

March/April 2011

LETARC

Propagation

March LETARC Meeting



Welden Pittman, KC5GQM, did a presentation on preparing low cost VHF/UHF antennas that are home made. These are excellent antennas as evident by low SWR and low cost. Samples included a basic 3 element yagi, basic quarter wave, more advanced phased quarter wave with higher gain yet low SWR. Antennas for both VHS and UHF were shown and described.

When making antennas, be sure to use Krylon clear coat [never metallic paint]. Use moisture displacing dielectric greases when making electrical connections. Use Noalox for aluminum/aluminum or aluminum/copper joints. Most of the components are typical zinc plated angle iron, aluminum tubing, brass welding rods, etc..



[L to R] Jim Rogers, N5VGQ, [behind Jim] Glen Nobles, KE5IMG, Tom Nance, KB5ZFS, Robert Parham, KD5OUF, Dean Patterson, KE5AVH

April 16th Meeting

Tom Wilbeck, N5KGN, will present a program during our club meeting on April 16, 2011. The program will focus on:

- Tower Climbing and Safety
- General equipment and procedures for climbing and working at heights.

Be sure to attend this meeting as it will provide life saving tips when working on towers. This is a "safety must" program.

Longview East Texas
Amateur Radio Club

LETARC.ORG

groups.yahoo.com/
group/LETARC/

Club Repeater
K15UA/147.34
(+ 136.5Hz tone)

Back to the Future

The Role of Amateur Radio in the New Century

Dale N. Hatfield (W0IFO)

Chief, Office on Engineering and Technology

Federal Communications Commission

Condensed Version

June 17, 2000

I would like to divide the remainder of my remarks into five parts.

- *First*, I will briefly -- very briefly -- talk about my personal involvement in amateur radio.
- *Second*, speaking from that perspective, I will talk about the growing scarcity -- and hence economic value -- of the radio spectrum and how that growing scarcity will inevitably put pressure on amateur allocations.
- *Third*, I will talk about the important role that the amateur radio service has played in the past and -- going to the basic topic I have been asked to address -- what the amateur service can do to in the future to justify its spectrum allocations on both a national and international basis.
- *Fourth*, and finally, I will talk about a proceeding we recently launched at the Commission -- a proceeding dealing with Software Defined Radios.

Before I continue, I need to add the standard disclaimer that my remarks here this evening represent my own views and they may not necessarily reflect the views of the Commission, any individual Commissioner, or any other staff member.

Background in Amateur Radio

My own involvement in amateur radio began in my early teens, when my father bought me a used Hallicrafters S-38B shortwave receiver. He and his brother -- my uncle -- had tinkered with crystal sets when they were kids and he somehow sensed that I might find radio interesting as well. I connected that receiver to piece of antenna wire hung out of my bedroom window and soon I heard a ham radio operator in Morocco calling CQ in the 20 meter amateur band. From that moment I was hooked on radio communications.

Two local hams lived near me -- this was in Dayton, Ohio in the early 1950s -- helped me get my first license (WN8NKG) and helped me build my first transmitter. These two hams were electrical engineers that were employed at Wright-Patterson Air Force Base near Dayton. It was their interest that led me into electrical engineering as a vocation and ultimately to a job at the government's old Central Radio Propagation Laboratory in Boulder, Colorado. I won't bore you with the details, but that first, entry-level job eventually led me to the position I hold today. Accordingly, I am in debt to the two hams who so unselfishly supported my passion for radio.

Growing Demand for Spectrum

The management of the radio spectrum resource is an extremely important part of telecommunications policy and regulation. As you all know so well, radio spectrum is an increasingly scarce natural resource. We simply do not have enough spectrum to give everyone all they want. This increasing demand is being propelled by a host of developments:

- the growing shift of our economy towards the service sector,
- the increasing mobility of our workforce,
- the convenience and increased efficiency produced by mobile/portable communications
- the increasing performance and falling cost of wireless devices
- the increasing requirements for public safety and for national defense systems, and the dramatically growing interest in accessing the Internet on a wireless basis.

Continue

Hence, the allocation of spectrum for particular uses and the development of specific technical and service rules governing those allocations is a crucial determinant of telecommunications industry structure and performance. Even more importantly, it is critical to the performance of our public institutions that are devoted to certain scientific pursuits, such as radio astronomy, to the safety of life and property, and to the national defense.

Future of the Amateur Service

Turning now to the future, it seems to me that – given the increased pressure on the underlying resource from commercial and other non-commercial uses -- the key issue for the amateur service is maintaining access to an adequate amount of spectrum. The rapidly growing demand for spectrum coupled with the increased visibility of its economic value due to auctions makes it almost inevitable that amateurs will be under a certain amount of pressure to justify their "free" use of this precious resource.

In the past, the amateur service has justified its spectrum allocations by, among other ways, (1) engaging in experimentation that has advanced the radio state-of-the-art, (2) providing emergency communications in times of natural or man-made disasters, (3) providing trained radio operators in times of national emergencies, (4) encouraging international cooperation and goodwill by allowing direct communications between and among people on an international basis and (5) as in my case, providing an important educational outlet for people interested in the more technical aspects of radio communications. While the relative importance of some of these ways has obviously changed because of marketplace, technological and other developments, they remain valid today. The important thing is that they actually be carried out. Or, to use a bit of slang, it seems to me that it will be even more important for all segments of the amateur community to "walk the walk" not just "talk the talk."

Another potentially important area deals with how efficiently one uses the spectrum. We could probably discuss at some length the proper measure of spectrum efficiency but for our purposes here this evening it might be simply the number of simultaneous conversations that can be accommodated in a given amount of spectrum in a particular geographic area. In the commercial sectors, where organizations pay for their use of the spectrum, there is a significant economic incentive to use the resource efficiently – to spread costs over as many users as possible while maintaining good quality service. That is, there is a strong incentive to develop and adopt more spectrally efficient technology. For example, by adopting various digital techniques, commercial mobile radio service providers (e.g., cellular and PCS) have been able to dramatically increase their capacity compared to the original analog technology. When the broadcast industry completed its transition to digital television, we reclaimed a substantial amount of spectrum for other uses.

I recognize that, in the past, hams have also adopted more spectrally efficient technologies – for example, by migrating from double-sideband amplitude modulation to single-sideband modulation and, more recently, by shifting to more efficient modulation for text – TTY – modes. I would urge you to continue shifting towards more spectrally efficient communications techniques – especially digital techniques. Such a shift has a number of benefits:

- First of all, it demonstrates to policymakers and regulators that you are good stewards of the public's airwaves even without direct economic incentives.
- Second, by using what you have efficiently, it strengthens your case when you need to ask for additional spectrum.
- Third, by allowing more users to access the available allocations simultaneously, it improves the amateur experience and ultimately increases the attractiveness of the service to new and old users alike.
- Fourth, it provides the opportunity or "headroom" for increases in data rates to more closely match those available on wireline networks and, in the future, on commercial wireless networks as well.
- Fifth, as the rest of the telecommunications world makes the transition to digital techniques – and there are very few exceptions to that trend – the amateur service will look antiquated if it is not making progress in that direction as well.

So looking to the future of the amateur radio service in the new century, I would urge you to continue your traditional role in public service by being prepared for and providing communications in times of emergencies, con-

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ducting experiments, providing training in radio communications, and encouraging international comity. But I would also urge you to focus particular attention -- for the reasons I just mentioned -- on experimentation with digital techniques that are capable of squeezing more "bits per second per Hertz of bandwidth" out of the increasingly valuable radio spectrum resource.

Software Defined Radios

I am rapidly running out of time but before I close I would like to talk about one additional topic that, as it turns out, may help enable some of the experimentation with digital techniques that I just advocated. The topic, as I mentioned at the outset of my remarks, is Software Defined Radios. Software defined radios -- or software radios or software programmable radios as they are sometimes called -- can be described as radios that are implemented in digital signal processors with functions defined in software. In other words the signals are generated in -- or converted to -- the digital format and the necessary processing -- for example, modulation and demodulation -- is done in software on a common platform.

From what I have been told, such radios could have a host of advantages:

- *One*, they would allow a common radio to accommodate a host of different standards and thereby help alleviate some of the problems that we have had with the creation of different standards in the wireless field.
- *Two*, they would facilitate interoperability among different types of radio systems, when for example, a large number of different emergency groups arrive at the scene of a major disaster.
- *Three*, they would allow a manufacturer to develop different radios but on a common hardware platform. In other words, rather than manufacture and carry in inventory several different radios, the manufacturer could achieve economies of scale in the production of a common hardware platform, but wait until the product is about to be shipped before loading the software to create a specific type of device.
- *Four*, they would allow the end user to update his or her radio simply by getting a software update -- just like an end user gets updated software for a Personal Computer today. In fact, one could even envision a situation where one could get software updates right off of the Internet or over-the-air.
- *Five*, it is possible that a manufacturer could sell a bare-bones hardware platform to which third party providers or end users -- including hams -- could supply software to create custom radio systems. Certainly we have seen similar developments in the computer field and in other sectors of the telecommunications industry.
- *Six*, it is even possible to imagine a radio that could adapt its characteristics to fit the interference environment and user needs on a more-or-less real time basis. For example, the radio could maximize its use of bandwidth in areas where the spectrum is not congested while conserving bandwidth or going to more robust modulation in areas where interference is heavy and/or propagation conditions are particularly difficult.

Indeed, if we can solve some of the difficult regulatory issues involved, it is even possible to envision Software Defined Radios as a means of facilitating a new era of amateur experimentation. One intriguing possibility is that it could enable hams without skills and/or interest in hardware construction to build and experiment with new systems by writing new code. It might also allow the rapid sharing of new modulation techniques and receiver designs through electronic publication of the implementing software. This could stimulate a whole new generation of amateur innovation that not only includes the more spectrally efficient systems I mentioned earlier, but also radios that could adapt to their environment as well.

In many ways, Software Defined Radios represent a merger of the radio communications and computer fields. Viewed from that perspective, this technological development even has the potential of attracting back to the hobby some of the people who have shifted their interest to computer technology. Because of this potential to advance the service in fundamental ways, I would urge amateur groups to participate actively in our proceeding.

Concluding Thoughts

Let me conclude by saying that I believe that the future of the amateur service is a bright one. It is one where technological advances such as Software Defined Radios can enable the ham community to continue its proud tradition of innovation while demonstrating its commitment to the efficient use of the spectrum resource.

Source: <http://www.fcc.gov/Speeches/misc/dnh061700.html>

Did You See

BP America donates equipment to group

During the Longview East Texas Amateur Radio Club meeting on Feb. 19, Joseph B. Crochet received an award on behalf of BP America Hallsville.

Presenting the award were Jim Quinn, president of the radio group, Rod Bartlett, and Eric Sandvik, both of whom are members of the organization. The award was presented to BP America Hallsville due to its extraordinary support of the amateur radio community in Longview through contributions of surplus equipment radio equipment, solar panels, poles and other items.

The Longview East Texas Amateur Radio Club's sister organization, Gregg County Emergency Communications, also received assistance from BP America. The amateur radio operators in Longview have an active group consisting of about 50 members. The group meets monthly at the Red Cross building at the intersection of routes 31 and 281 and has a complete emergency radio station and other communications equipment for general use by licensed members and for use during emergencies.

The radio station can communicate to other local radios, nationally or worldwide depending on need.

For information, call Todd Hoover at (903) 295-1720.

Longview News-Journal, Sunday, March 20, 2011 **3E**

Guidance for Basic Radio Station—February LETARC Meeting

During the February meeting of LETARC, the members identified several configurations for radio stations. This issue of the Propagation lists the basic setup — great station for Technician or limited budget General/Extra. The membership suggested that the following equipment will cost about \$1,200.00 which can be spread over several months. The “ham” can determine which items to purchase first after deciding what is most important.

- Used HF gear such as Heathkit HW101, Icom 718 or Yaesu 897
- Basic new handheld
- Used mobile VHF/UHF with antenna
- Make your own dipole for HF and J-pole for VHF/UHF
- Coax cabling
- Used laptop w/ echolink and for searching solutions with ethernet or wireless
- Hand built desk or small computer desk



The “ham” can make use of a small space for this station. It is important that the “ham” sets up an excellent ground system.

[L to R: Terry Johnson, KG5WO, Corey Ressler, KC9RAV, Ben Crochet, KF5HNX, Richard Brown, K5RRB, Colin MacRory, KE5QWN, Dennis Smith, WB5SRM]

A new member of LETARC was honored for outstanding performance in medical field. Lynn Fitzgerald, KF5JXT, won the Healthcare Professional of the Year award according to the Longview News-Journal, Thursday, March 24, 2011. Great job, Lynn.

— Upcoming Events —

The Wednesday evening two meter net on 147.340 will have an addition. At the conclusion of the net on the Wednesday before the LETARC meeting, we will hold a session on “sale, trade or swap that gear”. If you have something you would like to sell, buy, trade, or swap, check out this new feature. The date for this first “Sale, Trade and Swap” will be April 13, 2011.

On May 14th, the first area wide tailgate sale will be held. The plans are still being refined however the event will begin at 7:00 AM. We are hoping for co-sponsors from area amateur radio clubs. More information will appear in “Propagation”. There will be announcements on the Wednesday evening LETARC two meter net meeting at 8:00 pm— 147.340. We will need some volunteers for this event.

On June 25-26, 2011, will participate in the na-sponsored by American The weekend is a great other club members to through out the United This is a great opportunity

Field Day 2011 - June 25-26!

Field Day 2011 is fast approaching. Are you and your club ready? Download the Field Day packet, meet with other club members and get your plans finalized for the largest on-air Amateur Radio activity under the sun!



be the weekend used tional Field Day Radio Relay League. place to work with work radio stations States and abroad. to learn about radio.

Board Member Profile

Cloys Tolbert, Vice President

Education:

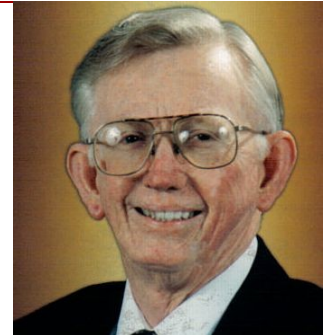
Kilgore High School class of 1955

Member, Hi Y Club, 2nd Lt. Civil Air Patrol

I had appointment to the Air Force Academy but failed physical for flight training because of poor vision

Received A.A. Degree in electrical engineering from Kilgore College in 1957

Furthered education in engineering, math and physics at Texas A & M. After military duty, entered Lamar Tech for studies in mathematics and physics.



Entered the U.S. Army in 1960.

After basic training at Ft. Leonard Wood, MO, I was assigned to the Army Security Agency/ AIS training center at Ft. Devens, Mass. Held Secret, Top Secret, and Top Secret Crypto clearances. Served in the Far East in various countries. Duties were classified. Honorable Discharge in Sept 1963. Received Medical disabilities for injuries received while on active duty.

Employment

1965-1968 Geophysical Services, Inc. Chief Engineer, Off Shore Seismic exploration

1968-1982 Texas Instruments, Inc. Electrical R & D Engineer, Projects involved were infrared, semiconductor injection lasers, high power LED's, Liquid Crystal Display technologies, magnet video recording on a spinning magnetic, disc. And the first LCD wrist watch and first four function calculator.

1982-1993 Compaq Computer Corp. Held several positions, Electric R & D Engineer for all rotating memory devices. Manager, Technology Planning and Development, Chief Technology Engineer and Chairman, Compaq Technology Council. Received U.S. patents, Canadian patent and European patent. I was a representative to ANSI (NIST), ECMA, and a U.S. representative to ISO.

Received my Extra Class license in March 2010.

If you have questions or comments, send an email to Todd Hoover, N5TJH.
HOOVER_TJ@YAHOO.COM