PCARA Update

Volume 22, Issue 6 Peekskill/Cortlandt Amateur Radio Association Inc. June 2021

Clinging on

We kicked off May with a PCARA **on-foot Foxhunt** in FDR State Park in Yorktown Heights, NY on May 1, 2021. This format was new for PCARA — using an "automatic" fox supplied courtesy of Stan WA2NRV. There were eight participants in beautiful weather in a most pleasant setting. For a full report on results please see the article in this month's edition of the *PCARA Update*.

The PCARA **Breakfast** on the morning of May 6, 2021 at Downing Park in Yorktown Heights was somewhat subdued due to the cool and damp weather. Regardless, there was a handful of brave souls under the pavilion who soldiered on to make it happen. PCARA RESOLVE!

On May 15, 2021 at 9:00 a.m. the monthly PCARA **Membership Meeting** was held on the west lawn of the John C. Hart Memorial Library in Shrub Oak, NY. We were blessed with beautiful spring weather with fifteen souls present.

May meeting on west lawn of John C. Hart Library.

Among the club business discussed was the recent registration of the association's crank-up antenna trailer with NYS DMV. For those who recall, this is the trailer that was graciously donated to PCARA by WECA over two years earlier. Between the NYS DMV paperwork requirements, two visits to the Peekskill DMV office, and a pandemic — it took a while, but we finally got 'er done! Much thanks to Lou KD2ITZ for scheduling the visits to the DMV. A budget was approved for new tires and maintenance of wheel bearings if needed. If all goes well, PCARA will have a crank up tower for Field Day! Down the line we'll need to apply a little paint and TLC for a facelift or sorts. We'll certainly need volunteers to help.

A PCARA **V.E. Test Session** followed the May Membership Meeting at the John C. Hart Memorial Library (full report follows). We have two new Extras as a result — Mitch AD2CF and John AD2CG. Congratulations and welcome! We've had great success with candidates over the last few months, and our membership has increased as a result. Once again thanks to the John C. Hart Memorial Library for permitting use of their grounds, and to Mike W2IG for coordinating the session. Also, much thanks to our dedicated team of VEs who help make it all possible.

If you haven't had a chance, please check out the PCARA website at http://www.pcara.org to see all the **Upcoming Events**. Among them are the following:

- Saturday June 12, 2021: PCARA **Breakfast** at Downing Park in Yorktown Heights, NY, 9:00 a.m.
- Saturday June 12, 2021: **Hudson River Radio Relay** at Hudson Highlands State Park / Annsville Circle. Setup follows breakfast. Operating times 1:00 p.m. to 5:00 p.m. For details visit: https://hudsonriverradiorelay.com/index.html.
- Wednesday June 23, 2021: PCARA **Membership Meeting** at 7:00 p.m. at Walter Panas High School Upper Baseball Field. Field Day Planning Session.
- Saturday June 26 - Sunday June 27, 2021: PCARA **ARRL Field Day** at Walter Panas High School, set-up begins 9:00 a.m. Saturday morning.
- Sunday June 27, 2021: PCARA **VE Test Session** at PCARA Field Day Site (Walter Panas High School), 10:00 a.m.

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- The Zoom presentation "**RF Safety and Occupational Exposure"** by Bob N2CBH scheduled for Wednesday June 2 has been postponed. Details to follow.

Just some housekeeping — please watch for PCARA Membership Renewals in the next few weeks from our Treasurer David KD2EVI. *[See article alongside -Ed.]* Renewal subscriptions can be forwarded to the PCARA P.O. Box. Also PCARA Hats are still available as well as new PCARA logo **cling stickers**.

Cling sticker for vehicle window. [KB2CQE pic.]

Things are certainly improving on the pandemic front. Although the numbers are looking better every day, we still have a way to go. Let us remember and pray for those we have lost, the families of those lost, and those living with the effects of this abhorrent disease. May God Bless.

I look forward to seeing each of you at the Wednesday June 23, 2021 PCARA **Membership Meeting / Field Day Planning Session** at Walter Panas High School at 7:00 p.m. Please take care and stay safe.

- 73 de Greg, KB2CQE

PCARA Board

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Greg Appleyard, KB2CQE; kb2cqe 'at' arrl.net
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Net night

Peekskill/Cortlandt Amateur Radio Association holds a roundtable net on Tuesday evenings at 8:00 p.m. and a directed 'Old Goats' net on Thursday evenings at 8:00 p.m. Both events take place on the 146.67 MHz W2NYW repeater, offset -0.600, PL 156.7 Hz.

Join the roundtable to find out what members have been doing or join the Old Goats with net control Karl N2KZ for news and neighborly information.

Member renewal - KD2EVI

It's membership renewal time. Our fiscal year ends in June and we will be sending out reminders shortly to renew (or join) PCARA, first via Google groups and then hard copy letters to our members. Those of you who joined in March 2021 or later have had their annual membership extended to June 2022 by a vote held at our May 15 meeting.

Annual dues support PCARA activities, pay insurance premiums and contribute to the cost of repeater maintenance and upgrades. The dues schedule is as follows:

[ ] Full Membership ($25.00/year)
[ ] Associate Membership ($15.00/year)
[ ] Student Membership (Free)
[ ] Senior Membership (65 years and older - $10.00/year)
[ ] Family Membership ($30.00/year)
[ ] Family Membership (65 years and older - $20.00/year)

When you get your Google groups or hard copy renewal please mail the form to: :

PCARA
P.O. Box 146
Crompond, NY 10517

At this time we can only accept checks or money orders through the mail. I will accept cash at meetings.

- 73 de David, KD2EVI

NA2M new QTH - KD2ITZ

Bill Hellman NA2M sends regards from his new location in Fort Myers, FL. He looks forward to connecting with the local Quarter Century Wireless Association chapter in the near future. Bill is well known to amateurs in our area. In addition to being a member of PCARA, he was active with several other clubs that preceded it. In the September 2019 *PCARA Update*, he wrote about the history of the Peekskill Radio Club, Peekskill Communications Club, and the Taconic Amateur Radio Club. See the April 2019 newsletter for his recollections from the 1950's of another PCARA: Putnam County Amateur Radio Association. - KD2ITZ

Bill NA2M adds: "I am still a senior member and past president of the North Jersey DX Association (NJDXA). Also a senior member and past president of The Order of Boiled Owls of New York contest club. In the NJDXA club I was the letter manager of the 'S' and 'L' letters in the QSL Bureau."

- 73, Bill. NA2M (ex-W2PQZ (1946) and W2UD).

Adventures in DXing
- N2KZ

Digital Magic

History was made on Monday, May 24th, 2021. WFAS 1230 kHz White Plains officially went on the air as America's third all-digital "AM" station. Broadcasting traditional *analog* audio from their transmitter site on Secor Road in Hartsdale has ended! Sending out an HD Radio® *all-digital* signal marks a bold step into the future. Will it bear fruit?

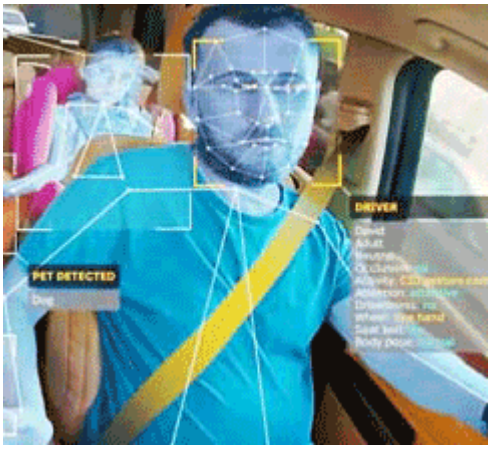
Listening to WFAS-HD now requires one of two options. You need a modern HD Radio capable of digital radio reception – or – a laptop, desktop PC or mobile device that can receive WFAS live stream audio over the Internet. Look for it at: https://www.am1230digital.com. If you want to hear WFAS on a traditional AM radio, you are out of luck. Tune to 1230 kHz with your analog radio and you will only hear what sounds like the roar of a vacuum cleaner. It's the sound of digital data!

This step forward in technology provides two great advantages. WFAS-HD is now available in crystal clear stereo audio with a reception range nearly twice the area as before and even offers 'artist experience' graphics seen on your new radio's display screen along with explanatory text. Full-digital HD Radio is also an essential part of a new world of audio distribution without limits. Let us explain!

Screen shot of Karl's car radio receiving WFAS in enhanced digital mode. [N2KZ pics]

Broadcasting in full-fidelity stereo HD Radio is only the beginning. It is one element of the Xperi® DTS AutoStage™ system filled with innovations to enhance your home and in-cabin car audio experience. Using AutoStage, your digital over-the-air local stations will seamlessly integrate with their web streams creating worldwide coverage. Leave the service area of your local radio station and AutoStage flips to your station's web stream automatically. Good tunes and information will be forever effortless and available wherever you go.

AutoStage will also aid drivers by monitoring their attention and fatigue to avoid dangerous situations using "advanced biometrics." The system will continually analyze the passenger compartment's temperature and humidity and its human, canine and feline inhabitants.



DTS AutoSense™ is a suite of automotive imaging and sensing solutions that deliver advanced in-cabin monitoring of driver, passengers, pets or objects in the vehicle.

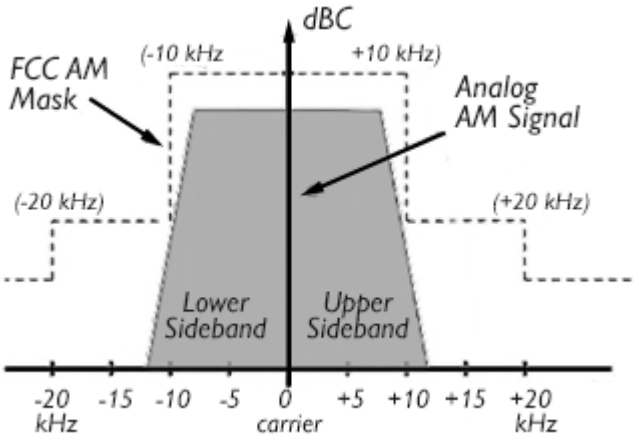
AutoStage monitors each person's state and motion, sleep habits and even the safety and comfort of your pets! Your electronic AutoStage assistant will always keep you comfortable and safe. No matter where you travel, your audio and overall mobile experience will be perfectly integrated and delivered without interruption.

For a full description of this amazing suite of technologies see: https://www.xperi.com/markets/connected-car/. Xperi also sells and manages use of their exclusive HD Radio transmission mode. Stations employing HD Radio technology pay royalty fees to Xperi for its use.

The WFAS-HD all-digital broadcasting upgrade is an early practical experiment towards the development of just one of the AutoStage bouquet of applications necessary to bring these futuristic concepts and goals to fruition. Welcome to a new, efficient and optimized world!

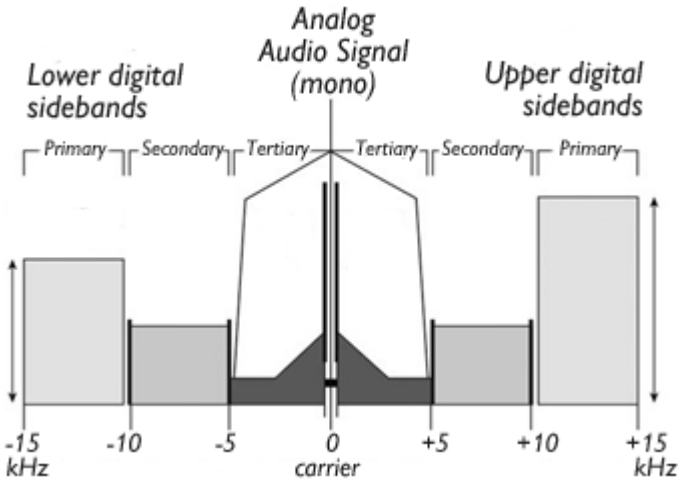
Today's Broadcasting Options

Three individual modes can now be used for medium wave "AM" radio broadcasting. The great majority of stations continue to use trusty amplitude modulation employed by multitudes of AM radio stations nationwide for over 100 years.



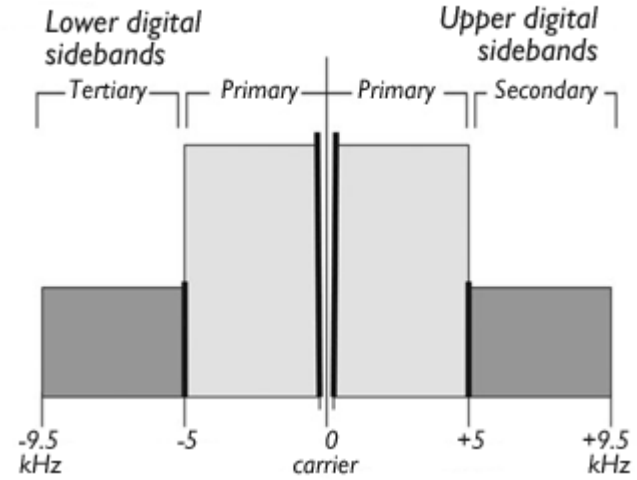
RF spectrum of analog AM broadcast station showing FCC mask that defines the total bandwidth allowed.[After Nautel.]

A handful of "AM" stations already have adopted a hybrid digital and analog mode called MA1. Analog signals are centered within the station's bandwidth while digital signals are emitted as sidecars to the main carrier. Lots of information is squeezed into a small space of spectrum. Using MA1, only a fraction of the station's output power is utilized for digital carriage. To make room for the digital component, analog listeners endure lower audio quality. Digital listeners suffer poor signal strength and limited range. It is a compromise that serves no one!



*Spectrum of **MA1** hybrid analog and digital mode shows total bandwidth requirement of 30 kHz, occupying three analog AM channels. [After Xperi.]*

All-digital "AM" transmission (MA3) is a courageous further move forward. Using 100% of a station's broadcast power to convey your digits, you gain considerable extended range of your signal. In the case of WFAS-HD, your former 15 mile range becomes 25 miles wide with perfect reception until you lose digital lock.



*RF spectrum of the **MA3** all-digital mode occupies less bandwidth. Primary digital sidebands fit into a single 10 kHz-wide analog AM channel. [After Xperi.]*

Unfortunately, few people have HD Radios to receive the signal. Only time will tell if rewards come to those who wait! Will digital HD Radios ever become universally adopted and used? In the year 2021, how do you convince someone to buy a new *radio?*

Along with the change of transmission mode, WFAS-HD has dropped CBS Sports Network as their weekday program supplier and has reverted to a new all-conservative talk format provided by syndicator Westwood One. Both Westwood One and WFAS-HD are owned by Cumulus Media, one of North America's largest station owners and program syndicators.

Change Requires Hard Work

WFAS-HD owner Cumulus Media was well aware that developmental experiments with advanced technologies come with risk and cost. Decades ago, the WFAS-HD tower site in Hartsdale housed a full-fledged AM and FM local radio station with a huge loyal following. When the expense of locally produced programming could no longer be sustained adjustments were made. The more profitable FM station was physically moved to The Bronx, switched to a more urban R&B format and, in turn, lowered their overhead costs considerably.

Signboard at WFAS in Hartsdale reflects the site's former significance as home to 103.9 WFAS-FM "Westchester's best music variety" and WFAS-AM 1230, "Westchester's soft favorites." [N2KZ pics.]

WFAS-AM was not so agile since it requires a great big tower and a large plot of real estate to transmit. It had to remain a fixture on Secor Road in Hartsdale. Again, operating costs were minimized by reverting to nationwide syndicated programming. Only essential broadcasting equipment remains. You need a transmitter and support electronics to deliver the outside-produced programming. A basic program automation system and an audio processor completes the necessities.

The relocation of the FM station and the decline of the AM sister station brought about stark changes. Human beings permanently departed from the office building and tower site in Hartsdale and the facility became only a point of presence. The name and phone number of the chief engineer is now posted on a piece of paper at the front door for emergencies. Can you

imagine? Once a beehive of human interaction and activity has become a ghost town. As a former WFAS employee, I could just shake my head in wonder. Change, indeed!

Engineering Update

Complex preparatory work was required to delve into the new digital age. The WFAS tower is a tall and guyed vertical 5/8 wave grounded folded unipole.

Grounded tower at WFAS is 450 ft high. It is surrounded by a wire skirt, fed at the base, constituting a folded unipole for MF transmissions. [N2KZ pics].

It needed to be broadbanded to provide a smooth linear bandwidth necessary for proper and proficient digital operation. The antenna tuning matching network and ground skirt were carefully re-designed and replaced. A stunningly beautiful Nautel NX3 transmitter was brought in along with a modern Telos Omnia 9 audio processor to complete the restoration. The results sound sweet and the increase in range and quality is truly remarkable. Congratulations to the Cumulus engineering team on a project well done!

Nautel NX3 3kW AM TX.

The DX Experience

There are only two other all-digital "AM" HD Radio stations on the air: WWFD 820 Frederick, Maryland and WMGG 1470 Egypt Lake (Tampa), Florida. The only all-digital "AM" I have had first-hand experience receiving is WWFD 820 which is co-channel with New York City's NPR outlet WNYC-AM. WNYC-AM only broadcasts in legacy analog amplitude modulation.

(Note: Local listeners can also hear WINS 1010 New York broadcasting in MA1 hybrid digital serving both analog and HD Radio digital listeners. WTIC 1080 Hartford also operates in MA1 hybrid digital.)

Listening to 820 kHz at night can be disheartening. I enjoy WNYC programming. Any time between dusk until dawn, the digital noise produced by WWFD in Maryland simply buries any hope of enjoying WNYC-AM at night when listening at my QTH — about 50 miles north of their transmitter site adjacent to the Meadowlands in Kearny, NJ. (Daytime reception of WNYC-AM remains unscathed and interference-free.)

Propagation between my QTH and Frederick, Maryland becomes enhanced via 'grayline' periods twice daily at sunset and sunrise. If you are very patient and conditions are just right, the signal from WWFD from Maryland will dominate the frequency and will miraculously resolve into a briefly listenable perfect digital signal.

First, 820 kHz will sound just filled with HD Radio white noise received when the analog side of your radio is active. As the signal improves and clarifies, your HD Radio will go silent and usually produce a text message including the station ID and maybe the 'HD' orange logo will appear on your screen.

If you wait long enough, short term glips and glops of digital audio will resolve. A complete home run is when you finally receive a longer period of clear digital audio. If you are lucky, you may even see a picture of the artist performing along with accompanying text and a full station callsign ID. Snap a quick picture of your radio's display with your cell phone! That's your QSL!

Screenshot of all-digital WWFD-HD.

When you lose the HD Radio signal, you will always have extended periods of idle silence. Your radio will hold on for a considerable time before resigning itself back to analog mode. Digital DX is always fleeting! It is hard to maintain data streams during fading and other propagation effects.

The WFAS-AM Prospectus

WFAS is assigned to 1230 kHz — one of seven medium wave frequencies in North America allocated for lower power local stations typically 1000 watts or less and often with single towers. At night, DXers call these local channels 'graveyard frequencies' due to their often decipherable cacophony of signal blending, reminiscent of Citizens Band activity back in the 1970s! Over 150 stations nationwide operate on 1230 kHz. Consider what a pile-up like that would sound like on 160 meters! How WFAS-HD will fare on 1230 kHz remains to be seen.

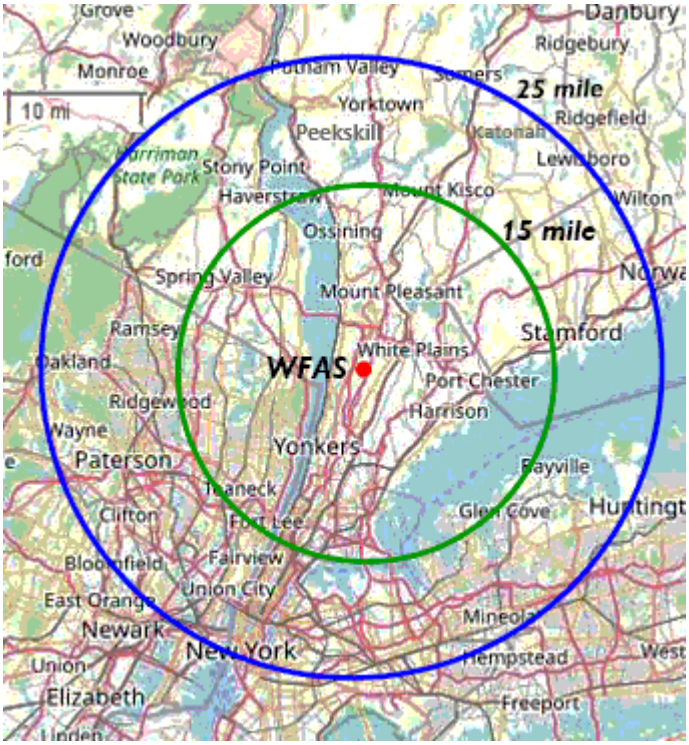
WFAS-HD officially went on the air with full digital

HD Radio on Monday, May 24, 2021. I tuned in during my 5:00 to 6:00 a.m. commute between Katonah in Northern Westchester to Stamford, Connecticut. There was simply too much man-made and co-channel interference to allow the signal to resolve for even a moment or two. WFAS-HD's signal strength does rise considerably as I approach Long Island Sound but not enough to lock their digital audio.

Dayside reception was a different story. Perfect lock occurred immediately as I started my car. I drove from Stamford to the WFAS-HD antenna site in Hartsdale with uninterrupted solid reception. The digital stereo result was truly remarkable. WFAS-AM never sounded this good!

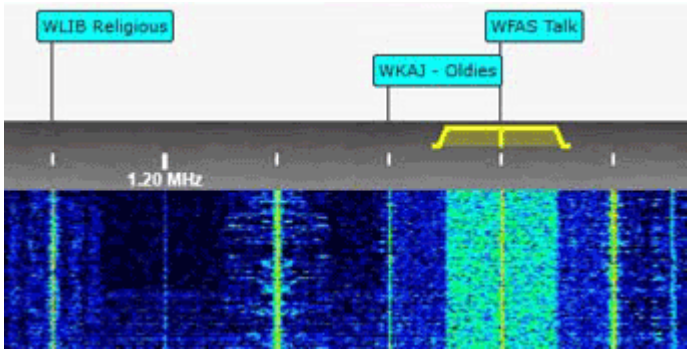
I continued my journey north back along I-287 and I-684 toward Katonah and Goldens Bridge. Only when I left the highway and began to drive through the rocky crags near my home did the WFAS-HD signal begin to duck out.

Reception seems to perfectly uphold the predicted 0.5 mV/m daytime groundwave service contour seen at the FCC's AM Query site: (https://www.fcc.gov/media/radio/am-query) Get to know it! It is a wonderful resource providing detailed answers to all your questions about America's broadcasters and their facilities. There are sister sites for FM radio and TV broadcasters, as well!



Cumulus Media claims that previous 15 mile range of analog WFAS-AM has increased to 25 miles with change to an all-digital format.

It is amazing how refreshing all-digital "AM" sounds as compared to legacy analog transmission. When the digital locks, the sound is perfect. Gone was all the annoying, yet familiar, static, man-made noise



Software Defined Radio waterfall display shows primary digital sidebands of WFAS-AM centered on 1·230 MHz, 10 kHz wide and surrounded by analog AM stations.

and fading you would expect especially from low-power AM. As you listen, keep reminding yourself that WFAS-HD operates with just 1,000 watts. I can only wonder how far a 50,000 watt all-digital clear channel signal might travel.

There is no doubt that full digital transmission has matured into a viable and enjoyable medium. The big challenge will be public acceptance. If writers, producers and performers can offer enticing programming, radio may revive its popularity as an essential medium.

Take it easy on the advertising load, folks! During drive time in the New York City metro market, I have sat through advertising pods that last ten full minutes or more. Would you listen to that? Enjoy the WFAS full-power digital HD Radio experience while you can. It certainly is quite remarkable!

Cumulus Media building at WFAS site, Secor Road, Hartsdale previously housed a sales office, newsroom and studio as well as the transmitter room. [N2KZ pic.]

My very best wishes to Cumulus Media for taking on this bold experiment. I will continue to put this trial through its paces as I drive and listen to my only HD Radio. My recommendation is simple: "If you could only hear what I can hear!" I encourage you to try it for yourself!

Until next month, 73s and dit dit de N2KZ "The Old Goat."

Spring Foxhunt

Mayday mystery

PCARA's Spring Foxhunt was organized by Lou KD2ITZ and Al K2DMV with support from Stan WA2NRV. Lou's instructions said that all participants must start from the Pool Parking Lot at Franklin D. Roosevelt State Park at 10:00 a.m. on May 1st and all participants must travel on foot. E-mail registration was requested, in order to discover the fox frequency.

Saturday morning May 1 dawned bright and sunny, though the temperature had only reached 49°F by start time. Hunters began assembling at the northern end of the FDR pool parking lot — the southern end of the lot is currently fenced off as part of the swimming pool rehabilitation project.

Hunters gathered in the Pool Parking Lot at FDR State Park for the Spring foxhunt. L to R: KD2STB, KD2VAV, W2VJ, KD2ITZ, KD2SKY and WA2NRV.

Shortly before 10:00 a.m. all the hunters had arrived and were paired off in teams as follows:

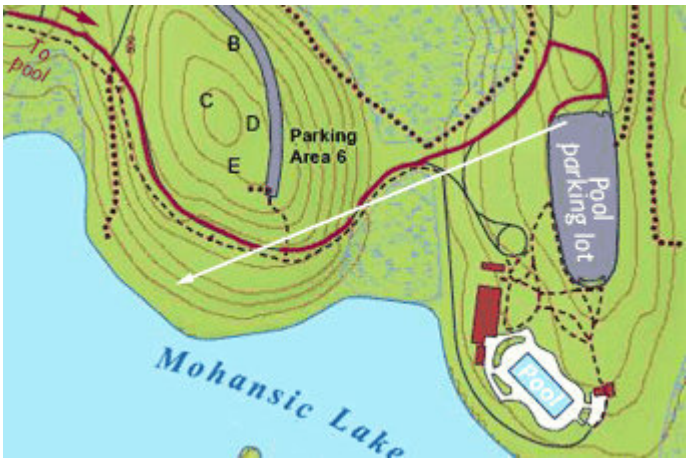
Stan WA2NRV + Ed KD2STB + Nic KD2SKY
Vincent KD2VAV + Verle W2VJ
Malcolm NM9J + Jared KD2HXZ
Mike N2EAB + Rob KD2WCL

Nic KD2SKY started with the team of Ed KD2STB and Stan WA2NRV, but spent most of the time with Lou KD2ITZ observing the hunt.

Verle W2VJ and Vincent KD2VAV made up one of the four teams. [KD2ITZ pic.]

They're off

We were told the fox transmitter was being supervised by Al K2DMV — and shortly after 10:00 a.m. the fox appeared on 146.565 MHz FM simplex. Unlike previous PCARA Foxhunts where the fox station had an operator on the microphone transmitting to a published schedule, this new fox was automated — featuring transmission blocks with a non-musical tone sequence followed by a CW-ID. In the parking lot, our tape-measure Yagi antennas swung around and general opinion favored a direction WSW from the pool parking lot. That would place the fox somewhere along the pool approach road or at the end of Parking Lot 6 — or possibly in a rowboat on Mohansic Lake!



A bearing WSW from the Pool Parking Lot points toward the pool approach road and Parking Lot 6.

Jared and I saw several hunters strike out from the pool parking lot across the grass — we decided to take a more elegant route down the concrete steps toward the bathhouse and past the Park Police station. Along the way, the new bearing to the fox still indicated a location near Parking Lot 6.

As we joined the pool approach road, the route turned rapidly uphill, and we could see several hunters ahead, continuing to take bearings.

Team of Mike N2EAB and Rob KD2WCL (right) take a bearing toward the fox from the pool approach road. [KD2ITZ pic.]

There was no sign of the fox at the signboard shelter, so we followed the footpath that leads steeply uphill to Parking Lot 6. (This section slowed down some of the hunters — road and footpath rise 70 feet in a short distance.)

On arrival at the parking lot, the 146 MHz signal was seriously strong — my two-section 32dB switched attenuator could no longer keep the signal within range of the handi-talkie's S-meter. I had to introduce two 10dB inline BNC attenuators.

Steep path from pool approach road to Parking Lot 6 slowed down some hunters.

20dB/12dB switched attenuator was assisted by two more 10dB attenuators, used with the tape-measure Yagi.

We noticed several hunter teams were already searching around the parking lot area when we spotted Al K2DMV within the Children's Playground at the crest of the hill. Al explained that he was **not** the fox, but was acting as observer to record when the fox transmitter was discovered — which had not occurred yet.

Jared and I redoubled our efforts. We headed back to the section of the parking lot where the 146.565 MHz signal was strongest, then began monitoring the harmonic on 439.695 MHz. When this *3f* signal appears, it usually means the fox is very close by. I followed the strong 440 signal into the woods at the edge of the parking lot and found a furry critter hiding behind a tree! Jared confirmed the siting, then we went back to report to Observer Al, K2DMV. Our discovery was timed at 10:30 a.m., 30 minutes after the start time. As an aside, this is the same location from where Mike N2EAB confounded the hunters during a PCARA mobile foxhunt in May 2016.

Jared KD2HXZ confirms the fox location.

As we waited on the hillside near Al, additional hunters came by to report finding the fox.

Stan WA2NRV and Ed KD2STB probe into the woods alongside Parking Lot 6.

Here is a list of successful teams along with their reporting times as provided by Al K2DMV.

1. 10:30 a.m. Malcolm NM9J and Jared KD2HXZ
2. 10:36 a.m. Ed KD2STB and Stan WA2NRV
3. 10:51 a.m. Vincent KD2VAV and Verle W2VJ
4. 10:53 a.m. Mike N2EAB and Rob KD2WCL

The fox transmitter had been supplied by Stan WA2NRV. It was a Byonics MicroFox PicCon, (https://byonics.com/mf) a small, self-contained unit the size of a handi-talkie, running 0.5 watt output and housed inside a furry red fox outfit.

Fox transmitter in its furry coat.

During the foxhunt, Stan and some of the other hunters had taken the opportunity to demonstrate direction finding techniques to less experienced team-members, including body fade and tuning off-channel when the signal became too strong. Later, Stan wrote: "I enjoyed the challenge and it was a pleasure working with Ed. He put up with me without any complaints. The fox also sends its regards and enjoyed the time in the field."

As participants walked back to the Pool parking lot, we reflected on a successful event, thanks to organizers Lou KD2ITZ and Al K2DMV, plus fox supplier Stan WA2NRV. Here's looking forward to the next hunt.

- NM9J

V.E. Test Sessions

New calls

Three candidates from PCARA's April 17 Volunteer Examiner test session qualified for General and were granted FCC licenses on April 27, just too late for the two new call signs to be published in the May newsletter. Congratulations to newly licensed Mitchel **KD2WGK** of Cortlandt Manor and John **KD2WGL** of Yorktown Heights. At the same session, Robert KD2WCL of Montrose, NY successfully upgraded from Technician to General.

May session

PCARA's latest Volunteer Examiner test session took place on Saturday May 15, following immediately after the monthly meeting. Location was on the lawn at the western side of the John C. Hart Library in Shrub Oak. Two candidates from the April test session were hoping to upgrade to Extra and both were successful. Well done to Mitchel KD2WGK, now **AD2CF** and to John KD2WGL, now **AD2CG** after the FCC processed their test results on May 25, 2021..

Thanks to the Volunteer Examiners who supervised the May test session including V.E. Team Liaison Mike W2IG, Joe W2BCC, Lou KD2ITZ, Stan WA2NRV, Larry AC2QH and NM9J.

Two candidates seated outdoors at separate tables take part in the May V.E. Test Session.

Changes to the rules

From May 20, 2021, the Taxpayer Identification Number (SSN) will no longer be acceptable at a V.E. Test Session and all candidates for an amateur radio license will need to provide an FCC Registration Number (**FRN**) to the Volunteer Examiners *before* they can take an amateur exam. Existing amateur radio licensees should already have an FRN (look on your FCC license) but **new applicants** will need to obtain an FRN from the FCC's **Co**mmission **Re**gistration **S**ystem (CORES) before turning up for a test. Instructions on registering with CORES to obtain an FRN and Password are available on the FCC's web site: https://www.fcc.gov/new-users-guide-getting-started-universal-licensing-system-uls. A video is available at: https://www.fcc.gov/rofrn.

E-mail must

Another change that takes effect from June 29, 2021 is that all applications submitted to the FCC **must** include a valid **e-mail address** in order to receive correspondence back from the FCC. The FCC will no longer print and mail paper authorizations. New applicants and those upgrading or making changes to their details will receive an e-mail direct from the FCC with a link to the official electronic copy of their Amateur Radio license in PDF format.

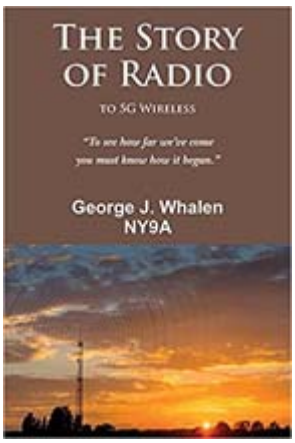
Hint: — make sure your SPAM filter allows e-mail from: authorizations'at'fcc.gov. After the authorization link expires, licensees can still download and print official copies of their licenses in ULS License Manager.

Next session

PCARA's next V.E. Test Session is scheduled to take place during the club's Field Day operations at Walter Panas High School, 300 Croton Avenue, Cortlandt Manor, NY. The session is scheduled for June 27th, starting at 10:00 a.m. on Sunday morning. Candidates are strongly advised to contact V.E. Team Liaison Mike W2IG using the e-mail address w2igg'at'yahoo.com.

Story of Radio

Steve KD2OFD draws our attention to a message from George J. Whalen NY9A of Tarrytown who has a recently published book on radio history.



"News received on Tuesday morning 5/26, for all amateurs and hobbyists. Amazon.com is doing a free weekend giveaway of my book: *The Story of Radio*, starting Fri, May 28th at midnight, through Sun, May 30th at midnight You can get it from the Amazon web site at no charge.

"To download your free copy, (1) go to Amazon.com; (2) type: 'The Story of Radio' into the search box and hit enter. The Story of Radio covers 188 years of unbelievable inventive American genius, from the telegraph in 1832 to the start of 5G rollout in 2021. It's how electronics began. Think you know about radio waves? Who invented radio? Wireless? ICs? Smartphones? And more? Check your answers in this book. Get it free 5/28 to 5/30 (only)!"

73, George J. Whalen, NY9A

IC-2730 review

Not a new radio

I decided that my 1999-vintage Icom IC-207H VHF-UHF FM transceiver might be ready for an upgrade. I checked what was available from various dealers — and discovered that stocks of transceivers are low everywhere. (This triggered the May 2021 article "Missing chips & ships".)

The **Icom IC-2730A** had most of the features I was looking for. A major selling point is the separate volume, squelch and tuning knobs on the left and right sides of the radio.

The IC-2730A has been around for six years… but this model was out of stock everywhere I looked. Then I heard from our local dealer that one was available… so after a short visit to Buchanan, I became the proud owner of a late model.

Accessorize

The IC-2730A was introduced at a list price of $340. For this, you receive the transceiver main unit, separate control head, 11 foot controller cable, 12V DC cable and microphone.

Items included in the basic IC-2730A box — clockwise from top left: main unit, microphone, 11 foot controller cable, 12V DC cable, separate control head.

The basic package is fine if you only intend to attach the separate control head to a flat surface with Velcro®. Any other arrangement will need additional mounting accessories at substantial Icom prices. Previous Icom models usually included the mobile mounting bracket and remote controller bracket inside the transceiver box.

If you would like to attach the IC-2730A control head to the transceiver main unit, you will need an MBA-4 combination bracket (list $49.99). This molded bracket with short 6-pin cable connects the two components perfectly together… far neater than the predecessor Icom IC-2720H. But at what a price!

In order to mount the combined units under a shelf or under the dashboard of a vehicle, you would also need an MBF-4 mobile bracket (list price $34.99). And to mount the separate control head onto a flat surface or onto an Icom MBF-1 suction pad base ($79.99) you will need an MBA-5 controller bracket ($36.99). The MBF-1 price is sufficiently eye watering that I would suggest a visit to the Lido Radio web site, https://www.lidoradio.com/ to have a look at their less expensive amateur radio mounts.

Icom accessories. Top: MBA-4 combination bracket, middle: MBF-4 mobile bracket, below: MBA-5 controller bracket.

I ordered the accessories that I needed from Ham Radio Outlet and waited for their arrival in the mail.

Assembly time

A week or so later, all the accessories had arrived. The IC-2730A and accessories bore the label "Made in Japan" — apart from the MBF-4 which is made in Taiwan. While unpacking the IC-2730A I noted there is **no** 6-pin mini-DIN socket for connection of an external TNC for packet, APRS or EchoLink/IRLP.

In the IC-2730A box is a 90-page Instruction Manual which also covers the IC-2730E European model. From previous Icom radios I was expecting to find assembly and installation instructions at the beginning of the book — but this important information has been shifted to Chapter 9. Following the manual's instructions, my first action was to attach the MBA-4 bracket to the back of the controller head, connect the short RJ11 cable then slide the controller onto the main unit.

IC-2730A and IC-2730E Instruction Manual.

My next task was to crimp a pair of Anderson PowerPole® connectors onto the end of the 12V DC connecting cables. Why can't manufacturers install these near-universal connectors nowadays? The supplied red and black wires are marked 2×2.0mm — or approximately 12 AWG. This is a little undersized for the specified maximum current drain of 13.0A – causing a voltage drop as high as 0.4V.

Attachment of the controller head with MBA-4 bracket onto the IC-2730A main unit

Initial tests

Turning on DC power lit up the LCD screen, briefly showing the supply voltage as "ICOM 13.8V", followed by a frequency display of 146.010 (Busy) / 440.000 (Busy). The busy indication was because both squelch controls were open.

Icom IC-2730A front panel display after initial power-up.

With a power meter and 50 ohm dummy load connected, I checked transmitter output power and current draw from the 13.8V power supply — at full output, power / current was 50W / 9.5A on 146.010 MHz and 42W / 9.0A on 440 MHz. At medium power (15W) the current drops to 5.0 – 5.6A, and at low power (5W) the current was 3.0 – 3.4A, depending on whether the fan was running or not. Current draw on receive was 0.3 – 0.4A.

Monitoring transmitted audio on a separate radio, I listened to the FM quality on simplex frequency 146.565 MHz. The audio sounded fine, if a little low in level — the microphone gain can be adjusted through the transceiver's menu system. I moved it up from the default setting of **2** to the next higher level, **3**.

After transmitting at high power the fan on the back of the radio continues to run for 1 minute — it was rather noisy while the radio was still sitting on the bench.

Observations

With the radio assembled it was possible to make some initial observations. The large liquid crystal display is backlit with white-light LEDs. Brightness and contrast are adjustable through the menu system. Ten front panel control buttons are also backlit, as is the HM-207 microphone keypad.

The six rotary control knobs on the front panel are quite small but feel firmly attached — an improvement over the IC-2720 where the control knobs felt quite 'wobbly'. I attached slivers of white vinyl tape to the four small knobs to highlight the molded indentations that indicate control position.

Positions of volume and squelch control knobs marked with white vinyl tape.

With an antenna connected, reception could be checked. Pressing the "MR" (memory recall) button *once* brings up a stored memory channel as expected. Pressing the same button a *second* time brings up Weather Band reception… the first channel "WX-01" is 162.550 MHz, the frequency for NOAA Weather Radio's KWO-35 transmitter in NYC.

Each side of the radio has its own S-meter displayed beneath the frequency read-out. These "meters" have 12 bars, but those bars are switched on two-at-a-time, so that only six different signal strengths can be displayed. This a step down from the seven levels displayed on the IC-2720H, IC-207H and IC-2800.

Close-up of the IC-2730A display showing the 12-bar S-meter below the frequency.

An early observation was that the rotary squelch controls have a new option set as default. I was familiar with Icom's squelch controls that act as an **attenuator** when turned clockwise past the 12 o'clock position. On the IC-2730A, the default menu setting is "**S-meter Squelch**" where the squelch does not open until a certain signal strength is achieved. The setting is displayed as the squelch knob is rotated past 12 o'clock.

No scan do

The Up/Down ▲▼ keys on the HM-207 microphone move the VFO frequency or the memory channel up and down by one step and — if held down — change frequency continuously. But they do **not** initiate a scan when held down for 1 second then released. This behavior is different from most other radios.

HM-207 microphone.

Carrying out a scan requires a different sequence of key presses. First you hold down the "V/MHz SCAN" key on the control unit. This brings up a menu of scan types on the display which can then be selected with the rotary dial knob. When you have selected the type of scan (e.g. "BAND") you have to press "V/MHz SCAN" a second time to start the scan. What a performance! Fortunately scanning is *very* fast.

Left-side keys on the IC-2730 controller.

Using the IC-2730 menu system it is possible to program the F-1 key or F-2 key on the HM-207 microphone with the "SCAN" function, allowing a single key press to start or stop a scan.

Down memory lane

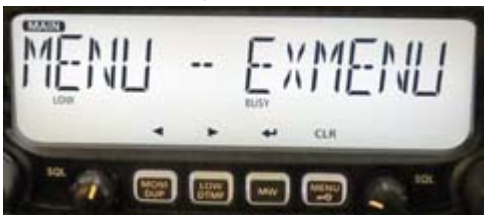
I like to store one or two frequencies *manually* into memory locations, just to make sure I know how to do it. I began with the W2NYW repeater on 146.670 MHz. The procedure is to first set frequency in VFO mode. You can rotate the dial knob or enter frequency directly from the numeric pad on the HM-207 microphone. Repeater offset of -0.600 is automatic in this part of the band, but you have to turn on PL tone using menu choice "TONE – ON" then dial up the 156.7 Hz tone required for repeater access with menu choice "R TONE". When all the settings are correct, they can be written to a memory location using the following sequence:

> Press the "MW" button, rotate dial knob to select "CH SEL".
> Press soft key ↵, rotate dial to select channel number.
> Press ↵ and rotate dial knob to select "WRITE".
> Press ↵ again and rotate dial knob to select "YES".
> Press ↵ again to write details to memory.

This is quite a performance — especially if you decide to add an alphanumeric name to each memory channel. Multiply this effort by 40+ VHF / UHF channels and you are looking at a significant effort. An easier approach is to use programming software — or Cloning Software as Icom describes it. (See below.)

Extra menus

The menu system on the IC-2730A includes 14 basic settings for frequently adjusted items such as PL tone, frequency offset, backlight brightness etc. A fifteenth choice MENU → EXMENU gives access to a large number of more advanced settings that are seldom adjusted. For example, if you want to see those 6-character alphanumeric memory names instead of frequencies on the display, you navigate to MENU → EXMENU → DISP → NAME → ON. To return to frequency display, navigate to the same place and select NAME → OFF.



The menu choice "EXMENU" gives access to 50+ additional items, using the four 'soft keys' below the display.

The printed Instruction Manual only gives an *outline* of the many EXMENU items. For a full description, there is a 26-page PDF file "EXMENU items and CI-V information" available from the Icom Japan web site: https://www.icomjapan.com/support.

I found the official Icom Instruction Manual somewhat disorganized, possibly because of the large number of menu options that have to be covered. My suggestion would be to purchase the N6FN Nifty! Mini-Manual for the IC-2730A, which provides the essential commands in a more logical order.

Make many memories

Icom provides its CS-2730 'cloning software' available as a free download, but it requires an Icom OPC-478UC cloning cable. This two-part cable connects the computer's USB port to the "SP2" speaker jack on the rear of the IC-2730. The Icom cable costs $60.99 so I checked what was available from RT Systems, https://www.rtsystemsinc.com/. Their WCS-2730-USB kit ($49.00 list) includes a USB to 3.5mm stereo jack programming cable plus a serial number for download of RT Systems' own software. After positive experiences with other radios, I ordered RT Systems' package and installed the software on my Windows 10 notebook. (RT Systems' software is also available for MacOS.)

The software ran without a problem and I was able to read existing settings from the IC-2730A then save in a file in case of future problems. I already had

RT Systems' software for the Yaesu FTM-100D on the same computer, so it was easy to export the FTM-100D memory contents to a tab-delimited text file, then import that same file into the IC-2730A software.

RT Systems USB cable and programming software for the IC-2730A.

The result was full setup of channels 1-23 with 2 meter frequencies plus channels 101-121 with all my 440 MHz frequencies. The data imported includes frequencies, repeater offsets, PL tones, channel names and scan skip status — for avoiding the buzz of digital repeaters.

RT Systems software also allows scan memory limits and call channels to be set up. A separate window named "Radio Menu settings" provides access to all the transceiver's MENU and EXMENU settings.

Installation time

After becoming more familiar with the IC-2730A, I decided to install it permanently as part of my home station. I mounted the newly-programmed transceiver under the Dexion shelving using Icom's MBF-4 mobile bracket. Once mounted beneath the shelf, background noise of the cooling fan was much reduced.

Icom IC-2730A mounted under the Dexion shelf.

Pluses and minuses

As with any new radio, the IC-2730A is a case of two steps forward and one step back. The newer radio incorporates a number of improvements over Icom's previous models, and at a reasonable price, but a few desirable features have been left out in the process.

I still like Icom's approach to a dual band radio of laying out the control panel for the 'left side' and 'right side' of the radio. This provides separate rotary controls for volume, squelch and dial. Display of left and right frequencies on the 14-segment alphanumeric display is easy to read from a distance… but rather old fashioned in an age of high-resolution dot matrix color displays. One drawback is the inability to display memory name at the same time as frequency. On the plus side, the radio's monochrome LCD display is easily legible in bright sunlight from wide angles — while lack of a touch-screen is a positive advantage for a mobile transceiver.

Scanning is very fast and I have not experienced any receiver overload to-date using an external gain antenna. The only downside is that while scanning in VFO mode using 5 kHz steps, the receiver pauses *three* times — at 5 kHz below carrier frequency, at the on-frequency point and at 5 kHz above carrier frequency.

The IC-2730A has a narrow-band option for both sides of the radio in FM and AM-Air modes. On FM-narrow (MODE – FM-N), the receiver IF bandwidth is reduced from roughly 18 kHz to 11 kHz, making it suitable for the 12.5 kHz channel spacing currently employed in Europe*. At the same time the maximum deviation on FM transmit is reduced from ±5 kHz to ±2.5 kHz. In our part of the world, analog FM is mostly using 5 kHz peak deviation with a channel spacing of 15 kHz on two meters and a channel spacing of 25 kHz on 70 cm. My suggestion — don't select FM-N unless working through a repeater with narrow-FM, otherwise you will receive reports of weak audio.

*For example the Southport, UK 2 meter repeater **GB3OA** transmits on the 12½ kHz frequency: RV49, 145.6125 MHz using narrow FM, 2.5 kHz deviation. Offset is -600 kHz and PL tone is 82.5 Hz. Digital voice repeaters in North America may also employ 12.5 kHz channel spacing.

Conclusion

If you would like a dual-band analog FM transceiver for mobile or fixed-station use, the Icom IC-2730A is a good performer at a reasonable price. Just choose your accessories wisely.

- NM9J

SignalStuff update

Mr Whippy

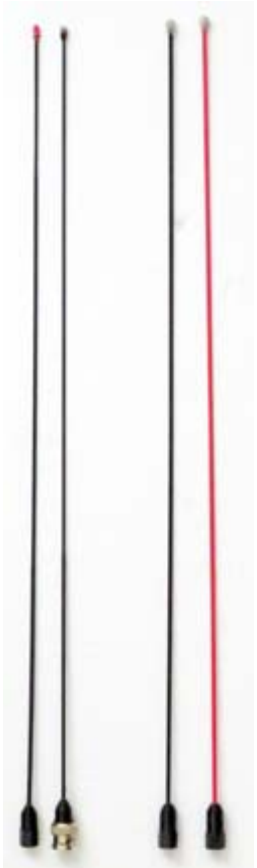
In the *PCARA Update* newsletter for June 2018 there was an article "Daffy ducks and wiry whips" comparing performance of antennas for dual-band amateur radio handi-talkies. One of the products mentioned was the highly flexible antennas available from Richard, KD7BBC at https://signalstuff.com/ . These antennas are manufactured from **nitinol** nickel/titanium alloy (NiTi), covered in heat-shrink polymer. The metal alloy used in the antennas is surprisingly resilient, capable of being wound up into a space-saving circle then springing back to the original shape when released.

Highly flexible "Signal Stick" antenna can be wound into a small circle.

Flexible friend

Three years later, SignalStuff is still making flexible antennas… On the "Signal Sticks" history page, KD7BBC explains that the first design used stainless steel wire, then switched to nitinol **superelastic** wire. Richard has continued selling the antennas as a fundraiser for https://hamstudy.org/ — a web site that provides amateur radio study aids and support for remote license exams.

Signal Sticks are available with either a male BNC, male SMA or female SMA connector at the base, and in a choice of 12 colors for the plastic that covers the nitinol wire. I recently ordered one black and one red antenna with male SMA connectors for my Yaesu FT-70D handi-talkie. Compared to my 2018 Signal Sticks, the plastic covering is no longer tapered from base to tip, making the slender structure less "wobbly" while the tip insulator has changed shape from a small cylinder to a larger ball.



Signal Stick antennas from 2018 (left) and from 2021 (right).

Strong stuff

As pointed out on the SignalStuff web site, these 19 inch whips are a ¼ wavelength long on 146 MHz and a ¾ wavelength on 440 MHz. The full quarter wave on 2 meters improves performance compared to the small 'rubber duck' antennas normally supplied with an HT. On the 440 MHz band, the ¾ wave size is less desirable because of some high angle radiation, but the match is good and in practice the antenna still works well.

SignalStuff has some additional products available, including spacers and adapters for their HT antennas. New products include a "Signal Stalk" ¼ wave flexible mobile whip with NMO connector (NMO mount required) and a "Signal Staff" collapsible open-stub J-Pole antenna for portable use. Take a look at: https://signalstuff.com/shop/ .

Tiger by the tail

Hint: For an additional boost in performance, you can add a quarter wave counterpoise to your handi-talkie's antenna. This usually takes the form of 19¼ inches of flexible insulated wire connected to the outer conductor of the HT's antenna connector.

You can fabricate your own counterpoise — see W3ATB's site for instructions (https://w3atb.com/tiger-tail-antenna/). Some amateurs use a ring terminal to make the connection to antenna ground. A more expensive alternative would be to purchase a commercial counterpoise from a supplier such as RatTail (https://rattailantenna.com/) where cost is $31.95.

- NM9J

NY QSO Party 2020

Lou KD2ITZ has forwarded the following thank you note from Art Collins* N3AA who was awarded one of the two plaques sponsored by PCARA for 2020's New York QSO Party.

**[Not the same Arthur Collins as W0CXX, founder of the Collins Radio Company. -Ed.]*

From: Art Collins
Date: Mon, May 24, 2021 at 4:27 PM
Subject: 2020 NY QSOP
To: <mail'at'pcara.org>

I would like to express my sincere appreciation and thank you all for sponsoring the 2020 Non-New York SSB ~Single Op Low Power Plaque, I am deeply grateful for this award and will display it in the shack and on my QRZ page... Thank you once again and will catch you down the log....

- 73's Art Collins N3AA

Peekskill / Cortlandt Amateur Radio Association

Mail: PCARA, PO Box 146, Crompond, NY 10517
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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 (apart from holidays, July/August break and pandemics). Talk-in is available on the 146.67 repeater.

PCARA Repeaters

W2NYW: 146.67 MHz -0.6, PL 156.7Hz
KB2CQE: 449.925MHz -5.0, PL 179.9Hz
N2CBH: 448.725MHz -5.0, PL 107.2Hz

PCARA Calendar (Masks and social distancing are required)

Sat June 12: PCARA Breakfast, 9:00 a.m., Downing Park Pavilion, Rt 202, Yorktown. *(Followed by...)*
Sat June 12: Hudson River Radio Relay, Hudson Highlands State Park, Paddlesport Center, 1:00 - 5:00 p.m.
Wed June 23: PCARA Membership meeting, 7:00 p.m., Field Day Site, Walter Panas High School, 300 Croton Avenue, Cortlandt Manor, NY. Outdoors, bring your own chair.
Sat/Sun June 26-27: ARRL Field Day, Grounds of Walter Panas High School, 300 Croton Avenue, Cortlandt Manor, NY.
Sun June 27: PCARA V.E. Test Session, 10:00 a.m. Field Day Site, see below.

Hamfests (Check with organizers before leaving.)

Sat June 5: Fairlawn ARC Hamfest, Fair Lawn Recycling Center, 19-25 Saddle River Rd, Fair Lawn, NJ. 8:00 a.m.
Sun June 6: LIMARC Outdoor Hamfest, 1055 Stewart Ave, Bethpage NY. 9:00 a.m.
Sun July 18: Sussex County ARC Hamfest, Sussex County Fair Grounds, 37 Plains Rd, Augusta, NJ. 8:00 a.m.

VE Test Sessions (Check with the contact before leaving.

June 5, 12, 19, 26: Westchester ARC, 19 Hunts Bridge Rd, Yonkers NY. 12:00 noon. Must contact VE, (914) 237-5589.
June 5, 12, 19, 26: NYC-Westchester ARC, 43 Hart Ave, Yonkers NY. 12:00 noon. Must contact VE (646) 225-8600.
June 18: Orange County ARC, Munger Cottage, 183 Main St, Cornwall NY. 6:00 p.m. Contact Joe DeLorenzo, (845) 534-3146, w2bcc'at'arrl.net
Jun 27: PCARA Field Day Site, Walter Panas HS, 300 Croton Ave, Cortlandt Manor, NY. 10:00 a.m. Contact Michael W2IG w2igg'at'yahoo.com.

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