PCARA Update

Volume 16, Issue 5 Peekskill/Cortlandt Amateur Radio Association Inc. May 2015

Repeat performance

We had an excellent turnout of PCARA members for the Orange County Amateur Radio Club Spring Hamfest on April 19 in Middletown, NY. There were two tables full of equipment being offered for sale. It was really great to see so many of our members there, enjoying the spring sunshine!

Mike N2EAB and Greg KB2CQE stand behind the PCARA club table at Orange County ARC's recent Hamfest.

There are two weeks left to prepare for the PCARA Fox Hunt. The hunt will begin at the Beach Shopping Center in Peekskill, NY at 3:00 pm on Saturday May 9, 2015. Registration starts at 2:30 pm, and you must register in order to participate. Just a reminder that the role of the Fox is being played by Karl, N2KZ, who has a reputation of being quite creative and cunningly clever. Yagis, attenuators, meters, maps, compasses, and good luck are strongly recommended. Rules for the Fox Hunt are included in this month's issue. At the conclusion we will gather at a location of the Fox's choosing (usually a local diner or restaurant) for a meal, refreshment, and awards. Please consider joining us for an afternoon of adventure and fun.

A **new** Yaesu DR-1X 144/430 Dual Band C4FM/FM Digital Repeater is on order and expected to be delivered within the next couple of months. The repeater was ordered through a program offered by Yaesu allowing amateur radio clubs to purchase the unit at a substantially discounted price. This repeater is capable of simultaneous analog and digital operation and will permit PCARA to experiment with digital technology, as well as provide an analog backup for either the 146.670 MHz or 449.925 MHz repeaters. More details to follow.

Yaesu DR-1X System Fusion dual band repeater handles conventional FM and C4FM digital transmission.

The ARRL Field Day 2015 will take place on June 27-28. As in years past, PCARA is planning on holding Field Day activities at Walter Panas High School in Cortlandt Manor, NY (pending approval by the Lakeland Central School District). Field Day will be on the agenda for the May 2015 meeting. If you are interested in participating in Field Day please let us know at: mail'at'pcara.org.

There are two local hamfests coming up in May. They are the Bergen Amateur Radio Association (BARA) Spring Hamfest on Saturday May 30, 2015, and the Mount Beacon Amateur Radio Club (MBARC) Hamfest on Sunday May 31, 2015. If anyone is interested in taking a table at either of these hamfests, please let us know at the May 2015 meeting.

Our next regularly scheduled meeting is on May 3, 2015 at 3:00 pm at NewYork-Presbyterian / Hudson Valley Hospital. I look forward to seeing each of you there. - 73 de Greg, KB2CQE

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It's Spring

Amazing news: Snow has finally melted away from our lawns and driveways. There is actually a lawn under there! Along with gathering debris and picking up hundreds of fallen sticks, garden maintenance also includes examining chimneys, tree forks, man-made towers and other supports after a long and troubled winter. Antennas need to be high above ground and it's our responsibility to keep them aloft!

Before I even attempt to climb onto my roof, I secure a couple of hanks of rope with the correct diameter fit to be threaded through ceramic dog bone insulators. Never has there been a winter that didn't weather and wither away my dipole ropes.

This Spring was no different. My ten-meter dipole completely fell away at one end. While replacing its rope, I noticed my 40-meter dipole was also holding on for dear life. It was just relying on some knots and twists around my chimney to remain aloft. From the evidence I saw, it appears that the 40m rope broke some time ago! Both rotted ropes have now been replaced with new white shiny replacements. Maybe you should take a look at yours!

Our editor, Malcolm, NM9J, has written two informative essays describing the chemistry necessary to create today's miracle resilient ropes. You can find these articles in our *Update* archive. The September 2006 edition provides a fine introduction to rope fibers and the June 2010 newsletter continues with even more detail. All 15 years of PCARA Update can be found at: http://home.lanline.com/~pcara/newslett.htm.

3/16" dia double-braided polyester antenna rope.

Malcolm's wisdom: "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 chemicals and does not rot when exposed to moisture."

Where do you find good polyester rope? Malcolm suggests hamfests and marine supply stores. Certainly, mariners require the best ropes possible to meet the demands of their work. These ropes will serve you well. If possible, buy black colored rope to deter sun damage further. Tie one on!

FM in the Sunset

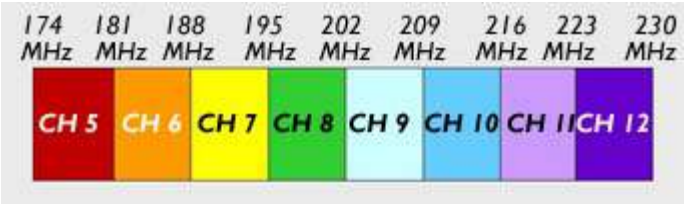
Norway is getting rid of FM radio. They just don't need it anymore. They have better things to listen to. Really. I'm not kidding. Norway has been working on it for 20 years! Fly to Oslo! Hear the future now!

This amazing milestone in the history of radio will begin in 2017. Norway is preparing to become the first country on Earth to rely entirely on a new all-digital approach to broadcasting. No FM is necessary! Listeners will continue to hear dozens and dozens of crystal clear digital radio channels with beautiful fidelity. Broadcasters will spend less money on transmission costs. Probably most important: Radio in Norway will use less precious spectrum space than ever before.

How is it done?

Norway plotted a solid direction towards the future and never lost course. Their good fortune began with the allocation of a new frequency band exclusively for digital audio broadcasting: 174 to 240 MHz. CEPT, The European Conference of Postal and Telecommunications Administrations, set aside 'high VHF Band III' specifically for digital radio. This spectrum is roughly the same territory used for TV channels 7 through 13 in The Americas. TV broadcasts in Norway have been exclusively on UHF frequencies for a very long time so high VHF was ripe and ready for use.

The rationale was simple. Broadcasting in Norway began nearly ninety years ago on medium wave and long wave. When FM became popular, it enjoyed a new frequency band to insure its success: 87.5 to 108 MHz. Digital arrived in 1995 and found its own place on the dial: 174 to 240 MHz. It all made sense.



High-VHF Band III TV channels in Europe are now being used for digital radio.

Discreet bands for each transmission method allowed development of new technologies without being backwards compatible. Europe was free from the challenge (and eventual failure) of implementing in-band on-carrier compatible digital (IBOC 'HD Radio') as seen in The United States. Every European band had a purpose and there was no requirement to mix broadcast standards and technologies in one pot. In Norwegian eyes, trying to piggyback digital signals on

an archaic AM or FM carrier would be absurd. The purveyors of our stateside 'HD Radio' had another idea!

Norway is a lightly-populated country (5 million people) in northern Europe, bordered by Sweden, Finland and Russia.

The Norwegian approach is also remarkably efficient with spectrum space and overall financial cost. Most areas in Norway are served by only two or three transmitters employing a technique known as **SFN** — Single Frequency Networks. One digital carrier is capable of delivering 12 or more individual radio programs simultaneously. 36 or more radio stations only require about 4.5 MHz compared to 20 MHz necessary to convey the same amount of programs via the analog FM band. Amazing!

It Makes Sense

Consider the budget necessary to install, operate and maintain 36 separate FM stations and associated translators to cover all of Norway. Compare this to running three SFN multiplexes with a similar distribution scheme. Bean counters would be smiling enough to treat themselves to a free lunch!

This new digital world is an interesting one. Radio's delivery becomes quite concise and efficient. Transmitted bandwidth within a SFN can be changed at will to suit the needs of each specific format. Is your station mostly talk? Use less bandwidth. Does your service feature classical music and show tunes? Widen its bandwidth for ultra-fidelity. (Norway's SFNs use a bitrate of 192 kbps for music and 96 kbps for talk.) Network managers can tailor their multiplexes to suit today's needs.

The history of Norwegian digital radio technology is fascinating. The original system, deployed in 1995, was called simply DAB - Digital Audio Broadcasting. To receive these new broadcasts, people in Norway needed to purchase completely new radios to suit. LW/AM/FM radios simply won't work!

The incentive to update was enticing. With AM radio, you could hear maybe two different stations. FM radio provided a small handful of choices, at best. Pulling in each individual analog AM or FM station could be tricky and challenging. Digital transmission provides dozens of static-free choices without worry or elaboration. High-powered digital transmissions, on the high end of the VHF spectrum, became a perfect combination for success.

Engineers studied their initial impressions of the DAB system and found room for improvement. Mobile reception needed further refinement especially to meet the demands of rough terrain and distance. Analytical studies revealed what was being lost during travel mostly occurred during high-speed driving. One problem was particularly fascinating: Digital signals were losing lock when cars exceeded 120 km/h due to Doppler shift! Diagnostic work began and designers looked for answers.

A few years later, an all-new system was launched and marketed. DAB+ was a completely redesigned system that doubled the efficiency of bandwidth use (twice as many programs were now possible.) Designers decided to use a new digital codec called AAC+ and also employ the Reed-Solomon error correction scheme. Radio moved another step forward.

The conversion to DAB+ took some time to deploy. Unfortunately, DAB+ was not compatible with the original DAB transmission scheme, so listeners had to, once again, invest in new radios. It has been 20 years since Norway began to broadcast using DAB formats. Today, 99.5% of Norwegians can receive a DAB+ signal and over half of Norway's radio listeners already rely on digital to tune in.

Norway Is Ready

The time has come to pull the plug and discontinue all analog FM broadcasting in Norway. Operating redundant analog broadcasts no longer makes financial sense. First to go all digital will be the dominant government-owned NRK station group heard across the nation. Analog shutdown will begin in 2017. Local independent broadcasters are encouraged to follow suit although there is no mandatory date for their analog demise quite yet.

Digital DAB+ has earned public acceptance after demonstrating long-term technical reliability and providing vast programming options. Adding to the embrace is the ability to send descriptive text for station IDs, song and program titles and other program information. The system is also capable of sending graphics and entertainment material. I think they thought of everything!

So, what's in store for digital radio? The choices are many. The easiest way to tune in is to purchase an outboard converter such as the popular Tiny Audio C3.

It uses a retrofit receiving antenna that glues onto your windshield. DAB+ broadcasts are relayed to your car radio via a low powered FM transmitter built into the Tiny Audio C3. Tune your older FM radio to your converter's transmission frequency and hear the world of DAB+ now! Power for the converter comes from a 12 volt cigarette lighter plug adapter. The Tiny Audio C3 looks very similar to converters marketed in North America for Sirius and XM satellite radio reception.

The Tiny Audio C3 is a converter for Band III DAB transmissions, allowing reception on a nearby FM radio

This little converter is quite a diverse and agile beastie. The display indicates signal strength, output FM frequency, actual received DAB frequency, SFN channel and program ID along with rolling text capable of all sorts of text messages. An interface is available to integrate the Tiny Audio C3 with your smartphone or other Bluetooth device. Onboard memory allows you to pause broadcasts or even replay them. If you have an older car, this converter will help you get with the program! Fancy stuff! Of course, many car manufacturers integrate full-featured DAB+ radios into their new vehicles making converters unnecessary.

Home DAB+ receivers come in all shapes and sizes. First, take a look at a major retailer's offerings: Komplett is the Norwegian equivalent of Best Buy. Try https://www.komplett.no/ and search DAB+. You'll see quite an amazing collection! One manufacturer seems to lead the pack — a British firm called Pure. I really want to try their tiny portable receiver — the Move 2500. Simple and basic with a big sound. See: http://www.pure.com/digitalradio/

The Pure Move 2500 is a rechargeable personal DAB Digital and FM Radio.

Two very attractive and popular models caught my eye. They feature attractive wood grain cabinetry and sleek European styling. The best-selling Pure Evoke D6 and the Sony XDR-SD16DBP both combine a nostalgic tip of the hat to legacy designs combined with clean lines and style you would expect today. Norwegian living rooms and bedrooms would welcome these beauties.

Pure Evoke D6 is a portable stereo DAB Digital and FM receiver, as well as a Bluetooth speaker.

The features are fun, too. Most of these radios all auto-tune by program name. First, you scan the band to create a list of available programs. Scroll through the list as you decide what you would like to listen to. Now you are locked on to a channel. Travel far and wide and the radio will follow your program from transmitter to transmitter along the way as you go. No retuning necessary! More sophisticated sets also allow tuning by individual multiplex or actual transmit frequency. It is a new world over there!

Listen To This!

So what can you hear? The dominant broadcaster in Norway is NRK - Norsk rikskringkasting AS — owned and operated by the government of Norway. Typically, one of the three DAB+ SFN multiplexes will be exclusively loaded with NRK programming. You'll find many formats to choose from: news/talk, pop, dance, classical, jazz and several services aimed at specific local and regional audiences.

Many independent broadcasters offer alternatives to NRK. Radio Norge is a popular full service

Tryvannstårnet broadcast tower (right) stands 387 feet tall, on the 1,736 ft summit of Tryvannshøyden hill near Oslo.

station mixing music, talk and information for general audiences. You might also find some international content. France is well-represented by Radio Nova, Radio Inter and NRJ. See a complete rundown of Norwegian radio channels at: http://radiomap.eu/no. Click on the station names to hear live streams of each radio service!

Ingøy longwave transmitter on 153 kHz uses an 1188 ft guyed mast plus skirt radiator.

One Norwegian analog station shows no sign of retirement: NRK's 100 kW longwave station at Ingøy Måsøy — a remote island in the farthest reaches of Northern Norway — operates on 153 kHz. Its antenna tower reaches 1188 feet — the tallest structure in Scandinavia. When all else fails, this station will be heard! Longwave DXers have logged it all over the world. Long live longwave!

Norway is far ahead in the roll-out of their DAB system, but they are not alone. 21 countries have established DAB operations with another 18 countries experimenting and deciding their fate. Canada is in digital limbo. They tried digital audio on the L band (around 1.47 GHz) and the system never gained popularity.

America's HD Radio scheme has been treading water since testing began in 2001. HD Radio is not a SFN system but an add-on to existing analog operations. Few financial gains can be found and stations must purchase licenses to use this technology. Adding to the mud is a lack of new innovative programming and useful receivers for purchase. Our wheels are spinning and we are not moving ahead.

All hope is not lost. Americans almost have a SFN in our SiriusXM satellite system serving Canada and the United States. Since most SiriusXM radios are found in cars, receiver and converter choices are limited. The system is financially quite a success. More subscribers than ever now listen to SiriusXM. Mobile satellite radio is not available in Europe. Still, I'd love to experience the advanced technology of Norwegian DAB+ up north.

Finally, DXers should know that DAB+ travels long distances during high-VHF tropo lifts. Norway's DAB+ has been heard in various places in Europe when conditions allow. Visit ace DXer Ruud Brand's channel on YouTube: https://www.youtube.com/user/RBrDX (look at his videos) for documentation of some amazing catches!

It will probably be many years or decades before analog terrestrial broadcasts will be ended in North America. Currently, America looks like it is heading towards Wi-Fi as a digital multimedia distribution system. Time will tell!

Catch A Fox!

DX is not the only thing you can catch! A certain fox will be hiding within 5 miles of the Beach Shopping Center in Peekskill on Saturday afternoon, May 9 starting at 3 pm. Participant fox hunters will gather at about 2:30 pm adjacent to the CVS Pharmacy and check in with hunt co-ordinator, Malcolm NM9J. Everyone is welcome to join in! No amateur radio license is necessary to participate! Look for the fox on 146.565 MHz FM simplex until 4:30 pm. I will guarantee this will be a fun and challenging hunt!

Karl's previous appearance as Fox was in May 2013 when he was hiding at the Scenic Overlook on the Goat Trail (Route 6 approaching Bear Mountain Bridge).

After the adventure is complete, we will gather at a local restaurant to exchange experiences, award the winners and just have fun! All welcome! Please join us!

Until next month, prepare to catch the fox! I'll be waiting for you! 73s and dit dit de N2KZ - The Old Goat.

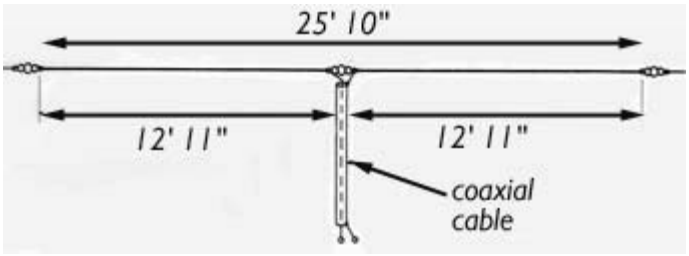
Three dollar dipole

-N2CKD

Like most hams I enjoy constructing antennas and other projects from unusual sources, so when I wanted to make an inexpensive 17 meter (18.11 MHz) dipole I was scrounging in my junk box for left-over wire and an SO-239 UHF connector.

I did not have any spare wire so decided to buy some. At a local hardware store and at Home Depot the price of 16 gauge wire turned out to be more expensive than I thought. During my next stop at Walmart I found an inexpensive 15 foot household extension cord at a bargain price of $2.97 so I purchased it. A 15 foot extension cord is an ideal length to make a 17 meter dipole, which is about 12' 11" long for each leg of the dipole. My initial idea was to cut off the 120 volt plug and receptacle and use just the 15 feet of insulated wire.

Walmart extension cord.



Dimensions of a half-wave dipole for the 17 meter band, center frequency 18.11 MHz, using formula: l = 468/f ft.

When I got home I thought I would try something different, so here is a novel idea I came up with.

1. Cut off the molded plug and discard it. Split and pull apart the twin lead from the cut end toward the receptacle end. Now you have two lengths of wire for the dipole, approximately 15 feet long. Cut each wire end to approximately 13' 4" for later trimming to resonance. (Better to cut too long rather than too short).


Cut off the molded plug.

2. Cut a portion off the top of the molded receptacle, about ¼" deep. This should be just far enough to expose the metal contact strips for live and neutral. Make small holes on top and bottom for mounting the SO-239 socket. I enlarged the SO-239 mounting holes slightly to allow a #6 machine screw (1¼" long) to pass through.


Cut the molded receptacle to expose the brass contact strips.

3. Solder the exposed metal contact strips to two lengths of flexible speaker wire about 1¼" long. Solder one wire to the SO-239 socket center pin and the other wire to a solder lug washer. The lug washer will make contact to the grounded portion of the SO-239 when a #6 screw is inserted. The speaker wire flexes easily and tucks down during assembly.


Flexible wires connect the outlet's contact strips to SO-239 center pin and to a solder lug for ground.

4. When the soldering is done, carefully insert #6 machine screws through the SO-239 mounting holes to finish the assembly. The final product looks compact, secure and functional. The small open gaps around the socket should be filled with suitable insulating compound to make it water-proof, for example Coax-Seal.


Mount the SO-239 on the molded outlet using machine screws and nuts. [Pics - N2CKD]

After trimming the dipole end wires with an antenna analyzer I was able to resonate the antenna in the center of the 17 meter band. I could then load the antenna at 125 watts with an SWR of 1:1.2 without a tuner. The antenna is very quiet compared to my multi-band vertical.

Needless to say, I am very pleased that building a dipole from an inexpensive $3.00 household extension cord worked out better than I expected and am glad to share my experience with you. Make one for yourself and have fun.


Lovji N2CKD holds up his $3.00 dipole.

- 73 de Lovji, N2CKD

PCARA Foxhunt Rules

Saturday May 9, 2015

1. Transmission: FM simplex on 146.565 MHz, horizontally polarized.

2. Transmissions start at 3:00 p.m. for 5 minutes, followed by 5 minutes off. Second transmission commences at 3:10 p.m. 3 minutes on, 7 minutes off. The fox will not move during this time. This cycle repeats at 10 minute intervals until the last transmission ends at 4:30 p.m. when the fox will announce its location.

3. The opening transmission will include a time check for watch synchronization.

4. All contestants who wish to be eligible for a prize must book in at the **Beach Shopping Center car park***, in Peekskill before the start. Contestants will count as one team if more than one person occupies a car. (i.e. if three in a car, they don't get first, second and third prize.)

* on the far west side of the car park near CVS.

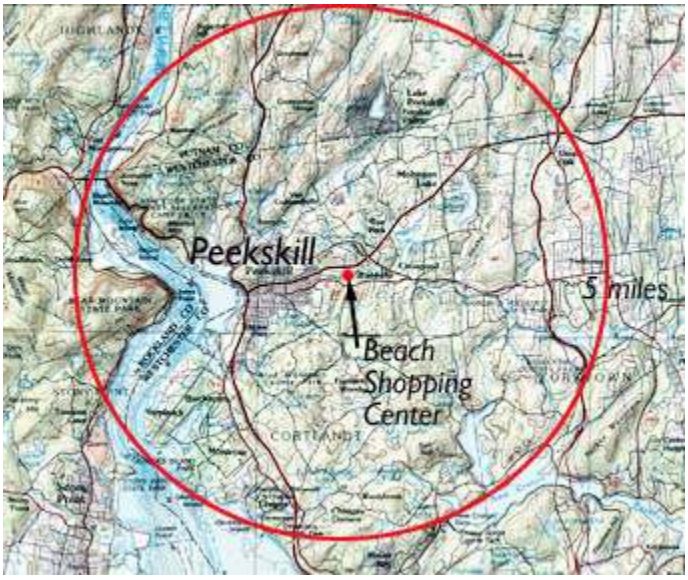
5. No contestant is allowed to move his/her car until the end of the first transmission, so take your time with the first bearing and make it a good one. The transmission will be audible from the start without a super-sensitive receiver.

6. Radio silence will be maintained by all contestants on all frequencies from the first to the last transmission.

7. No excess mileage penalty will be incurred but all contestants are reminded at all times to stay within the law and observe speed limits, parking restrictions etc.

8. The fox will be hidden not more than 5 miles from the start. The location of the fox will not be on property which is inaccessible by car.

9. Upon a contestant finding the fox, please do not shout or in any way give the location away to other contestants. Report your name/callsign to the fox and retire to the place of refreshment immediately. This will ensure that other contestants do not discover the fox because a group of people is hanging around nearby. It is requested that you maintain radio silence



The fox is allowed to hide within a 5 mile radius of the starting point at the Beach Shopping Center, Peekskill.

even though the fox has been found and the fact that you have found the fox should not be revealed to anyone until the place of refreshment has been reached.

10. The first competitor to locate the fox and positively identify him/her will be presented with a certificate. This competitor will be invited to assume the role of fox for the next foxhunt event.

11. Competitors should convene from 4:30 p.m. at the place of refreshment, which will be announced on-air by the fox.

Rules adapted from
Bury Radio Society Fox Hunt – Malcolm, NM9J

Newsletter archive

Following the switch to electronic distribution in December 2001, copies of the *PCARA Update* newsletter were made available *via* the Internet. From 2004, the PDF files were housed by Computer.Net at the following URL: http://home.computer.net/~pcara/newslett.htm .

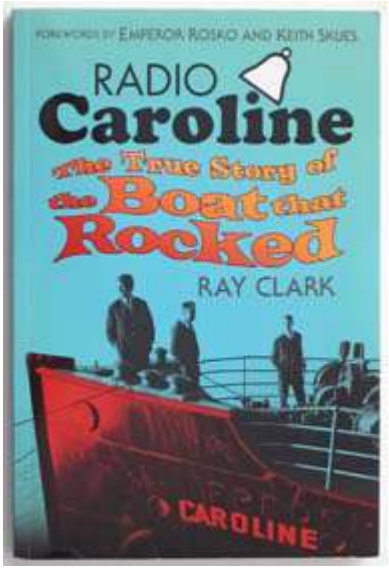
Computer.Net successor LANline Communications of White Plains recently informed your editor that from June 1, e-mail addresses and web sites would not be able to employ "computer.net". The company that owns the domain name will no longer allow LANline Communications to use it.

As a result, the archive of *PCARA Update* newsletters has now been moved to the following URL: http://home.lanline.com/~pcara/newslett.htm .

PCARA thanks LANline Communications, http://www.lanline.com, for continuing to house the newsletter archive on its servers.

Sounds from the sea

I have been reading a new book: "Radio Caroline — the True Story of the Boat that Rocked" by Ray Clark. This prompted memories of my radio listening days while a youngster... let me explain.



Back to the sixties

When I was growing up in Great Britain, the broadcast radio situation was very different from the USA. The main difference was — **no** commercial broadcasting. The British Broadcasting Corporation (BBC) had a monopoly of all AM/FM radio transmissions. For most of the 1960s they provided just three main services throughout the United Kingdom. These were known as "Home, Light and Third", the Home Service, the Light Programme (English spelling) and the Third Programme.

Light Programme 1,500 m. and 247 m.			Third Programme 464 m. and 194 m.
THE HOME SERVICES			
North 434 and 261 m.	Scottish 371 m.	Welsh 341 m.	London 330 m.
West 285 and 206 m.	Midland 276 m.	Northern Ireland 261 m.	

BBC radio wavelengths from 1950 onwards.

The Home Service supplied news, information and drama; the Light Programme was the source of entertainment, with middle-of-the-road music, variety shows and concerts. The Third Programme delivered mostly classical music with some educational content on Network Three. There were no commercial breaks and no sponsored programs. Everything was paid for by a compulsory annual Radio/TV license which set owners had to pay for at the Post Office.

There were a couple of things missing from this picture... first of all, a lack of competition — there was just one organization responsible for all radio broadcasts. Secondly, and of special interest to Britain's youngsters, was an almost complete lack of "pop" and rock music. By agreement with the Musicians' Union and the record industry, the BBC was strictly limited in the amount of recorded music it could play over the airwaves (so-called needle time). The Corporation frequently had to broadcast cover versions of popular tunes, performed by artists and musicians who were far from famous.

There were a couple of outlets for "pop" music on the BBC that attracted youngsters... "Saturday Club", presented by Brian Matthew at 10:00 a.m. on Saturday mornings in the Light Programme, featured both recordings and live performances to overcome the "needle time" restrictions. I remember it was much discussed the following Monday at school, especially when the Beatles were beginning their rise to fame from nearby Liverpool.

Saturday Club was introduced by Brian Matthew, who can still be heard on BBC Radio 2

On Sunday evening there was another item on the Light Programme that featured popular music. "Pick of the Pops" was introduced by Australian disc jockey Alan "Fluff" Freeman, playing records from the British charts, including the Top 10/Top 20.

Cracks in the wall

For the radio-savvy, there were a couple of alternatives to the BBC. The English Service of Radio Luxembourg "The Station of the Stars" was broadcast every evening on 208 meters (1439 kHz) from the tiny Duchy of Luxembourg, situated between France, Germany and Belgium. With a power of 1300 kW, the night-time transmissions reached the British Isles on sky-wave, with all the usual fading and phase distortion that a shifting ionosphere adds to any AM signal. Radio Luxembourg was not restricted by the "needle time" agreement and had a mix of music programs recorded in the UK plus programs originated in the Grand Duchy by a small group of resident English-speaking disc jockeys.

Part way between mainland Britain and Ireland sits the Isle of Man. The Island is a crown dependency with its own seat of government, not subject to all United Kingdom law. In 1964, the Isle of Man

government negotiated a license for the first commercial radio station in the British Isles. Strongly supported and partially owned by UK telecommunication company Pye, Manx Radio came on air in 1964 on 89.0 MHz FM followed by 188 meters AM (1594 kHz) and later 232 meters AM (1295 kHz). The 1 kW directional daytime AM signal from Foxdale on 232 meters could be picked up in Southport using a communications receiver and an outside antenna, so I was one of their few mainland listeners. I remember paying a visit to the studios on Douglas promenade alongside the Aquarium during CUWS' GD6UW DXpedition to the Isle of Man in 1967. For more about the history of Manx Radio see: http://www.manxradio.com/contenttabs.aspx?fol=20607&sec=28240 and http://www.manxradio.com/content.aspx?id=68287 .

The only other source of commercial broadcasting to the UK at that time was via shortwave. In the mid-1960s, I used to listen to "Radio New York Worldwide", WRUL/WNYW which had some commercial content plus bulletins from ABC News. WRUL has an interesting history — see http://www.stellamaris.no/wnyw3.htm .

In the late 1960s, the BBC began opening local radio stations that covered the area around a city or medium-sized town. This was an echo of the BBC's early days in the 1920s when broadcasts came from a transmitter located *within* a city in order to provide sufficiently strong signals for the cat's whisker detectors of the day. My own local radio station was BBC Radio Merseyside, which came on-air in November 1967 on 95.85 MHz FM. These stations tended to carry local news and talk, plus a little more popular music than the national stations — but still no advertising.

Talk like a pirate

In March 1964 a former Danish ferry boat, renamed the MV *Caroline,* anchored 3½ miles from Felixstowe, on the east coast of England. From this ship, **Radio Caroline** came on-air broadcasting on "199 meters" (1520 kHz). Radio Caroline was the very first offshore "pirate station" broadcasting in English to Great Britain.

MV (motor vessel) Caroline.

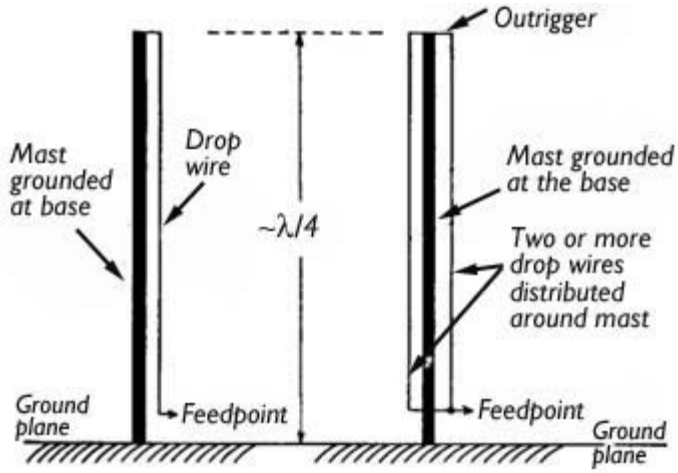
Your all-day music station

Since the vessel was registered in Panama and anchored in international waters, just outside the UK three mile limit, it was no longer bound by UK law. As a result, needle time restrictions no longer applied. The original plan was to use programs recorded on land, but difficulties with reliable delivery of tapes to a floating radio station meant that the young, on-board disc jockeys were soon creating most of the programming themselves, with their own choice of recorded music. The other UK rule that could be ignored was the ban on commercial broadcasting. Despite government annoyance, various UK companies signed up with Radio Caroline to have their commercial messages aired from the offshore station. This provided a source of income that kept the ship on-air for four years.

Big signal

The floating radio station was equipped with a pair of Continental Electronics (Dallas, Texas) 316B 10kW AM transmitters. The ship had been fitted with a 165 ft high vertical steel mast that supported a series-fed wire cage or 'sausage'. The resulting antenna was described as a vertical folded unipole, 168 feet high or 180 feet above sea level — though it sounds more like a folded *monopole* to me. (In other words, the top half of a folded dipole.) Both designs make use of a support mast which is grounded at the base, a design well-suited to the marine situation where the mast is bonded to the ship's steelwork. This arrangement also prevents static build-up that can occur with a base-insulated mast. Pictures of the installation depict a large number of support stays made of steel wire, these

are isolated and broken up from resonant lengths using multiple insulators.



On the left, a folded monopole antenna as used on Radio Caroline. On MV Caroline, a wire cage ran up to the top of the grounded steel mast. On the right is a folded unipole, where a "skirt" consisting of several wires is arranged around a central mast which is also grounded at the base.

With 10 kilowatts output, an efficient vertical antenna and a near-perfect ground provided by North Sea salt water, the result was a strong ground-wave signal that covered much of southeast England.

The combination of informal disc jockeys, all-day popular music, plus jingles and commercials was in complete contrast to the BBC. As a result, the station soon attracted a huge audience, not to mention concern from the authorities, the BBC and the recorded music industry.

Company

Radio Caroline was the first of the offshore radio stations in the North Sea broadcasting to Britain. One month after MV *Caroline* had arrived at Felixstowe, the MV *Mi Amigo* anchored off Frinton-on-Sea, further south than Caroline and nearer to the Thames Estuary. In May 1964 the *Mi Amigo* came on-air as "Radio Atlanta" on a wavelength of 201 meters (1493 kHz), with recorded programs, a more formal style, and cover versions of popular music.

Both ships had been fitted out in Greenore, Ireland but Radio Caroline split away from the Radio Atlanta group. With Caroline being first on-air it claimed the larger audience. Then, in July 1964 the two sides announced a merger. The MV *Mi Amigo* would stay in place to serve London and southeast England, while MV *Caroline* would sail to an anchorage off the Isle of Man, transmitting to northern regions as Radio Caroline North.

Go North

In early July, 1964 MV *Caroline* weighed anchor and began a clockwise journey from Felixstowe on the the east coast around southern England, past Cornwall then north between Wales and Ireland into the Irish Sea. Broadcasts continued during this journey, arousing a great deal of interest from listeners along the route. The ship arrived at the Isle of Man, anchored in Ramsey Bay, and began a regular service to the area surrounding the Irish Sea.

Location of the Radio Caroline ships after MV Caroline sailed north to Ramsey, Isle of Man in 1964 and MV Mi Amigo took over transmission to southeast England.

I remember this period quite vividly — I was still at grammar school and followed news of the ship's journey around the British Isles. When Radio Caroline North began broadcasts from the Isle of Man, the signal across the 70 mile sea path to Southport was good and strong, allowing listeners to enjoy programming on everyday AM radios, whether at home, in a vehicle or outdoors with a transistor radio.

Radio Caroline North provided a welcome change from BBC Radio and the station soon attracted a large daytime audience for its 6:00 a.m. to 8:00 p.m. broadcasts. The ship was serviced from the Port of Ramsey on the tourist-oriented Isle of Man — and the Island received lots of free publicity from the on-board disc jockeys.

Another pioneering development by the offshore DJs was a move away from the BBC music format

Tony Blackburn in the self-op studio on board Radio Caroline.

where a presenter spoke the words in the studio while a technical assistant behind a glass panel played out vinyl records and tape recordings. In the new "self-op" arrangement the disc jockey would operate all the equipment himself, making announcements, cueing up records and operating the tape cartridge machines for jingles and commercials.

I ran into Radio Caroline North's head disk jockey "Daffy" Don Allen several years after he had left MV *Caroline*, while he was working on dry land as chief announcer for Manx Radio. He was still carrying out all the operating himself on the evening show as he was the only person left in the studio building. Don Allen was a Canadian disc jockey who liked country music — he even provided a weekly program for BBC Radio Merseyside later in his career.


Head disc jockey Don Allen operating from Radio Caroline North in 1967.

Competition

The success of the Caroline ships along with their ability to operate outside the broadcasting rules of the United Kingdom attracted a number of competitors. One of the most significant was "Radio London" , operating from late 1964 on board a former U.S. Navy minesweeper the MV *Galaxy*, which was anchored close to the *Mi Amigo*. The operation had been financed by Texas entrepreneurs, with the ship fitted out in the USA and a presentation style much closer to U.S. commercial broadcasting. The RCA BTA 50H transmitter allowed more RF power on 1133 kHz ("266 meters") than Caroline could radiate.

As time went on, more ships joined the ranks of the offshore broadcasters. A few stations were set up on forts that had been erected in the Thames Estuary and off the east coast for naval and air defense purposes during World War II.

By 1966, I had left school and was attending university, 50 miles north of London in the fenlands of East Anglia. I had a Heathkit Mohican portable communications receiver with me, which had no problem picking up station after station from the nearby North Sea and the Thames Estuary. Because of restrictions on shipboard antenna length, most of the marine broadcasters had chosen frequencies at the high end of the AM broadcast band (for example "199 meters"). Standard receivers with variable capacitor tuning tended to compress this part of the band into an inch or less of tuning dial, making it difficult to tune in desired stations visually.

One solution adopted by radio set manufacturers was to introduce an additional AM band which stretched the upper part of the MF broadcast spectrum across the whole tuning dial. I had a Marconiphone AM/FM receiver with this type of "bandspread" range, which certainly helped when tuning in the offshore stations.

1960s UK transistor radio with "bandspread" (BS) tuning range covering roughly 214-188 meters, 1400-1600 kHz.

The end is Nighy

To some extent, the "pirate" stations became a victim of their own success. As more and more listeners were attracted away from the BBC, the Corporation became worried. Government departments were also concerned — the ships were outside territorial waters and therefore outside any form of government control or police supervision. There were frequent complaints about interference to vital emergency communications, though this might have been more a result of inadequate receivers than spurious emissions. The recording companies were not happy as they were not being paid when their records were aired. And radio stations in Europe complained of interference to their own frequencies by transmissions not covered by international band plans.

There were some regrettable incidents — the worst occurred in 1965 when "Radio City" run by Reg Calvert from a fort in the Thames Estuary was invaded by a boarding party led by Oliver Smedley. The

following day Reg Calvert visited Oliver Smedley in his home. During the altercation, Oliver Smedley killed Reg Calvert with a shotgun.

There were more problems with the radio vessels out at sea, often a result of the companies who provided supplies by tender not being paid on time. Ships also ran aground and sprang leaks in the rough waters of the North Sea, requiring rescue by HM Coastguard and the lifeboat crews.

In 1967, the UK Government introduced the "Marine etc. Broadcasting Offences Act." When the act came into effect on August 14, 1967, broadcasts from offshore vessels and structures to the UK were made illegal and all concerned were guilty of an offence, including the vessels that provided supplies to the ships and organizations that arranged for commercial advertising.

This had an immediate chilling effect on the offshore stations, where the majority of the disc jockeys were U.K. citizens, liable to a spell behind bars on return to shore if they continued broadcasting. Only the Caroline ships stayed on the air, with drastically reduced crews, minimal supplies and no official contact allowed with their old UK-based organization. They managed to stay on air until March 1968, when the two ships were towed to the Netherlands for not paying tendering fees.

Meanwhile on September 30, 1967 the BBC introduced its own pop and rock music station, named "Radio 1". The service was accommodated on an existing chain of medium-to-low power MF transmitters operating on 247 meters (1214 kHz). These transmitters were originally intended as filler sites for areas where the Light Programme from Droitwich on 1500 meters long wave (200 kHz) was either too weak or affected by industrial noise. "Radio 1 on 247 metres" was a single-frequency network covering the whole of the British Isles, with daytime reception in-between the transmitter sites suffering from "mush" fading and distortion, worse than Radio Luxembourg at night.

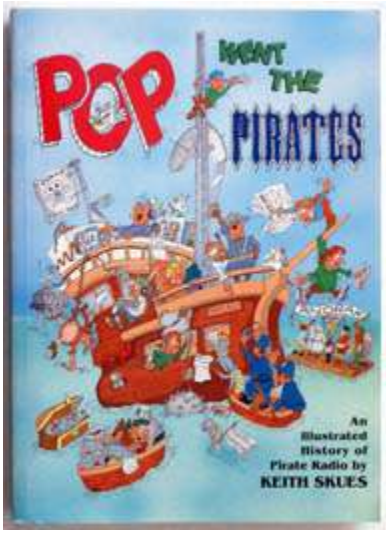
Radio Times cover girl.

Many of the offshore disc jockeys who did not want a prison sentence found their way onto BBC Radio 1. Needle time was still a problem, but with the addition of lively PAMS jingles and outside events such as the "Radio One Roadshow", the service found a loyal following with a younger audience. Almost fifty years later, several of the original pirate disc jockeys who moved from offshore to BBC Radio 1 can still be heard today — though now on Radio 2 — including Tony Blackburn and Johnny Walker.

Even with the arrival of BBC Radio 1 in 1967, there was still no commercial advertising on UK radio. It would be another six years before Independent Local Radio arrived, beginning with Capital Radio and LBC in London in 1973. Piccadilly Radio (Manchester) and Radio City (Liverpool) followed in 1974.

Read all about it

I can recommend two books that deal with the era of offshore broadcasting in Britain. "Pop went the Pirates - an Illustrated History of Pirate Radio" was written by disc jockey Keith Skues in 1994 and gives a comprehensive account of all the ships and forts used for sending signals to the UK mainland. A second edition appeared in 2009. The book that I mentioned already, "Radio Caroline, The True Story of the Boat that Rocked" by Ray Clark was published in 2014 and concentrates on the history of Radio Caroline, from the 1960s through the later eras of pirate radio in the 1970s and 1980s. There is a lot of background material in these books which gives insight into the motives of the people involved and why the disc jockeys and crew were prepared to be isolated at sea for weeks on end in terrible conditions.



There is also the 2009 movie "Pirate Radio", originally titled "The Boat that Rocked" in the UK. Starring Bill Nighy and the late Phillip Seymour Hoffman, it is a *highly fictionalized* account of a UK pirate ship "Radio Rock", roughly based on Radio Caroline South. None of the characters — including DJs and government officials — corresponds to a real person, though there are similarities to actual people and to the events that dogged the *Mi Amigo* in the mid-to-late 1960s. - NM9J

Peekskill / Cortlandt Amateur Radio Association

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Archive: http://home.lanline.com/~pcara/newslett.htm

PCARA Information

PCARA is a **Non-Profit Community Service Organization**. PCARA meetings take place the first Sunday of each month* at 3:00 p.m. in Dining Room B of 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 and July/August break.

PCARA Repeaters

W2NYW: 146.67 MHz -0.6, PL 156.7Hz
KB2CQE: 449.925MHz -5.0, PL 179.9Hz
N2CBH: 448.725MHz -5.0, PL 107.2Hz

PCARA Calendar

Sun May 3: PCARA Meeting, NewYork-Presbyterian / Hudson Valley Hospital, 3:00 p.m.
Sat May 9: PCARA Foxhunt. Check-in at Beach Shopping Center, Peekskill from 2:30 p.m. for 3:00 p.m. start.

Hamfests

Sat May 30: Bergen ARA Spring Hamfest, Westwood Regional HS, 701 Ridgewood Rd, Township of Washington, NJ. 8:00 a.m.
Sun May 31: Mt Beacon ARC Hamfest, Employee Rec. Center, 83 Red Schoolhouse Rd., Fishkill, NY. 8:00 a.m.
Sun May 31: Hall of Science ARC Hamfest, New York Hall of Science, 47-01 111th Street, Queens, NY. 9:00 a.m.

VE Test Sessions

May 2, 9, 16, 23, 30: Westchester ARC Radio Barn, 4 Ledgewood Pl, Armonk NY. 12. M. Rapp, (914) 907-6482.
May 3: Yonkers PAL Ham Radio Club, 127 N Broadway, Yonkers NY. 2:00 p.m. Pre-reg. M. Rapp (914) 907-6482.
May 3: Yonkers ARC, Yonkers PD, Grassy Sprain Rd, Yonkers. 8:30 a.m. Pre-reg. John Costa (914) 969-6548.
May 14: WECA, Westchester Co Fire Trg Cen, 4 Dana Rd., Valhalla, NY. 7:00 pm. S. Rothman, 914 831-3258.
May 15: Orange County ARC, Munger Cottage, 183 Main Street, Cornwall NY. 6:00 p.m. Thomas Ray (845) 391-3620
May 18: Columbia Univ VE Team ARC, 531 Studebaker Bldg, 622 W 132nd St, New York. 6:30 pm. Alan Crosswell

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