



# PCARA Update



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## Vital signs

Attendees of the September PCARA Membership Meeting had an air of renewed vitality from the Summer Break, with 14 in attendance — three being brand new members! This increased membership is the direct result of PCARA VE Test Sessions which just celebrated their one year anniversary, under the stewardship of Mike W2IG. Thanks Mike!

During the meeting we learned that Bob N2CBH was working on a replacement for the 448.725 MHz machine that should be ready soon. In addition to being a very significant improvement it would also permit the use of DMR should it be desired by the membership. To be continued...

On Saturday September 21, 2019 at 9:00 a.m. we had another of our famous PCARA Breakfasts at Turco's in Yorktown Heights, NY. There were 15 folks in attendance and as usual, there were multiple conversations on numerous topics related to our amazing hobby. The breakfast wound down just in time for the PCARA VE Test Session at 11:00 a.m. at the John C. Hart Memorial Library in Shrub Oak, NY. We had 2 candidates in attendance who both received CSCEs for Technician Licenses. One candidate joined PCARA on the spot. Congratulations and Welcome!

In October we have a few things going on, so make sure to mark your calendars. Here we go.

We start with the October **PCARA Breakfast** on Saturday October 19, 2019 Turco's in Yorktown Heights, NY at 9:00 a.m. Later that morning at 10:00 a.m., PCARA will begin participating in the **NY QSO Party** from the home QTH of Joe WA2MCR. The contest runs until 10:00 p.m. As in years past, PCARA has sponsored plaques for the categories of *NY Multi One Low Power* and *Non-NY SSB Low*. Please consider coming out to operate and earn PCARA some points! (N.B. Joe's XYL makes a killer coffee cake).

On Sunday October 20, 2019 PCARA along with our friends at WECA will be providing communications support for the **39<sup>th</sup> Annual Harry Chapin Memorial Run Against Hunger** at Croton-Harmon High School in Croton-on-Hudson, NY. The timing for the race events has changed a bit this year. Details can be found at: <http://www.runagainsthunger.com/>. We need volunteers to cover stations along the routes. The first event begins at

8:30 a.m. so members should arrive early to ensure getting in position well before the start of activities. If you are interested in helping out please email us at: mail 'at' pcara.org . Thanks.

Our next regularly scheduled Membership Meeting is on Sunday October 6, 2019 at 3:00 p.m., at New York – Presbyterian / Hudson Valley Hospital in Cortlandt Manor, NY. I look forward to seeing each of you there.

- 73 de Greg, KB2CQE



Happy hunters at the end of PCARA's Fall Foxhunt. For full report, see page 6.

## Contents

Vital signs - KB2CQE	1
Adventures in DXing - N2KZ	2
Fall Foxhunt 2019 - NM9J	6
Foxhunt University #3	7
PCARA Board	7
Run against Hunger 2019	8
New York QSO Party 2019	9
Cold cathode blues - NM9J	10
V.E. Test Session Sept 21	13

## Net night

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

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

# Adventures in DXing

- N2KZ

## Of rocks and radio

Imagine a world where there is no FM radio. You scan your car radio and it never stops. Switching to AM does not bring results either. Just two AM stations come in with heavy static and noise. Does a place like this actually exist in America? Welcome to **Yosemite National Park** in California.

How resolute is Yosemite? The website for the park offers a clue: "Please note that *GPS units do not always provide accurate directions* to or within Yosemite. Yosemite covers 1,200 square miles and does not have a single address. We do not recommend using GPS units for directions in and around Yosemite." There is a reason for all of this. Let me explain.

My family and I traveled for over five hours from Los Angeles along the I-5 to reach the park. It is quite a drive. In L.A. speak: You take the 405 over the Topanga hills into 'The Valley' passing Sherman Oaks, Van Nuys, Northridge and then **San Fernando**. You find your way to another valley where you'll find **Santa Clarita**.

Bear left onto the 5 and soon you will find yourself in the **San Joaquin Valley**. Passing the city of **Grapevine** should give you a clue. This vast area is one of the most fertile and productive farmlands in the world. Many of the fruits and vegetables and nuts you'll see in stores were grown here. Vineyards offer the finest wines to be found. The Valley is also a great source of oil. It is not unusual to see oil pumps at work amongst the planting fields.



Map of Southern California locations mentioned by Karl.

Just north of Grapevine, you bear right onto the 99 that leads to Bakersfield and Fresno. One omnipresent landmark is the enormous processing plant for Halos mandarin oranges. The entire Valley reminds me of the planting fields in central Michigan. You can see for 40 miles in every direction and nearly nothing blocks the sky. It's a truly remarkable place to see and experience.

The ride to Yosemite just goes on and on! As you leave Bakersfield you'll pass the town of **Delano**. This really rang a bell for me. Being a devout shortwave listener, I knew Delano as being one of the grand transmitting sites of the iconic Voice of America.

When passing Delano, I kept a watchful eye for any sign of the VOA's installation and towers. We passed within a couple of miles of their antenna farm on Melcher Road. A series of four towers with high hats accompanied by a similar group of three towers in parallel were outstanding to all that passed. Many other towers and a few satellite dishes still remain. I felt like I was seeing a national monument for the first time!



Voice of America shortwave towers visible at Delano, CA.

Remarkably, the Delano towers are still there. The antenna farm at the Voice of America's signature broadcast facility near Greenville, North Carolina was demolished back in 2016. See: <https://youtu.be/Zcsbny8PFZw> for a remarkable video of their demise.

I was amazed how dominant the Delano towers appeared along the highway. Even when moving at 70 mph the towers could be seen for quite a long time. I clearly remember the signature sound of their powerful broadcasts: "This is the Voice of America broadcasting from Delano, California!" The sounds of their introductory theme 'Yankee Doodle' filled the ether back in the day.

Our trip would not be complete without a stop at one of California's culinary landmarks: **In-N-Out Burger**. This is a fast food joint right out of the old TV series 'Happy Days.' Greasy and sloppy burgers, thin French



fries, onion rings, milkshakes and everything else you might expect. The classic white tile with red highlights motif added to the atmosphere. You could hardly tour California without it.

### Onward and upward

Continuing on our journey, as you leave Fresno you leave the highway and continue to proceed north on Route 41. The San Joaquin Valley fades behind you as you slowly start climbing in altitude on the way to Yosemite National Park. Lots of souvenir stores and mentions of 'Yosemite' and 'bears'(!) verify that you are definitely going in the right direction.



Road construction delay on the way to Yosemite. [All pics - N2KZ]

*ful*. This must be the 'purple mountain majesty above the fruited plain' they were talking about! The road begins to narrow as you make your way up to the little town of **Wawona**. You are now officially within the park, but there is still quite a way to go before you sleep.

### Hard rock

Our final destination was the **Yosemite Valley** nested among the legendary glacial rock formations of Half Dome, El Capitan and Glacier Point. Although you will pass through several tunnels before you reach the valley, the last tunnel is the most memorable. It opens to a rest stop known as Tunnel View... and what a view it is! Seeing these places for the first time makes momentous memories.

Behold the amazing view now before you! The Dawn Wall of El Capitan is considered one of the all time great challenges of rock climbing. For a real taste of what it is like, watch the award-winning film 'The Dawn Wall' currently available on Netflix, on-line and on DVD. Only the finest rock climbers in the world take this challenge. View the wall in person and you will

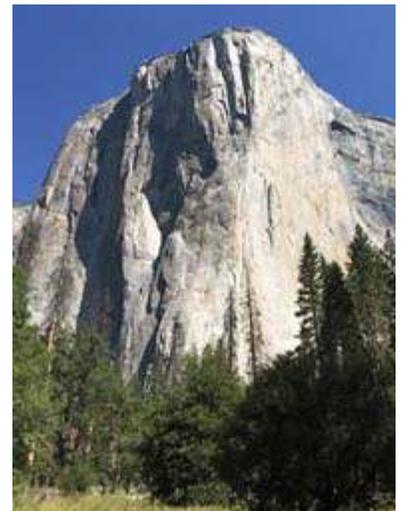


This photo from Inspiration Point, near Tunnel View, takes in El Capitan (7569 ft) on the left with Half Dome (8836 ft) in the center distance.

immediately understand why.

There is a long portion of road that follows the base of El Capitan where cars constantly pull off by a vast meadow.

With a good set of binoculars or a telescope, you carefully look up the vertical rock. You will gasp when you first see the climbers on their way up. More exciting still is viewing them by night. You can see their flickering flashlights as they sit in hanging tents resting for another day of climbing higher and higher. A full climb to the top can take a week or more! Why



El Capitan pictured from the roadside stop.

do they do this? You can only wonder and gasp in awe.



El Capitan at night with climbers' flickering flashlights.

By the time we drove to the end of the valley road, it was almost dark. We had reached our destination: The Ahwahnee Hotel deep within Yosemite's famous valley. This is quite a location unlike most everywhere you have ever been. It is literally surrounded in every direction by over 3000 feet of glacial rock. The overlook from Glacier Point gives you a full perspective of the towering rock formations surrounding the valley. You can peer downward to see the Ahwahnee Hotel's grounds, feeling like a high flying bird!



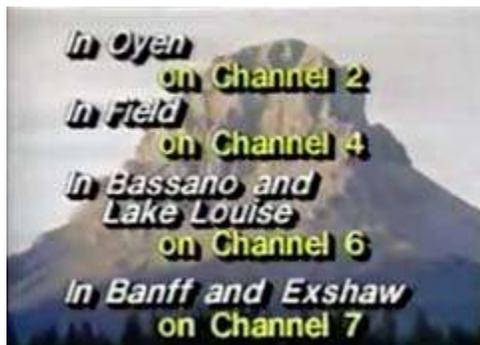
*Breakfast coffee — and view of the surrounding mountains — from Ahwahnee Hotel.*

To anyone who enjoys radio, one thing is obvious immediately. No FM signals penetrate this mountain locked space. You may hear a whisper or two if you find just the right spot but scan with a car radio and the dial will just go around and around forever. With such an isolated space, I could only wonder if FM meteor scatter penetrates into this natural crack in the earth.

### Canadian rock

The only location I can ever remember like this is Lake Louise, Alberta aloft in Banff National Park of Canada. Lake Louise is deep into the forest adjacent to a legendary ski resort and completely removed from all civilization as we know it. It is one of the most stunning places you could ever visit. It could be, indeed, heaven on Earth.

When I visited around the year 1990 on a skiing trip, the only listenable radio station was at 87.75 MHz. It was not a proper radio station at all! It was the analog TV audio carrier of a TV Channel 6 translator of CFCN Television in Calgary. I remember sitting in a loft in a cabin



*CFCN sign-on slide.*

with this one solitary signal to listen to. Don't sign off!

Lake Louise was so remarkable for meteor scatter. Tune to any empty FM frequency and be patient. You

would always hear fleeting bursts of program audio from places far, far away. Where they all came from I will never know. Still, it was a fascinating experience.

### Window rock

Back to Yosemite... The Ahwahnee Hotel is a stately historic hotel with an old school structure. Plaster and lath walls and lots of digital TV sets, light dimmers, LED light bulbs, old elevators and everything else made over-the-air listening relatively impossible, even on high floors. I did spend one night in one of their cabins out in the woods far from the main hotel.

The cabin visit was entirely different in radio reception. At night, the AM dial was filled with stations from San Francisco, Los Angeles, Las Vegas and beyond. Most memorable was a middle of the night reception of clear channel KTNN 660 from Window Rock, Arizona with their Navajo and country music format. Full details and live streaming can be found at <http://www.ktnnonline.com/>. Often seen



*Steller's "Blue Jay" has a dark head and blue body.*

in the surrounds of the hotel were coyote, deer, Steller's blue jays and aggressive and bold squirrels begging for handouts. Of course, the most talked about creature was great big bear! They wandered about looking for trash and other tasty morsels along with their native berries and fish. Signs were everywhere warning not to leave out food. Specially designed garbage containers were placed all around the park to discourage bear foraging. Most bear congregated at night near the open campgrounds where mobile camping trailers and tents made delicious targets for these big furry guys.

### Dark rock

During our last night at Yosemite we ventured to the top of Glacier Point for an evening stargazer presentation. Radio reception from the top of this precipice brought me back to the civilized world. Stations from nearby Merced were obvious on both AM and FM. The local NOAA weather radio station KAD94 at 162.450 MHz with 80 watts could be heard nicely.



The stargazing was indeed eye opening. Along with everything else, Yosemite is renowned for being a dark sky site. The peak of Glacier Point enjoys at least 85% complete darkness. As the beautiful sunset disappeared into the horizon, the sky opened up into a view that resembled what you might expect in deep space.



'Welcome to Glacier Point' sign states that people have been visiting for generations.

I also noticed a distinct flight path from east to west of transcontinental aircraft spaced about two minutes apart. There was so much to see. Look! There's the Big Dipper! There's Cassiopeia! There's Scorpius! The Milky Way was stunning and distinct in a manner rarely seen near civilization. Observing stars at Glacier Point could entertain you magically for many, many nights. Keep looking up and you'll still discover more.

Probably the best lesson taught during our presentation was the importance of dark skies and the impetus to reduce light pollution. Viewing the stars is especially important for the passage of migratory birds and animals. Human-created light sources disturb the natural rhythms and behaviors of nature. Looking at the big picture, we need to minimize our heavy-handed influence over the natural processes on our planet. For great insight to this cause, please take a look at the website of The International Dark Sky Association: <https://www.darksky.org/> . It will open your eyes!

### Reaching round rocks

One kind of RF does get around Yosemite National Park: Amateur Radio and the **Family Radio Service**. You'll hear some FRS chatting going on especially on FRS channel one: 462.5625 MHz. Visitors use it for keeping in touch when roaming around the park or especially when hiking. It's a great way to stay together while the stronger and fitter folks want to climb ahead.

The world of amateur radio (the hand-held variety) is centered on *the* repeater. It is based on top of Turtleback Dome on the far side of the tunnel attached to Tunnel View as you enter the Yosemite Valley along Wawona Road. This is very close to a hike we made to a nearby peak called Inspiration Point. At about 5300 feet above ground, the Turtleback repeater is heard all around the park! Look for it at 147.000 MHz

with a plus 600 KHz offset and a 100 Hz PL. The Turtleback machine is owned and operated by the Turlock Amateur Radio Club (TARC) with the call sign W6BXN. With a series of remote receivers and multiple sites, there is no telling where you might be heard when you jump on the system. Read all about their massive repeater system at: <http://w6bxn.org/repeaters/> .

I never figured out who exactly owns the remote receiver site that is atop the Ahwahnee Hotel. There is a 10 element Yagi that appears to be in the 70 cm frequency range along with an omni-directional vertical.



Remote receive site at Ahwahnee Hotel.

You won't often see Yagi antennas pointed up in the air around here, but if your main repeater site is 5300 feet up it may be quite necessary!

We began our trip back to Los Angeles with a visit to Glacier Point in the daytime to say our final goodbyes to El Capitan and Half Dome. What a magnificent view from this site day and night. Every sunset is memorable and the stars at night are unlike anything you have ever seen.



View from Glacier Point. Half Dome is formation on right.

Without question, Yosemite National Park is just as amazing as everyone says it is... and maybe even a little bit more. We only had a brief first taste of the park during our four-day stay. Great memories are made here and your adventures are only limited by your imagination. There is so much to explore and so many places to visit and climb. It belongs on everyone's bucket list for the future. You never know... you may even see a bear!

Until next month, *happy trails!*  
73 de N2KZ 'The Old Goat.'



# Fall Foxhunt 2019

PCARA's Fall Foxhunt took place on Saturday September 28. The weather was perfect — dry and sunny, with a temperature around 80°F. Hunters assembled at the Beach Shopping Center from 2:30 p.m. Six radio amateurs were there — Stan WA2NRV, Karl, N2KZ, Masa JR1AQN, Bruce KC2WGX, Bob N2DVQ and NM9J. David KD2EVI came by to offer support at the starting line, but was unable to join the hunt.

With the aim of passing on expertise, the six hunters divided into three teams — N2KZ plus WA2NRV; N2DVQ plus KC2WGX and NM9J with JR1AQN. At 3:00 p.m. our radio fox Mike N2EAB appeared on the simplex frequency 146.565 MHz and gave his first transmission lasting 5 minutes. Antennas swung around in search of the strongest signal — strength was good and the direction seemed to be north of east for one team and south of east for the other two teams.



*Starting out from the Beach, L to R: Karl N2KZ, Bruce KC2WGX, Stan WA2NRV, Bob N2DVQ and Masa JR1AQN.*

At the end of the first transmission all three vehicles left the Beach Shopping Center and set off eastward along Route 6. Karl N2KZ and Stan WA2NRV were using a 4-element Arrow beam and had observed a first bearing of northeast from the Beach. They continued to Mavis Tire and took another bearing on the next transmission which was still northeast. This led them to investigate Westbrook Drive and surrounding streets, returning to the Kohl's parking lot. They came back along Route 6 to Millington Avenue but found the signal dropped at Locust Avenue. The strongest signal subsequently received was at the Home Depot Parking Lot.

Your editor, accompanied by Masa JR1AQN, had noted a different first direction, south of east from the Beach Parking Lot, on a line that went through Walter Panas High School. Acting on a hunch, we headed east on Rt 6 then on Rt 202, skipping past the second transmission at 3:10 p.m. so we would arrive at the High

School in time for the 3:20 p.m. message. There we ran into N2DVQ and KC2WGX — see below. From the High School the next transmission was strong with a reverse bearing of northwest, suggesting we had overshot. Further stops took place near Croton Avenue, on Locust Avenue, with bearings converging on the area between Rt 202 and the Bear Mountain Parkway. We heard the fox say he was “not in a hole” and was at a height of 460 feet. There was much mention of “Lafayette Radio Electronics” and EEB — could Mike be near Lafayette Avenue again? Despite investigating streets and parking lots along Route 202, with strong signals needing 30-40dB of attenuation, there was no sign of a Toddville fox.

Bob N2DVQ was using his synthesized foxhunt receiver again. Teamed with Bruce KC2WGX, their first bearing was south of east, so they headed over to Walter Panas High School — where they ran into NM9J and JR1AQN. Bob said that his first bearing had also led straight to the High School. The next bearing pointed northwest so they headed back to Bear Mountain Parkway. Going via Parkway Drive, Bob took readings from higher ground on the south side of Route 6 and decided that the fox had to be in either the Burger King or the King Buffet parking lots on the other side of the state route. They discovered Mike N2EAB in the upper parking lot behind King Buffet and “The Back Nine Indoor Golf”.

The Fox location where Mike N2EAB was hiding is reached by leaving Route 6 at the intersection with Jacobs Hill Road. Mike had chosen the upper parking lot because it is in a vehicle-accessible place, not far from the starting point, and close by a hillside that rapidly climbs to 600 ft at the summit of Jacobs Hill. Mike was feeding 1 watt RF output into a horizontal dipole facing southeast and partially shielded from the Beach Shopping Center. As a result there were strong reflections from nearby hills — confusing some of the hunters, who were already beset by heavy traffic.



*Fox vehicle was equipped with a low, horizontal dipole on a pole supported through the passenger window. [N2EAB pic.]*



Map shows starting point at the Beach Shopping Center and location of the fox behind 'King Buffet' restaurant.

While Mike was glad that he had been found on this, his third time in a row playing the fox, he had an unpleasant experience after the hunt ended at 4:30 p.m. His vehicle refused to start and needed a battery boost from NM9J/M to start the engine.

As the event closed, Mike guided hunters to the "202 Diner" for refreshments. Karl N2KZ, Masa JR1AQN, Bruce KC2WGX and NM9J sat down with Mike, sharing their experiences over a pleasant meal.



Fox and hunters outside the 202 Diner. L to R: Karl N2KZ, Mike N2EAB, Masa JR1AQN and Bruce KC2WGX.

No other team found the fox and since winning hunter Bob N2DVQ was unable to join us at the Diner, he will receive his certificate later. Bob is also invited to take over the role of fox at PCARA's next event, likely to be on CQ Magazine's WW Foxhunting Weekend in May 2020. - NM9J

## Foxhunt University #3

Readers may recall that on September 16, 2017 Karl, N2KZ conducted his first "Foxhunt University" for PCARA members and friends in the grounds of Walter Panas High School, Cortlandt Manor. Those attending were asked to bring along their own foxhunting equipment for a comparison of antennas and radios. Karl gave a practical presentation on foxhunting techniques which was followed by a short practical session where participants were asked to find a live 'fox' in the school grounds. (See PCARA Update, October 2017.)



PCARA members compare their direction-finding equipment at the first Foxhunt University conducted by Karl N2KZ at Walter Panas High School.

Karl was subsequently invited to give an encore presentation of the Foxhunt University at Candlewood ARA's October 2017 meeting.

Karl will be conducting his **third** presentation of the Foxhunt University for the benefit of members of the **QSY Society** on Tuesday October 1, 2019. Here is part of the announcement from Shirley, N2SKP describing the program for the meeting, starting at 7:00 p.m. on Tuesday October 1 at the East Fishkill Community Library.

"FOX HUNT UNIVERSITY produced and presented by one wild and crazy guy — Karl Zuk N2KZ. It is a one hour presentation including a mini in-house fox hunt done with very, very sneaky tactics. Filled with all sorts of tips and strategies, it will bring a smile to your face.

"Bring your antennas, attenuators, HTs or other radios, cables, etc. to the meeting!

"FOX HUNT UNIVERSITY PARTICIPANTS NEED TO BRING A RADIO and hopefully their receiving gear.

If you have not visited the QSY Society before, meetings take place in the 'Alley Room' of East Fishkill Community Library, located at 348 Route 376, Hopewell Junction, 1½ miles north of Route 52.

QSY Society's first annual Foxhunt is scheduled to take place on Saturday November 16, beginning 10:00 a.m. at the Poughkeepsie Galleria Mall (as staging area).

## PCARA Board

President:

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

Vice President/Treasurer:

Joe Calabrese, WA2MCR; wa2mcr 'at' arrl.net

Secretary:

Lou Cassetta, KD2ITZ, radiocassetta 'at' gmail.com

Directors:

Bob Tarsio, N2CBH

Mike Dvorozniak, W2IG

# Run Against Hunger 2019

## Sixth year running

Following combined efforts over the past five years, PCARA and WECA have once again been invited to provide communication support for the Harry Chapin Memorial Run Against Hunger, which takes place on Sunday October 20<sup>th</sup>, 2019.



The very first Run Against Hunger was organized in Croton-on-Hudson to honor singer-songwriter Harry Chapin who died in a Long Island auto-accident in 1981. This year will be the 39<sup>th</sup> occasion that the event has been commemorated.

## Sunday schedule shifted

Timing of race events has once again been modified compared with last year. This is to allow sufficient time to place timing mats at the start line between races. Start of the 5K Race/Walk has been shifted forward by 30 minutes to **8:30 a.m.** This is followed by the 10K Race which begins at **10:00 a.m.**, the same as in 2018. The final event is the 1 mile Fun Run which now begins at **11:45 a.m.** instead of 11:30 a.m. With the exception of the 'Fun Run', start and finish lines are all close to Croton-Harmon High School.

## 5K Race & Walk, 8:30 a.m. – 9:30 a.m.

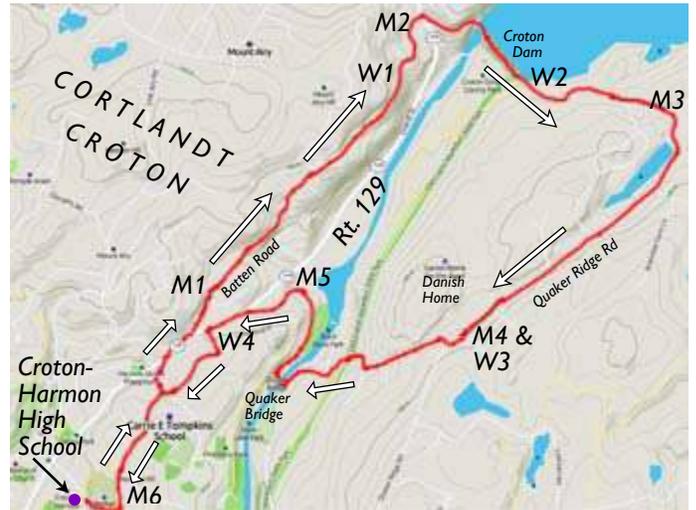
The 5K Run/Walk begins near the High School and continues along Old Post Road South, down Truesdale Drive, east on Cedar Lane, then north up Nordica Drive and Truesdale Drive, through Croton Gorge and returning down Cleveland Drive to the High School.

## 10K Race, 10:00 a.m. – 11:30 a.m.

Starting from near Croton-Harmon High School on Old Post Road South, north on Cleveland Drive, left on Gerstein Street and right on Wood Road onto Rt 129.



2018 Fun Run participants curve around Cleveland Drive on their way to CET Elementary School.



Map shows the 10K Run Against Hunger, from Croton Harmon High School to Croton Dam then back to the school. M1-M6 = mile points, W1-W4 = water stops.

Left onto Batten Road, then across the New Croton Dam. Return is along Quaker Ridge Road, crossing the river at Quaker Bridge Road, then Rt.129 to Jacoby Street and returning down Cleveland Avenue to Old Post Road South and the High School.

## One Mile Fun Run, 11:45 a.m. – 12:30 p.m.

The start point of this run/walk is on Cleveland Drive, just south of Veteran's Corners. North on Cleveland Drive to CET (Carrie E Tompkins) Elementary School on Gerstein Street, then back along Cleveland Drive, finishing at the High School.

Full details of the three race routes are available at the Run Against Hunger web site, <http://www.runagainsthunger.com/course/>

## Radio support

A meeting between WECA, PCARA and the Run organizers to discuss their radio communication requirements is scheduled for October 13<sup>th</sup>. Please watch for announcements about possible changes to the routes and stations listed here. Setup at the High School will need to be earlier than last year — so Net Control personnel should arrive around 7:30 a.m. for setup at the usual location on the driveway.

In addition to Net Control and Organizer's Shadow the following stations will be required for each race.

## 5K Run / Walk, 8:30 a.m.

Station	Location
Stop #1, Start of Croton Gorge Trail	Truedale Drive, Silver Lake parking lot
Stop #2, End of Croton Gorge Trail	Trail end at Cleveland Drive
S3 Intersection	Cleveland Drive and Gerstein Street

## 10K Run Against Hunger, 10:00 a.m.

Station	Location
Net control	Croton-Harmon High School
Shadow	Croton-Harmon High School
Trail car	Following last runner
Water Stop #1	140 Batten Rd
Water Stop #2	East end of Croton Dam
Mile Point 3	Croton Dam Rd & Quaker Ridge Rd
Water Stop #3 / Mile 4	Danish Home
Mile Point 5	Quaker Bridge Rd & Niles Rd
Water Stop #4	Jacoby Street
Mile Point 6	Cleveland Dr & Alexander Lane

## One Mile Fun Run, 11:45 a.m.

Station	Location
Turn-around point	CET Elementary School, Gerstein Street.

### Come to the Run

The organizers have asked for a list of support personnel and positions by October 13<sup>th</sup>. If you would like to volunteer, please inform Greg KB2CQE using: [mail@pcara.org](mailto:mail@pcara.org) or sign up at the Oct 6<sup>th</sup> meeting. There will be more information closer to the event.

### Get ready to run

If you have been assigned a position on the course, please drive straight to that location *before* the event begins. Croton-on-Hudson Police Department will close streets ahead of each race, making it difficult to drive around the course immediately before the event.

If you do not have an assigned position be aware that parking at Croton-Harmon High School is limited, and soon fills up. It may be better to check with Net Control via radio to find your location.

For maximum flexibility bring along a mobile radio with external antenna — if you have one — as well as your handi-talkie plus spare batteries. Program your radio(s) in advance with these likely frequencies: (a) WECA repeater 147.060 MHz +0.600 MHz, PL 114.8 Hz; (b) 146.565 MHz simplex, and (c) PCARA repeater 146.67 MHz -0.600 MHz offset, PL 156.7 Hz. Be prepared to enter additional VHF or UHF frequencies if requested.

Bring suitable clothing and provisions to keep yourself safe and comfortable from roughly 8:30 a.m. to 12:15 p.m. If you will be operating on a street near other vehicles and runners, wear a high visibility vest or jacket.

# New York QSO Party 2019

The New York QSO Party, sponsored by the Rochester DX Association, takes place on the third Saturday in October. For 2019, this date falls on **Saturday October 19<sup>th</sup>**. The contest lasts 12 hours using all modes on HF and VHF/UHF bands.

Last year, PCARA's club entry, organized by Joe, WA2MCR claimed a total of 392 QSOs, for a score of 41,172 points. The actual results published in April 2019 gave W2NYW a total of **370 QSOs** and **36,040** points. This placed us **first** in the "Multi-One Low Mixed" category, earning one of the two plaques which are sponsored by PCARA. "Multi-One Low Mixed" means: multiple operators with only a single transmitted signal, 5 – 100 watts, mixed mode (CW / Phone / Digital).



*L to R: Joe WA2MCR and Greg KB2CQE enjoy themselves during the 2018 New York QSO Party.*

The second award sponsored by PCARA in 2018 was the "Non-New York SSB Low Power" plaque, awarded to Robert, AB1EP of Franklin, ME who made 71 QSOs and 2,130 points. The same two plaques should be sponsored by PCARA for 2019.

If you are interested in operating in the New York QSO Party this year, you can take part from your own station, or contact Joe, WA2MCR for details of the club entry using W2NYW. The contest starts at 10:00 a.m. Eastern (1400 GMT) on Saturday October 19<sup>th</sup> and runs for 12 hours until 10:00 p.m. that same evening. New York stations send signal report plus county, using a three-letter abbreviation for the county name. Westchester County is **WES** and Putnam County is **PUT**. Stations outside New York will send their Signal Report plus State, Province or "DX".

Full contest rules, including the all-important list of three-letter county codes, are available from the New York QSO Party web site at: <http://nyqp.org/wordpress/>

# Cold cathode blues

During a voltage brown-out I noticed that the **neon lamp** in my Tripp-Lite Isobar<sup>®</sup> power strip was barely lighting, but brightened significantly if I pointed a flashlight towards it. Shortly afterward, I switched on my HF transceiver and the **backlight** for the liquid crystal display took a *very* long time to turn on — it felt like several minutes. What was happening?

## Hot and cold

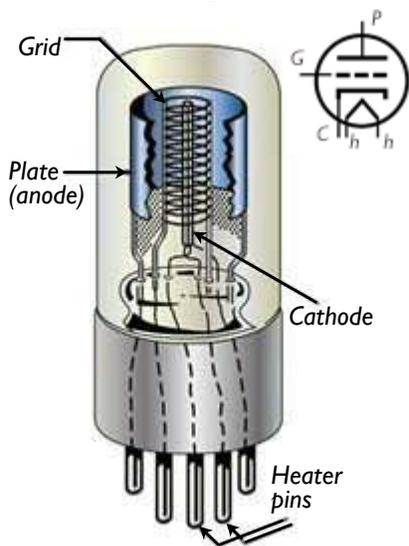
These observations are related to **cold cathode** tubes with no heater. In a conventional vacuum tube, the cathode is heated by a low voltage filament to drive off electrons. In fluorescent tubes for lighting, both electrodes are initially heated to drive off electrons and start the electrical discharge through the low pressure gas that fills the glass tube.

Similar devices exist where the electrode is **not** heated externally. They are known as **cold cathode tubes**. One example is the neon glow lamp. The neon lamp is one of our older electronic devices, still popular for use in illuminated signs and voltage indicators today.

## Neon's warm glow

Neon is a member of the “noble gas” family, previously known as the “inert” or “rare” gases. Neon was discovered in 1898 along with xenon and krypton by British chemists William Ramsay and Morris W. Travers while investigating the residue left behind when liquefied air is evaporated. Ramsay and Travers found that application of high voltage to low pressure neon gas in a discharge tube produces a brilliant red-orange glow.

Morris Travers wrote of this discovery: “The blaze of crimson light from the tube told its own story and was a sight to dwell upon and never forget.” He gave a more detailed description in his book *The Experimental*



A conventional vacuum tube has a cathode (electron source) that is kept hot by a separately-powered heater filament.



Sir William Ramsay (left) and Dr. Morris Travers (r) jointly discovered the noble gas **neon** in 1898.

*Study of Gases*, 1901:

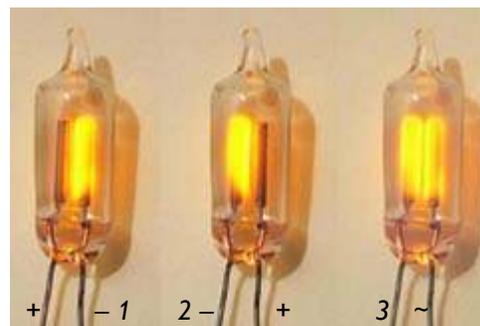
“Neon — The lines in the spectrum of this gas lie for the most part within the red area; these are strong and brilliant, as is also the yellow line D<sub>5</sub> (5852.6\*). There are also strong green lines. The glow in the vacuum-tube is a red-orange, which becomes rosy if much helium is present in the gas...”

[\*M.W. Travers was measuring wavelengths in Ångstrom units (Å),  $1 \times 10^{-10}$  meters. The modern equivalent would be 585.2 nm (nanometers).]

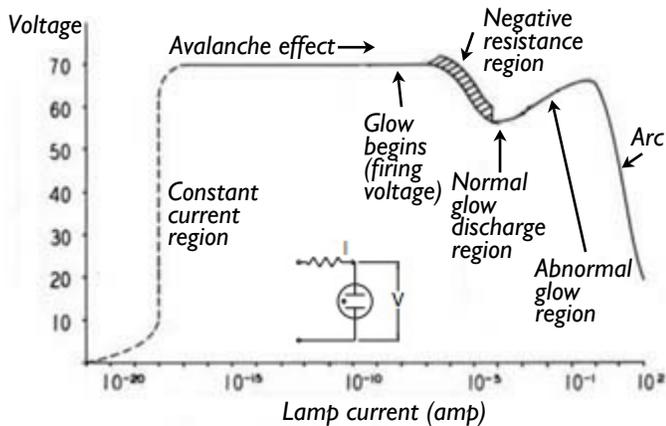
Neon is prepared on an industrial scale by fractional distillation of liquefied air, which contains just 18 parts per million of the gas. Its main use is inside the glass tubing of high-voltage “neon signs”. The familiar orange-red color is produced by almost pure neon gas, while other colors are produced using argon, krypton or xenon, sometimes with a phosphor coating on the inner glass surface. Neon also finds use in low-voltage neon lamps (as in my Isobar power strip), in lightning arresters, and in helium-neon lasers. During the era of tube radios, neon was used in voltage regulator tubes such as the 85A2 and OA2, and in numerical indicators or “Nixie tubes”. I remember using a neon lamp as an **RF field indicator** by placing it close to the PA coil in my first four meter (70 MHz) transmitter — the lamp did not need wires and did not have to touch anything.



Small neon glow lamps are made with two electrodes of copper-clad Dumet alloy (Fe/Ni) passing through a glass envelope. They are used as indicators in electrical equipment because of their low power consumption, long life and ability to operate on AC mains voltage without complex circuitry. Small sized lamps such as the NE-2 have a starting voltage — when the electric discharge begins — around 90 volts DC or 65 volts AC. A maintaining voltage, 10-20 volts lower, is then needed to keep the discharge current in the desired range, usually 200 – 600  $\mu$ A. When an alternating voltage is applied, both electrodes glow evenly as the electrical discharge changes direction, starting and stopping twice each AC cycle.

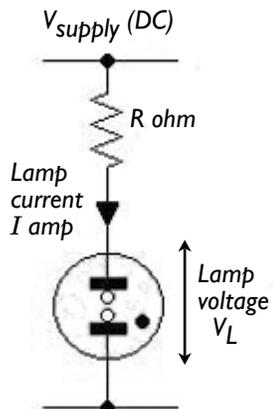


An orange glow surrounds just the **cathode** of an NE-2 neon lamp as negative DC voltages are applied at (1) and (2). Both electrodes glow when an alternating voltage is applied (3).



Characteristic curve of neon lamp shows lamp current as the voltage across tube and ballast is steadily increased. Constant current region is caused by residual ionization of the neon gas by UV/cosmic radiation etc. Avalanche effect occurs when electrons collide with neon atoms, releasing more electrons and causing rapid current increase. Above the firing voltage, this effect becomes self-maintaining, with no further need for an external ionization source. In the “normal glow” region, voltage changes little as current increases. [After General Electric Glow Lamp Manual, 1965]

A high value ‘ballast’ resistor is usually wired in series with the neon lamp to limit the current and prolong device life. (In the case of a neon voltage tester, this resistor also prolongs the life of the person doing the testing!) Typical values are in the range of 100 kΩ – 1 MΩ depending on the available voltage and the lamp characteristics.



Neon lamp series resistor  
 $R = (V_{supply} - V_L) / I$

When a neon lamp has been operating for a long period, the electrode material may “sputter” onto the inner glass surface, blackening the surface and reducing light output. Composition of the gas inside the tube may also change with age, making the lamp harder to start and producing a flickering effect rather than a steady glow. The series resistor sometimes drifts higher in value, with similar results.



Neon bulb blackened by sputtering.

Neon lamps become more difficult to strike in complete darkness — this is known as the “dark effect”, requiring a higher voltage to start the discharge. Striking voltage can be lowered by shining some light onto the tube or by introducing a mild source of radioactivity, usually the radio-isotope krypton-85. (Naturally-

occurring krypton has an atomic mass of 83.8.) The improvement in starting of a neon lamp is brought about as atoms of neon inside the tube are excited by the internal or external source of radiation, making them easier to ionize once a voltage is applied. The half-life of krypton-85 (<sup>85</sup>Kr) is 10.8 years, so neon lamps containing this beta-emitter could have more difficulty starting in the dark after they are a few decades old.

Lamp aging and low light are the explanation for my Isobar’s neon lamp, which was flickering on and off in a dark corner whenever the AC supply voltage dropped below



Tripp Lite Isobar® four-outlet surge protector and EMI filter has its power switch illuminated by a built-in neon lamp.

120V AC. Shining an LED flashlight — which contains plenty of blue/violet radiation — in the general direction of the Isobar would change the neon indicator output from an irregular flickering orange glow to a steady, bright illumination. If you have a neon indicator stuttering away to itself in a dark corner, you can try this experiment out for yourself — you don’t need much additional light for the test.

Neon lamps are considered old technology — high voltage neon tubes for lighting were first patented in 1915 and the neon lamp was patented by General Electric just 100 years ago in 1919. Nowadays light emitting diodes (LEDs) are more efficient, and have much longer lifetimes.

For more information on the gentle glow from neon devices see “Neoscrewdriver”, PCARA Update, October 2012 and the following page by Swiss radio amateur Iacopo HB9DUL: <http://www.giangrandi.ch/electronics/neon/neon.shtml>



Tripp Lite Eco-Surge 7-Outlet Surge Protector has six outlets controlled by individual switches with internal neon lamps.

## Cold-cathode flues

My IC-7410 HF transceiver was slow to light its liquid crystal display after it had been switched off for a long time. This problem was caused by another type of cold cathode tube, the **cold cathode fluorescent lamp or CCFL**. (Not to be confused with the compact fluorescent light bulb or CFL.)



Backlight for this IC-7410 display was slow to light after the radio was switched off for several weeks.

## Fluorescent lamps

Cold cathode fluorescent lamps were widely used as backlights for liquid crystal display panels in computers, monitors, radios and TVs in the days before wide-spectrum white-light LED backlights became available. CCFLs are also used as the source of illumination in photocopiers and scanners.

In a **conventional fluorescent lamp**, the electrode at each end of the glass tube consists of a tungsten filament coated with metal oxides that release thermionic electrons when heated at the start of operation. A moderate voltage pulse then excites the mixture of argon gas and mercury vapor inside the tube, starting an electric discharge. When electrons collide with mercury atoms, they raise one of mercury's outer electrons to a higher energy level. As this electron returns to its normal state, ultra-violet radiation is produced. The UV light is then converted to visible light by a phosphor coating on the inside surface of the glass tube, in a process known as fluorescence.

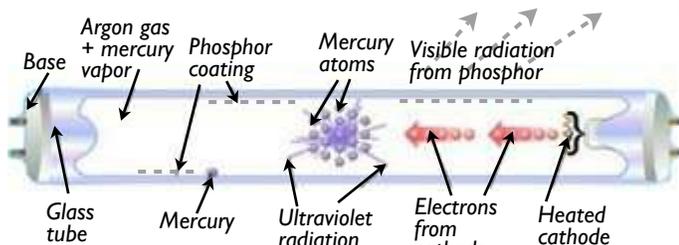


Diagram of a conventional fluorescent lamp, with a heated electrode at each end of the glass tube releasing electrons.

The **cold cathode fluorescent lamp** acts in a similar way to a conventional fluorescent tube, *except that* the electrodes no longer have an externally-powered heater to produce thermionic electrons. Instead, a much higher voltage is applied across the electrodes at switch-on, causing a low current discharge through the neon/argon gas. As the cold electrodes are bombarded with positive ions, they produce more and more electrons. The electrodes warm up, but not to the same

extent as the heated filaments of a conventional fluorescent lamp, reaching only  $\sim 200^{\circ}\text{F}$  rather than  $900^{\circ}\text{F}$ .

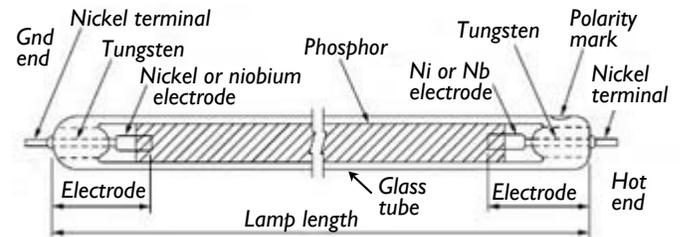
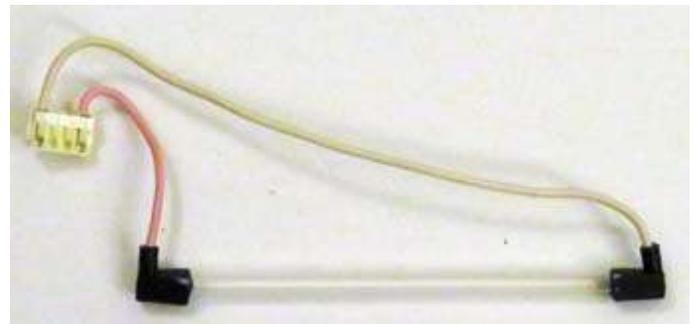


Diagram of a cold cathode fluorescent lamp or CCFL. Note the lack of a heater for the electrodes. [After Sanken.]

My IC-2800 VHF/UHF FM transceiver has a CCFL backlight in its control head — the cathodes might not be heated, but the tube runs quite warm and the panel emits some infra-red radiation in addition to the bright colors of the liquid crystal display.



Cold cathode fluorescent lamp assembly forms part of the backlight for the color display of the Icom IC-2800.

The CCFL is usually supplied as a long, thin glass tube, smaller in diameter (1.8 to 4 mm dia.) than a conventional fluorescent lamp. It can be dimmed down to 5% of full output, can be switched on-and-off more rapidly than a standard fluorescent tube and has a longer lifetime of 20,000 – 40,000 hours. The light output is consistent along the length of the tube — as opposed to LED backlights which tend to have bright areas around the individual diodes. Color accuracy of the CCFL can be excellent when using broad-spectrum phosphors to convert UV to visible light. Typical phosphors used in white-light CCFLs include — *Blue*:

$\text{BaMgAl}_{10}\text{O}_{17}:\text{Eu}$ , *Green*:  $\text{LaPO}_4:\text{Ce,Tb}$  and *Red*:  $\text{Y}_2\text{O}_3:\text{Eu}$ .

One disadvantage of the CCFL is the requirement for a complicated inverter circuit to generate the high starting and running voltages, around 500V – 1000V AC at a frequency of 40-60 kHz.

## Why so slow?

What was the reason for slow-starting of the CCFL that provides the backlight for my Icom IC-7410 HF transceiver? The first clue came from a Field Service Note by Coin Mechanism Inc., of Glendale Heights IL (Their CCFLs are widely used in slot machines):

**“Description:** CCFL lamps may be affected by periods of long term storage and storage at low temperatures. Storage periods in excess of 12 weeks and temperatures below 11 deg C (~52 deg F) can delay the lamp start up cycle...”

**“Causes:** The slow start up of a CCFL lamp that has been stored at low temperatures over a long period is due to a settling of two (2) gases contained within the CCFL glass tube. These gases may separate, solidify or liquefy, and are essentially remixed when the lamps are re-initiated upon a fresh power up.”

Huh? Settling of gases? Sounds fishy to me! The gases present inside a CCFL lamp consist of low-pressure neon and argon along with mercury vapor to produce the ultraviolet radiation when struck by electrons. “Gases may separate, solidify or liquefy” does not sound like a scientifically accurate statement to me.

I found a more satisfactory explanation in a brochure on “Cold Cathode Fluorescent Lamps and CCFL Inverters” from Sanken Electric Co. of Japan.

Sanken Electric Co. explains that a small amount of mercury is placed near the electrodes at both ends of their CCFL lamps during manufacture. When the lamp is first lit, temperature inside the lamp rises, mercury is vaporized and diffuses into the existing gas mixture of neon/argon. When the lamp is extinguished, the evaporated mercury returns to the liquid state and adheres to the inside surface of the lamp, especially at any cooler spots. As a result, mercury near the electrode gradually moves toward the illuminated area, where it can be adsorbed onto the phosphor coating. When this uneven mercury migration occurs, mercury vapor concentration is lower in some areas so that at switch on, only the dim neon-argon discharge is visible. In a few minutes time, as the lamp temperature rises, the mercury vapor level increases, collision of electrons with the mercury atoms produces UV radiation, which is then converted to white light by the phosphor on the inside surface of the glass tube.

The good news is that turning the Icom radio on more frequently has cured the slow-starting backlight —

the display now lights immediately after power-on. If you suffer from similar problems, just turn your equipment on more often. Another approach — if finances permit — might be to splash out on a more modern radio with LED backlighting.



*CCFL backlight for the Icom IC-7410 display now starts more reliably.*

- NM9J

## VE Test Session Sept 21

Celebrating one year of bimonthly V.E. Test sessions, PCARA’s team of Volunteer Examiners gathered at the John C. Hart Library on Saturday September 21. The weather was unusually warm for late September, but once again the Children’s Reading Room was an oasis of cool, calm deliberation.



*John C. Hart Memorial Library in Shrub Oak.*

Two candidates arrived to take part in the V.E. Test Session, and both were successful. Edward is the son of another recent candidate, Nick KD2SKY. Edward was successful in the Technician examination.

Michael was also successful in the Technician exam. Lou KD2ITZ noted that, as a student, he qualifies for a free subscription to PCARA. (Welcome Michael!)

Volunteer examiners on September 22 included PCARA Team Liaison **Mike W2IG**, Stan WA2NRV, Lou KD2ITZ, Larry AC2QH, NM9J and from across the river Joe WB2CC of Orange County ARC. Helpers included Greg KB2CQE.

PCARA’s next V.E. Test Session is scheduled for Saturday November 16, 2019, 11:00 a.m. at the John C. Hart Memorial Library. All candidates are strongly advised to contact w2igg ‘at’ yahoo.com before the event for details of resources and what to bring.

# Peekskill / Cortlandt Amateur Radio Association

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

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

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

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

E-mail: NM9J 'at' arrl.net

*Newsletter contributions are always very welcome!*

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

## PCARA Information

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

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

## PCARA Repeaters

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

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

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

## PCARA Calendar

**Sun Oct 6:** PCARA Meeting, NewYork-Presbyterian / Hudson Valley Hospital, 3:00 p.m.

**Sat Oct 19:** PCARA Breakfast, Turco's, Yorktown Hts. 9:00 a.m.

**Sat Oct 19:** New York QSO Party, 10:00 a.m. - 10:00 p.m. EDT. PCARA entry from Joe, WA2MCR.

**Sun Oct 20:** 39<sup>th</sup> Harry Chapin Memorial Run Against Hunger, 8:30 a.m. - midday, Croton-on-Hudson.

## Hamfests

**Sun Oct 6:** Hall of Science ARC Hamfest, 47-01 111th St., Flushing Meadow, Corona Park, Queens NY. 9:00 a.m.

**Sat Oct 12:** Bergen ARA Fall Hamfest, Westwood Reg. HS, 701 Ridgewood Rd, Township of Washington, NJ. 8:00 a.m.

**Sun Oct 27:** LIMARC Hamfest, Levittown Hall, 201 Levittown Parkway, Hicksville, NY. 9:00 a.m.

## VE Test Sessions

**Oct 10:** WECA, Westchester Co Fire Trg Center, 4 Dana Rd., Valhalla, NY. 7:00 p.m. S. Rothman, (914) 949-1463.

**Oct 12:** Bergen ARA Fall Hamfest, Westwood HS, 8:00 a.m.

**Oct 13:** Yonkers ARC, Yonkers OEM, 789 Saw Mill River Rd, Yonkers NY. 11:30 a.m. Pre-reg. Walter P. Pastor (914) 826-5571.

**Oct 18:** Orange County ARC, Munger Cottage, 183 Main St, Cornwall NY. 6:00 p.m. Contact Joseph J. DeLorenzo (845) 534-3146.

**Oct 21:** Columbia Univ ARC, 531 Studebaker Bldg, 622 W 132nd St, New York. 6:30 pm, Alan Crosswell (212) 854-3754.

**Saturdays:** Westchester Amateur Radio Club, 12 noon. Must call Paul Maytan AC2T (914) 237-5589 for details and appointment.



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