PCARA Update

Volume 3, Issue 8 Peekskill / Cortlandt Amateur Radio Association Inc. August 2002

Indian Point emergency response training — KB2CQE

Westchester County ARES/RACES will be offering a four hour course covering *"RACES Operator's Roles in Radiological Emergency Response"* sometime between now and the early part of September. The training is for registered members of Westchester County ARES/RACES. If you are not currently a member of Westchester ARES/RACES, I would **strongly** recommend you consider joining and attend the course. You can go online to join Westchester County ARES/RACES at http://www.weca.org/ares.html. Fill out the application and you will be added to the list to attend the class. If you have any questions or would like more details please contact Alan Crosswell, N2YGK, at n2ygk@weca.org.

The PCARA sponsored VE session held at Copper Beech Middle School on July 18, 2002 saw our ranks swell by three new Technicians and an upgrade to General. Thanks to Malcolm, NM9J, Joe, KR2V, Armen, N2PLZ, Karl, N2KZ, and Mike, N2HTT for a job well done!

Cash for Cans! If you haven't sent in your membership renewal yet, now would be a perfect time. Bob, N2CBH is in the midst of some very significant upgrades to the 2 meter machine. Amongst other things, your dues would help greatly towards purchasing a new set of cavities. As usual, any and all contributions will be gratefully accepted! Remember to return your membership renewal to Joe, KR2V.

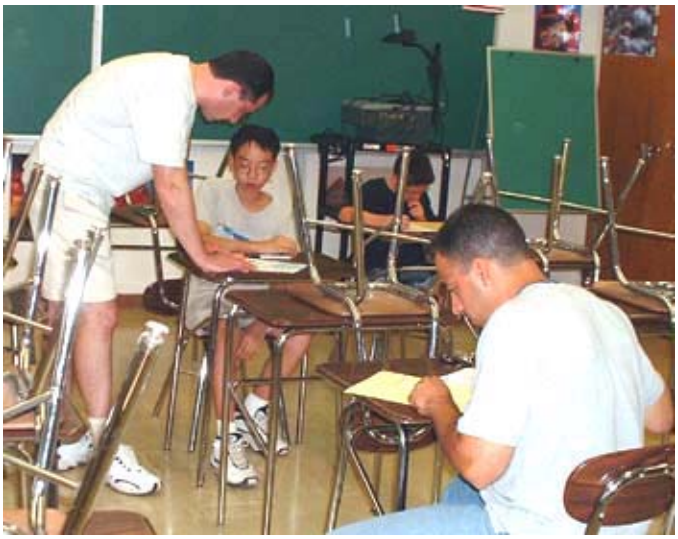
Hope to see you all at the August 4th meeting. Enjoy the summer!

— 73 de Greg, KB2CQE

VE Test Session

Peekskill/Cortlandt Amateur Radio Association held a VE Test Session at Copper Beech Middle School, in Yorktown Heights on Thursday July 18. Six candidates took part, including four youngsters from the school's radio club. At the end of the session we had a total of three new Technicians and one upgrade to General. New licenses and an upgrade were granted by the FCC on July 25 as follows:

Richard J Chu	KC2JZV	Tech
Lenny A Lustrino	KC2JZW	Tech
Eric J Stone	KC2JZX	Tech
Raymond Ciaccio	N2TAN upgrd	General



Joe, KR2V explains procedures to one of the candidates at PCARA's July 18 VE test session.

Thanks to the Volunteer Examiners who took part in the session, including Joe KR2V, Armen N2PLZ, Karl N2KZ and Mike N2HTT, plus NM9J.

- Malcolm, NM9J

Membership News

Thanks for renewing:

Mike Aiello, N2HTT
Armen Balemian, N2PLZ
Ed Bub, WA2AXP (plus a generous donation)
Rich WZ2P and Iris KB2KGO Almeida

If you have received a renewal notice, but have not yet sent it back, please do so, as this is our main source of funding over the course of the year.

– Joe, KR2V

Make the Move to Morse – Karl, N2KZ

CW is like baseball. It is basic, simple, and even primitive. Generation after generation has been drawn to it. It hasn't changed much in over a hundred years. Yet, it can still draw great crowds. There is a fraternity of people, young and old, who knows and understands it. As you are learning, elders help you along the way. When you gain fluency, you become a part of a time-honored fraternity.

Amateur radio CW operators continue a tradition that has existed since the beginning of electronic communication. You are a descendant of a nearly 200-year-old legacy. The founders were the landline telegraphers who served the nation with the first long-distance communication systems. Western Union, RCA, and similar companies became household words and served as a reliable and formal message center until the 1970s. Wireless telegraphers gained importance just after the turn of the twentieth century. Early amateurs were concurrent with the advent of commercial wireless telegraphy.

When you operate CW, you become part of history. Marine wireless operators knew the code 100 years ago and saved lives and machines with their fists. War-time upright typewriter mill operators copied five letter groups for 16 hours at a time, sending encrypted messages detailing battles and strategy. Thousands and thousands of distress calls have gone out to save countless lives. Simple signals from simple transmitters have carried messages afar miraculously where no other message could be heard. You are a continuation of history. You are taking the skills and stories of operators from 50 or more years' experience, adding your interpretation of these skills, and passing them on to future generations.

You would send CW even if no one were listening just to hear the sound of it. You love the feel of a straight key and honor the advanced skill of "diddling" with a bug. It is a skill. During your first attempts, it's hard to understand. You fall off your bicycle constantly. Eventually, you begin to find your balance. Slowly, you gain knowledge of the sounds of everyday conversation. Waiting for you, there is a crowd of nurturing operators welcoming and encouraging newcomers on the novice segments. The welcomes continue when you advance to sending slowly in the first 50 kilocycles of each band. The response to "I am a new ham" is always "FB OM es welcome."

Diddling with a bug

Eventually, you get to a level of sophistication that allows you to converse freely. This is the equivalent of effortlessly dancing a *pas de deux* in ballet. You send a sentence or two and the return response is a sentence or two without even a single K. There is a rhythm and a beat.

You'll cherish the stories of the old timers that you meet. Their tales are wide and varied — years of sending traffic from freighters traveling over the Great Lakes. Tales of endless copying of code groups onto an upright typewriter Mill high on a mountain in Italy for sixteen hours or more a day. Having the same call sign since the 1920s and never operating AM or SSB. "I would copy the traffic from North Vietnam every day. When the attacks came you would hear fists you recognized stop and never hear them again." "My code speed has fallen off a little bit since I turned 90." "I had arthritis in my right hand, so I learned to send with my left. When my left hand gave out, I practiced and learned to send with my right toes. I just don't have the speed I'd like to, but I'm still on the air." "I'm blind and I hear so much in people's fists." "I'm deaf and it's the only mode I can operate. Send slowly so I can feel your fist."

There is anonymity in the sound of the code to those who are not acquainted with the community. You'll discover that each and every voice in the cacophony of the "first fifty" of every band is as individual as voices in a crowd. Those who know the crowd can recognize people just from the character of the way they talk with their fists. On 40 meters, Tomas Martinez (CO6TM) has a transmitter that continues to radiate while he keys his final stage. This equates to a signature keying style. Tomas never goes off until he ends his message. You can hear his local oscillator even when his key is up. When his key is down, the note is stronger. It's like trying to copy CW with a zero-beat heterodyne. Morgan Eavenson W5FFC sits on ten meters like a beacon. Well into his eighties, you will hear Morgan on nearly every afternoon looking for a good rag chew even if you came by just the day before. Morgan has a signature "swing" in his sending that you would know anywhere.

There is also the thrill of the miraculous CW catch: You hear a very weak station and you exchange reports. You send a weak 239 report and receive a 599 report in return. How is this possible? The CW signal you are working is a 100-milliwatt station in Pennsylvania — or — you are driving home sending CQ with a straight key in your car. Suddenly, you find yourself in a QSO with another mobile station that happens to be in New Zealand.

The folklore does not end with operating activities. The tools of the trade: keys, bugs and even paddles, all can be the subjects of great tales of adventure. The keys used today on the air can be as old as telegraphy itself. The tales can be as tall as corn in Kansas in August, but they can be fun. The piece of brass that the other guy is using may have been aboard a battleship in Pearl Harbor or used to send messages to save the Titanic. The more involved stories may have gained elaboration over the years or might possibly be the most viable. Some are pure entertainment: "Do you know how that key got its burn mark? See that scar on my index finger? I was aboard a Merchant Marine vessel in the North Atlantic on a very stormy night. I was signaling distress when we were struck by lightning. All of my gear went up in fire and I really winced when the strike wounded my hand. The storm cleared and we were all OK, but we couldn't send a message until we arrived back into port." Really?!? Even saying 'goodbye' can be fun: "Sorry. Must QRT. Ed McMahon is at my door with a check!"

The piece of brass that the other guy is using...

...may have been used to send messages to the Titanic.

Newcomers show exuberance, too. Some are so glad you are willing to send slowly and clearly and have the patience to spend 20 minutes to get through basic information with them they want to hug you through the air. Others may give up fast in the middle of a QSO but QSL with excitement and ask to work you again. The veterans of code can be exuberant, too. Work a speedy Russian on 20 meters, add some Cyrillic abbreviations and watch the smoke come out of your headphones.

There is also the aspect of secrecy. Unless you understand the code, it's a foreign language that only the CW community understands. It is primal and basic. Don't all spies use Morse code for their clandestine messages? Even if you could read the code by computer, decoding it might still seem like gibberish unless you understand the shorthand abbreviations. Good code operators are cerebral. Copying in your head is complicated. It requires concentration, thought, and experience.

The Morse community has provided rewards for those who pursue the cause. The ARRL sends code proficiency tests via W1AW and certificates are awarded for those who can provide word-perfect copy. The Fists Morse club also sponsors an awards program for various aspects of CW operating that can be quite challenging. Of course, the old-timers still proudly display their old FCC Radiotelegraph Licenses. Celebrity within the community is found by earning these awards.

Anyone who thinks Morse code is dead should look at inexpensive "kid" walkie-talkies. You'll often find "beep buttons" on them along with a little label that shows the code so friends can send secret messages to each other. If Boy Scouts can master this skill, so can you! Watch *PCARA Update* for news about upcoming Morse code practice sessions. Yes, you can pass the 5 word per minute test! And, who knows, you might actually find that you *like* it!

— 73 de Karl, N2KZ

Watts up?

Here's a handy piece of measuring equipment spotted recently at the JV Mall Radio Shack.

P3 International's "Kill A Watt" power meter is a cumulative kilowatt-hour monitor incorporating an LCD display.

The idea is that you plug a 120 volt appliance into the Kill A Watt, then by pressing the appropriate buttons you can monitor the line voltage, the current drawn by the appliance, the power consumption in watts, the volt-amps (VA) draw, as well as the power-line frequency (Hz) and power factor. The line voltage and current are shown as true root-mean-square (RMS) values, rather than the calculated-from-mean figure of a typical inexpensive multimeter. There is also display of cumulative kilowatt-hours and elapsed time.

Similar equipment has been available in larger packages at a considerably higher price — several hundred dollars — but the Kill A Watt is available for less than $50.00.

Whether you are monitoring ConEdison's line voltage for brown-outs or keeping an eye on the output from your portable generator, the Kill A Watt may be just what you need. You could also measure the power consumption of your amateur radio equipment and convince your significant other what a bargain it is. The model number is P4400 and the RS part number is 63-1152.

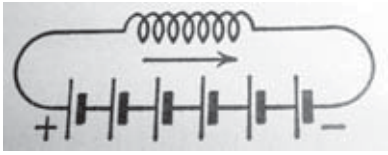
- NM9J

Time to change that battery! -NM9J

In times past, the only type of battery used by radio amateurs was a big, old accumulator, sitting on the floor of the shack, slowly dissolving the carpet! Times have moved on – let's take a look at the way modern batteries have improved.

Lead-acid: Lead-acid batteries are still important, both in the car and as a standby power source for the shack. They have a lead anode and a cathode made of lead dioxide, with sulfuric acid/water as the electrolyte. Nominal cell voltage is 2.0V. Modern "maintenance free" batteries introduced in the 1970s are based on a grid made from lead-calcium alloy, with a catalytic recombiner and valve-regulated seal. They do not require topping-up with distilled water the way their predecessors did, they self-discharge less and do not vent corrosive fumes.

A battery consists of two or more individual cells, usually connected in series so the cell voltages add together. Each cell contains two electrodes (negative anode and positive cathode) plus an electrolyte. A 12 volt car battery therefore contains six lead acid cells connected in series.



Six cells connected in series to form a battery.

Carbon-zinc: The old standard for cylindrical dry batteries was the Leclanché carbon-zinc cell, based on a cathode made of manganese dioxide, a metallic zinc anode and an ammonium chloride paste electrolyte. It has a cell voltage of 1.5 volts. The carbon in the name is mixed with manganese dioxide cathode material to improve conductivity.

Alkaline cell: The alkaline cell, introduced in the 1960s has largely replaced carbon-zinc cells. In the alkaline cell, the electrolyte is changed from ammonium chloride to potassium hydroxide solution. The anode is powdered zinc. As a result of the higher conductivity of the new electrolyte, the cells have higher energy density. They also have longer shelf life and better leakage resistance than carbon-zinc.

Three different sizes of alkaline battery — D, 9V and AA.

Equipment designed to run from AA alkaline cells — from digital cameras to the Icom IC-7QA and IC-T2H portable transceivers — has the advantage that replacement cells are available almost anywhere in the world.

Alkaline batteries are normally thought of as "primary cells" -- they can only be discharged once and must then be discarded. A recent development is an alkaline cell designed to be capable of recharging.

Nickel Cadmium: Nickel-cadmium cells have an anode made of cadmium metal and a cathode made of nickel oxyhydroxide. The electrolyte is once again a solution of potassium hydroxide in water. This is a "secondary" cell capable of being charged and discharged over hundreds of cycles. Nickel cadmium cells became popular in the 1960s for portable power tools, just as transistor technology was making portable transceivers a practical reality. NiCd cells allowed a portable radio to be used for an 8 hour shift, then recharged overnight ready for the next day's work. The cell voltage is only 1.2 volts — some transceiverss can run with reduced output from 1.2 volt rechargeable AA cells as well as from 1.5 volt alkaline AA cells. Disadvantages of "nicads" include the low cell voltage, the presence of a small amount of toxic cadmium, and the well known NiCd "memory effect", where a cell loses capacity as a result of being recharged before being fully discharged. This may be cured by deep discharging each cell to about 1 volt (no lower), then recharging.

Three rechargeable nickel-cadmium batteries for different portable transceivers. The first battery case has been opened to show the individual cells.

There are environmental concerns about nickel cadmium batteries — the European Commission has proposed a complete ban by 2008. In my opinion, it is a mistake to purchase nickel cadmium batteries nowadays — there are much better choices available.

Nickel Metal Hydride: The nickel metal hydride cell (NiMH) can be thought of as a NiCd cell in which the cadmium anode has been replaced by hydrogen gas absorbed in a rare earth or nickel alloy. The cathode is still nickel oxyhydroxide and the elec-

AA-size nickel-metal hydride cells.

Nickel-Metal hydride battery pack for an Icom transceiver.

trolyte is a solution of potassium hydroxide. Like a NiCd cell, the voltage is 1.2 volts, but the capacity of a NiMH cell is higher — up to twice the milliampere-hours of a similar-size nicad — and the memory effect is less than for nickel cadmium. One disadvantage is the high self-discharge rate, meaning that cells must be recharged regularly.

Modern NiMH cells, developed for the notebook computer market, have a lot of desirable features compared to nickel cadmium. These characteristics have spilled over into amateur radio — if your portable transceiver is powered by nickel-cadmium cells or by a NiCd battery, you can probably replace the original power source with NiMH. AA cells are readily available from Radio Shack at low cost. NiMH replacements for original battery packs are available for amateur transceivers from W&W Manufacturing, Maha or Batteries America — however the price will be higher than for a bunch of AA cells. Charging characteristics for NiMH are sufficiently similar to NiCd that you can still use your old charger — whether it's a slow trickle charger or a fast charger. Just bear in mind that the higher capacity of a NiMH cell implies a longer charging time than for a similar-size nicad. Chargers for the standard-size NiMH battery sizes are also available from Radio Shack.

Radio Shack 1-hour battery charger for nickel-cadmium and nickel-metal hydride cells.

Lithium: The use of batteries containing lithium as the anode became popular at the end of the 1970s. Lithium is the lowest-density metal, with a large electrode potential, so the individual cell voltage can be 3 volts or more. Lithium coin cells have a lithium metal anode and a manganese dioxide cathode. The electrolyte is an organic liquid - typically a mixture of propylene carbonate and 1,2-dimethoxyethane. Provided the discharge rate is low, these cells can have a life of up to ten years, making them ideal for memory backup, clocks and watches.

Lithium coin cell as used in clocks, watches and for memory backup.

Tiny 3.6V lithium-ion battery from a Motorola cell phone.

Lithium-ion: The cells described above containing metallic lithium are of the primary type — they should not be recharged for safety reasons. Rechargeable designs incorporating lithium compounds in place of lithium metal are known as "lithium-ion". The first commercial lithium-ion battery developed by Sony in 1990 incorporates a cathode made of lithium cobaltite (LiCoO2), a carbon anode and a non- aqueous electrolyte such as LiPF6. During charging, **lithium ions** (Li^+) move from the LiCoO2 cathode through the electrolyte to the anode, where they become inserted between the layers of carbon atoms.

Lithium-ion batteries have high energy density, low weight and good self-discharge characteristics. They have been widely deployed in notebook computers and cell-phones. The batteries frequently incorporate their own electronics to regulate charging. They cannot be directly substituted for NiCd or NiMH because of the three-times higher cell voltage (3.6-3.7V) and different charge characteristics, but portable transceivers are now beginning to appear with this type of battery as original equipment, including the Kenwood TH-F6A and Yaesu VX-7R.

Kenwood TH-F6A tri-band HT with 7.4 volt 1550mAH lithium-ion battery.

- Malcolm, NM9J

References: PowerStream Battery FAQ: http://www.powerstream.com/BatteryFAQ.html
W&W Manufacturing Co.: http://www.ww-manufacturing.com
Maha Energy Corp.: http://www.mahaenergy.com
Batteries America: http://www.batteriesamerica.com

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Newsletter contributions are always very welcome!

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 the Hudson Valley Hospital Center, Route 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.

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 Aug 4: August meeting, 3:00 P.M., HVHC.

Hamfests

Sun Aug 11: Tri-State ARA, Matamoras Airport Pk, Matamoras, PA. I-84, exit 53, open for buyers 8 a.m.
Sat Aug 17: Ramapo Mountain ARC, American Legion Hall, 65 Oak St., Oakland NJ. Buyers 8 a.m. to noon.
Sat Sept 7: Saratoga County RACES, Saratoga Cnty Fairgnds, Ballston Spa, NY. Gates open 7:00 a.m.
Sun Sept 15: LIMARC Hamfest, Briarcliffe College, 1055 Stewart Ave., Bethpage, NY. 8:30 a.m.
Sun Sep 22: Candlewood ARA, Edmond Town Hall, Rt 6, Newtown CT.

VE Test Sessions

Aug 4, Sep 1: Yonkers ARC, Yonkers Police Dept., 1st Precinct, East Grassy Sprain Rd, 9:00 A.M. Contact: Daniel Calabrese, 914 667-0587.
Aug 8: WECA, Fire Training Center, Dana Rd., Valhalla NY. 7:00 p.m. Contact Sanford Fried, 914 273-2741.
Aug 13: Crystal Radio Club, Rockland Co Fire Trg Ctr, Firemans Memorial Drv, Pomona NY, 7:00 P.M., contact Robert Chamberlain 845 354-7340.
Aug 16: Bergen ARA & Fair Lawn RC, Fair Lawn Cultural Center, 12-56 River Rd., Fair Lawn, NJ. 7:30 p.m. Contact D C Younger, 201 265-6583.
Aug 19: Columbia Univ ARC, Watson Labs, 612 W 115th St. New York, NY 10025, 6:30 P.M. Contact Alan Croswell, 212 854-3754.
Sep 28: Putnam Emergency ARL (PEARL), EOC, Putnam Co Office Bldg, Carmel, NY. 9:00 a.m. Contact NM9J, 736-0368.

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