PCARA Update

Volume 27, Issue 1 Peekskill/Cortlandt Amateur Radio Association Inc. January 2026

Silver scrapbook

Before we look forward to the New Year, we should look back at the previous 12 months. 2025 was a special year for Peekskill/Cortlandt Amateur Radio Association, as it marked our **25th/Silver Anniversary.** Here are highlights of the year.

PCARA Retrospective 2025

- Ten VE Test Sessions were organized at Putnam Valley Library plus one session at Tompkins Corners Cultural Center, with 24 candidates served. The March 2025 Test Session was the first using the ExamTools system.
- The Annual Bring and Buy Auction took place in January at the Cortlandt Town Center CUE Room. Four tables of member equipment were on offer.
- PCARA benefited once again from the Stop & Shop Community Bag program during March 2025.
- Sad passing in April 2025 of longtime PCARA member Bill Hellman NA2M.
- Orange County ARC made a club table available to PCARA at their annual Hamfest in Mountainville, NY on May 4.
- On Saturday May 10, 2025 PCARA celebrated its 25th (Silver) Anniversary with an outdoor event at Franklin D. Roosevelt State Park in Yorktown, using the picnic shelter adjacent to Parking Lot 3. A Special Event Station was set up as a "Parks on the Air" activation, with 51 contacts from Park US-2056. David KD2EVI and Elliot (now KE2GEQ) brought food from Sansotta Brothers for the lunchtime picnic, while Jay NE2Q gave a demonstration of how to make a mobile VHF antenna directional.
- ARRL Field Day took place on June 28-29 under the covered entrance to George Washington Elementary School in Mohegan Lake. 21 members took part, with a visit from ARRL Hudson Division Vice Director David KM2O. As a result of FD computer problems, two notebook computers have been donated to PCARA by N2SO and W2CH.
- In August, two meter repeater W2NYW/R on 146.67 MHz suffered a dramatic drop in sensitivity. Bob N2CBH and Rich WZ2P replaced the Super Stationmaster antenna with Sinclair exposed dipoles and new feeder.
- The October 4 meeting featured a visit from ARRL Hudson Division Director Ed Wilson N2XDD. He presented a plaque to the club celebrating PCARA's 25 years of ARRL affiliation and a *QST* Cover Plaque to Jay NE2Q for Jay's article in April 2025 *QST*. Ed also gave a talk on the role of clubs in advancing amateur radio. His presentation is available on PCARA's YouTube Channel courtesy of Rob AD2CT, see https://www.youtube.com/@peekskillcortlandtamateurr7670.
- A simplex test took place on October 11 using frequency 146.565 MHz.
- On October 19, members of PCARA and WECA provided communications support for the 45th Harry Chapin Memorial Run Against Hunger. This involved a new route for the 10K Run to avoid the Quaker Bridge which has been declared unsafe.

Continued on page 2 ⇨

PCARA members, family and friends enjoyed the annual Holiday Dinner at Table 9 Restaurant on December 7.

Candidates sat in the pews at Tompkins Corners Community Center for PCARA's December 20 VE Test Session.

Contents

- The Fall Foxhunt took place on October 25, with 7 members searching FDR State Park for the fox transmitter controlled by Rob AD2CT.
- PCARA Breakfasts indoor and outdoor took place throughout the year at Uncle Giuseppe's Marketplace in Yorktown Heights.

We began December 2025 with the Annual PCARA Holiday Dinner at our "new" location, Table 9 Restaurant in Cortlandt Manor. The project to raise the height of Annsville Circle and reduce size of the roundabout made access more difficult. Even so, 15 members and family enjoyed a festive meal on Sunday December 7. This was followed by a PCARA Breakfast on Saturday December 20, and a VE Test Session at Tompkins Corners Cultural Center. There were seven candidates with four new Technicians and one upgrade to General.

Our first activity of the New Year will be the January meeting combined with PCARA's Annual **Bring and Buy Auction**, scheduled for Sunday January 4, 2026 at the Cortlandt Town Center CUE Room. Access to the CUE Room is from the parking lot behind the cinema and behind Walmart. Be sure to check your basement and attic for radio and electronic treasures that could be of value to fellow members.

Our PCARA Breakfasts continue on Saturday January 17, 9:00 a.m. at Uncle Giuseppe's, followed by a VE Test Session at a location to be announced.

PCARA Board

President:
Greg Appleyard, KB2CQE; kb2cqe 'at' arrl.net
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Bob Tarsio, N2CBH; bob 'at' broadcast-devices.com
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Robert Gill AD2CT
Vice President Emeritus: Joe Calabrese, WA2MCR.

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. (No Old Goats Net on Thursday January 1).

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.

VE Test report

ARRL-VEC now insists that VE Teams use the ExamTools system for administering tests. Lou KD2ITZ has been recruiting new Volunteer Examiners. He arranged a virtual test session on December 15 to familiarize new VEs with the ExamTools system. Those taking part included Charles N2SO, David K2WPM and Peter W2PDK. Also assisting were Joe W2BCC, Rob AD2CT, Ken W1YJ and NM9J.


Tompkins Corners Cultural Center in Putnam Valley.

Because of building maintenance at Putnam Valley Library, PCARA's VE Test Session on Saturday December 20th moved to a new location — Tompkins Corners Cultural Center, 729 Peekskill Hollow Rd, Putnam Valley. Lou thanked Peter W2PDK and Christie KE2GTA for securing the new location. VE Team members were welcomed to the building, a former Methodist Church, by Center President Mark Weiss.

There were seven candidates for the ARRL VEC Test Session, including four pupils from Lakeland High School who had been encouraged by Jasper NK2Y. Youth examinees under age 18 pay a $5.00 test fee to ARRL VEC instead of the usual $15.00. For successful candidates under 18, the $35.00 FCC license application fee is reimbursed by ARRL after the new license has been issued by the FCC.

Matthew Hayes of Yorktown Heights and Gideon Sapitan of Putnam Valley both passed Element 2 and qualified for Technician licenses. Matthew's call was not available at press time. Gideon was assigned call **KE2HJA** by the FCC on 12/24/2025.

Two more candidates who passed Element 2 were Reinaldo Ortiz of Otisville, NY and Joseph Watson of Mohegan Lake (who is pictured on the December 2025 cover). Reinaldo was allocated call sign **KE2HIJ** by the FCC and Joseph was allocated **KE2HIL** on 12/23/25.

Edward KD2STB of Cortlandt Manor passed Element 3, upgrading from Technician to General. (Edward is the son of Nic KD2SKY.)

Volunteer Examiners who took part in the December 20 Test Session include Team Leader Lou KD2ITZ, Ken W1YJ, Joe W2BCC, Charles N2SO, Peter W2PDK, Joe WA2MCR and NM9J. Thanks to everyone who brought along notebook computers and tablets for use by candidates and examiners with ExamTools' system.

PCARA's next VE Test Session will be on Saturday January 17 2026, **location to be announced**.

Adventures in DXing

- N2KZ

Happy New Year!

Congratulations! We have made it through the first full quarter of the 21st century! Things are changing very rapidly and the world is whirring by. We all strive to keep up with the latest in technology and modern life. What is in the future? Just you wait!

Is amateur radio quickly drifting to an all-digital hobby? Every group gathering is filled with chat about FT8, FT4, JT65, WSJT-X, DMR, C4FM System Fusion, D-STAR and old friends like WSPR, RTTY, PSK31 and even CW! Advanced tools help, too: WSPR, Meshtastic®, Reverse Beacon Network and the list goes on.

When remembering ancient technologies, I have to laugh. How things have dramatically changed! Those of a certain generation remember a world where newfound novices would send: `CQ DE WN2EMP /U` — or — `/D`. Novices were 'rock bound' and could only use a quartz crystal for frequency control. (In theory, this protected beginners from operating out of band.) No two novices had 'rocks' for the same frequency as the signal you were receiving. **U** and **D** stood for 'Up' or 'Down' indicating where you would be tuning and scanning with your receiver after you ended your call. Talk about adventure! With a bit of luck, maybe you could find someone replying to your CQ. In the 21st century, you let your FT8 do the footwork. Come back later and see who you automatically worked. That's what I call progress!

Ask Good Questions

Another very popular topic of conversation these days is **Artificial Intelligence**. Will **LLM**s (**L**arge **L**anguage **M**odels) take over the world? Will everyone become unemployed? Let me suggest another approach to this oncoming mystery. Tomorrow's top notch successful amateurs (and all of humanity) will know how to tame and ride these applications to meet their needs. The time to learn about them is *now!*

Life is about to become even more fast and furious. Google, Yahoo, Firefox, Chrome, Bing and DuckDuckGo are rapidly becoming obsolete and a memory of past generations. Test drive a new future forward search system like Perplexity's **Comet**. In a flash, it scrapes the Internet for in-depth information and immediately creates a conversation for your follow-up questions.

Say "Goodbye" to combing through endless amounts of site result URLs, trying to parse together the answer and data you seek.

(You may have already seen Google's AI driven **Gemini** in action as a drop-down first result when you ask a basic Google search.)

Comet is a constantly updating and fluid information base. It is responsive to trends and preferences of its user universe. Ask a question and it changes the hierarchy for answers to be presented to future users. Real people reviews are becoming secondary to user hits and responses. Just remember that all new search systems have distinct personalities and opinions. In time, they know what you are about and what you expect. They are that inquisitive!

Beware: now more than ever, online searches can be manipulated by sponsorships and ulterior motives. You will find greater accuracy and unbiased points of view if you ask your questions to *more* than one source. Always keep that in mind! One source should never be thought of as authoritarian. Just the opposite! Ask many questions in many ways!

LLMs are only as good as the questions they receive. The name of the game is to develop high proficiency in asking them. Today's popular programs all have specialties and points of view and analysis. Get to know each of them to understand their abilities and personalities. Don't be afraid to pose your questions to several different LLMs as if you were asking multiple friends for advice.

Introducing...

One AI LLM is not "better" than another. Each has its own strengths and intent. **ChatGPT** is like a Swiss Army knife. It shines for everyday tasks, brainstorming and writing research.

Google's **Gemini** is designed to meet the needs of long-time Google users. **Copilot** is Microsoft's vision of an LLM.

Perplexity caters to those seeking deep research such as medical or engineering tasks. **Claude** presents to intelligentsia a formal and cerebral tone. It serves advanced text writers and coders with the cogitation they specifically seek. **Meta AI** continues Facebook's point-of-view. Get out of the way of X's **Grok!** Asking it a question can sometimes result in never-ending replies! Many LLMs specialize in instant graphics creation.

Humankind thrives on the diversity of our species. The new computer world offers diversity between LLMs! Look around. There are dozens and dozens of LLMs to choose from.

Vocabulary is Essential

As you build your experience and proficiency using AI LLMs, you will wish you were an English major in college. You will discover having an encyclopedic knowledge of word usage and vocabulary can be the most powerful skill indeed. Learn how to ask good questions!

The biggest challenge when seeking and maintaining future employment will be proving that your talents and experience can bring a cutting-edge advantage up and above what AI can complete on its own. The secret is **knowing how to frame questions** to receive the precise answers and innovations that you seek. Learn the fine art of using **keywords**. There are books and books written about this essential aspect alone!

Consider this example: If I sat down to **ChatGPT** and asked "How can I achieve better results using FT8?" you might get a very generic and short reply suggesting you use the correct frequency, use low power and to watch your audio levels. Well, we know that already!

Let's get more specific: "I am using FT8 and want to improve my connections with stations in India using the amateur radio 20 meter band. Suggest what equipment, antennas and operating techniques I could use to improve my results." Try it for yourself. Copy and paste this question into an AI LLM. You will instantly see how more useful your answer results will be when you fully describe your questions especially with proper advanced vocabulary.

AI LLMs love to have conversations. You can attach full articles of information (like a .pdf white paper) for immediate analysis and comments. You can ask an endless string of follow-up questions to LLMs as if you were speaking to a Yoda-like wizard for advice. Take the time to present identical chats with more than one engine to gain a spectacular varietal collection of information. Don't be afraid to ask "What do you think?"

You will be pleasantly amazed at the spontaneity of the authoritarian answers (with attribution footnotes) that appear instantly before your eyes. Your conversations with these AI LLMs can be as fast-paced as you can type or talk. It really is a remarkable experience! Try to ask something it may not be able to answer. Let me know if you find one. I will see you before dinner!

Read through your results — and — then use the thoughts provided by the initial conversation to begin a completely new thread now firmly focused on your goal in knowledge. Repeat until you are thoroughly satisfied and inspired. Squeeze the lemon over and over again. It can be a fascinating pursuit. Become proficient and create your own unique methods of reaching deep truth. Aha! Now you are a quite valuable *human* to the new AI world!

Operating Techniques Rule

It's not what you already know or the fantastic shack you have at home. It is how you use your *knowledge, independent thought and innovation* to utilize it. This very well may be the key to contest success and renown in the future world of amateur radio. Think of the challenge in trying to drive a newfangled high-tech automobile. How do you access the features and what do they do? How can I find out? What can they do for me? Now you have an instant way to find out!

In the world we experience in the year 2026, we are presented with many, many useful tools with all sorts of capabilities and conveniences. Now, you just have to discover them all and put them to your best use. Want some new and novel operating tips? Ask AI LLMs good questions *about your very specific gear* and then ask some more! "I have an Icom IC-7300 Mark 2. What filters are available when I am using SSB?" Use the 'Ask Anything' field below your answer to continue your conversation.

Icom IC-7300MK2 HF/6m transceiver.

"How can I use Twin PBT (Passband Tuning) to eliminate adjacent channel interference?" "Explain Narrowing on crowded bands?" Get the idea? The results can open your eyes!

Too complicated? With the onslaught of digital modes that require no more than low power and simplistic antennas, your daily operating skills might rise to being the solitary key to amateur radio success and satisfaction. It's not what you do. It's the way that you do it.

Read!

"Don't tell me how it works. Just tell me how to do it." Old-fashioned research can still provide reasonable results in your quest for never-ending learning. Find and read the manuals written about your gear (again and again) and ponder all the features and capabilities you may have overlooked.

Meet the Maker

I have developed a useful and satisfying rapport with the friendly folks at Yaesu and Ham Radio Outlet. They often can answer quizzical questions instantly. Watching YouTube videos and joining user groups can also feed your passions. Secrets of the universe can be

found in user group chats. “Oh! That’s how you do it!” Other amateurs may have already discovered and created things that you never ever even thought of! You can use their ideas, too!

Your creativity and invention can seed a wonderful relationship with manufacturers. Their research and development staff are always looking for new ideas to forward their products into the next generation of their success. Suggest all the things you wish your gear could do. Discover and endear those who will listen to your requests.

Equipment manufacturers and vendors thrive on interaction with their clients. Offer your customers brand new gear with all sorts of never-before-seen novel and useful features. Many equipment sales may follow!

Don’t Give Up — Keep it Simple

Downsizing is a familiar word to retirees and grand old hams. Antennas fall and rot. Equipment wears out. Your ability to concentrate or find the patience to learn and use complicated gear may wane. There are ways to keep your hobby going again with simple-to-use gear.

One response is nearly universal: Concentrate on 2 meter or 70 centimeter (440 MHz) FM. Press the push to talk button on a HT and you can contact all sorts of people. It is basic, convenient and rewarding.

Look! It’s a Comet!

No, This Comet is not an advanced AI search engine! I recently purchased a Japanese-manufactured **Comet GP-3** vertical fiberglass antenna stick for just over $100 delivered.

Comet GP-3 144/440 MHz base station antenna. [N2KZ pic.]

It is a perfect dual-band antenna for 2 meters and 70 cm. You’ll enjoy 4.5 dBi gain on 2 meters and an impressive 7.2 dBi gain on 70 cm. It is very easy to assemble and mount with very simple tools and it only weighs two pounds and 12 ounces. The Comet GP-3 makes a terrific stealth antenna. It is a 6 foot white stick that attracts no attention and could easily blend into architecture without any notice. It is very lightweight: If you like, bring it inside and hold it up with a leftover Christmas tree stand. (I still use a familiar desk chair. It’s just been too cold to go out and craft a permanent mount outside!) Most ceilings are 8 feet tall and the Comet is only 6 feet tall. You could hide it almost anywhere. It assembles nearly instantly, has dual band 2 meter/70 cm coverage and produces nice gain figures. What more could you want?

Base of Comet GP-3 antenna ready for the three short radials to be screwed in and tightened. [N2KZ pic.]

Installation is nearly instantaneous: Simply screw in the three little ground radials to the bottom of the stick. Comet’s scheme to mount it permanently outdoors is just as simple. The GP-3 is poetry in motion. Highly recommended.

Don’t forget: Think up some really good questions and begin your LLM experimentation. Human beings are not obsolete yet! Hone your skills and learn how to ride this new-age horse. LLMs can take you far. I bet you will enjoy it!

Comet GP-3 tethered to chair.

Enjoy the New Year and join us on the air soon! The first Old Goats Net will air on Thursday night, January 8th at 8:00 p.m. on the PCARA 2 meter repeater: 146.670 MHz, minus 600 kHz offset, 156.7 Hz PL.

Happy Holidays every one and have a happy New Year. 73 ES DIT DIT DE N2KZ ‘The Old Goat.’

More antique antennas

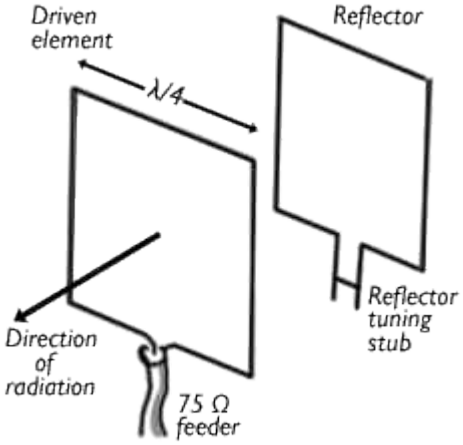
Last month Jay NE2Q showed readers a 1961 advert from *73 Magazine* for Telrex Laboratories' 8-element 2 meter Yagi, model 2M814. This triggered memories for Ray W2CH. Ray wrote…

Ad from 73 Magazine, September 1961.

"By the way, I bought the Telrex beam, when my father and I drove to Telrex, I believe they were in Belmar or Neptune, NJ. Back in 1963, I used the antenna horizontally polarized with a CDR bell-shaped rotator. I first used a Heathkit "Twoer" (HW30), a Gonset Communicator III, then a Tecraft transmitter… We used AM modulation, before I began using FM repeaters in the early 1970's."

This month, Jay NE2Q is showing us a different antenna, as advertised in *73 Magazine* for September 1961. (See bottom of page.) This is the **Cubex Mk III** 3-band cubical quad antenna, covering 10, 15 and 20 meters with a 2 inch dia. boom and aluminum spiders. Gain was 8-10 dB, cost in 1961 was $67.50.

The cubical quad antenna consists of a full-wavelength loop of wire or tubing as the driven element, with a reflector behind it consisting of another loop of wire or tubing. The driven element can be fed in the middle of a horizontal side for horizontal polarization.



2-element cubical quad antenna.

Cubex Company

Cubex Company was founded in 1957 by Karl Scharping W6KWF. The Mk-series of tri-band quads and other antennas were manufactured in Cubex's Altadena, California location. Norm Alexander W4QN took over the company in the 1990s and moved production to Florida. Around 2010, Roger Greenfield WB8NDC acquired the company and transferred it to Alto, Michigan. The present owner Mark Chouinard K5YAC acquired the company in 2021 and moved production to Collinsville, Oklahoma.

The Cubex Mk II, Mk III and Mk IV Series of multi-element quad antennas are still available from Cubex Quads, though the price has increased from $67.50. See: https://www.cubexquads.com/mk-series/

Jay's quads

Regarding the MK series of cubical quad antennas, Jay writes:

"A friend had one in Yonkers about 1958. First one I had ever seen. I built a 20 meter quad in 1962 that I used in Mohegan Lake. You can see photos of the quad in Mohegan Lake on my QRZ page.

With Jay's permission here are his notes on the Mohegan Lake quad…

"Quad photo was taken in 1962 at my father Ben's summer home on Lake Shore Drive in Lake Mohegan, NY.

"After using dipoles during my initial four years of hamming, I built my first directional antenna in 1962. Got it working on the day of my 21st birthday. A 20 meter homemade quad with a 10 foot boom, fed directly with 75 ohm coax. No matching system at the feedpoint, no baluns. My Heathkit HW-32 transceiver in the 1960's had pi-network output as did my home-brew pair of 813's amplifier. The spreaders were bamboo wrapped with 2" fiberglass tape and three coats of fiberglass resin. Center of the antenna was 35 feet high on a homemade wooden fold-over tower. The reflector was adjusted for maximum front to back at 14.175 MHz using an adjustable tuning stub in the bottom of the reflector wire.

"The antenna worked great for many years. Excellent front-to-back ratio (F/B) at the design frequency and great forward gain. The front to side was outstanding. Worked all over the world. Never had any snow, rain or blowing dust precipitation static.

"I don't know of any other type of two element directional antenna that performs as well as the quad with regard to all parameters considered. Gain, F/B, F/S and immunity to precipitation noise. Closed loop antennas such as quads are

Jay NE2Q constructed this 20 meter cubical quad antenna at his father's summer home in Mohegan Lake. [NE2Q pic.]

known as quiet antennas. The "quiet" comes from good reduction of unwanted signals and atmospheric noise — attributed to the good F/B and F/S and the absence of noise caused by precipitation static. I prefer the "boomless" quad over the standard 'boomed' quad. The "boomless" design allows closer spacings between the driven elements and the reflectors as the frequency rises from 20 up to 10 meters. This should result in better control of F/B adjustments.

"Other antennas without closed loops such as Yagis, hexbeams, dipoles, verticals, etc. are prone to severe noise pickup (as high as 30 dB over S9) as charged raindrops, snowflakes or dust particles discharge when hitting the elements."

Jay went on to say:

"I have much experience with quad antennas and have designed quite a few. VK3CWB recently built a 4 element 20 meter quad on a 40 ft boom. It is 60 ft high, to my design."

4-element cubical quad antenna built by Moz VK3CWB to a design by Jay NE2Q. Quad wires, boom and spreaders are emphasized for clarity. [VK3CWB pic.]

British quads

Your editor has his own memories of U.K. quad antennas. In the mid-1970s members of Ainsdale Radio Club organized a "Special Event Station" GB3BSP, for the **Banks Steam Party**. This was an annual exhibition of vintage agricultural and fairground steam engines held over the Easter weekend at the premises of an agricultural contractor at Banks, near Southport in southwest Lancashire.

Steam engines at Banks Steam Party, near Southport.

We were lucky enough to have the loan of a Strumech tilt-over, crank up tower to support the HF antenna. Harold G3LWK had the idea of constructing a cubical quad antenna to go on the top. He obtained the necessary spider, spreaders and insulated wire. We had assistance from Chris G3VBL who was in charge of calculating wire lengths for the driven element and reflector loops with mathematical precision.

After the Special Event was over, Harold G3LWK decided that the quad antenna should be transported to his home nearby, ready for mounting on his *own* tower. He did not want to take the carefully-constructed antenna apart, so we lifted it intact onto the back of his company wagon (flatbed truck) for the journey.

My job was to sit in the back of the truck and hold on to the antenna to make sure it arrived in one piece. An HF quad for 10-15-20 meters is a large beast and I remember having to tilt the antenna down as we navigated the streets of rural Banks to avoid touching overhead power lines.

Fortunately, the antenna and I survived the trip and Harold was able to install the quad on his own tower — which was still present when I visited in 1996.

J-Beam Q4/2M cubical quad antenna.

I had another encounter with a quad when I moved from Southport to the Rochdale area. I replaced my old J-Beam 8-element Yagi for 2 meters with a J-Beam 4-element quad, model Q4/2M. This antenna had the same gain as the 8-element Yagi (10 dBd) but was only half the length (4 ft 11 in.). It was mounted on a Yaesu rotator along with my beam antennas for 4 meters and 430 MHz. The 2-meter quad crossed the Atlantic with me but did not survive the move to New York. - NM9J

Run Against Hunger

– News Report

The 45th Harry Chapin Memorial Run Against Hunger took place on Sunday October 19, 2025. An initial report on PCARA members' experiences appears in *PCARA Update* for November 2025, pages 7-11.

The race organizers submit a letter on the Run Against Hunger to the editor of Croton's *The Gazette* newspaper. The 2025 letter appears in the *Gazette* issue for December 18-31, 2025 on pages 6-9. Many thanks to **Todd N2MUZ** for supplying a copy of the relevant issue.

Westchester County RACES Emergency Communications vehicle at Croton-Harmon High School on Oct 19, 2025. [KD2EVI pic.]

A short extract describing the radio support provided by PCARA and WECA appears below, alongside the text by Race Director Mike Grayeb.

"In addition to working with police, fire and EMS, we worked closely with volunteers from two community-based communications groups, including the Peekskill-Cortlandt Amateur Radio Association (PCARA) and Westchester Emergency Communications Association (WECA). Kathleen O'Keefe, the public service director of WECA, and Gregg Appleyard and David Fredsall, both of PCARA, helped with our safety planning and they and their colleagues provided valuable "eyes and ears" as volunteers on our courses and emergency communications for all of our events. Among their respective volunteers who provided on-course communications back to a central communications hub at the high school or communications support at the high school itself, were Alan N2YGK, Christie KE2GTA, David KD2EVI, David K2WPM, Elliot KE2GEQ, Greg KB2CQE, Jennifer KE2AGN, Kathleen KC2VCT, Larrie W2UL, Malcolm NM9J, Mary Ellen KE2GNZ, Mike KD2ARZ, Peter W2PDK, Robert KE2GOF, Steve KD2OFD and Zee KE2FRX.

"We are deeply grateful to the leaders and members of both groups for working together to ensure a safe experience for all of our runners and walkers."

In addition to working with police, fire and EMS, we worked closely with volunteers from two community-based communications groups, including the Peekskill-Cortlandt Amateur Radio Association (PCARA) and Westchester Emergency Communications Association (WECA). Kathleen O'Keefe, the public service director of WECA, and Gregg Appleyard and David Fredsall, both of PCARA, helped with our safety planning and they and their colleagues provided valuable "eyes and ears" as volunteers on our courses and emergency communications for all of our events. Among their respective volunteers who provided on-course communications back to a central communications hub at the high school or communications support at the high school itself, were Alan N2YGK, Christie KE2GTA, David KD2EVI, David K2WPM, Elliot KE2GEQ, Greg KB2CQE, Jennifer KE2AGN, Kathleen KC2VCT, Larrie W2UL, Malcolm NM9J, Mary Ellen KE2GNZ, Mike KD2ARZ, Peter W2PDK, Robert KE2GOF, Steve KD2OFD and Zee KE2FRX.

We are deeply grateful to the leaders and members of both groups for working together to ensure a safe experience for all of our runners and walkers.

A later paragraph describes the role of the Trail Car, following last runners in the 10K event.

"These same students and coaches were joined by additional students, Quinn Kelley, Brandon Ajabaca, Danial Kim, Sebastian Linarez. Andrew Barillo and Justion Walker and were stationed along the 10K course. That event which kicked off at 10 a.m., started in a new location due to the 2025 course change. Leading the 10K runners was a Croton EMS volunteer in an all-terrain vehicle and trailing the pack was a civilian car driven by John Pershing of Asbury United Methodist Church, accompanied by Larrie Sutliff, a member of the Westchester Emergency Communications Association. We thank each of those people for their support."

Trail Car following last runners in the 10K Run Against Hunger contained Larry W2UL with 2 meter transceiver and APRS transmitter to track location.

The full report concludes by noting that the 45th Annual Harry Chapin Memorial Run/Walk Against Hunger achieved success with 1,297 registrants for the in-person and virtual events and distribution of $57,000 to non-profit organizations that fight hunger – an all-time record. These included the Croton-Cortlandt Food Pantry, Croton Caring, Caring for the Hungry and Homeless of Peekskill (CHHOP), Fred's Pantry, Hillside Food Outreach and Feeding Westchester. The organizers look forward to the 46th event on Sunday October 18, 2026.

- NM9J

More flippin' bits

Radio amateurs are not the only people who are affected by the 11-year sunspot cycle. 2½ years ago, *PCARA Update* published a short article about the effects of cosmic rays on modern electronics. In "Flippin' bits", (*PCARA Update* June 2023, p 13), I described how an item of laboratory equipment with a CCD detector was affected by emissions from the sun.

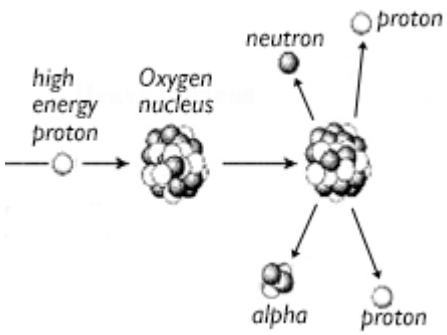
Laser Raman spectrometer with CCD detector.

Solar flares produce X-ray and ultraviolet radiation. They may be accompanied by coronal mass ejections which release high-energy particles — mainly electrons and protons (ionized hydrogen). When these particles strike Earth's atmosphere they produce new particles — including **muons** — that interfere with silicon-based CCD detectors at ground level. Muons are negatively charged particles with much greater mass than the electron. Two solar cycles ago, disturbances to the lab instrument could be predicted by monitoring "space weather" web-sites for readings of solar X-ray and proton flux

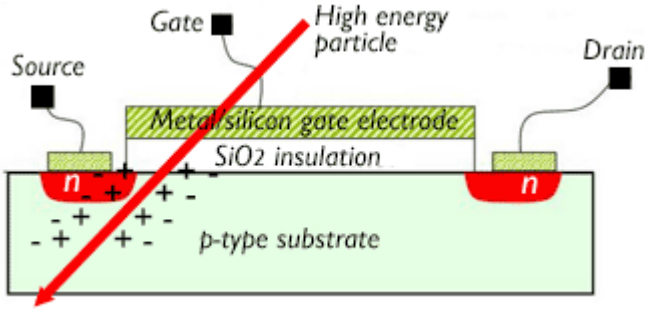
High flying bits

A 2022 article on the BBC News web site by Chris Baraniuk described more recent events that might be explained by cosmic radiation changing the state of bits in computer memory. These included a heart pacemaker that went awry on a plane approaching Amsterdam in 2016 and a Qantas flight in 2008 where an Airbus A330 flying from Singapore to Perth suddenly fell hundreds of feet *twice* over western Australia, injuring passengers. See https://www.bbc.com/future/article/20221011-how-space-weather-causes-computer-errors .

Unlike devices on the ground, aircraft in flight at 30,000 to 40,000 feet are especially prone to bit-flip errors as they are no longer protected by 6 to 8 miles of Earth's atmosphere. At this height, protons emitted from the sun collide in the upper atmosphere with atoms and molecules — mostly oxygen and nitrogen — releasing a cascade of lighter particles, including high-energy **neutrons**. Those electrically-neutral neutrons can penetrate through an aircraft's structure *and* through the metal casings of aircraft electronics, flying through the cloud of electrons that surround each atom's nucleus. If a neutron then crosses the lattice of silicon atoms in a CPU or memory device, a silicon atom can be displaced, creating electron–hole pairs in the gate insulation layer — possibly changing the state of a transistor switch or causing permanent damage to the device.



A high-energy proton hits the nucleus of a ^{16}O atom, releasing a neutron, two protons, and an alpha particle.



A high-energy particle strikes an MOS transistor. Energy is transferred to a silicon atom and electron-hole pairs are generated in the gate region and in the substrate.

Aviation electronics are designed to survive this type of bit-flip event by incorporating:

1. error-correction-code memory (ECC memory) that can detect and correct single bit errors,
2. redundant systems — where three or more separate computers carry out the same calculation and their results are compared,
3. software that should then filter out impossibly large deviations.

More flying bits

On October 30, 2025 an eerie echo of the Australian Qantas incident was experienced in **North America**. JetBlue Airlines' flight 1230 took off from Cancún, Mexico for its destination of Newark, NJ. One hour into the flight, the Airbus A320-200, call sign N605JB, was on autopilot at 35,000 feet when it experienced a sudden, unexpected drop in altitude of 100 feet in 7 seconds. The pilot radioed that at least three people had been injured and made an emergency landing at Tampa International Airport, Florida, where fifteen passengers were hospitalized for further care. (Another report by Chris Baraniuk for the BBC describes the episode: https://www.bbc.com/future/article/20251201-how-

JetBlue Airbus A320-232 call sign N605JB. [Credit Tomas Del Coro, cc-by-sa-2.0]

cosmic-rays-grounded-thousands-of-aircraft.)

The Airbus A320 family, introduced in 1988, was the first airliner with digital fly-by-wire flight control. Instead of mechanical or hydraulic links from the cockpit to moving parts on the wings and tail, commands from the pilot are interpreted by a computer system that sends *electrical* signals to operate actuators at each control surface. The computer system also maintains level flight while on autopilot and prevents the aircraft from being flown beyond safe operating limits.

Airbus analysis

Airbus investigated the cause of the October 30 incident and on November 28, 2025 issued a Press Release stating:

"Analysis of a recent event involving an A320 Family aircraft has revealed that intense solar radiation may corrupt data critical to the functioning of flight controls. Airbus has consequently identified a significant number of A320 Family aircraft currently in service which may be impacted."

Airbus issued an "Alert Operators Transmission" requiring immediate action which stated…

"An Airbus A320 aircraft recently experienced an uncommanded and limited pitch down event. The autopilot remained engaged throughout the event, with a brief and limited loss of altitude, and the rest of the flight was uneventful."

The Airbus alert described a vulnerability in the "ELAC B hardware fitted with software L104 in case of exposure to solar flares". The ELAC (Elevator and Aileron Computer) of the A320 is the unit that interprets pilot commands and controls the aircraft's pitch and roll by adjusting actuators on wings and tail. Airbus stated that the previous version of ELAC B software was *not* affected and ELAC B L104 software should be reverted to version L103+. Older ELAC B units that could not have the software modification would have to be replaced. The Airbus alert was reinforced by an Emergency Airworthiness Directive issued by the European Aviation Safety Agency (EASA) on November 28, backed up by the FAA.

Thales ELAC (Elevator and Aileron Computer)

Airlines worked over the Thanksgiving Day weekend to change the software in their affected ELACs. As a result, Airbus was able to report on December 1 that the vast majority of 6000 aircraft impacted by the Alert Operators Transmission had received the necessary modifications and less than 100 aircraft still had to be returned to service.

Underlying cause?

One question still remained. In their press release Airbus had pointed the finger at "**intense solar radiation**" as the cause of the A320 problem. In contradiction, "Space Weather Woman" Dr. Tamitha Skov, WX6SWW pointed out on November 29 on Twitter/X:

Dr. Tamitha Skov, WX6SWW. See: https://www.spaceweatherwoman.com/

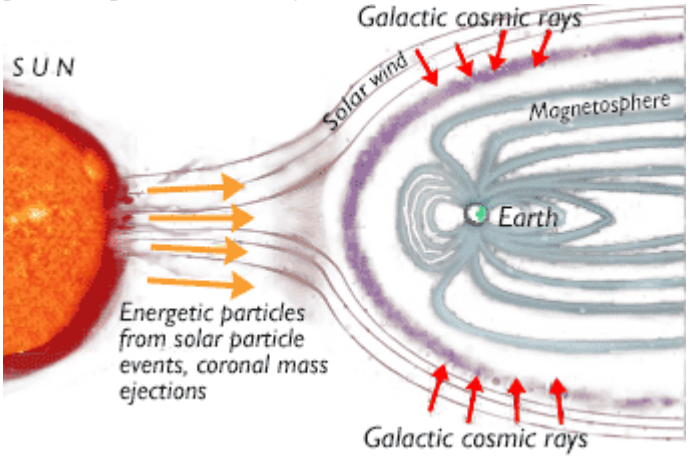
"The problem is the incident they cite as the reason for the required fix, namely the Jet Blue altitude drop on October 30. On that day, space weather was completely quiet. No solar storms, no radiation storms, and no radio blackouts from solar flares either. Was it just a chance GCR* secondary or a delayed response to an earlier event effect in the avionics?" [*GCR = galactic cosmic ray –*Ed.*]

Additional space weather experts including Professors Clive Dyer and Keith Ryden from the University of Surrey came to a similar conclusion.

Outside influences

Even if October 30, 2025 was a quiet day for solar activity, with *no* solar flares recorded, high energy particles can still arrive at Earth from *outside* the solar system and *outside* our own galaxy — the Milky Way. These **galactic cosmic rays**, consisting mostly of protons and alpha particles traveling near the speed of light, probably originate from distant supernovas and black holes.

Primary galactic cosmic ray particles can interact with atoms and molecules of Earth's upper atmosphere, just like cosmic rays from the sun. This results in secondary cosmic rays that include neutrons and muons. The flow of cosmic rays arriving at the upper atmosphere depends on strength of the solar wind, Earth's



Two sources of energetic particles are (a) solar particle events from solar flares and ejections of matter and (b) charged particles from supernova explosions and other events extremely far from the solar system. [After NASA]

magnetic field and energy of the cosmic rays.

Although October 30, 2025 was a quiet space weather day, Professors Dyer and Ryden stated that *after* the JetBlue incident…

"There was a big radiation increase two weeks later, on 11th November 2025, when a 'space weather' event known as a ground level enhancement (GLE) took place — the largest for 20 years. Our model indicates that radiation levels reached almost ten times normal for a short period at cruising altitudes, and measurements using rapid reaction balloons launched by the UK Met Office during the event are being studied — we certainly saw substantial increases in some regions."

Raising awareness

Whatever the source of the Airbus bit flip, it *did* alert the aircraft manufacturer to a vulnerability in its fly-by-wire system that could cause an uncommanded elevator movement. This prompted rolling back to an earlier version of the ELAC software, increasing the refresh rate so a corrupted parameter would not affect the flight controls.

It would appear that the aviation industry has become complacent about bit flips, especially after a long period of quiet solar conditions. The need to ground 6000 aircraft should have acted as a powerful wake-up call.

Heights and depths

Cosmic-ray-induced bit flips are not confined to aircraft flying at 30,000 to 40,000 feet.

Down at sea level, we are normally protected from the full impact of galactic cosmic rays and solar wind by the magnetic fields that surround the Earth and by the Earth's atmosphere. At ground level, the neutron flux is around 300 times lower than at the flight levels of commercial airliners.

But cosmic ray incidents still occur at ground level. For example, cosmic ray particles can affect the CMOS sensor in a smartphone camera and this is being used in citizen-science experiments. (See: https://credo.science/ and https://en.wikipedia.org/wiki/Cosmic-Ray_Extremely_Distributed_Observatory).

Because cosmic rays *are* present at ground level, safety-critical electronic equipment should already be hardened and tested against bit flips. Examples include medical electronics, power grid systems and financial systems where data corruption could cost millions. The same solutions employed in aerospace should all help — including error correcting memory, cross-checking by three or more computers and range checks in software for impossible conditions. Real-time space weather monitoring should also be encouraged.

- NM9J

WECA Extra Class

WECA will conduct a free Amateur Extra License Class that will run for ten weeks starting on Tuesday, January 6th, 2026 and on subsequent Tuesday nights from 7:00 - 9:15 p.m. in-person at the Westchester Fire Training Center, 4 Dana Road in Valhalla, NY 10595 and via Zoom. VE Test Sessions are available in the local area and at the Fire Training Center ($15 testing fee).

Join this free, interactive course taught by a team of knowledgeable Amateur Radio Operators from WECA. Instructors will be Amateur Extras or others who have special knowledge of specific subject areas. The class will review the Test Pool questions and answers and provide explanations of the accompanying concepts. There are >700 questions in the pool: 50 test questions; 37 correct (74%) to pass. All are welcome to attend who wish to gain additional knowledge of amateur radio subjects even if you do not expect to take the test or do not hold an amateur license.

All WECA classes are recorded and posted to: https://www.weca.app for review and self-study.

Texts

1. **ARRL Extra Class License Manual** 13th Edition with link to Practice Exam Software, https://home.arrl.org/action/Store/Product-Details/productId/2016746457
2. **ARRL Extra Q&A 6th Edition**, https://home.arrl.org/action/Store/Product-Details/productId/2016747300

— or from Gene K2KJI at KJI Electronics, Cedar Grove, NJ on 973-571-1930, or from Amazon — be very sure to order the correct editions.

Please purchase the license manual and begin reading as soon as possible. The Q&A has answers and brief explanations for all the Pool questions — a worthwhile investment.

Conduct of Training

Subjects include: FCC regulations, operating procedures and practices, radio propagation, electrical principles, practical circuit components and design, modulation, emissions, antenna design, transmission lines and safety.

If you have an area of strong interest and expertise that you can share with the group, please inform W2UL so you can be involved in the class.

If you would like to upgrade to Amateur Extra, please contact Larrie Sutliff, W2UL by email at: education'at'weca.org so Larry can register you and provide additional information.

Peekskill / Cortlandt Amateur Radio Association

Mail: PCARA, PO Box 146, Crompond, NY 10517
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YouTube Channel: https://www.youtube.com/@peekskillcortlandtamateurr7670

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

PCARA Information

PCARA is a **Non-Profit Community Service Organization**. PCARA meetings take place every month (apart from July/August break). See http://www.pcara.org for current details.

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 4 2026: PCARA January Meeting followed by Bring & Buy Auction, 3:00 p.m., Cortlandt Town Center CUE Room, 3131 East Main St. (See map, page 2.)
Sat Jan 17: PCARA Breakfast, 9:00 a.m., Uncle Giuseppe's, 380 Downing Dr, Yorktown Heights, NY.
Sat Jan 17: PCARA V.E. Test Session, 11:30 a.m., location to be announced – check web site and Google Groups. See below.

Hamfests

Check with organizers before leaving.
Sat Jan 10: Ham Radio University & Long Island Section Convention, LIU/Post, 720 Northern Boulevard, Brookville, NY. 9:00 a.m.. See: https://hamradiouniversity.org

VE Test Sessions

Check with the contact before leaving.
Jan 8 2026: WECA, Westch Cnty Fire Trg Center, 4 Dana Rd Valhalla NY. 7:00 p.m. Contact VE, rcasino48'at'gmail.com.
Jan 16: Orange County ARC, Munger Cottage, 40 Munger Dr., Cornwall NY. 6:00 p.m. Contact VE: joed99'at'verizon.net.
Jan 17: PCARA, 11:30 a.m., location to be announced. Must contact VE Lou KD2ITZ, radiocassetta'at'gmail.com.

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