



# PCARA Update



Volume 21, Issue 1 Peekskill/Cortlandt Amateur Radio Association Inc. January 2020

## 2020 – Vision

Welcome to 2020! **PCARA Inc.** is turning **20** in **2020!** Keep an eye out for upcoming anniversary celebration(s) — e.g. Special Event Station, commemorative T-Shirts, hats, picnic and/or party. If you have any suggestions or ideas on ways we could mark this milestone, please let us know. We’ve got a lot to celebrate, we’ve come a long way from very humble beginnings. What started with a single UHF repeater and a



mailing to a few dozen local licensed amateurs in 1991, has grown through the years to become an incorporated nonprofit 501(c)(3) organization with three coordinated repeaters, a website, Facebook page, Yahoo! Groups presence, and a magnificent collection of very talented members! None

of this would have been possible without our membership. So give yourselves a well-deserved hand for building this organization **together**. **THANK YOU!**

The 2019 PCARA **Holiday Dinner** was held on December 8, 2019 at the Cortlandt Colonial Manor Restaurant. This year we were seated in the main dining room with sixteen members in attendance. As in years past, the food was excellent and the company was perfect!



In December we didn’t stop with the Holiday



PCARA’s 2019 Holiday Dinner on Sunday December 8 had been postponed — because of bad weather on December 1.

Dinner, we kept busy by providing **parking support** for the Christmas Eve Mass at the Church of the Holy Spirit in Cortlandt Manor, NY. Parking expertise was supplied by Bob N2CBH, Malcolm NM9J, Al K2DMV, and David KD2EVI. By 4:00 pm all on-site parking was full and the overflow had to move across the street. Another job well done by our members. Thank you for your time and efforts!

Now on to the event we’ve all been waiting for, the annual **PCARA Bring and Buy Auction**. You still have time to rummage through your collection of *treasures* you’ve been hiding in your shack, and bring those that you no longer want or need to the



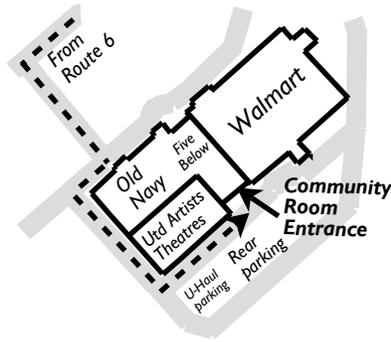
Flashback to the January 2019 Bring and Buy Auction at Hudson Valley Hospital. There will be more space available for the 2020 Auction on January 5<sup>th</sup> at the Town of Cortlandt CUE Room .

Cortlandt Town Center CUE Room on Sunday January 5<sup>th</sup>, 2020 at 3:00 p.m. *Continued on page 2.* ⇨

## Contents

2020 – Vision - KB2CQE	1
Adventures in DXing - N2KZ	2
Run Against Hunger - news report	7
Church support Dec 24	8
V.E. Test Session	8
Tech class	8
Handbooks I’ve known - NM9J	9
Deviation check - NM9J	12
µBitx update	14
The last twenty	14

There you can try and find a new home for those boat anchors and doorstops, where they can make someone else's shack complete. Just a reminder that no boat anchors can be left behind after the auction. Start digging!



CUE Room location.

On Saturday December 14, 2019 we gathered at Uncle Giuseppe's Marketplace in Yorktown Heights, NY for another **PCARA Breakfast**. We had 14 attendees and as always an excellent and wonderful time was enjoyed by all. If you didn't have a chance to join us then you

have another opportunity on Saturday January 18<sup>th</sup>, 2020 at



9:00 a.m. at Uncle Giuseppe's Marketplace. I promise you won't be disappointed. After the breakfast there will be a **PCARA V.E. Test Session** at the John C. Hart Memorial Library in Shrub Oak, NY at 11:00 a.m. If you know of anyone interested in taking an exam, please let them know.

Our next regularly scheduled membership meeting is the annual PCARA Bring and Buy Auction at 3:00 p.m. at the Cortlandt Town Center CUE Room in the Cortlandt Town Center shopping complex. I look forward to seeing each of you there.

- 73 de Greg, KB2CQE

## PCARA Board

President:

Greg Appleyard, KB2CQE; kb2cq@arrl.net

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Secretary:

Lou Cassetta, KD2ITZ, radiocassetta@gmail.com

Directors:

Bob Tarsio, N2CBH

Mike Dvorozniak, W2IG

## Net night

Peekskill/Cortlandt Amateur Radio Association holds a weekly net on the 146.67 MHz W2NYW repeater on Thursdays at 8:00 p.m.

Join net control Karl, N2KZ for news and neighborly information.

## Adventures in DXing

- N2KZ

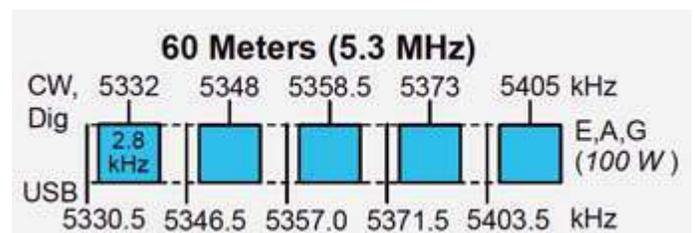
### See You on Sixty

Looking for new operating challenges? You may have heard of the **60 meter** amateur radio band... but have you ever tried it? It is unlike any other band I have operated before. Five channels are waiting for you between 5 and 6 megahertz to enjoy and explore. You would be surprised how much goes on within such a small amount of spectrum space!

The 60 meter band was originally authorized for use in the year 2003. Since then, American amateurs have been communicating on these channels as secondary users. The primary users are many. "In the US, the band's (primary) occupants include FCC Part 80 (Maritime), Part 87 (Aviation) and Part 90 (Private Land Mobile). Many specific government allocations are confidential" according to the ARRL.

General, Advanced and Extra Class amateurs have authority to use the channels, provided that other services do not require these frequencies. Needless to say, the calculation of your operating frequency demands to be quite accurate and courtesy and brevity are paramount. There is no continuous tuning here. You have five frequencies with a list of regulations to adhere to. No more — no less!

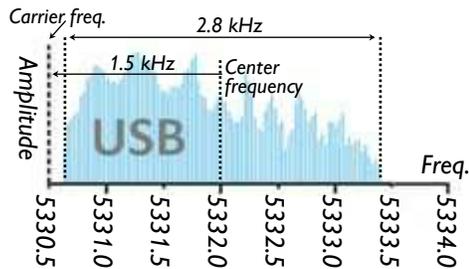
To operate on 60 meters, you must remember this: There are five fixed channels. Your signal must be centered perfectly in the middle of the channel — and — your signal can not exceed the channel's 2.8 kHz width. For CW, the place to park is easy. Your basic CW carrier is precisely in the middle of the channel: 5332, 5348, 5358.5, 5373 and 5405 kHz.



60 Meter Bandplan from ARRL Amateur Radio Bands leaflet. "General, Advanced and Amateur Extra licensees may operate on these five channels on a secondary basis with a maximum effective radiated power (ERP) of 100 W PEP relative to a half wave dipole. Permitted operating modes include upper sideband voice (USB), CW, RTTY, PSK31 and other digital modes such as PACTOR III. Only one signal at a time is permitted on the band."

All voice communications on the 60 meter channels are **upper sideband** (USB.) You need to restrain your audio not to exceed the 2.8 kHz bandwidth of the channel — and — position your signal to be centered on one of the five center frequencies. In example:

Channel 1 is centered at 5332 kHz. The active channel bandwidth is 2.8 kHz giving you 1.4 kHz above and below the center frequency. Upper sideband modulation operates from a lower frequency to a higher frequency. FCC Rule 97.303(h) states “In the 5330.5-5406.4 kHz band (60 m band)... control operators of stations transmitting phone, data, and RTTY emissions may set the carrier frequency 1.5 kHz below the center frequency.” Therefore, the USB carrier frequency for channel 1 would be 5330.5 kHz, Channel 2 5346.5 kHz, Channel 3 5357.0 kHz, Channel 4 5371.5 kHz and channel 5 at 5403.5 kHz. Get it? (Whew!)



For the five 60 meter band channels, FCC recommends setting the carrier frequency 1.5 kHz below the center frequency.

My modern Yaesu FTDX1200 transceiver makes 60 meter operation convenient and easy. Preprogrammed into the rig’s memory bank are 5 channels preset for CW and data use and 5 more presets that adapt these same frequencies for USB use.



Yaesu FTDX1200 transceiver for 160 - 6 meters is capable of operating on 60 meters / 5.3 MHz. [N2KZ pics.]

The center frequencies of the five channels are 5332, 5348, 5358.5, 5373 and 5405 kHz. CW and data are placed at these center frequencies.

Upper sideband is offset to correctly adjust for these channel frequency centers. In example, sideband on the first channel begins at 5330.5 kHz. Life is



Close-up of FTDX1200 display, while in CW mode on memory channel 5M-09.

so much easier when you don’t have to think about where you are in frequency and mode. Thank you, Yaesu!

This confusing scenario takes a little getting used to. Please refer to the handy ARRL pictorial of the 60 meter band to aid your understanding. It took me a while to figure out the intent! I first had to teach myself how to access the Yaesu presets. The hard part came next: What do you do with them! A little listening to each preset provided good comprehension of the 60 meter scheme.

The more I listened to 60 meters, the more I became acquainted with life on this channelized band! I heard a couple of conversations proceed in USB on Channel 2. The bee-hive sound of FT8 filled channel 3. The sounds of CW were found on channels 1 and 4. Listening to 60 meters was interesting and informative but transmitting would be even better! My dilemma: I only have dipoles for the familiar legacy bands to offer. My attempt to load up a 60 meter signal to my 80 meter dipole failed miserably. I was stunned and amazed that my 40 meter dipole actually (almost) worked pretty well on 60 meters!

Even with the sometimes miraculous built-in tuner on my Yaesu, the 40 meter dipole produced a resultant SWR of about 4 to 1. Woof! Not so hot! Respecting my final transistors, I turned down my output power (way down!) and actually managed a couple of very brief QRP CW QSOs into North Carolina with solid copy on each end. Both Brian KB4MNG and Eric NI4E gave me good reports during my 60 meter maiden voyage.

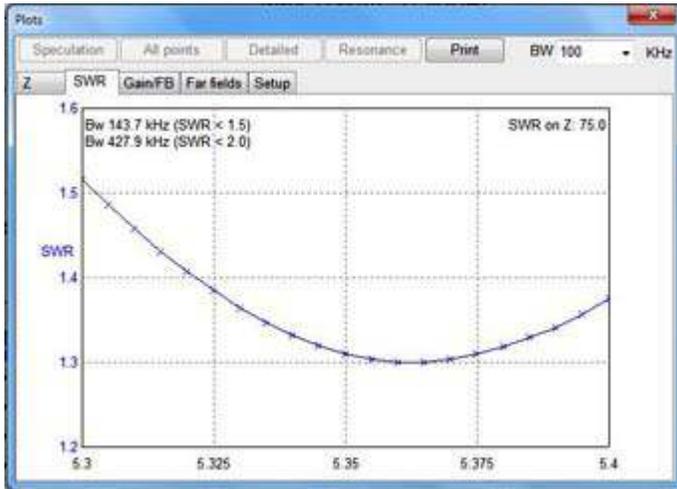


Brian KB4MNG of Williamston, NC.

One of the guidelines for 60 meter use pertains to field strength and power output. You must not operate with a signal strength that exceeds the effective radiated power of 100 watts presented to a simple dipole. No specification has been given regarding height or placement of the dipole. If you use a directional antenna, you must lower your output power to compensate for the inherent gain of your skyhook.

Quick calculation and Internet research suggested that a dipole for 60 meters should be about 44 feet (or a few inches less) for each leg (about 88 feet total.) Malcolm, NM9J, kindly verified these findings:

“I ran the numbers through “MMANA-GAL Basic” modeling software. For resonance at 5.36 MHz, the half wave dipole should be 87.6 feet long total, each leg 43.8 feet long. This was calculated over real ground, at a height of 10 meters above ground, with 75 ohm feeder. Dipole material was copper wire, roughly 14 AWG. SWR on the 75 ohm feeder at resonance would be 1.3 : 1. Bandwidth for SWR < 2:1 = 471 kHz. You should take these figures from MMANA-



SWR on 75Ω feeder for 87.6 ft wire dipole over frequency range 5.3 - 5.4 MHz as predicted by MMANA-GAL .

GAL with a pinch of salt, be prepared to trim the length for resonance in your particular circumstances.”

With an abundance of scrap video cable at my workplace, I suggested the 75 ohm feeder impedance. I use 75 ohm video coax for all of my dipoles with great success. Guess who will be building a new dipole soon?

### Getting to Know You

Do you want to know more about 60 meters? A little education can go a long way. A good place to start learning is the 60 Meters Online site at:

<http://60metersonline.com>. You'll find a nice summary of the bandplan and many lists of links to take you farther in pursuit of knowledge.



You will see that Channel

5 is usually used for weak signal and DX work. Channel 3 is the single channel that is recognized worldwide and is devoted to FT8. I discovered USB and CW are mix and match on Channels 1, 2, 4 and 5 and are used on a first-come first-served basis — one QSO at a time, please.

Although 60 meters is rapidly becoming an international band, (new countries are approving 5 MHz amateur operation all the time) exact frequency allocations vary widely from country to country and from region to region. American 60 meter allocations only align with *some* international countries. You may need to arrange cross-band 'skeds' to verify contact with many other exotic places. It can be done! Look at the comprehensive frequency list at:

<http://60metersonline.com> to figure it all out!

One amiable characteristic of 60 meters is the strict organization and usage of the spectrum. You never have to look far to find where someone might turn up on 60 meters. With only five available channels, there are not a lot of places to look and the operating frequencies are precisely defined!

You will enjoy the nice clear channels and the gentlemanly behavior found here. If the band is active, QSOs are brief and efficient. On off-hours, especially in early local mornings, groups of stations will congregate to chew the rag. One great find was a quite active net on Channel 1 (5330.5 USB) where my feeble signal was heard far and wide! I contacted Bill, WA2TQI Mt. Laurel, NJ; Rich, K1OF in Westport, CT; Kris KM2KM in Ithaca, NY; Paul, KD2ELY in South Amboy, NJ and Ian, VA3OCO in Ayr, Ontario all during one session. Quite a nice crowd from far and wide!

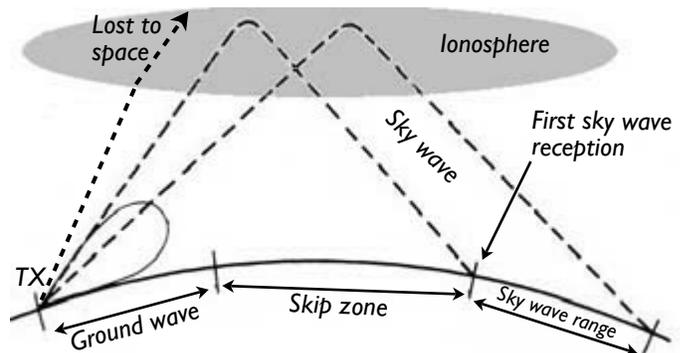
Rich, K1OF tells me this net has been meeting casually at 8:00 a.m. Eastern since the 60 meter band opened back when. Regular check-ins come from as far away as Michigan, Ohio and Virginia. There were so many participants the day I discovered this net that it continued until almost 10:30 a.m.

### Let's Rock!

60 meters has gained the nickname 'The Rock Band.' The quite formal channelization is reminiscent of old-time Novice operations when stations were locked to very specific frequencies by quartz crystals known as 'rocks.'

Just as the 30 meter amateur band is a blend of the propagation of the classic 20 and 40 meter bands (a little DX and a little domestic,) 60 meters is a blend of the long-haul possibilities of 40 meters and the relatively local coverage of daytime 80 meter operations.

60 meters is also thought of as the best wavelength to employ NVIS antennas and propagation. Creating Near Vertical Incidence Skywave has been proven to be a simple method of filling in the transmission coverage gap between direct ground wave and long-distance sky wave to make a never-ending signal with 'rock' solid reception.



The gap between ground wave and sky wave coverage of an HF transmitter is known as the **Skip Zone**.

By using antennas designed to send signals nearly straight up in the air to create the NVIS effect, 60 meters' ability to always be open, always be quiet and undisturbed and ready for hundreds of continuous miles adds more mortar to the 'rock band' moniker! This is a useful strategy when proceeding with ongoing

traffic handling and emergency event support.

### Military Handshake

Amateur radio has long been known for organizing and participating in military auxiliary groups such as MARS (Military Auxiliary Radio System) and the Civil Air Patrol. Civilian amateur operators have needed to specially modify their equipment to reach the various HF and VHF frequencies employed by these organizations which are outside normal ham bands.

With the allocation of 60 meter channels for amateur use, military, governmental and amateur spectrum space can now overlap. This allows mutual use of these frequencies for coordinated exercises and preparation.

In example: The Federal Emergency Management Agency (FEMA) holds monthly exercises using the five amateur 60 meter frequencies on the third Wednesday of each month from 1730 to 1900 UTC (12:30 p.m. to 2:00 p.m. Eastern Standard Time) using the FEMA Region 10 call sign WGY910. Amateurs and governmental personnel continue to prepare for emergencies where normal communication means are unavailable. 60 meters has been determined as a prime space to conduct backup messaging and coordination during disasters and other calamities.



### Trans-Atlantic Beacon

A handy transatlantic 60 meter propagation beacon is actually a VOLMET aviation weather station serving the 'Shanwick' airspace region comprised of Shannon, Ireland and Prestwick (Glasgow,) Scotland airports and their surrounds. 'Shannon VOLMET' broadcasts adjacent to the 60 meter amateur band on 5505 kHz 24 hours a day. If you hear it, you know Ireland and the U.K. are within reach on 60 meters. Reception of other VOLMET stations are available in this range from Argentina, Great Britain and China. A detailed list of worldwide VOLMET stations is maintained by ace DXer William R. Hepburn found at: <http://www.dxinfocentre.com/volmet.htm>. (VOLMET is a combination of French words describing 'vol' for flight and 'météo' for weather.)

### Discover Sixty

60 meters is not a mysterious band at all! As you can see, it is very useful and very different. What a wonderful place to discover and explore! Not only is it

a place of great organization and cooperation, it may be a harbinger to the world of amateur radio in the future. Start by just listening in. Welcome to a new decade and welcome to 60 meters.

### Happy New Year

Straight Key Night is coming very soon! This yearly event invites amateurs to dust off their vintage gear and straight keys and get on the air just like in the good old days in the past. SKN begins at 7 p.m. Eastern on New Year's Eve and continues to 7 p.m. New Year's Day.

You will find slow code operation on all CW allocations. 80 meters (3525 to 3600 kHz) and 40 meters (7025 to 7125 kHz) are the usual places to find the most activity. All licensed amateurs can operate CW on the frequencies mentioned above. Novices and Technicians must operate with no more than 200 watts.

If you ever wanted to experiment and try-out operating in CW, this is your chance! Everyone will be sending in very slow code! Even if you don't operate in CW, tune in to hear the sounds of old-time amateur radio! This is not a contest, just an enormous get-together to delight in the manual sound of Morse Code. More details at:

<http://www.arrl.org/straight-key-night>. Check it out!

Many thanks to Malcolm, NM9J for his help and guidance with this month's article. Happy New Year everyone and I hope to see you on the air soon. 73s and dit dit de N2KZ 'The Old Goat.'



### Adventure addendum

Owing to a transmission error, several paragraphs were left out of Karl's "Adventures in DXing" article for December 2019. Here is the section **More Magic** with the missing paragraphs now magically restored. -Ed.

### More Magic

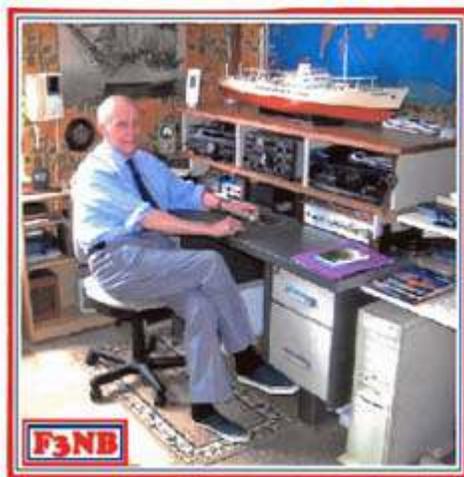
Six meters can be even more fun. Longing to try the "magic band," my friend Lonnie, NY2LJ, loaned me a Santec MX-6S HT with an interesting combination of modes: SSB and CW. With a good set of batteries and some luck, the Santec should emit a full



Mizuho/Santec MX-6 50 MHz transceiver.

watt of power. On first trial, I had the HT with its big long collapsible whip antenna laying on my bed on the second story of my house. With my straight key attached and ready to go, I heard a CQ and answered it. W8LU, Ken from Plymouth, Michigan was calling and heard me right away. Do I have things to be thankful for? You bet!

My fascination with the miracle of ham radio continues.



André Bertemes, F3NB.

One of my very first QSOs with my Small Wonder Labs QRP kit was a very memorable QSO with F3NB, Andre "Andy" Bertemes in Cugnaux, France just outside of Toulouse. My SW-40+ was feeding my 40 meter

dipole with a powerful one watt signal on 7020 kHz CW. Andy was first licensed in 1932 and was 89 years old when we met in 2005. Needless to say, we were both thrilled with this contact!

When I first went on the air in 2000 with my trusty Heathkit HW-16, I had only an 80 meter dipole and lived nightly around 3700 kHz. The people you would meet especially in the wee hours of the morning: musicians and restaurant workers coming off their shifts, factory workers, retired military veterans and a cornucopia of humanity that never stopped fascinating.

Wait later in the evening, approaching the beginnings of the dawn and the world 'down under' would begin to percolate with stations from Australia and New Zealand almost on a daily basis. Consider when it becomes 7:00 p.m. anywhere in the world and chances are that local hams would be sitting down to operate. You'll see this especially on 30 meters. For example: eastern and central European stations are often heard in the mid-afternoon here on the American East Coast. 7:00 p.m. somewhere is always prime time to fill in more countries in your log book.

**Some of the best catches** came from exotic places. I worked a Russian ham, Mike Fokin, RW1AI/ant stationed in Antarctica on 15 meters one night when the band was 'completely dead.' Some of my best contacts have come by calling CQ into an otherwise quiet band. You can't work someone unless they know you are there!

I would often troll 80 meters and find ship operators manning fruit boats or container ships in the Carib-

bean. I heard many stories about working for The United Fruit Company (Chiquita bananas.) Many a surprise was registered when I would hear an out-of-place call with an odd suffix sitting up on a huge cargo vessel off the shores of places like the Dominican Republic or St. Kitts. Especially memorable was working Italo Viviani, IV3IYK on his glorious sailboat in the Adriatic Sea. I would have loved to switch places with him. A magnificent moment!



QSL cards from RW1AI/ant and IV3IYK.

Many seasoned military operators found their way into my log book, too. I gained so much knowledge and folklore from them. One gent taught me several tricks to condense copy including using an 'X' as a line-ending period. Others told me how to emphasize important characters and other shortcuts.

Lots of tales of monitoring the old marine standard 500 kilocycles and surrounds on medium wave made for excellent conversations. Ship radiomen had all sorts of tales from their days on the high seas. I love to hear about their experiences with propagation and the range and distance that you could achieve at all hours of the day and night. They really knew how to work the bands for best results!

In some respects, they were not any different than AM broadcast band DXers working sunrise and sunset skip for solid contacts or acknowledging 28 day cycles of sunspots and knowing they might miss a day or two of correspondence until the solar winds abated. Imagine talking to someone shipboard who just wanted to touch base with another human being on the mainland. Amazing!

- Karl, N2KZ

# Run Against Hunger

## News report

The 39<sup>th</sup> Harry Chapin Run Against Hunger took place on Sunday October 20<sup>th</sup> with an initial report appearing in *PCARA Update* for November 2019, pages 6-8.

The Run Organizers have now compiled their own comprehensive report on the 2019 event, full details of which were published in *The (Croton) Gazette* for Dec 19, 2019 - Jan 1, 2020. Thanks to **Henry KB2VJP** a copy of *The Gazette's* three page report has now arrived at the PCUD Editor's desk.

The report begins by stating that participation reached 1,017 registrants for all three events with a substantial boost in the fund-raising. Here is the paragraph regarding support by PCARA and WECA members, along with two pictures that were too late for inclusion in the November issue of the *PCARA Update*.

"Local amateur radio groups joined us for the sixth year to aid communications and safety around the courses of all three of our events. We met with Presi-

Local amateur radio groups joined us for the sixth year to aid communications and safety around the courses of all three of our events. We met with President Greg Appleyard of the Peekskill/Cortlandt Amateur Radio Association (PCARA) and Megan Hall and John Donnelly from Croton EMS for a very helpful planning session so we could better knit together our safety net. PCARA volunteers joined forces with members of the Westchester Emergency Communications Association (WECA), led by Public Service Director Kathleen O'Keefe. With the Westchester County Mobile Amateur Radio Command Center (RACES) truck set up at CHHS, Net Control was ably managed by Tom WB2NHC. Alan N2YGK shadowed Assistant Race Director Mike Grayeb and Kathleen KC2VCT rode in our trail car for the 10K so that we could receive immediate communication from distant locations. Shifting course locations for the various events were Greg KB2CQE, Lou KD2ITZ, Robert N2TSE, David K2WPM, Russ N2AMP, Larrie W2UL and Steve KD2OFD. With ten individuals from both groups all working together they gave us excellent communications coverage for all three events, staffing six different posts and the trail car for the 10K course. Having in-progress race updates from their posts out on the 10K course was very helpful in tracking our runners and bringing the race live to our waiting spectators at the high school. The professionalism of both of these groups certainly belies the word "amateur" and we are indebted to them for continuing to help us improve race safety and communications. Fortunately, there were no reports of any injuries or other significant issues.

*Part of report in The (Croton) Gazette for 12/19/2019.*



*Net Control was in the Westchester County RACES vehicle, alongside Croton-Harmon High School. [Run Against Hunger.]*

dent Greg Appleyard of the Peekskill/Cortlandt Amateur Radio Association (PCARA) and Megan Hall and John Donnelly from Croton EMS for a very helpful planning session so we could better knit together our safety net. PCARA volunteers joined forces with members of the Westchester Emergency Communications Association (WECA), led by Public Service Director Kathleen O'Keefe. With the Westchester County Mobile Amateur Radio Command Center (RACES) truck set up at CHHS [Croton-Harmon High School -Ed.],

Net Control was ably managed by Tom WB2NHC. Alan N2YGK shadowed Assistant Race Director Mike Grayeb and Kathleen KC2VCT rode in our trail car for the 10K so that we could receive immediate communication from distant locations. Shifting course locations for the

various events were Greg KB2CQE, Lou KD2ITZ, Robert N2TSE, David K2WPM, Russ N2AMP, Larrie W2UL and Steve KD2OFD. With ten individuals from both groups all working together they gave us excellent communications coverage for all three events, staffing six different posts and the trail car for the 10K course. Having in-progress race updates from their posts out on the 10K course was very helpful in tracking our runners and bringing the race live to our waiting spectators at the high school. The professionalism of both of these groups certainly belies the word "amateur" and we are indebted to them for continuing to help us improve race safety and communications. Fortunately, there were no reports of any injuries or other significant issues."

The report concludes by noting that a total of \$44,000 was raised, a significant increase over 2018. The Race Organizers expressed a humble "thank you Croton" for all the generosity they enjoy from the entire Croton community. They also look forward to the 40<sup>th</sup> Anniversary Harry Chapin Memorial Run/Walk Against Hunger, scheduled for Sunday October 18, 2020.



*Net control was capably managed by Tom WB2NHC. [Run Against Hunger pics.]*

# Church Support

December 24

On Tuesday afternoon, December 24 PCARA had once again been asked to provide radio support at the Church of the Holy Spirit in Cortlandt Manor for the 4:00 p.m. Christmas Eve Mass. Shortly after 2:30 p.m. David KD2EVI and Bob N2CBH were joined by Al K2DMV who had come straight from work. The parking lots around the church were completely empty — but that situation would rapidly change.



David KD2EVI and Bob N2CBH prepare for the onslaught of traffic ahead of the 4:00 p.m. Christmas Eve service.

The weather was dry and sunny with temperatures around 40°F. Fr. John and Fr. Vernon advised us that parking on the grass would be possible, but we should not allow vehicles to park on the large circle adjacent to Route 202. Safety cones had been laid out to guide traffic around the circle toward the Church building.

Vehicles began arriving at 3:00 p.m. and the PCARA team spread out to guide drivers toward the various parking areas, with communication maintained on 146.565 MHz simplex. By 3:30 p.m. the parking lot adjacent to the Church was completely full and vehicles



Bob N2CBH and Al K2DMV wave on traffic at the Church entrance after the parking lots had all filled up.

were guided up the hill to the upper parking lot where Bob was located. Ten minutes later, the upper lot was full and David was kept busy arranging vehicles into rows on the grassy area at the top of the hill. Your editor had to persuade several drivers that they really should not park on the circle, by kind request of Fr. John.

As 4:00 p.m. approached, the main rush was over, but vehicles were still arriving and David advised that there was no more space on the grass. Al led the team down to the entrance where we advised latecomers that there was no more room at the Inn and they would have to park elsewhere. Bob had to slow down traffic on Rt. 202 to allow pedestrians to cross over from a nearby lot. A few minutes later, we noted people walking away from the Church as there were no more seats available and the building was completely full. We continued advising latecomers of this situation until close of operation at 4:15 p.m.

- NM9J

## V.E. Test Session

A PCARA Volunteer Examiner (V.E.) Test Session is scheduled to take place on Saturday January 18, 2020 starting at 11:00 a.m. at the John C. Hart Memorial Library, 1130 E Main St, Shrub Oak, NY. The session follows immediately after the PCARA breakfast at Uncle Giuseppe's, scheduled for 9:00 a.m. on the same morning.



John C. Hart Memorial Library.

The cost for candidates is \$15.00 per exam or retest. A photo-ID is required and your Social Security Number will be needed if unlicensed. Please bring a copy of your current amateur radio license if upgrading.

All candidates are strongly advised to contact Mike W2IG before the test session, using e-mail address: w2igg 'at' yahoo.com .

## Tech class

PEARL is offering a Technician Licensing Class for newcomers to the hobby starting Saturday Jan 4<sup>th</sup> to Saturday Mar 21<sup>st</sup> 2020, 9:00 a.m. at Putnam County EOC, 112 Old Route 6, Carmel NY. There is a \$30 donation for the ARRL License Workbook. To register, contact Liam using e-mail: classes 'at' pearlk2put.org.

# Handbooks I've known

On "Cyber Monday" (Dec 2, 2019) I noticed that ARRL had a special offer on their soft-cover "2020 ARRL Handbook for Radio Communications" which was only \$40.00, with free shipping. The normal price for this 5½ lb weighty volume is \$49.95 plus shipping. I had an ARRL \$25.00 Prize Certificate from Bergen ARA's Fall Hamfest, so I used the prize code with my order. The end result was a shiny new ARRL Handbook for only \$15.00 — thanks ARRL!

## Good value

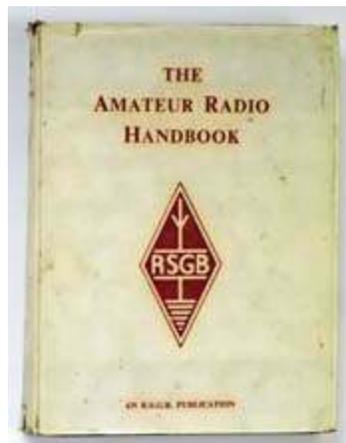
I have long thought that, compared with expensive transceivers, textbooks and handbooks can be remarkably good value, especially in a hobby like ours with a large audience. Where else can you find a single item costing a handful of dollars that distills the knowledge of dozens of experts and lasts for decades?

## Great British Handbook

While studying for the U.K. Radio Amateur's Examination, one of the items that I kept near my receiving station was the Radio Society of Great Britain "Amateur Radio Handbook". I was still at Grammar School, so my copy came from Southport's Atkinson Lending Library where I had to renew the loan every two weeks. Fortunately nobody else wanted to borrow this book, so I was able to devour the contents for several months.

This particular RSGB Handbook was the **Third Edition**, first published in 1961. Previous editions had a famous history. The **First Edition** appeared in December 1938 and proved very popular. On the day before World War II broke out, RSGB received 3000 copies of a second printing. Large orders were received from members of the armed services and those in training for radio-related postings. A Second Edition appeared in 1940 and went through *twelve* printings during the war years of 1940-1946. A total of 181,500 copies were produced at a time when all amateur stations were closed down, with all equipment surrendered to the U.K. Authorities. This large number of radio textbooks led to a large number of ex-service personnel applying for Amateur Radio licenses when the War was over.

I knew I could not keep renewing the Atkinson



RSGB Handbook, 3rd Edition.

Library's Third Edition 'RSGB Handbook', so I purchased my own copy in 1966. The original was returned to the library shelves where I hope it served to inspire future radio amateurs. By then the Third Edition was on its sixth printing and was looking a little dated... most of the equipment was based on

vacuum tube technology with just a few transistorized circuits—for example, an audio amplifier and a 144 Mc/s (sic) crystal controlled converter. There was plenty of other information on radio theory, modulation, propagation and antennas that is still relevant today.

## Enter the ARRL

A few months later I received my U.K. Amateur Radio license and went off to college. There was less time for radio as I was involved in a constant round of lectures, practical classes, studies and supervisions. Nevertheless, I found time to pick up a copy of the ARRL "Radio Amateur's Handbook" which was available from Short Wave Magazine and specialist book stores. If memory serves, I think I purchased my copy from "The Modern Book Company" of Praed Street, London. This was just off the Edgware Road, home to surplus electronic stores such as Henry's Radio.

The copy that I purchased was the 43rd edition, published in 1966 with a USA price of \$4.00 and a U.K. price of £2/6/-

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RADIO SOCIETY OF GREAT BRITAIN

FIRST EDITION

First Printing .. .. .	December, 1938
Second Printing .. .. .	August, 1939

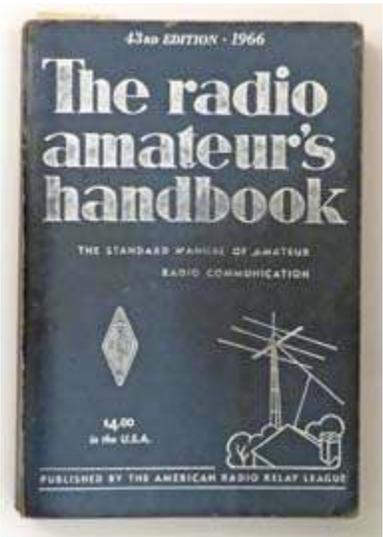
SECOND EDITION

First Printing .. .. .	July, 1940
Second Printing .. .. .	January, 1941
Third Printing .. .. .	April, 1941
Fourth Printing .. .. .	September, 1941
Fifth Printing .. .. .	January, 1942
Sixth Printing .. .. .	April, 1942
Seventh Printing .. .. .	October, 1942
Eighth Printing .. .. .	January, 1943
Ninth Printing .. .. .	August, 1943
Tenth Printing .. .. .	January, 1944
Eleventh Printing .. .. .	August, 1944
Twelfth Printing .. .. .	February, 1946

THIRD EDITION

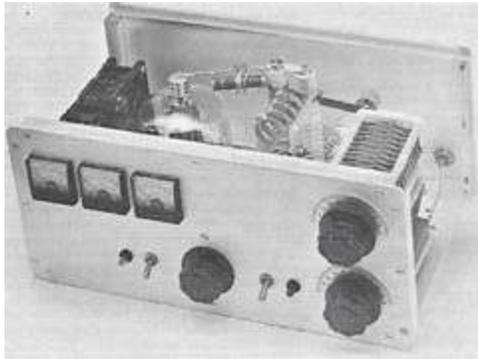
First Printing .. .. .	November 1961
Second Printing .. .. .	February 1962
Third Printing .. .. .	August 1962
Fourth Printing .. .. .	April 1963
Fifth Printing .. .. .	November 1964
Sixth Printing .. .. .	May 1965

*Publishing history of the First, Second and Third Editions of the RSGB Handbook. Note the twelve printings of the Second Edition during WWII.*



ARRL Handbook, 43<sup>rd</sup> Edition.

(two pounds six shillings). This book was quite a contrast to the RSGB Handbook. It had 704 pages, including an advertising section. The RSGB Handbook was printed with letterpress technology using raised metal type and photographs that employed a coarse mechanical screen. ARRL's Handbook was produced using the newer lithographic process, with livelier typography and more detailed photos of equipment that were all beautifully lit and constructed.



*Beautifully-built compact kilowatt amplifier using a 3-400Z tube from the 1966 ARRL Handbook.*

The ARRL Handbook for 1966

still had a preponderance of vacuum tube circuitry, with just a few projects employing transistors — for example there was a regenerative receiver and a high voltage mobile power supply. The circuit schematics took a little getting used to as U.K. convention was to draw the high tension line *above* the active components (vacuum tubes) while a U.S. diagram would show the “B+” line below.

Most of the material concerned AM, SSB and CW transmission. Frequency modulation was described in just four pages of the 1966 ARRL Handbook, with sparse coverage of repeaters. The only mention was in the following paragraph...

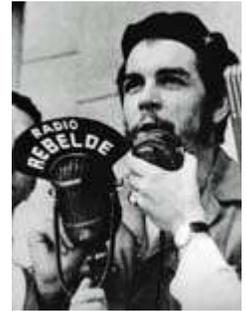
“Hilltop-located unmanned repeater stations make extended-range v.h.f. contacts readily possible with normal equipment. Ten or so such stations are scattered around the country. Each one is a special problem, involving satisfying the FCC that all legal requirements (no unauthorized access, log-keeping, master control) be met.”

### Say you want a revolution?

Returning to those college studies, supervisions involved a weekly visit with another student to the **Supervisor**. He was a post-doc who would assign subject work for the following week and review our current efforts.

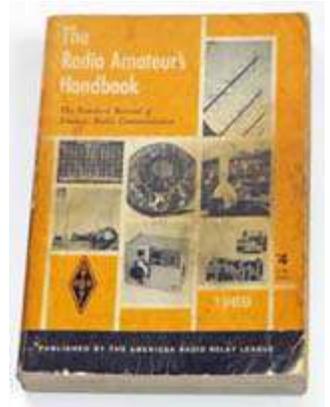
My physics supervisor arranged these sessions in his own rooms. Glancing around his shelves, I noted various books including a copy of the ARRL “Radio Amateur’s Handbook”. What was that doing there? He wasn’t a radio amateur... It turned out that the ARRL Handbook was an excellent primer on electronics and radio, highly suitable for anyone working with test gear and radio frequencies in a physics laboratory.

There was another possible explanation... during the 1960s there was a lot of support for radical politics, with student “demos” and “sit-ins” taking place all around the world. If you were planning to overthrow the state, a knowledge of radio communication could be an essential skill. The **ARRL Handbook** was just the thing to have in your revolutionary toolbox!



### Bye bye to tubes

The next ARRL Handbook that I acquired was the **Forty Sixth Edition**, published in 1969. The U.S. price was still only \$4.00 but there were significant changes within. The Editor had changed from Byron Goodman W1DX to **Doug DeMaw**, W1CER (later W1FB, SK). Doug DeMaw is famous nowadays for a series of articles and amateur radio books including “Practical RF Design Manual”, “W1FB’s Design



*Much-thumbed copy of the ARRL Radio Amateur’s Handbook, 46<sup>th</sup> Edition.*



*Doug DeMaw W1FB.*

Notebook”, “W1FB’s QRP Notebook” and — coauthored with W7ZOI — “Solid State Design for the Radio Amateur”. He was ARRL’s Senior Technical Editor and Technical Department Manager in the 1970s, shifting the emphasis from vacuum tubes to solid-state technology for both *QST* and the ARRL Handbooks.

Doug DeMaw’s preference for solid-state is apparent in the

1969 Handbook where there are plenty of transistor circuits alongside the traditional vacuum tube designs. A good example is the chapter on V.H.F. and U.H.F. receiving, where 80% of the circuits now employ bipolar



*Books authored by Doug DeMaw, W1FB.*

transistors or Field Effect Transistors (FETs). What a contrast with 1966!

The chapter on power supplies shows a similar shift to solid state. I made good use of the following circuit for a 12 volt Regulated Power Supply in my own multiband receiver. Can you spot a flaw in this power supply design?

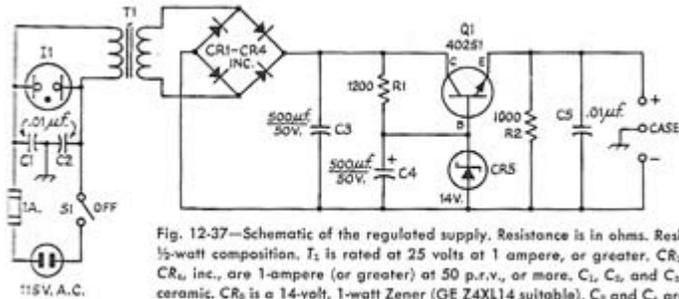


Fig. 12-37—Schematic of the regulated supply. Resistance is in ohms. Resistor composition,  $T_1$  is rated at 25 volts at 1 ampere, or greater.  $CR_1$ ,  $CR_2$ ,  $CR_3$ ,  $CR_4$ , inc., are 1-ampere (or greater) at 50 p.r.v., or more.  $C_1$ ,  $C_2$ , and  $C_3$  are ceramic.  $CR_5$  is a 14-volt, 1-watt Zener (GE Z4XL14 suitable).  $C_4$  and  $C_5$  are electrolytic.  $S_1$  is a s.p.a.t. toggle.

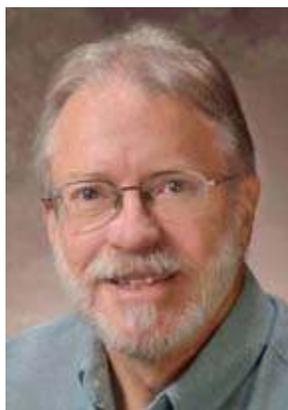
Schematic of a 12 volt regulated DC power supply from the 1969 ARRL Handbook.

Answer: Apart from the single pole on-off switch and fuse location, the main flaw in this circuit is the lack of protection for the output pass-transistor against a short circuit on the 12 volt DC output. I had to replace my substitute RCA 40251 several times after I accidentally shorted out the supply line during receiver development. Apart from that, the regulator circuit worked well.

I borrowed quite a few other ideas from that 1969 ARRL Handbook. One advantage of ARRL's publication is that the Handbook is updated once a year, compared with every 6-7 years for the RSGB Handbook. For a U.K. Radio Amateur, the RSGB Handbook was essential as it was aligned with U.K. device manufacturers such as Mullard and GE M-O Valve Company, plus local conventions and practices — for example, we had our own British Standard Wire Gauge and British Association screw threads. But the ARRL Handbook was also essential, as a source of fresh ideas, circuitry and components from across the Atlantic.

### Latest and greatest

Looking along my bookshelves, I can count ten ARRL Handbooks, the latest of which is dated 2012. But the new "ARRL Handbook for Radio Communications 2020" is the 97<sup>th</sup> edition — and it's even better. The page count is 1,280 so this is a weighty volume. The Editor, H. Ward Silver N0AX, is well known as the author of many QST articles, including the "Hands-On Radio" column and numerous



H. Ward Silver, N0AX.

books\*. Two of N0AX's QST articles have resulted in the Bill Orr Technical Writing Award.

(\*Books by N0AX: Ham Radio for Dummies, Two-Way Radios & Scanners for Dummies, Do-It-Yourself Circuitbuilding For Dummies, Hands-on Radio Experiments Volume 1-2, 3, Grounding and Bonding for the Radio Amateur, A History of QST, License Manuals, Zone of Iniquity.)

Most amateurs do not pick up an ARRL Handbook every year — but when you have a gap of eight years between purchases, there is a surprising amount of new material to absorb. I won't go into detail — but I already found sections in the 2020 edition on "Digital Oscilloscopes", "Antenna Analyzers", Digital Mobile Radio (DMR) and "System Fusion" which are not in my older Handbooks. This is only a beginning — you will find plenty of other modern topics such as "Remote Stations", "Digital Signal Processing" and "Software-Defined Radio".

Another change from my previous Handbooks is the provision of auxiliary material. My older Handbooks and Antenna Books had a CD-ROM (remember them?) bound into the back of the book. The present Handbook has no media included — instead the reader is instructed to head to the online ARRL Store and display the page for the appropriate "ARRL Handbook 2020 eBook" – Mac/Linux version or Windows version. This provides a downloadable version of the ARRL Handbook and supplemental articles in Adobe Reader PDF format. Normal price would be \$49.95 (like the Handbook) but there is a one-time Coupon Code included in each paper Handbook that will discount the full purchase price of the download. The included software is only compatible with MS Windows.

### Un-put-downable

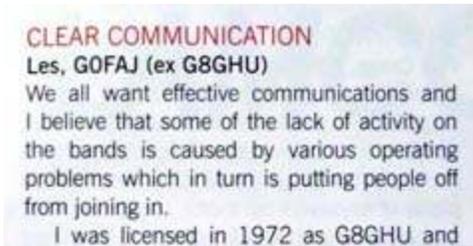
I need to add a warning — if you start leafing through this latest edition of the ARRL Handbook, you may find a topic that interests you and start reading... and reading... and reading. By the time the book has formed a dent in your lap, you will have absorbed everything the expert authors think you need to know about most aspects of the hobby.



Soft-cover ARRL Handbook for 2020 has 1,280 pages.

# Deviation check

In the “Last Word” section of December 2019 *RadCom* (monthly journal of the Radio Society of Great Britain) there is a letter by Les G0FAJ. Here is a short extract.



## CLEAR COMMUNICATION

Les, G0FAJ (ex G8GHU)

We all want effective communications and I believe that some of the lack of activity on the bands is caused by various operating problems which in turn is putting people off from joining in.

I was licensed in 1972 as G8GHU and am now G0FAJ. I have mainly used 2m and 70cm FM over the years and have done a lot of RF mobile work between jobs. The communication quality of transmissions has reduced dramatically over the years. It has got to a point where the incoming recovered audio is so low on a lot of transmissions that it is impossible to read, especially if you are mobile and trying to listen to poorly modulated signals over the vehicle and road noise. Please can everyone using voice modes make sure they speak correctly into their microphones and talk them up, whether it is on RF or on a PC of a mobile phone.

This problem has been further enhanced with the cheap imported FM rigs that have flooded the market. I have one myself and I can completely understand amateurs buying them as they are so cheap, but the transmitted speech from them is woefully low in audio level, even with the deviation set up to WIDE. I get the impression after listening to so many of them is that their wide deviation is probably set to our usual NARROW deviation level, so you will never be able to modulate these rigs to a decent level, as well as the mic gain on the rigs being too low. Also I do wonder if how to use a microphone is in the syllabus when you try to get a licence. I have had abuse thrown at me over the years when I try to tell operators that they are not speaking correctly into the microphone, when I am in fact trying to improve their readability.

I have to agree with some of G0FAJ's points. Listening on local repeaters and on simplex, you will often hear significant variations in audio level from one station to another.

In order to solidify my instinctive feeling into an actual measurement, I checked **deviation** for stations who participated in a recent PCARA “Old Goats Net”. See the table below — call signs have been masked to protect the innocent.

Station	Deviation
Station A	4.50 kHz
Station B	4.44 kHz
Station C	4.94 kHz
Station D	1.66 kHz
Station E	3.72 kHz
Station F	2.27 kHz
Rptr Voice ID	2.94 kHz

(Note the wide variation in deviation. For details of how these readings were made, see the Appendix.)

## Microphone manners

Here are some suggestions on how to satisfy G0FAJ's points about microphone technique and optimum deviation setting. First, examine your transceiver's microphone. This might be a stand model for a base station or a hand-held microphone for a mobile — or a built-in microphone on a handi-talkie. Can you see one or more holes in the case where the sound waves will enter? There might be a single round hole over an electret element or a slot or grille covering a larger, dynamic element. Wherever the hole or holes are, that is where your voice should be directed.



Three mobile microphones with location of the hole(s) for sound entry arrowed. L to R: Yaesu MH-48, Yaesu MH-31 (dynamic) and Icom HM-133.

But a word of warning. Don't speak DIRECTLY into the microphone. Try to speak ACROSS the opening to avoid excessive 'popping' and wind noise from variations in your breath.

How far should you be from the microphone? The radio manual might suggest 3 inches or 6 inches away — but my advice is — CLOSE TALK the element while monitoring your audio in a second receiver or transceiver. This is easy on FM as strong signals will not cause distortion of locally-received audio. Monitoring your audio on the repeater output is also possible — though it may prove difficult if there is any digital delay. Keep the audio level in



Yaesu FT-70D HT with microphone location arrowed.

the second receiver low or use headphones to stop howl-around. Close-talking will also prevent external noise from obscuring your own audio.

### Desperate for deviation

In frequency modulation, **deviation** is the maximum amount that the radio frequency carrier swings away from its resting value when a modulating signal is applied. The higher the deviation, the greater the RF bandwidth occupied. Most transmitters have a limiter circuit to prevent loud audio signals causing over-deviation.

Amateur radio in the USA generally uses a deviation of 4.5 – 5.0 kHz for FM on both VHF and UHF bands. This provides a good compromise for signal-to-noise ratio compared to available bandwidth.

In recent years, most Private Land Mobile Radio complying with FCC Part 90 has been forced to adopt a narrow channel spacing of 12½ kHz, with peak FM deviation of 2.5 kHz. Some services have an even narrower channel spacing of 6.25 kHz, with maximum FM deviation of 1.2 kHz. Signal-to-noise ratio is not so good\* with such narrow deviation. If you try to use this type of transceiver on amateur FM you may find that its receive bandwidth is too narrow to accept amateur radio signals with 5 kHz deviation and your own transmissions will have significantly less deviation than other amateur stations' signals.

(\*Reducing FM deviation from 5 kHz to 2.5 kHz results in a 6 dB decrease in signal to noise ratio. The area coverage of an analog FM base station or repeater which is subject to this type of narrow-banding is roughly halved. See:

<https://urgentcomm.com/2010/04/01/cut-your-losses/> )

My suggestion — use VHF and UHF radio equipment intended for amateur radio use by the “**big three**” amateur radio manufacturers from Japan — Icom, Kenwood and Yaesu. Their equipment meets the FCC Part 97 rules for amateur radio, with adequate frequency stability, deviation and receiver bandwidth.

You may come across big-three amateur radio equipment for VHF/UHF which is capable of switching between FM and “NFM” (narrow-band FM). An

example is the Kenwood TM-V71 mobile transceiver. This is intended for locations such as IARU Region 1 (Europe/ Africa/Middle East) with a 12½ kHz channel spacing band plan for 144 MHz FM simplex and repeaters. For use in the



Kenwood TM-V71.

Americas, be sure to set the mode to “FM” and not “NFM”.

Be careful when selecting equipment from other manufacturers outside the ‘big-three’. Some equipment

manufactured in the Far East may not meet FCC Part 97 rules and is frowned on by the FCC if it can operate outside amateur bands and/or produce spurious emissions. Equipment intended for DMR use which also has FM capability needs to be examined closely — check the specifications. If designed for 12½ kHz channel spacing *only* then deviation will be 2.5 kHz. This type of equipment may also be difficult to program from the front panel — requiring a computer interface.

### Appendix

The readings of peak deviation during the Old Goats net were taken by connecting a digital storage oscilloscope to the “TAPE” output of my BCT15X scanner. The TAPE output is not affected by the scanner’s volume control or volume offset.

Peak to peak voltage during station modulation was read directly in millivolts from the oscilloscope display. Conversion from voltage to deviation in kHz



Monitoring FM stations’ audio output on a Digital Storage Oscilloscope.

by comparison

with the modulation from an IC-Z1A transceiver whose peak deviation had been measured using Bessel functions. This method makes use of the carrier disappearing when the Modulation Index = 2.405 (first null), 5.520 (second null), 8.654 (third null). Modulation Index is the ratio of peak frequency deviation to the maximum modulating frequency,  $h = f_d / f_m$ . For my IC-Z1A, with full sine wave modulation, the first null in the carrier appears at an audio frequency of 1.874 kHz so peak deviation =  $1.874 \times 2.405 = 4.507$  kHz.

Carson’s Rule (J.R. Carson, 1922) states that bandwidth of a frequency-modulated signal is approximately  $2(f_d + f_m)$  where  $f_d$  is the peak deviation and  $f_m$  is the highest (audio) modulating frequency. Here are some typical bandwidths for a 3 kHz max audio frequency.

Deviation	Bandwidth	Channel spacing
2.5 kHz	11 kHz	12½ kHz
4.5 kHz	15 kHz	20 kHz
5.0 kHz	16 kHz	25 kHz
15 kHz	36 kHz	50 kHz

Broadcast FM (88 – 108 MHz) has higher audio bandwidth (15 kHz mono) than land mobile radio and much higher deviation:

Deviation	Bandwidth	Channel spacing
75 kHz	180 kHz	200 kHz

- NM9J

## μBitx update

On December 17, Charles N2SO suggested to Nic KD2SKY that the μBitx v6 transceiver kit might be worth investigating. This 10 watt HF SSB/CW transceiver for 80 - 10 meters is made in India, costs less than \$200.00 and can be assembled in one evening.

Todd N2MUZ had reviewed an earlier version of the μBITX transceiver in the *PCARA Update* issue for April 2018, pages 5-6. Todd subsequently wrote that the kits are amazingly good and effective little rigs with his own Version 3 only costing \$109.00. The generic plastic case from eBay was \$7.00. The project, which only took four hours to build, was fun and just challenging enough.

Todd went on to say: “one of the big reasons that I think the μBitx will appeal to young hams entering the hobby is that they are infinitely programmable and expandable. There are people out there that have turned the humble V3 boards into full blown, full function rigs, that you'd be hard pressed to tell from Icom/Yaesu/Kenwood factory built. They are computer controlling them and running FT8 on them. Amazing.”

On December 19, Karl N2KZ posted an item about the μBitx v6 kit on the PCARA Facebook page (see link to the Facebook page on <http://www.pcara.org>). By December 22 Karl reported that the item had just broken the club's all-time record for Facebook hits. The post had suddenly gone viral and attracted nearly 13 thousand hits. This really made the μBITX transceiver “The Talk of The Town”. By December 26, the Facebook post was approaching 15 thousand hits.

There may be a presentation on the μBITX transceiver and its Arduino controller early in the New Year. Watch for further details. Meanwhile, you can check out the specification and possibly order a μBITX v6 for yourself at the HF Signals site: <https://www.hfsignals.com/>



*Karl's much-liked Facebook post about the μBitx (or uBitx) transceiver.*

## The last twenty

As we approach the twentieth anniversary of Peekskill/Cortlandt Amateur Radio Association, it's worth looking back over the past twenty years. Many noteworthy developments and important events have been documented in the pages of this journal. If you would like to look back through the archive of previous newsletters, follow the link on the PCARA web site, <http://www.pcara.org/pcaraupdatenewsletter.html>. Past issues are all stored as Adobe PDF files.

Here are some highlights from just the **first four years** of the club newsletter. Thanks to our previous Editor Joe KR2V and to **all** the authors who have contributed over the last twenty years.

- Kid's Day – *PCARA Update* June 2000
- Boy Scout Trekoree and JOTA – November 2000
- Logo competition winner – December 2000
- CSMA Meeting and Kid's Day – January 2001
- Klondike Derby at Camp Smith – February 2001
- Special Event Station Blue Mntn Middle School – April 2001
- PCARA Tech Class photos – May 2001
- First Field Day on Bear Mountain – July 2001,
- “Six Meters is open” by Karl N2KZ – June 2001
- First V.E. Test Session – August 2001
- 911 report by Gary, WB2HNA, JOTA pics – October 2001
- Editor change from Joe KR2V to NM9J – December 2001
- Repeater co-ordination by UNYREPCO – February 2002
- Operator of the year, Wires KC2FYY – April 2002
- W2Q Special Event Station, Bear Mountain – June 2002
- Second Field Day on Bear Mountain - July 2002
- Repeater overhaul – September 2002
- Repeater Update and N2FF visit – November 2002
- Repeater installation – December 2002
- First Holiday Dinner, CW Class, High speed Internet – January 2003
- “Full size station” WEVD by Bob, N2CBH – March 2003
- Field Day 2003 on Bear Mntn, Dayton report – July 2003
- “The Ham Band” Escape by Gary WB2HNA – August 2003
- First “Adventures in DXing” by Karl N2KZ – August 2003
- First Foxhunt rules, IRLP linking – September 2003
- First Foxhunt report and IRLP progress – October 2003
- Logbook of the World by Mike, N2HTT – October 2003
- W5GI Mystery antenna by Mike N2HTT – November 2003
- Eagle Scout KC2FYY – December 2003.

# 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 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

**Sun Jan 5:** PCARA meeting, Annual Bring & Buy Auction, *New location:* Cortlandt Town Center CUE Room 3:00 p.m.

**Sat Jan 18:** PCARA Breakfast, Uncle Giuseppe's, Yorktown Hts. 9:00 a.m.

**Sat Jan 18:** PCARA V.E. Test Session, John C. Hart Memorial Library, Shrub Oak, NY. 11:00 a.m.

## Hamfests

**Sat Jan 4:** Ham Radio University, LIU / Post, Hillwood Commons Student Center, 720 Northern Boulevard, Brookville, NY. 7:30 a.m.

## VE Test Sessions

**Jan 12:** Yonkers ARC, Yonkers OEM, 789 Saw Mill River Rd, Yonkers, NY. 11:00 a.m. Pre-reg. Walt KD2D, kd2d 'at' arrl.net

**Jan 13:** Columbia Univ ARC, 531 Studebaker Bldg, 622 W 132nd St, New York. 6:30 pm, Alan Crosswell (212) 854-3754.

**Jan 16:** WECA, Westchester Co Fire Trg Center, 4 Dana Rd., Valhalla, NY. 7:00 p.m. S. Rothman, (914) 949-1463.

**Jan 17:** Orange County ARC, Munger Cottage, 183 Main Street, Cornwall NY. 6:00 p.m. Contact Joseph J. DeLorenzo (845) 534-3146.

**Jan 18:** PCARA, John Hart Memorial Library, 1130 E Main St., Shrub Oak NY. 11:00 a.m. Contact Michael W2IG (914) 488-9196, w2igg 'at' yahoo.com



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