



# PCARA Update



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Peekskill / Cortlandt Amateur Radio Association Inc.

September 2006

## September song

Now that summer is winding down and everyone is getting back to the day-in day-out routine, it's also time to think about amateur radio. We have our next meeting on Sunday, September 10, 2006 at 3:00 PM at the Hudson Valley Hospital Center.

On the Public Service Events calendar there are a couple of things brewing. I was contacted by Robert Kantor, N2TSE the Public Service Director for WECA, and asked to see if any of our members would be interested in participating in a couple of activities. The first is the Golden Apple 2006 Bike Tour on September 17, 2006, and the second is the 2006 Tappan Zee Bike Tour for MS on October 1, 2006. If you're interested, please send an email to Robert Kantor, N2TSE at n2tse 'at' weca.org. Thank you.

The G5RV dipole that Malcolm, NM9J helped me to get back into the trees a couple of months ago, needs to be put up again. This time the remnants of Tropical Storm Ernesto took their toll. The 75 foot oak tree that held one end of the G5RV was uprooted and is now lying in my backyard (see pictures). Now I have to figure out how to get a new antenna up into the air!

Remember our meeting on Sunday, September 10, 2006 at 3:00 PM at the Hudson Valley Hospital Center. I look forward to seeing each of you there!

- 73 de Greg, KB2CQE



*This leafy antenna support at KB2CQE came crashing down in the winds of September 2. Fortunately, nothing was harmed apart from the G5RV antenna. (Photo - KB2CQE)*

## Magic band

PCARA members have been enjoying themselves on six meters over the summer break. Joe, WA2MCR erected a 6 meter beam on aluminum poles while Ray and Marylyn erected their M<sup>2</sup> three-element 6 meter yagi on a 20 foot mast that previously supported a discone. There have been some spectacular openings on this band over the summer months.



*W2CH 6 meter beam.  
(Photo - W2CH)*

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## PCARA Officers

President:

Greg Appleyard, KB2CQE kb2cq at arrl.net

Vice President:

Joe Calabrese, WA2MCR; wa2mcr at arrl.net

Secretary/Treasurer: open.

# Adventures in DXing

— N2KZ

## Seriously!

“When are we going to be there, Dad?” I’m starting to ask the similar questions about the world of HDTV. I was an early adopter, combining an outboard external tuner, decades of knowledge of TV DXing, and the Sony’s largest CRT screen to receive early broadcasts. High definition broadcasting is slowly improving, but it is really taking it’s time!

In the beginning, nearly every broadcaster ran the Harris Corporation HD test reel of a Space Shuttle launch. I have it memorized! The ABC HD test tape, offering wild test patterns, a tour of the Good Morning America studios, and a HD clip from “Monsters, Inc.” was run for days and days without end. The era of the endless test tape may be history, but test *patterns* have taken their place! Many DT broadcasters assume they have an audience only when HD broadcasts are on the air, not when regular SD broadcasts are being simulcast digitally. Watch HDTV regularly and you are bound to see interesting test patterns and other unusual “programming.” The best time to seek silliness is right before prime time around 7:50 pm local time. More and more DT stations are appearing daily, but few broadcasters take the medium seriously.



HD test pattern from Fox as seen by N2KZ.

WNBC and PBS’ WNET still don’t broadcast with a full power digital signal. Stations often come and go as they please. You’ll enjoy full power signals for a week or two, then power will be dropped for months, eventually to reappear at a later date. In just the past couple of weeks, I’ve seen closed-circuit test patterns from Fox and The WB on the air for a half an hour or more before prime time begins. How do fans of Gilmore Girls survive this torture? I really enjoyed Fox’s broadcasting a text frame stating only Fox affiliates should be watch-



HD color bar pattern from the WB Network.

ing this private program stream. Should I turn myself in – to the RF police?

February 17, 2009 is the big day when all analog television broadcasting will allegedly cease. Wal-Mart is already selling inexpensive 4 x 3 televisions with built-in digital tuners. Their boxes boast great claims about the additional programming now available due to digital multicasting. Does any consumer really understand what makes these new TVs different? I’m starting to believe that digital HDTV may be no more than a high-tech oddity never to be widely adopted by American families.

So many other avenues of entertainment are now available. I find myself watching more and more low-res Internet TV. If you’ve ever giggled at public access cable TV programs in the 1980s and 90s, you’ll love YouTube. Available on the Internet since early 2005, YouTube is a free-for-all web site offering nearly everything a home TV camcorder or computer camera can capture. It’s wild! There are endless videos of people singing or dancing to their favorite songs, old men ranting and shaking their fists, stupid animal videos and tons of clips pirated from commercial TV. Want to hear the rude comment Paris Hilton said on Letterman? YouTube will have a clip of it in no time!

Anyone can post programming on YouTube. Just quickly create an account for yourself, complete a brief file transfer, and you are on the air...uhhh...web! Get ready for responses! The entire world is watching and you are in the spotlight. OK, OK, maybe it’s more like a flashlight! No web site has so much face!

YouTube has become the star-maker venue for the next generation of Emmy award winners. Lots of people certainly try! Consider YouTube star “LucyinLA.” Lucy has just arrived in Hollywood direct from her adolescence in Texas. Every now and then, Lucy offers a three-minute video blog detailing her experiences as an aspiring actress in Tinsel Town. She’s loony, entertaining and innovative with only her hair bangs holding her





*Lucy in LA.*

back from superstardom! In her first month, 181,436 viewers watched Lucy's postings making her an instant video phenomenon. Take a look for yourself at: <http://www.youtube.com/profile?user=LUCYinLA>. You can even arrange to receive e-mails to prompt you every time a new episode is offered. Surf over today! Lucy needs your support!

The YouTube experience is entirely interactive. Do you really like a video? Post a video reply of your own! Endless text comments fill the home pages of most producers and many participants build large bundles of "friends" who share their interests and promote each other's work. On-line viewers constantly cheer and boo what they watch, but it's only a part of another day in the world of web video!

Is this the future of television? RF is only necessary for the last 100 feet between your wireless hub to your laptop! As the world slowly evolves into a global Wi-Fi hot spot, will traditional television, with high-powered transmitters, become obsolete? Will wide screen displays connect to all-purpose computers that provide a complete spectrum of communication and information? I'll bet on it! Tune in around 2016 and see for yourself!

### **Chime In!**

Anyone who has listened to shortwave radio in the past fifty years is acquainted with interval signals. Back in the days of analog radios, international broadcasters used distinctive little jingles, repeating over and over again, to lure listeners to their broadcasts. Each station had its own musical signature. Regular listeners would recognize these songs and immediately know who occupied a frequency.

One of the most famous hosts of shortwave broadcasting, Ian McFarland, (formerly of RCI and Radio Japan,) has produced a new 2-disc CD set featuring 160 classic interval signals and sign-ons. This material was originally broadcast on Radio Canada

International's SWL Digest program more than two decades ago. Now you can own this fascinating collection to rekindle your memories of the golden age of shortwave. For more information go to: <http://www.dxr.ca/content/view/40/>. Memories fade quickly but the songs linger on.



*Ian McFarland*

### **Get Hi!**

No doctor could help me! I caught the QRP bug again a few months ago. This recurring ailment afflicts amateur radio operators owning soldering irons and a passion for new thrills and adventure. My good friend, Lonnie, NY2LJ, handed me a small packet he just received from Small Wonder Labs. His message was simple: "Put it together and try it out!" Could I resist? The bug had bit me again!

Lonnie's envelope contained the latest CW QRP kit from Small Wonder Labs aptly named The Hi-Mite. It is the descendant of the popular Rock-Mite series of tiny CW transceivers, now improved and designed for use on the higher HF bands 20 meters and above. Before me were all the parts for the 20-meter version. The kit is designed to operate on 14.060 MHz, ready-to-go on the band's CW QRP frequency. The tiny circuit board offers a complete 20 meter transceiver with a built-in CW keyer and RIT. With only 250 milliwatts of output power, the Hi-Mite is quite an operating challenge in itself.



*Small Wonder Labs' HiMite CW transceiver.*

Assembly is easy, but you need some pre-requisite construction experience, concentration and patience. The kit's instructions are basic. Provided in the kit is a parts list, some brief assembly hints, and a handful of plastic packets holding all the parts you require. Read all the paperwork, heat up your soldering iron and go to it! All told, the Hi-Mite kit came alive after ten hours of work. The most time consuming aspect was mounting the PC board in a project box, drilling the necessary holes for the various connectors, switches and potenti-

ometers, and wiring all the external parts. I used small lengths of ribbon cable for wiring the controls. I learned this trick from other kits I have built. The result is a neatly dressed project that does not resemble a rat's nest! The Hi-Mite kit is bargain priced and is an easy ticket to QRP fun.

### Small wonder?

I can only wonder what the designer, Dave Benson, K1SWL, will dream up next! Small Wonder Labs also offers two self-contained transceiver kits for PSK31 operation. This could be quite a temptation as Christmas draws near! Dave has recently consolidated his one-man company to allow for a major move from Connecticut to New Hampshire. To view his current offerings, refer to <http://www.smallwonderlabs.com/>. Dave's level of support and quality of design are unsurpassed. Every SWL kit I have constructed worked the first time without fail. Dave is always ready to answer questions and address problems via e-mail. You are in good hands with Dave!



### Summer Vacation Elation

It wouldn't be summer without trying my luck in the wilds of Michigan with one of my little battery-operated QRP rigs. I always manage to squeeze my portable 20-meter dipole and QRP gear into the back of our mini-van along with tons of other luggage, sporting equipment and our large and silly black Labrador retriever. To assist installing my dipole antenna, I have invented a bizarre contraption to hoist ropes into the trees. The basis is a long sailboat mast. I lace a fiberglass mast from a windsurfer to the top of the sailboat mast and then try to lift this insanity into a vertical position. High atop this monstrosity, I attach a small piece of wood log, with one of the dipole's support ropes tied to it, with a piece of duct tape. I select a suitably high branch as my target and try to place the log over the branch. I jiggle the log until it breaks free from the pole. Gravity does the rest. The hardest part is persuading the rope through the extensions of the tree branches to take advantage of the height you have achieved inside the canopy of the tree. When this process works, it is true poetry. I'll have to try sling-shooting one day. I may be exerting a lot of needless energy to achieve the same result!

Operating on 20 meters, at the bottom of the 11-year sunspot cycle, can be an unpredictable trip in itself. During the day, you may need to endure high noise levels and fickle propagation conditions. I usually rely on the backdoor strategy waiting endlessly for a QSO to end and then screaming for attention to the stronger of the two participants. With QRP, you become truly thankful to receive any signal report at all! A RST of 559 is the earmark of a good day! Anything above

that level should be considered comical. I love participating in summertime contests, with five watts or less, and receiving 599 signal reports for nearly every contact. How silly.

This summer's QRP results were primarily domestic catches. I worked many stations from seven states all at distances of about 500 miles. This was quite different from last year when I hauled in many states and several European countries. Obviously, conditions have changed remarkably during the past twelve months. I always walk away with a rewarding sense of achievement from my remote QRP conquests. I also credit the phenomenal "ears" of my correspondent's stations.

### Coming soon?

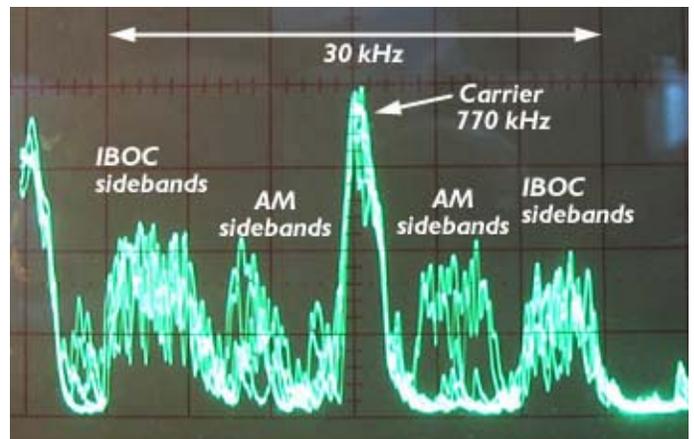
I have two late-year resolutions: I would like to start a weekly (or even daily) net on one of our PCARA repeaters to encourage more club participation. Please send me your suggestions regarding which days and times would be best for you. Would you prefer 2 meters or 70 cm? I'm also interested in organizing a club effort for the upcoming ARRL VHF contest September 9 through 11. Drop me a line at [n2kz@arrl.net](mailto:n2kz@arrl.net) if you would like to join the fun!

Until next month, happy trails de N2KZ the old goat. Dit dit.



## AM QRM

If you have a GC radio, tune to WABC 770, WFAN 660, WOR 710, or WCBS 880 kHz during daytime. Now switch to SSB — what do you hear? **Noise!** Now tune 12 kHz above or below the carrier and what do you hear? **Noise!** Those are the IBOC sidebands from "HD Radio" digital transmissions. What a racket!



Panoramic spectrum display on Kenwood SM-230 station monitor centered on 770 kHz, WABC-AM. Shows IBOC digital sidebands. Horizontal scale is 5 kHz per division.

# Essential<sub>2</sub> antennas

You may remember from last time that the “Essential<sub>2</sub>” campaign is sponsored by the American Chemistry Council, an organization that represents leading companies engaged in the business of chemistry. The ACC’s public education campaign is designed to show that chemistry is essential to safety, health, innovation, the environment, the economy... essential<sub>2</sub> our lives. Last time, I mentioned the importance of chemistry to two items found in many amateur radio stations... microphones and liquid crystal displays.

Moving outside from the shack, every amateur radio station needs at least one antenna... and antennas are another area where chemistry is essential. An understanding of chemistry can help in choosing the best materials for your RF radiator.

The simplest HF antennas are made of wire... and the favorite material for making these antennas is **copper wire**. But why do we choose the pink metal?

Copper metal is a good electrical conductor, it is easily worked and it can be drawn into a fine wire. It only corrodes slowly and was first manufactured in ancient times – around 7000 years ago. Today you can



*Stranded copper wire – ideal material for making antennas.*

walk into your local hardware store and pick up reels of copper wire intended for house wiring. Copper used to be inexpensive, but as global demand has risen, the price has quadrupled over the past five years to around \$7000 per ton.

One of the main minerals mined to obtain copper is the copper sulfide-based chalcopyrite  $\text{CuFeS}_2$ , extracted in the U.S.A, Canada and Chile. A more familiar mineral is the copper carbonate-based malachite,  $\text{CuCO}_3 \cdot \text{Cu(OH)}_2$ , used as polished slabs.

The sulfide ores are crushed, ground and concentrated by a technique called froth flotation. In this process, the ore is mixed with oil and water plus a surfactant. Air is bubbled through the mixture and a mix of copper mineral and oil rises to the surface, where it can be skimmed off. (The company I work for manufactures surfactants for froth flotation of several minerals.)

The concentrated ore is dried and roasted in a

furnace. A current of air removes some of the sulfur as sulfur dioxide while the iron-copper sulfide layer sinks to the bottom. This material is then smelted with sand and limestone to convert the iron to a fusible slag that can be removed. The remaining copper sulfide is then fused in a furnace where a blast of hot air oxidizes the rest of the sulfur, leaving metallic copper.

At this stage, this copper is still very impure and quite unsuitable for use as an electrical conductor. It is refined electrolytically, with the impure copper cast into anodes, which are placed in a bath of copper sulfate and sulfuric acid. The cathodes consist of thin sheets of pure copper. When current is passed through the cell, copper is dissolved from the anodes and deposited on the cathodes. Impurities such as iron and arsenic pass into solution while lead and silver are deposited around the anode. The resulting copper that collects on the cathodes is 99.99% pure and is shipped off to wire mills.

So... next time you roll out a length of copper wire to make an antenna, just think of all the chemistry that was involved in getting that wire from copper ore.

**String her up!** Now we have our copper wire antenna ready to go, we need something to suspend it from a tree or a mast. The best type of synthetic rope for this type of outdoor application is **polyester**. Polyester rope is similar in strength to nylon, but does not stretch as much. It is also more resistant to sunlight and abrasion than nylon. Polyester rope resists other



*The most suitable synthetic rope for raising antennas is polyester (top left). Nylon is stronger, but stretches too much. And while “poly” (polypropylene) rope is inexpensive and floats on water, it deteriorates in sunlight.*

chemicals and does not rot when exposed to moisture.

Polyesters are long-chain synthetic polymers that are connected by ester linkages. The particular polyester used to manufacture rope is **polyethylene terephthalate**, usually abbreviated to **PET**. This is the same material used to make clear plastic bottles for soda, fruit juice and other edible items. Once these lightweight, shatterproof bottles have been used to bring you food and drink, they can be recycled. The recycler re-melts the PET bottles, then extrudes the material into fibers for a second life as a rope or fabric.

Polyethylene terephthalate was discovered by British chemists James Dickson and Rex Whinfield during World War II. They produced the material by reacting ethylene glycol (as used in antifreeze) with dimethyl terephthalate. By incorporating an aromatic acid — containing a benzene ring — in the material, their polyester fibers were able to withstand the heat of an iron.

It took several decades for polyester production to be perfected. Modern plants use pure terephthalic acid rather than the methyl ester. Terephthalic acid, produced by oxidizing *p*-xylene, is reacted with ethylene glycol to form bis-(2-hydroxyethyl) terephthalate. This material is then heated to 200 degrees C under vacuum with a catalyst to produce the polymer.

When the resulting polymer is melt-spun into fibers, it is known by the trade names Dacron, Fortrel, Trevira, and Terylene. Polyester fibers perform particularly well when blended with cotton. Clothes made from these polyester blends are crease-resistant, easy to wash and need little or no ironing. Perfect for a DXpedition or for Field Day!

PET films are sold under a variety of trade names including Mylar. Mylar is a favorite material for manufacturing electrically-insulating sheets that can survive high temperatures, for making aluminized plastic film for capacitors, and for making those brightly colored metallized balloons seen at parties. PET film is also used in video and audio tape as well as photographic film.

So next time you are in the store choosing rope for your antenna, put aside those nylon, poly (polypropylene) and manila ropes. The type you want is **polyester**, made from versatile PET.



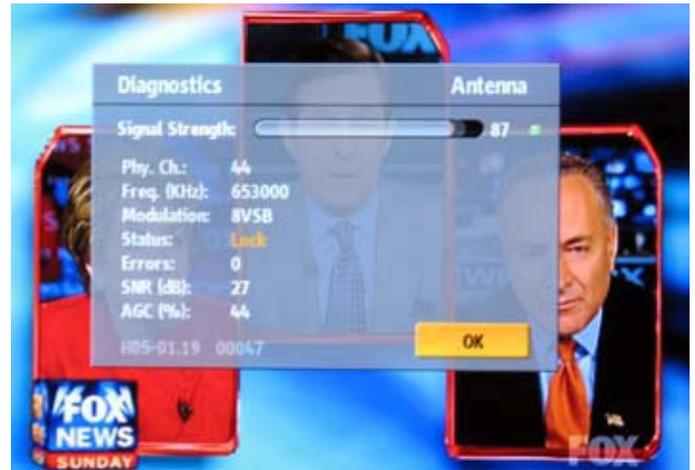
*Clear plastic soda bottles are also made from PET polyester.*

## HD for me

If you have been following N2KZ's columns in this issue and previous issues of the *PCARA Update*, you will know that Karl has been keeping us up-to-date with developments in over-the-air digital television and High-Definition TV in the northern Westchester area. You might think the only way to pick up these new-style digital TV signals is with an antenna... but as you'll see, there are more ways than one.

### Over the air

Success in receiving digital TV signals over the air is dependent on location. Digital TV signals from New York City are currently broadcast on UHF – and UHF propagation into our hilly Peekskill/Cortlandt area can be far from ideal. Digital stations have been ramping up power recently and some signals are consistently strong at my location. The strongest is WNYW-DT, Fox Television, on virtual channel 5.1, UHF channel 44, running 990kW ERP. Other stations running lower power are less strong, and their signals can vary depending on the time of day, weather, wind and number of leaves on the trees.



*The strongest digital signal out of New York City is WNYW-DT on UHF channel 44.*

With digital television, there is no “graceful degradation” as the signal level drops – it’s either there or it isn’t! A marginal signal such as WCBS-HD on virtual channel 2.1, UHF channel 56, 349kW ERP is viewable for less than 50% of the time at my location.

There are stations running so little power to such puny antennas that their digital signals have yet to penetrate Cortlandt Manor. One member of this hall of QRP fame is WNET-DT on virtual channel 13.1, UHF channel 61. They are rumored to be running a few 100 watts to a low-power panel antenna from somewhere deep in Manhattan.

- Malcolm, NM9J

Over-the-Air digital TV signals received in Peekskill/Cortlandt

VChan	Call	Netwk	AirCh	MHz	Resn
2.1	WCBS-HD	CBS	Ch 56	725.0	1080i
4.1	WNBC-DT	NBC	Ch 28	557.0	1080i
5.1	WNYW-DT	FOX	Ch 44	653.0	720p
5.2	WNYW-DT	my9	Ch 44	653.0	480i
7.1	WABC-HD	ABC	Ch 45	659.0	720p
7.2	WABC+	ABC	Ch 45	659.0	480i
7.3	WABCnow	ABC	Ch 45	659.0	480i
9.1	WWOR-DT	my9	Ch 38	617.0	1080i
9.2	WNYW-DT	FOX	Ch 38	617.0	480i
11.1	WPIX-DT	WBI1	Ch 33	587.0	1080i
11.2	WPIX-DT	theTube	Ch 33	587.0	480i
31.1	WPXN-DT	i	Ch 30	569.0	480i
41.1	WXTV-DT	UNI	Ch 40	629.0	480i
48.1	WRNN-DT	RNN	Ch 48	677.0	480i
50.1	WNJN-DT	PBS	Ch 51	695.0	480i
50.3	NJN-3	PBS	Ch 51	695.0	480i
50.4	NJN-4	PBS	Ch 51	695.0	480i
50.5	NJN-HD	PBS	Ch 51	695.0	1080i
54.1	WTBY-DT	TBN	Ch 27	551.0	480i
63.1	WMBC	—	Ch 18	497.0	480i
68.1	WFUT-DT	TEL	Ch 53	707.0	480i

(WPXN, WRNN, and WTBY also have multiple virtual channels, not listed above.)

Hint: for up-to-date information on broadcast stations, including location, power and coverage maps, take a look at the REC Networks broadcast query page,



<http://www.recnet.com/cdb/fmq.php>. This site is easier to understand than the FCC database from which it draws data. REC

networks is a supporter of low power FM and other ways to allow individual access to the airwaves.

**Enabled cable**

One alternative to over-the-air reception is **digital cable**. Cablevision serves the Peekskill/Cortlandt area and offers “iO” (Interactive Optimum) digital cable service. “iO” provides up to 170 channels of digital television, delivered along the same coaxial cable as analog cable TV.

In order to receive HDTV and digital TV, Cablevision would like you to rent a digital set top box. Quoting the Cablevision web site: “A digital cable box is required (at an additional charge) for each TV set to receive digital services.”

This statement is not quite correct. Cablevision transmits a number of digital channels “in the clear” and no set top box is required to receive them. All you need is the bare minimum “Broadcast Basic” subscription and a digital cable ready TV set or converter.

The acronym to look for on the TV’s specification is “**QAM**” (quadrature amplitude modulation), the

scheme used by cable TV in the USA for transmitting digital television over cable. In contrast, “ATSC” (Advanced Television System Committee) is the acronym to seek for over-the-air digital TV, which uses 8VSB (8-level Vestigial Sideband Modulation) as the mode of transmission.

For optimum flexibility, pick a digital-cable-ready TV set capable of receiving **both** QAM and ATSC, with **two** separate antenna connections, one for cable-TV and the other for your external, over-the-air antenna. Beware... sets described as “monitors” do not need any sort of TV decoder. The FCC now requires all sets described as “televisions” sized 25-inch and above, to have an ATSC tuner built-in. This is in preparation for the great analog TV shutoff, now scheduled for February 17, 2009.



“Digital cable ready” logo means a set is “Plug and Play” compatible with digital cable and with CableCARD technology.

The 8VSB modulation method used for over-the-air digital TV allows a bit rate of 19.39 Mbps in each 6 MHz-wide TV channel – and just about all that bandwidth is consumed when a high definition TV transmission is underway. If that same 6 MHz bandwidth is used for multiple *standard-definition* TV signals, there is sufficient room for up to six different program streams – a technique the broadcasters call “**multicasting**”. For example, WTBY-DT, Poughkeepsie carries five different religious programs in 480i standard definition on UHF channel 27. They are labeled: 54.1 WTBY-DT; 54.2 Church; 54.3 JCTV; 54.4 EnLace and 54.5 SOAC.



WTBY is the Trinity Broadcasting Network (TBN) station in Poughkeepsie, NY.

Cable television has fewer problems of fading and multipath to worry about than over-the-air broadcasters, so they can employ the less rigorous QAM method of modulation. QAM-64 can provide a digital bandwidth of 27 Mbps in each 6 MHz TV channel while QAM-256 (as used by Cablevision) can provide 38.4 Mbps. This is sufficient for 11 or 12 standard-definition program streams, or 2 HD streams plus a couple of SD streams within each 6 MHz-wide cable TV channel.

If you have a digital-cable-ready TV and you connect it to Cablevision’s North Westchester system, the following list shows the digital channels transmitted “in the clear” which you should be able to receive without the need for a digital set top box or a CableCARD.

CChan	Call	PhyCh	MHz	Resn	Aspect
0	WPIX-HD	81	567.0	1080i	16:9
84.39	WNYE (25)	84	585.0	480i	4:3
84.40	WNJU (47)	84	585.0	480i	4:3
84.42	WRNN	84	585.0	480i	4:3
84.43	WMBC (63)	84	585.0	480i	4:3
84.44	WFUT (68)	84	585.0	480i	4:3
84.46	WNJN (50)	84	585.0	480i	4:3
84.62	Chan 12	84	585.0	480i	4:3
84.67	WTBY (54)	84	585.0	480i	4:3
94.29	WCBS (2)	94	645.0	480i	4:3
94.30	WNBC (4)	94	645.0	480i	4:3
94.31	WNYW (5)	94	645.0	480i	4:3
94.32	WABC (7)	94	645.0	480i	4:3
94.33	WWOR (9)	94	645.0	480i	4:3
94.34	WPIX (11)	94	645.0	480i	4:3
94.35	WNET (13)	94	645.0	480i	4:3
94.36	WLIW (21)	94	645.0	480i	4:3
94.37	WXTV (44)	94	645.0	480i	4:3
94.38	WPIX (31)	94	645.0	480i	4:3
99.4	HSN	99	117.025	480i	4:3
100	iODG	89	615.0	480i	4:3
107	ABC+ (7.2)	83	579.0	480i	4:3
108	7NOW (7.3)	83	579.0	480i	4:3
109	NBCWP (4.2)	101	657.0	480i	4:3
110	NBC44 (4.4)	101	657.0	480i	4:3
118	"Oscilloscope Channel" (NTSC)				
131	13KDS (13.2)	110	711.0	480i	4:3
132	13WLD (13.3)	110	711.0	480i	4:3
133	21CRT (21.3)	83	579.0	480i	4:3
161	HISi (History Int)	108	699.0	480i	4:3
181	SNBC	107	693.0	480i	4:3
184	TheTube	81	567.0	480i	4:3
431	NBAC	111	717.0	480i	4:3
702	CBS-HD (2.1)	110	711.0	1080i	16:9
704	NBC-HD (4.1)	101	657.0	1080i	16:9
705	FOX (5.1)	101	657.0	720p	16:9
707	ABC-HD (7.1)	83	579.0	720p	16:9
713	13HD (13.1)	110	711.0	1080i	16:9
721	21NY (21.2)	83	579.0	480i	4:3
823	80s	109	705.0	480p	4:3

The first thing to notice is that standard analog over-the-air broadcast channels are duplicated on digital cable at standard definition (SD) of 480i – 480 lines, interlaced scan. Additional virtual channels broadcast by WNBC-DT, WABC-DT, WNET-DT, WPIX-DT and WLIW-DT such as WABC's 7.2 "WABC+" are made available on Cablevision iO as "separate" digital channels (Ch 107 in the case of WABC+). However, the additional multicast programs of our other local broadcasters are very definitely **not** being carried.

### Must carry?

At the time of writing there is a dispute between over-the-air broadcasters and the cable TV industry

over "must carry" rules for digital cable. The existing FCC rules for **analog** TV channels basically require cable companies to distribute all local over-the-air TV channels that are available in a given area. Cable companies do not want this ruling extended to **digital** television because of the previously-mentioned "multicasting", where additional standard definition services are squeezed into the broadcasters' 6MHz-wide digital TV channels. These additional services could consume more precious bandwidth than the cable companies are willing to hand over. The broadcasters argue that with a majority of viewers watching *via* cable, there is little reason for them to add more program choices if the cable companies refuse to carry these multicast channels. As of August, the FCC had not ruled on this tricky situation and final resolution may require intervention by Congress. Meanwhile, if you would like to watch all the program streams from WTBY-DT on UHF channel 54, or from WNJN-DT on channel 51, you will need an external antenna.

The high definition TV coverage on Cablevision is good, but not complete. Six high definition program streams from WCBS, WNBC, WNYW, WABC, WPIX ("Ch 11.1") and WNET ("Ch 13.1") are carried. Missing from the line-up is any high definition programming from WNJN (Ch 50.5) or WWOR (Ch 9.1). Cable companies have agreed to carry the primary analog and digital streams of at least one Public TV station per market — and Cablevision already carries WNET + WLIW's analog plus digital content.

The WWOR-DT gap may be a carryover from an earlier dispute between Cablevision and YES, the Yankees Entertainment and Sports Network. WWOR's Yankees coverage is produced by YES. (Cablevision does carry the "YES-HD" network, but not in-the-clear.)

In January this year, the UPN and WB networks announced that they would merge. The combined network will be called "The CW" — nothing to do with Morse code, the letters instead represent the initials of **CBS** (UPN's parent) and **Warner**. The new network is due to come on air September 18 over WPIX (Ch 11). Meanwhile WWOR (Ch 9) has abandoned all reference to its former UPN affiliation — apart from its web site <http://www.upn9.com/> — and changed its on-air branding to "my9". This is part of Fox's "MyNetworkTV", due to start on September 5<sup>th</sup> and reportedly heavy on prime-time "telenovelas".



### The digital experience

Digital television shows similar improvements over analog whether it is delivered on cable, satellite or over-the-air. The picture is practically perfect (depending on the source), with no ghosting and no picture noise. Sound quality can also be excellent. The only



Comparison of over-the-air analog broadcast from WNJN (top) with standard definition 480i digital broadcast (bottom). While the analog signal on UHF channel 50 is noisy, the digital signal on WNJN-DT channel 51 (virtual channel 50.1) is noise-free. WNJN is located at Montclair State University.

downside is the sudden pixellation, followed by complete disappearance of sound and vision when the signal level drops.

### Highly Defined

What does high definition look and sound like? With HD broadcasts, the technical improvements continue, though the content is much as before. For the commercial networks, a good deal of the programming on each HD channel is still the same old 4:3 480i source material as carried on the same station's standard definition outlet. However, in prime time, the networks roll-out their most popular programming in 720p or 1080i high definition, with 16:9 widescreen aspect ratio and Dolby Digital 5.1 sound. Sports coverage is also becoming available in High Definition. Compared with standard NTSC analog video, the improvement can be quite spectacular – whether it's blades of grass on the football field, blemishes on the actors' complexions or beautifully crisp credits at the conclusion. Unfortunately trash TV is still trashy, no matter how many thousand lines it is transmitted with.

High definition programming is mostly broadcast in a 16:9 widescreen aspect ratio. Some program types

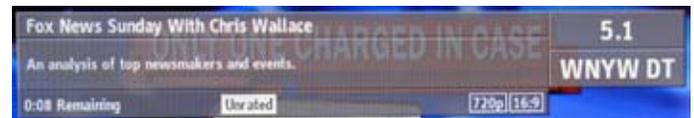
– including news and commercial breaks – need to incorporate standard definition 4:3 aspect ratio material within that 16:9 format. Many HD stations transmit black side panels with 4:3 material, but WCBS-HD changes the side panel color to gray. During these transitions to and from 4:3, the sound can hop backwards and forwards from Dolby 5.1 to plain old two channel stereo.

New York's PBS station WNET has a high definition channel that is a little different from the other, commercial channels – it transmits high definition material around the clock, including a mixture of science and nature documentaries. And whenever WNET-13's regular schedule features an item that is available in high definition, "thirteenHD" carries that same material in high definition.

There is another high definition PBS source available in our area -- and that is WNJN-DT. After 8:00 p.m., virtual channel 50.5 is turned on, carrying a somewhat repetitive schedule of PBS programming in high definition. NJN-HD is **not** available on Cablevision iO.

Most cable companies use the range 54 MHz–550 MHz for delivery of analog TV signals, and 550 MHz–750 MHz for delivery of digital signals. The range 5-42 MHz is reserved for upstream data – for example for ordering pay-per-view events and for the upstream channel from Internet customers with cable modems. At times, Cablevision displays the output from a spectrum analyzer tuned to this part of the band on NTSC -- analog cable channel 118.

One problem with Cablevision's digital cable service is that the "PSIP" title and program information



The ATSC's **PSIP** standard — **Program and System Information Protocol** — lets broadcasters identify themselves and describe up to 16 days of programming.

that accompanies over-the-air digital and analog TV is unavailable for digital cable on a QAM-compatible set. In order to see this information as well as the channel guide, you would need the cable company's set top box. The cable company transmits their interactive program guide and other information over a separate digital channel, known as the "OOB-FDC" (Out of Band - Forward Data Channel) – Cablevision employs a frequency of 70 MHz for the OOB-FDC, with a bit rate of 1544 kbps. Fortunately, channel names and closed captioning information do still come through the digital bit stream on the individual channels of HD stations carried on cable.

- Malcolm, NM9J

# Peekskill / Cortlandt Amateur Radio Association

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

**E-Mail:** w2nyw@arrl.net

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

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

E-mail: NM9J @ 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

(IRLP node: **4214**)

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

## PCARA Calendar

**Sun Sept 10:** September meeting, 3:00 PM. HVHC

## Hamfests

**Sun Sep 10:** LIMARC Hamfest, Briarcliffe College 1055 Stewart Ave, Bethpage, NY. 9:00 a.m.

**Sun Sep 17:** Candlewood ARA, West CT Hamfest, Edmond Town Hall, Rt 25, Newtown CT. 8:30 a.m.

**Sat Sep 30:** Bergen ARA Fall Hamfest, Westwood Regional HS, 701 Ridgewood Rd, Washington Twnshp, NJ. 8:00 a.m.

**Sun Oct 1:** Hall of Science ARC, New York Hall of Science, 47-01 111th St, Flushing Meadows Corona Park, Queens, NY. 9AM

## VE Test Sessions

**Sep 3:** Yonkers ARC, Yonkers PD, 1st Precinct, E Grassy Sprain Rd, 8:30 a.m. Contact D. Calabrese, 914 667-0587.

**Sep 18:** Columbia Univ ARC, Watson Labs, 612 W 115th St. New York, NY, 6:30 p.m. Contact Alan Crosswell, 212 854-3754.

**Sep 23:** PEARL, Bureau of Emergency Services, 112 Old Rt 6, Donald Smith Campus, Training & Ops Facility, Carmel, NY. 9:00 a.m. Contact NM9J.

**Sep 30:** Bergen ARA, Westwood Regional HS, 701 Ridgewood Rd, Washington Twnshp, NJ. 8:00 a.m. Contact Donald C. Younger, (201) 265-6583.

**Oct 1:** Yonkers ARC, Yonkers PD, 1st Precinct, E Grassy Sprain Rd, 8:30 a.m. Contact D. Calabrese, 914 667-0587.

**Reminder** — new Technician Question Pool from July 1, 2006.



Peekskill / Cortlandt Amateur Radio Association Inc.

PO Box 146

Crompond, NY 10517