



PCARA Update



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Food for thought

In just over a month, it will be time for the annual PCARA Holiday Dinner. This year we will be celebrating the Holiday Season at the Cortlandt Colonial Restaurant in Cortlandt Manor, NY. The dinner will be held on December 1, 2013 and will begin at 5:00 pm. The cost is \$30.00 per person which includes an entrée, dessert (cake), gratuity, and tax. Soda and drinks are extra. Look for the menu in this edition of the PCARA Update. Please be sure to send your choice(s) of entrée(s) to mail 'at' pcara.org so that we have accurate information to provide to the restaurant. Please consider joining us to rejoice in the season. As always, **all are welcome**.



Cortlandt Colonial Restaurant on Old Albany Post Road.

PCARA callsign badges are once again available. Malcolm, NM9J has successfully located the vendor who originally provided the badges years ago. Details on pricing and how to order, can be found within the pages of this month's edition of the PCARA Update.

Vintage issues of the PCARA Update (February 2001 and earlier) continue to be scanned into the archives thanks to the efforts of Malcolm, NM9J. To view those newsletters of our earlier times, please visit: <http://home.computer.net/~pcara/newslett.htm>.

PCARA is scheduled to hold a Ham Radio Introduction and Demonstration to Cub Scout Pack 118 on January 17, 2014, 7:00 pm at Furnace Woods Element

tary School in Cortlandt Manor, NY. Anyone interested in helping to organize and/or participate, please send an email to: mail 'at' pcara.org. This will be a topic of discussion at the November meeting.

Our next meeting is on November 3, 2013 at 3:00 pm at Hudson Valley Hospital Center in Cortlandt Manor, NY. I look forward to seeing each of you there — *after* moving the clocks back.

- 73 de Greg, KB2CQE

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Pictured at the Bergen Amateur Radio Association Hamfest on October 12, L to R: NM9J, Greg KB2CQE, Marylyn KC2NKU, Bob N2CBH and Luigi N2CWV. [Photo - W2CH]

Adventures in DXing

– N2KZ

Height is Everything

If someone tries to convince you that antenna height and location are not important, send them to me! I'll take them to the top of Bear Mountain and teach them a few things! Way in the distance, you can see the New York City skyline. It really looks like The Emerald City in The Wizard of Oz! The entire Hudson Valley opens up to view. You'll feel like a bird soaring high above the trees and mountains. It's a sight no one should miss.



A misty Bear Mountain pictured from the Scenic Overlook on the Goat Trail.

The spectacle doesn't stop with just what you can see. Radios blossom with delight up there too. All seven 162 MHz National Weather Services channels are filled with activity, with many being several layers deep in station reception. The famous N2KZ-mobile found all sorts of repeater and simplex challenges on a recent visit. My Yaesu FT-1900R at 55 watts to a Diamond 5/8 whip really got a workout! It was short of amazing.

My best catch was easily getting into the W1BOS machine (145.23 MHz, 88.5 PL, negative offset) located on a tall business building in downtown Boston. I could also get into the two Mount Greylock machines atop the largest mountain in all of Massachusetts (near North Adams) quite easily. Atlantic City and Camden, New Jersey were well within reach.

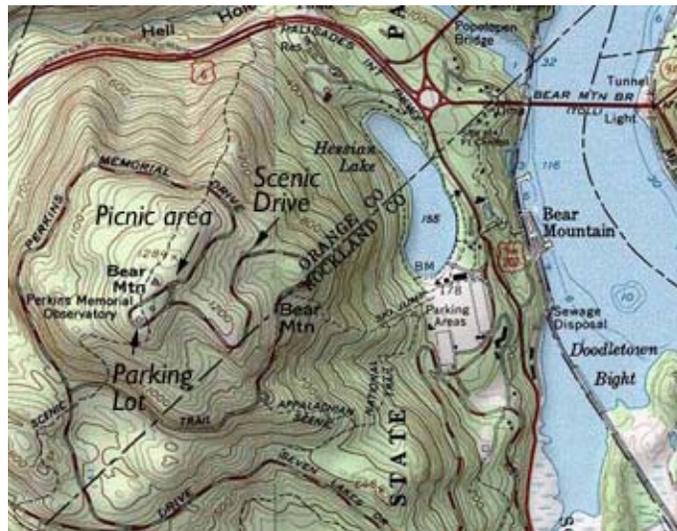
The biggest revelation, this time up, was finding a very active link to a huge multi-band repeater system in Pennsylvania on the same frequency as Boston. Tune in 145.23 MHz, negative offset, but this time with a 77.0 PL, and you'll join into the W3WAN Wide Area Repeater System serving huge swaths of The Keystone State and beyond. Details can be found at <http://www.wanrepeater.net>.

The system extends to Maryland, Washington, D.C and West Virginia. Repeaters are cleverly merged together with audio mixers allowing multitudes of voices to be heard at once sometimes creating amiable mayhem!

Simplex is no slouch from above either. Using the two most often used frequencies, 146.52 MHz and 146.58 MHz, I contacted stations in The Bronx, Westbury, Long Island and Armonk just as if I was holding a simplex net. The only difference was that I could hear everyone... but everyone else couldn't. I was the wizard who could hear all transmissions!

A couple of times, I had several stations calling me not hearing each other. I didn't know 2 meter FM was capable of pileups!

I can only imagine what the Bear Mountain summit might have to offer on a steamy July morning when the tropospheric skip is alive and ducting. Combine remarkable reception with enormous height and directional antennas and you could stir up some wonderful DX up there.



To reach the summit of Bear Mountain, take Seven Lakes Drive to Perkins Memorial Drive.

You can use the topography at the summit as a tool to tune your DX. Drive atop the picnic area, just to the right before the main parking lot, and you'll get the best omni-directional site you can imagine. Drive past the main parking lot and head slightly down the road to the Scenic Drive and you'll find breathtaking vistas of the Hudson River and beyond. These sites block the west and add some good attenuation when you are concentrating on Maine, New Hampshire, Massachusetts, Rhode Island and Atlantic Canada. If you are lucky enough to find a spot going down Perkins Drive, you can favor all points north with yet another perspective.

Warning: If you venture up Perkins Drive to the summit, bring good guidebooks to help you navigate around the bands. Highly suggested are the resources

found at the New England Repeater Directory site at <http://www.nerepeaters.com> and the classic ARRL



N2KZ/mobile parked high on Bear Mountain.

Repeater Book. Bring an empty log book or lots of blank paper. You'll need it! A good pair of binoculars might be handy, too. Discover what 1283 feet of altitude can do for you, but do it fast! The mountain closes for the winter in late November! Visit now!

Discover Your Surroundings

If you are like me, you often wonder about antenna towers and who owns them. I've discovered an Internet site that can tell you all this and more. Make a visit to Antenna Search (<http://www.antennasearch.com>) and plug in your address or any other place you wish. You'll quickly get a detailed map showing every nearby tower and tools to filter your result in a myriad of ways.



AntennaSearch.com web page.

The depth of data is quite impressive. You'll learn exactly how tall local towers are, their ownership, the type of structure and the date it was built. What is even more revealing is learning about towers you can't readily see in passing. I had no idea so many towers existed! The site will also link you with complete access to satellite and traditional map images of each site provided by Google Maps.

The database used for this site is accurate to a point. Two cellular towers were recently erected near my QTH. One went up just a few months ago and made the list. Another, sitting right off I-684 in Goldens Bridge, was built about two years ago and

didn't make the cut. I wonder what sources are used to create the Antenna Search database? Also keep in mind that the list includes professional commercial towers only. Your ham radio buddy's dream come true won't be seen here. Access to the site is free, so why not take a look and see what there is to see!

Shortwave Simplified

There is a lot to be discovered about the world of shortwave radio, too. Alan Roe, known for his work and dedication to The World Radio club based in The United Kingdom, has created a concise and useful web site that will introduce you to all the major shortwave broadcasters still on the air. Look for his 'Hit List' at: <http://www.w4uvh.net/hitlist.htm>.

Alan's web site is incredibly useful because you'll find so much in one place. Included are not only the main web sites for dozens and dozens of broadcasters but instant links to their frequency lists, program schedules, live web streams and on-demand material. Where the web site is only offered in a foreign language, Alan cleverly created quick links to instantly convert these pages to English via Google translator. You are bound to find something new to pique your interest.

Spooky Signals

PCARAn Jeff, WA2RAS, reporting in from Island Park, Long Island brought up a spooky find on a recent Old Goats Net. Over the Internet, he unearthed quite a beastie: a highly sought after and rare Rogers Electronics Black Widow. Built in about 1958 to 1960, it's a single band 15 tube transceiver that usually featured a 2E26 final. There were at least four versions manufactured covering 10 meters, 6 meters, 2 meters and 220 MHz. Jeff's find operates on the rarest of bands: 220 MHz. The transmitter was crystal controlled with a fully tunable receiver.



Rogers Electronics Black Widow transmitter/receiver for 220 MHz AM.

According to Jeff: "They were well designed 15-tube transceivers made by hand in a garage in Venice,

Ca. in the 1950s by a very skillful ham named Rogers (who happened to be a parapalegic). This one works perfectly (it just needed a power supply and the Heathkit HP-23 filled the bill). The final is a 6360.”

“The rig was a Halloween present given to K6DPZ, Hal Guretzky. Hal is the owner of Land Air Communications in Richmond Hill, NY and he has about a million different vintage ham rigs for sale. But he didn’t have the Black Widow — although he’s been searching for many years. He had one as a kid in California, lost it somehow and always wanted to get another one. Needless to say, the rig will not be for sale.” Best of all, it featured a very scary black widow logo! Nice catch, Jeff!



Long Wave Coupling

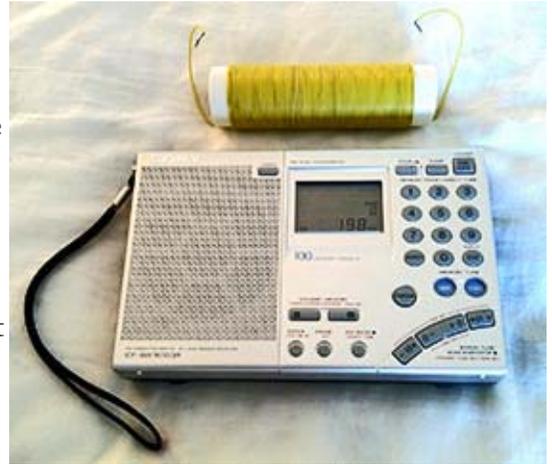
The farther you go down in frequency, the harder it is to find good signals above the noise. If you think AM broadcast radio is full of buzzes, static and mayhem, you should try long wave! In the world below 530 kHz, three types of signals can be found: data, beacons, and European broadcasters. Pulling them out of the mud sometimes requires patience, thought and good engineering. The rewards can be sweet. There are some very interesting and unusual signals down there!

I have two receivers that reach down to long wave. My Radio Shack Realistic DX-160 is continuously tunable and is capable of a direct connection with antenna and ground. I have had really nice results with it over the decades. My DX-160 is celebrating its 40th birthday! When it was young, it would easily receive the monster-sized signals of navigation beacons like TUK 194 kHz and EWR 379 kHz. It still does a nice job with signals down below!

My relatively recent addition, a Sony ICF-SW7600GR handheld portable, was really designed to be a self-standing radio. On HF, direct connection to even a modest antenna (like my homebrew 30 meter dipole,) would overload its front end overwhelming it with products and noise. I tried attenuating it with passive resistive pads but had to resort to large values, up to 40 dB, to achieve results.

With a little experimentation, I discovered that long wave reception relies on the same ferrite loopstick antenna used for medium wave AM broadcast reception. You must remember the cardinal rule for long wave: your ground system below is more important than the antenna above! Seasoned long wave DXers go to great lengths to create elaborate ground mats of dozens of underground wire radials just to improve their efficiency. “Honey, why are you digging up our lawn?” High-Q tuned large loop antennas or long Beverage antennas usually complete the system topside.

My first attempts to emulate their work have produced good results. It’s not easy pulling a 25 watt long wave NDB beacon, hundreds of miles away, out of the impossible din of electrical and natural noise that plagues this band! I pulled out of my drawer a coupling coil I made using thin wire and a small piece of white PVC pipe for a medium wave experiment I was fooling around with years ago. I connected a long wire antenna to one side of the coil and a cold water pipe ground to the other side. I moved my little Sony up to the coil and began to tune around. Hey! It produced really nice results for a first try.



Sony ICF-SW7600GR LW/AM/FM/SW portable receiver has long wave reception improved by coupling to an external antenna through a nearby inductor.

I was fooling around with years ago. I connected a long wire antenna to one side of the coil and a cold water pipe ground to the other side. I moved my little Sony up to the coil and began to tune around. Hey! It produced really nice results for a first try.

This basic idea needs more refinement. Obviously, moving the coil towards or away from the Sony rig creates a manual RF gain control. The short coil is only acting as a loose coupler to the internal loopstick. I also immediately noticed that I could null and peak signals as I changed the position of the coupling coil to the loopstick. A useful tool!

What if I made the coil really resonant by using adjustable taps on a larger coil and added a variable capacitor to create an L-C circuit to tune it to frequency? Tight tuning and nulling are essential for good results in the land of noise! My experiments will continue. How I would love to work the big stations from across the pond: Ireland’s RTE on 252 kHz, France-Inter on 162 kHz, Iceland on 189 kHz and The BBC on 198 kHz. Wish me luck!

Hear the very latest news and event updates on The Old Goats Net, Thursday nights at 8 pm on the PCARA 2 meter repeater at 146.67 MHz. Make sure you check our Facebook page and join our new Yahoo Groups Internet reflector today! Enjoy your trick-or-treating and see you next month!



73 es dit dit de N2KZ The Old Goat.

Club badges

Back in the mists of time, around 2001, PCARA organized the supply of engraved club badges for members. The badges show your name and call sign engraved in white on a blue background, along with the PCARA logo and club name. Badges are sized $2\frac{1}{2} \times 1\frac{3}{4}$ inches and have a pin type fastener on the back.



Vintage PCARA club badge.

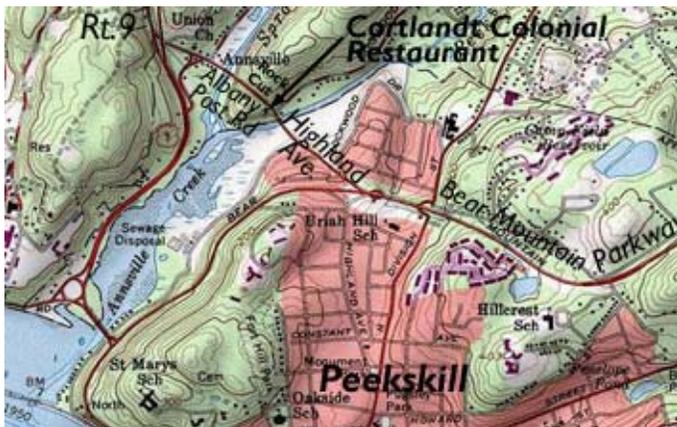
PCARA's supplier, Capital Engraving, is still able to supply these badges. The cost will be \$14.00 each for the pin type fastener, plus postage. An "alligator" fastener and a "military" type fastener are available for an additional \$0.50, while a magnet fastener is available for an additional \$2.50.

If you would like to order a badge, please send your call sign and name, exactly as you would like them to appear on the badge, to your editor (NM9J 'at' arrl.net) — or give me your details at the next PCARA meeting. I will combine orders together in order to reduce the overall postage. - NM9J

Holiday dinner

PCARA's holiday dinner for 2013 will take place on Sunday December 1st at a **new location** — the **Cortlandt Colonial Restaurant**. The restaurant is located at 714 Old Albany Post Road in Cortlandt Manor, close to the old "Rock Cut" (half of which was removed — to make room for an unbuilt hotel).

To reach the restaurant from Route 202 or Route



Cortlandt Colonial Restaurant is located in Cortlandt Manor, at Highland Avenue and Old Albany Post Road.

6, take the Bear Mountain Parkway and exit at Highland Avenue. Make a right off the exit ramp and proceed down the hill. Cross the small bridge, then

immediately turn left, just before the "Rock Cut". The restaurant car park is on the left.

Menu choices will be as follows:

*Prime Ribs of Beef
Grilled New York Sirloin Steak
Broiled Sea Scallops
Jumbo Shrimp stuffed with Crabmeat Stuffing
Chicken Marsala*

The package includes open soup and salad bar plus iced-cake dessert. Inclusive price will be \$30.00 per person, not including sodas or alcoholic drinks.

If you will be attending, please make your menu selection(s) then send details to Greg, KB2CQE using the PCARA mailbox, mail 'at' pcara.org, well before the December 1 dinner date.

New York QSO Party

Peekskill / Cortlandt Amateur Radio Society has submitted a multi-operator entry for the New York State QSO Party, held on October 19, 2013 and sponsored by the Rochester DX Association.

The club effort was captained by Joe, WA2MCR using a Carolina Windom off-center-fed dipole. Most of the operating was on 40 meters and 80 meters, SSB and CW. The club call W2NYW was in use from Westchester County (WES).



Joe, WA2MCR operating in the New York QSO Party, 2013.

In the 12 hour event, W2NYW made 300 QSOs, for 345 points. There were 83 multipliers (NY Counties, States and Canadian Provinces) for a final score of 28,980. By the way, PCARA has sponsored the plaque for "New York Multi-One", meaning — multiple operators with only a single transmitted signal at a time.

Results should be available soon on the Rochester DX Association web site, <http://www.rdxa.com>.

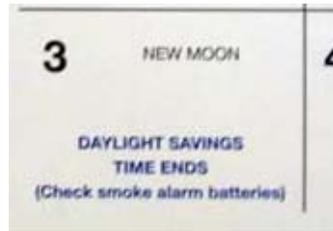
Battery day

The date of Sunday November 3, 2013 is significant for a couple of reasons. In North America, it is the day when clocks “fall backward” from daylight saving to standard time. It is also the date when many Fire Departments encourage home owners to change batteries in their smoke detectors — and to make sure those detectors are operating correctly.

I would like to add another reminder for the day when the clocks move. This reminder is to go around your home and check not just the smoke detector, but **every** device that uses batteries. If the batteries are rechargeable, be sure to **charge them up**, along with any **spares** that you keep in stock.

Familiar items that are used every day such as your cell-phone and portable computer are probably recharged on a regular basis. But there are plenty of other battery-powered devices around the home which are not taken out for an airing quite so often. If you leave these items alone and let the internal battery discharge too far, it may leak liquid electrolyte, corrode nearby wiring and damage other components. Rechargeable batteries which are discharged too far can be destroyed and then require an expensive replacement.

For radio amateurs, the most likely item to have an internal battery is the ever-popular handi-talkie. Hand-held scanners should also be checked. Other items around the shack with internal batteries might include an electronic keyer and portable test equipment such as multimeters, frequency counters and antenna analyzers. Your shack might also have a battery-powered clock showing GMT and a remote-reading thermometer.



Check your HT batteries.



*It's time to check the batteries in **all** radio room electronics - including this MFJ-133 Dual Time Atomic Clock.*

Nicad bad

For radios with rechargeable batteries, old-style technology made use of **Nickel-Cadmium** (Ni-Cd) chemistry. Nickel-cadmium cells are inexpensive, but they have several disadvantages. Old cells tend to develop a “memory”, meaning the electrical capacity, measured in millampere-hours, is reduced if the cell is not completely discharged before recharge begins. Cadmium is a toxic metal and Ni-Cd batteries should be disposed of at a store or facility where old batteries are recycled responsibly. Across the pond in Europe, import of nickel cadmium batteries has been **banned** by EU-directive since September 2008. On this side of the Atlantic, nicads are still on-sale. By the way, if you have any solar-powered yard lights, they probably contain a cheap AA or AAA Ni-Cd cell, which also needs to be cared for, then disposed of responsibly at the end of its life.



Solar-powered yard lights usually contain a cheap nickel-cadmium battery.

Ni-MH good

The modern substitute for Ni-Cd cells is the **Nickel-Metal Hydride** (Ni-MH) type, which has higher electrical capacity, lower weight and reduced problems from toxicity. Nickel metal hydride cells tend to suffer from fewer “memory effect” problems than Ni-Cd, but they do not last forever, and they still need care and attention for a long life. Nickel-metal hydride batteries are used in Toyota’s Prius hybrid electric car — which is probably the largest endorsement you will find for this particular battery technology.



This 2010 Toyota Prius has a 168-cell Ni-MH battery, with a nominal voltage of 201.6 volts.

For more information on the chemistry of nickel-cadmium and nickel-metal hydride cells, take a look at the article on page 4 of the *PCARA Update* for August 2002. (Back issues are available via the club’s <http://www.pcara.org> site.)

Charge time

When it’s time to recharge my Icom handi-talkie, I have an Icom BC-119 desktop charger. The BC-119 can rapidly charge Ni-Cd and Ni-MH battery packs in 1 to 1.5 hours. The charger identifies the battery pack’s size and voltage using four microswitches which are opened or closed by indentations in the bottom of the battery pack.

Occasionally, the BC-119 will fail to charge an old battery satisfactorily. At this point it is sometimes possible to rejuvenate the battery with my Maha MH-C777 Universal Charger.



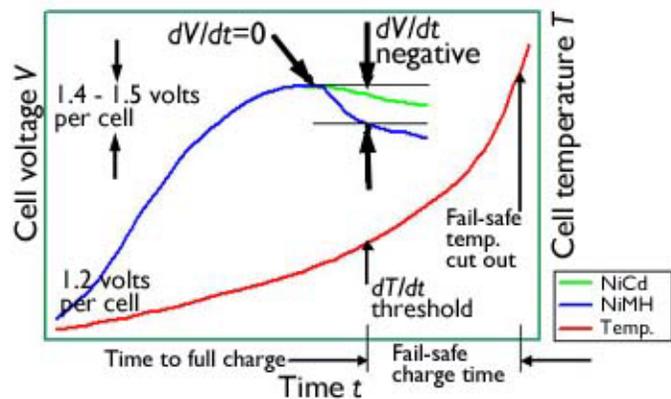
Icom BC-119 desktop charger charges Ni-Cd and Ni-MH batteries in 1-1.5 hrs.

The Maha unit has a set of movable contacts that can accommodate battery packs from different manufacturers. It also has a “discharge” button that is designed to discharge the battery pack to a limit of 1.0 volts per cell. Discharging to any lower voltage would damage the cell. Putting a dubious battery through several cycles of discharge/recharge will sometimes bring it back to life.



Maha MH-C777 Universal Charger rejuvenating a Ni-MH battery pack for Icom radios.

The Maha Universal Charger has two ways to make sure that cells are not over-charged — first it has a micro-processor that determines the number of cells from the initial battery voltage, then it monitors the voltage during charging. For nickel-cadmium cells, fast charging should be



Charging characteristics of Nickel-Cadmium and Nickel-Metal Hydride cells.

stopped as soon as the battery voltage begins to decline with time (Rate of change of voltage with time, dV/dt , goes

negative). For nickel-metal hydride cells, fast charging should be stopped *before* this point because the voltage may not decline when fully charged. The second protection device in the Maha unit is a magnetic temperature sensor which can be placed near the steel case of the individual cells of the battery. Nickel-cadmium and nickel-metal hydride batteries both show an increase in temperature as they approach full charge. This indicates that charging current is being converted to heat instead of being stored as chemical energy.

During attempts to resuscitate my old battery packs, I have found it helpful to monitor the battery voltage before and after charging using a digital multimeter.

If all else fails, it is probably time to order a replacement battery from vendors such as W&W Manufacturing (<http://www.w-w-manufacturing.com>) in Hicksville, NY or from NiCd Lady Company (<http://www.nicdladyonline.com>) in Riverside, CA. Replacement batteries, battery inserts and battery rebuilds are available for most popular brands of two-way radio.



Checking battery voltage with a digital voltmeter. This 6-cell Ni-MH battery reads 8.53 volts immediately after charging (1.42 volts per cell.)

The AA option

The most popular size replaceable battery is the **AA cell**. They are available in most parts of the world, as *non-rechargeable* alkali cells and as *non-rechargeable* lithium cells. AA cells that can be **recharged** are available as either nickel cadmium or (better choice) nickel-metal hydride. Some handi-talkies will run directly from AA cells while others require an optional battery pack — which can be filled with AA cells. AA cells are also popular for digital cameras and other portable electronics.



Icom BP-170 battery case holds four AA cells.

It may not always be possible to recharge Ni-Cd and Ni-MH AA cells *within* the portable device. Instead, the individual cells will have to be removed and placed in a separate charger. For this process, I have a Radio Shack 1-Hour AA & AAA NiCd/NiMH Battery Charger that I acquired 12 years ago. It can charge two or four batteries at a time. The parts list shows the presence of a ROM-based PIC microcontroller which is presumably monitoring dV/dt for the fully charged state as well as guarding against over-current and excessive charging time.

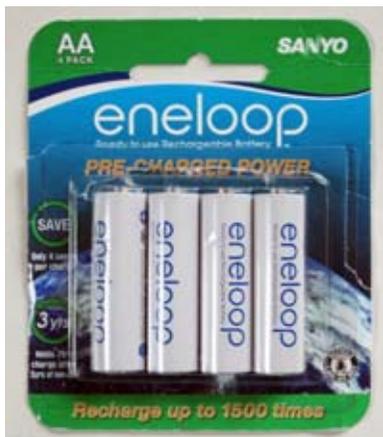
Radio Shack's 23-405 1 hour charger is no longer available, but more recent products are in stock at local stores, for example the "Enercell 1-2 Hr AA/AAA Everyday Battery/Charger Combo". Modern chargers incorporate specialized controllers that combine various cell measurement and protection techniques to make sure the battery is not overcharged. These can include timers, dV/dt monitoring and temperature monitoring. Less expensive chargers are also available that use a lower charging rate, but these models may require a much longer charge time — for example 8-14 hours. With this type, it could take a long time to recharge a drawerful of spare AA cells. Note that modern chargers may only be specified for use with Ni-MH cells and not for Ni-Cd.



Radio Shack 1-Hour AA and AAA charger.

Self discharge

In recent years, nickel-metal hydride batteries have become available that no longer lose their charge during storage. Low self-discharge AA batteries such as Sanyo's Eneloops can hold 75% of their original charge for up to three years. This has been achieved by substituting a new "superlattice" alloy for the cathode to reduce chemical decomposition, strengthening the anode and optimizing the separator and electrolyte composition. (Sanyo was acquired by Panasonic in 2009, so these batteries are now known as Panasonic Eneloops.)



Sanyo Eneloop pre-charged Ni-MH batteries.

For more details of Eneloop technology, see: <http://www.eneloop.info/home/technology/self-discharge.html>. Other manufacturers offer similar improvements in their AA cells, for example Duracell says their Duralock Power Preserve™ Technology holds a charge for up to 1 year. Energizer claims that their Recharge Power Plus and Universal batteries hold their charge for up to 1 year.

Clean contacts

With battery packs and AA cells, it is important to keep the battery contacts clean and free from corrosion — otherwise you may have difficulty in charging the batteries

and using them efficiently. I recommend "DeoxIT - Contact Cleaner & Rejuvenator" and "DeoxIT GOLD" from Caig Laboratories. These products are available in aerosols from Radio Shack and in pen, needle and wipe form from other vendors. Apply a dab of DeoxIT to all your battery contacts for a long life.



DeoxIT keeps battery contacts free of corrosion.

Lithium-ion

Small, portable electronic devices such as cell phones, notebooks, cameras and tablets have moved away from Ni-MH to Lithium-ion battery technology. Modern amateur radio handi-talkies have followed a similar path. For example,

Icom's current range of handi-talkies can all use Lithium-ion batteries, with several models like the IC-T70A able to use *either* a Lithium-ion battery *or* a Nickel-Metal Hydride pack, or an AA battery case.



Icom IC-T70A dual-band HT has a Li-ion pack available.

Lithium-ion batteries can store a remarkable amount of energy in a very small space and last a long time if properly cared for. They have no memory effects and they retain their electrical charge for long periods of time. But there are drawbacks to lithium batteries — partly because of the high stored energy in the lithium cobalt oxide anode material and partly because they contain flammable solvents such as ethylene carbonate or diethyl carbonate as part of the electrolyte. (See PCARA

Update, August 2002 for more information on lithium ion batteries.) Lithium batteries are difficult to charge when very cold and they can be positively dangerous when they get too hot due to thermal runaway. (See PCARA Update for April 2004.)

Unlike NiCd and NiMH technology, "bare" lithium-ion cells are not made available to the general public. Instead, lithium ion batteries are always sold in a sealed enclosure containing special circuitry to monitor and protect the cell during charge and discharge. Reputable manufacturers do their best to make sure the cell will provide a reasonable lifetime and remain safe under normal conditions of use. My own experience suggests that some lithium ion cells have a relatively short lifetime and may need replacing sooner than expected, while others can be charged and discharged on a daily basis for years of good service. This lack of predictability is one of the hazards of lithium-ion technology — whether you choose a full-price manufacturer's own brand or a reputable vendor's substitute. For vital equipment. I would recommend a well-

reviewed brand and carry around a fully charged spare so you are not disappointed. Your spare Li-ion battery should then retain its charge for many months — just like the NiMH Eneloops.

Lithium in the news

There have been news stories this year suggesting that lithium-ion technology is not without its problems in large-scale applications. In January 2013, Boeing's new 787

Dreamliner suffered battery failures on planes belonging to Japan Airlines and All Nippon Airways. The first event took place in an empty JAL plane on the ground at Boston Logan



Keep a fully-charged spare Li-ion battery for important devices.

International Airport where one of the lithium-ion storage batteries overheated and started a fire. The next problem occurred in the air and caused an emergency



Boeing 787 Dreamliner.

landing for ANA in Japan after smoke was detected in the battery compartment. Inspection showed signs of thermal runaway in the lithium-ion batteries. Japanese airlines and the FAA grounded Boeing's 787 Dreamliner until April 2013. By then, Boeing had redesigned the Li-ion battery system with increased spacing between the battery cells to reduce the risk of overheating and with cells stored in a strong, sealed case to minimize damage in the event of overheating.

In view of Boeing's problems, Europe's Airbus decided to forego lithium-ion cells for its new A350 airliner and reverted to the use of tried-and-trusted nickel cadmium batteries to speed up certification. (Airbus recently announced plans to also seek certification for their lighter lithium-ion batteries in the future.)

Problems are not confined to the airlines. In early October, a Tesla Model S electric car with a lithium-ion battery caught fire, causing major damage. Tesla stated that the fire was caused by a large metallic object hitting the battery pack, and pointed out that no one was injured. Earlier in the year, the New York Times had run an adverse road review about range and longevity of the Tesla Model S battery in very cold weather.



Tesla Model S electric vehicle has a 7000-cell lithium-ion battery.

Nowadays, General Motors is also a manufacturer of electric cars, and concerns have been expressed about a

Chevrolet Volt car which was damaged in a collision test, stored, then caught fire three weeks later. The lithium-ion battery was prime suspect. In April 2012, an electric-car battery undergoing tests at a GM research center exploded, sending an employee to hospital. GM announced in October 2013 that it would eliminate a lithium-ion battery from the Chevrolet Malibu's stop-go (micro-hybrid) system and replace it with a lead acid battery.



Chevrolet Volt hybrid vehicle has a 288-cell lithium-ion battery.

Some of these problems with lithium-ion cells in motor vehicles might just be teething troubles. Conventional autos with internal combustion engines have coped with flammable liquid fuels for 127 years.

But — the jury is still out on safe use of lithium batteries in large systems. Bear this in mind when making use of your own portable radios, computers, phones and power tools that employ lithium-ion technology. Don't short-circuit the battery, don't let batteries get too hot, keep them out of the sun and make sure they are never damaged by penetration or impact. Only recharge Li-ion batteries according to the manufacturer's recommendations with an approved charger. Be aware of recently revised regulations for transporting lithium and Li-ion batteries. And when a battery is no longer retaining sufficient charge, replace it and recycle responsibly.



- NM9J

Photo gallery



Mike N2HTT demonstrates the Elecraft KX3 at October's PCARA meeting. The KX3 is an all-mode ultra-portable 160 - 6m transceiver, with an internal 8-cell Ni-MH battery.

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://home.computer.net/~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 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. *Apart from holidays.

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 Nov 3: PCARA monthly meeting, Hudson Valley Hospital Center. 3:00 p.m.

Sun Dec 1: PCARA Holiday Dinner, Cortlandt Colonial Restaurant, 5:00 p.m.

Hamfests

Sun Oct 27: Long Island Mobile Amateur Radio Club, LIMARC Hamfest, Levittown Hall, 201 Levittown Parkway, Hicksville, NY. 8:00 am.

Fri Nov 29: Fair Lawn ARC Ham Radio Auction, Fair Lawn Senior Center, 11-05 Gardiner Road, Fair Lawn, NJ. 6:00 p.m.

Sat Dec 14: Boy Scout Troop 139 / Venture Crew 7373 Hamfest, Conlon Hall, 19 North William Street, Bergenfield, NJ. 8:00 am.

VE Test Sessions

Nov 2: Yonkers PAL Ham Radio Club, 127 N Broadway, Yonkers NY. 2:00 pm. Contact: M Rapp, 914 907 -6482.

Nov 3: Yonkers ARC, Yonkers PD, Grassy Sprain Rd., Yonkers. 8:30 am Contact D Calabrese, 914 667-0587.

Nov 14: WECA, Westchester Co Fire Trg Cen, 4 Dana Rd., Valhalla, NY. 7:00 pm. S. Rothman, 914 831-3258.

Nov 15: Orange County ARC, Munger Cottage, 395 Hudson St, Cornwall NY. 6:00 pm. Thomas R. Ray, (845) 391-3620.

Nov 18: Columbia Univ VE Team ARC, 531 Studebaker Bldg, 622 West 132nd Street, New York, NY. 6:30 pm. Alan Crosswell, 212 854-3754.



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