MOUNT VERNON AMATEUR RADIO CLUB

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February 2008 Newsletter

**MEETINGS SECOND MONDAY OF THE MONTH AT THE RED CROSS ANNEX BUILDING,
300 N MULBERRY ST, MT. VERNON, OHIO
Local Community: K8EEN/R, 146.790 Mhz (-600 Khz. with PL of 71.9 Hz.); KD8EVR/R 442.100 Mhz (+5 Mhz. with PL of 71.9 Hz)
SUNDAY NIGHT ARES NET AT 8:00 P.M ON THE K8EEN REPEATER OPEN TO ALL**

Dr.Terry Klopcic Demonstrates Wave Theory for MVARC Members

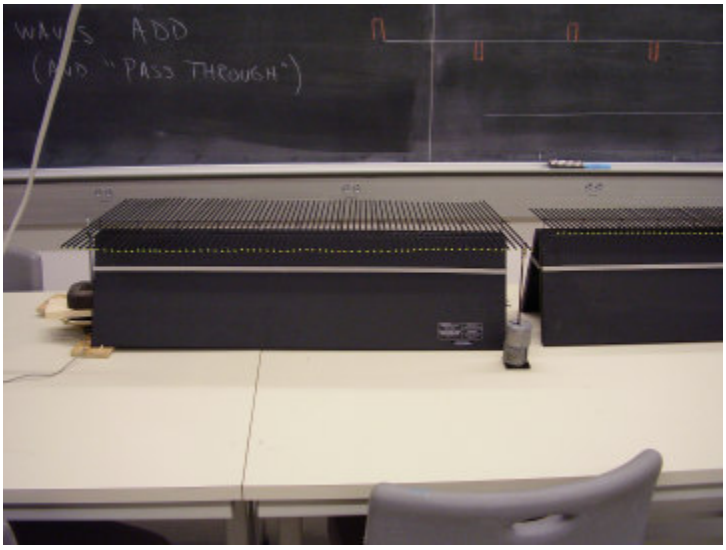
Members of the Mt. Mt. Vernon Amateur Radio Club spent an enjoyable and informative night with Dr. Terry Klopcic of the Kenyon College Physics Department.

Dr. Terry Klopcic

The theme was "The Basics of Wave Theory". After giving a brief explanation of waves and how to do some calculations (totally lost on this writer), Dr. Klopcic introduced a very interesting teaching tool called the Shive Wave Machine. This device is used to observe waves and wave mechanics. Normally, one can not observe wave motion because waves are just too fast. The Shive works to simulate waves in a highly visible way. This machine consists of evenly spaced rods attached to a square wire spine. Moving a rod up and down on one end causes a wave to propagate along the spine of the shive. The ends of the rods are painted white for easy viewing of the wave. The Shive Wave Machine can be left open on the end, simulating an open circuit, or it can be clamped to simulate a short circuit. There was also a smaller shive wave machine that could be attached in series with the bigger one, thus damping the wave.

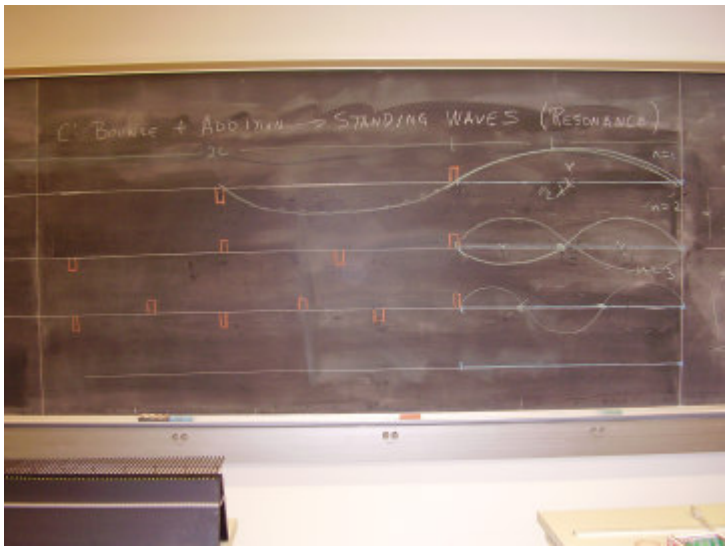
The Shive Wave Machine was designed by Dr. John N. Shive at the Bell Labs in the 1970's.

First Dr. Klopcic demonstrated that as the wave propagates down the machine which is free at the end, the wave is reflected at the same amplitude. When the end is clamped, the wave propagates to the end and then is returned with the same but negative amplitude.



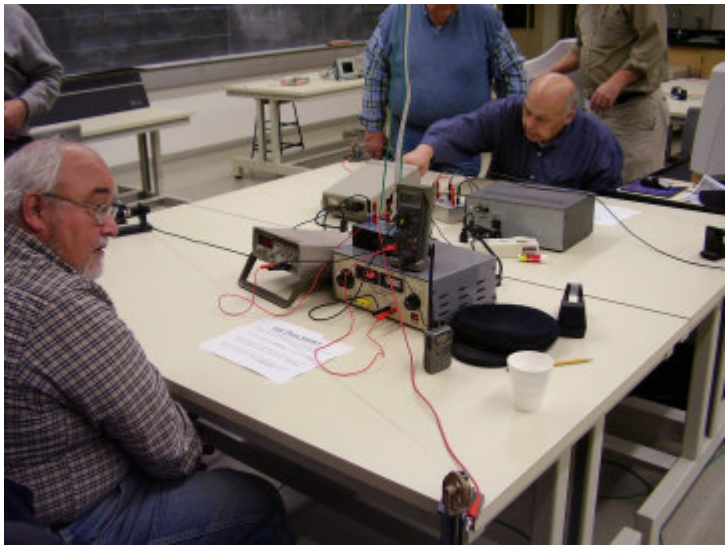
The Shive Wave Machine

After demonstrating the Shive, Dr. Klopcic took us to the drawing board and introduced Standing Waves. A characteristic of standing waves is that there are points along the medium that seem to be standing still. These points are called nodes. Conversely, there are other points along the medium which have large displacement. These are called antinodes. A standing wave always consists of an alternating pattern of nodes and antinodes.



Standing Waves on the chalk board

A wave at resonance will have two nodes, one at each end. The second harmonic of a wave will have three nodes, one at each end, and one in the middle. As you increase the frequency of the waves, more nodes appear. The third harmonic would have 4 nodes, and so on.

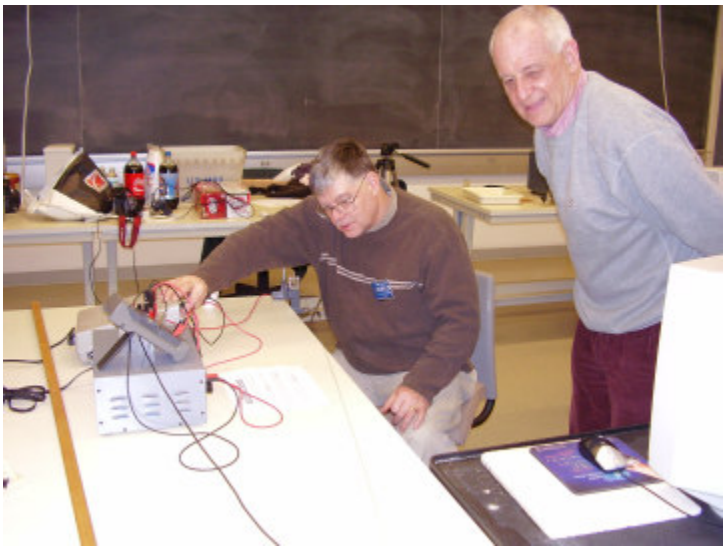


In front, Barry (N8PPF) is watching his demo. In back, Brother Jeff (N8SMT) is tuning his demo searching for a harmonic

Dick Huggins (N8RDH) and Dr. Jim Arbogast

After the demonstration of the Shive Machine and the explanation of standing waves, members were turned loose to play with some of the lab equipment. This demonstration was set up on several tables and consisted of a wire secured on both ends, in which one end was run through a magnet. A frequency generator was attached to the wire, and it was found that the resonance of this wire was around 17 Hertz. It was interesting to watch and listen as the generator was increased through the harmonics of 17 Hertz and counting how many nodes resulted. The demonstration was set up on several tables, so all members got some extended play time. Afterwards, pizza and good conversation was served.

In all, it was a very enjoyable evening. Thank you Dr. Klopcic. So much was learned during this demo that I could not fit it all in this short article. Please forgive me for being brief.



Dr. Klopcic watches Mike McCardel (KC8YLD) as the Frequency is being adjusted.

Those present included Dick Huggins (N8RDH), Jeff Butz (N8SMT), Barry Butz (N8PPF), Larry Heltzer (AA8WP), Mike McCardel (KC8YLD), Mike McCardel's brother in law, Dr. Jim Arbogast. Dr. Arbogast is currently studying for his Amateur Radio license. Lastly, Mike McCardel's daughters Kris McCardel and Maureen McCardel were also present. Kris is also studying for her ham license.

Web pages of interest for those wishing further information on wave theory and the Shive Machine are listed below:

http://www.wfu.edu/physics/demolabs/demos/avimov/byalpha/stvideos.html

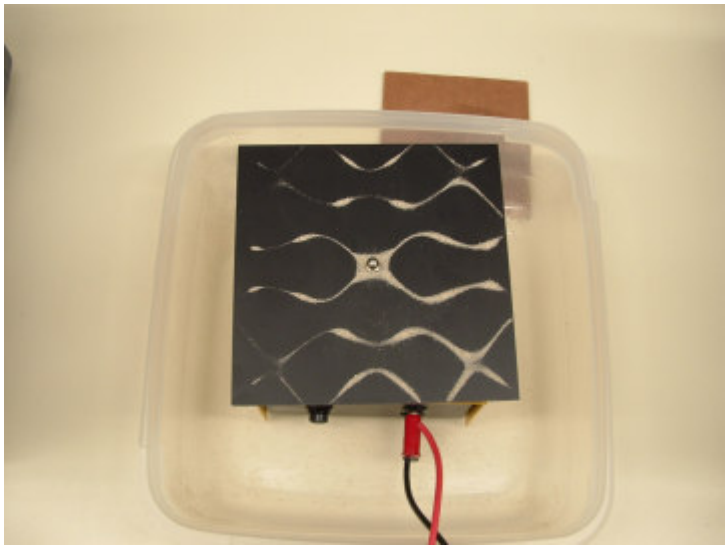
http://www.physics.umd.edu/lecdem/services/demos/demosg3/demosg3.htm

http://www.glenbrook.k12.il.us/gbssci/phys/Class/waves/wavestoc.html

Additional Wave Theory Information

(From Mike McCardel, KC8YLD)

One demonstration utilized a square metal plate (known as a Chladni plate), an electromagnetic generator, and sand.



The Chladni Plate

A plate was securely fastened to a table using a nut and bolt. The nut and bolt are clamped to the center of the square plate, preventing that section from vibrating. Sand was sprinkled upon the plate in an irregular pattern. Then the generator was adjusted to induce vibrations of various pulses within the plate; the plate began vibrating. And then the magic occured. A high-pitched pure tone was sounded out as the plate vibrates and reached a resonance. Remarkably the sand upon the plate began vibrating and formed a pattern upon the plate.

All objects have a set of natural frequencies at which they vibrate; and each frequency is associated with a standing wave pattern. The pattern formed by the sand on the plate was the standing wave pattern associated with one of the natural frequencies of the Chladni plate. As the plate vibrated, the sand began to vibrate and tumble about the plate until it reached points along the plate which were not vibrating. Subsequently, the sand finally came to rest along the nodal positions.

The picture shows one common standing wave pattern for the Chladni plates, which we observed. The light collored markings are the sand locations, resting where the plate wasn't vibrating (nodal positions).

It Was Always There

By Eric P. Nichols, KL7AJ
President, Arctic ARC
kl7aj@arrl.net

At a recent Arctic Amateur Radio Club board meeting, during a rare lull in the oft-heated discussions about how best to increase our membership, I threw out a simple question. "How did you get into ham radio?" The responses were revealing, to say the least. One by one, our board members, some young, some old, told the story of how they got into this hobby of all hobbies. One gentleman had a father who was a ham, and more or less forced him into the hobby, for which he was unspeakably grateful...years later, of course.

One XYL saw a shortwave radio at a friend's house, started twiddling knobs, and got frustrated that she could only listen. For her, the rest was history. A couple of others were exposed to amateur radio in high school, one in Boy Scouts. Another credited me with getting him into ham radio, much to my gratification. One other confessed that he didn't really know; it just seemed to him that ham radio was "always around." Interestingly enough, not one of the hams entered the hobby because of a concentrated recruitment program. Although occasional public relations "Blitzkriegs" have their place in Amateur Radio, I'm not sure they produce lasting hams. Like many other clubs, we manage to get a lot of hams licensed, but the dropout rate is appalling.

The vast majority of our newly licensed hams never get on the air. I don't think our message is flawed; I think it's our delivery. Of all the board members I mentioned

above, I believe the last fellow, the one who said ham radio was "always around" had the key. We need to get back to the place where amateur radio is a continual, if quiet, presence. People who get lured into the hobby, stick with the hobby. People who get coerced and cajoled into the hobby leave as soon as we aren't looking. The fact is, most new hams never see a working ham shack, about all they see is a handheld, which isn't all that fascinating. When a young person sees a ham shack equipped to cover everything from DC to daylight, they take notice...it doesn't matter whether they're a geek or not. I've never seen anyone who wasn't impressed by a Moon bounce (Earth-Moon-Earth contact) array swinging around on its rotators...whether they had a clue what it was or not! People don't know about ham radio because they don't see ham radio...except, perhaps at Field Day. The best place to cultivate that "always around" feeling is in the schools. We need to infiltrate the middle and high schools again. Notice, I said, again.

There was a time, not too long ago, when it was difficult to find a high school without a club station. Field Day should be a three hundred and sixty five day a year event, and that is easier to achieve in the schools than anywhere else. There is no better way to teach science than with ham radio. We need to remind our public (and private) school teachers and administrators of that. We need to let our students get their hands grubby making things happen, rather than merely watching things happen. We need to get some real hardware into the schools. We have wonderful new allocations now, and the technology to use them is cheaper and easier than ever. When I was in high school in the late 60s, it was everything one could do, and then some, to do Moon bounce. It was only because we had a lunatic (no pun intended) electronics teacher, that we were able to pull off such a stunt. Now, Moon bounce is practically within reach of any determined high school club station. Wouldn't it be great if Moon bounce stations proliferated at our high schools the way H.F. stations once did? Of course, I only use Moon bounce as one radical example. We have exciting things happening down at 500 kHz, as well. What better way to learn weak signal, digital signal processing techniques than with our newly allocated MF experimental spectrum? This all may be rocket science, but it doesn't take rocket science to get it into the schools! Our teachers want to see us excel in the sciences. Let's give them the tools to do so. Fifty years from now, someone may be asked how they got into ham radio. It would be nice if they could answer, "I don't know...I guess it was always there."

Tubs of Tubes

by Dan Romanchik, KB6NU'

The other day I got a call from a guy whose website I'm working on. He says he's calling from the Ann Arbor Reuse Center and that they have two tubs full of vacuum tubes there. He asked, "Do you know anyone who might want them"?

"How much are they asking for them"? I reply.

"Ten cents a piece."

"How many are there"?

"I'd guess about two hundred."

"Well, tell them I'll give him 20 bucks for all of them."

He tells them that I'll give them $20 for the lot. I hear some mumbling. He comes back on the line and says they're negotiating. After a minute or two, he says, "OK. You got them. How do I get to your house"?

I gave him directions, and in about 15 minutes, he pulls up to my house, gets out, opens the hatch, and pulls out two plastic tubs and a cardboard box with vacuum tubes in them. I can tell he was way off in his estimate. There must be at least 400 tubes in all.

There's nothing really exotic--most of them seem to have been taken out of old TV sets--but I did find a couple of 6J6s. These are the tubes used for the single-tube transmitter I have been thinking about building (see http://wv7g.home.mindspring.com/jones_6j6.html for more info). In one of the tubs, there was even a socket for the 6J6. There are also a bunch of 6KS7s. According to the RCA tube manual, these tubes were often used as RF or IF amplifiers. That sounds like the beginning of a receiver project, doesn't it? In fact, 6SK7s were used in the receiver section of the ParaSet

(http://www.mines.uidaho.edu/~glowbugs/paraset.htm),

a "spy radio" used during WWII.

And, of course, there are a bunch of rectifiers to make a power supply. Now, all I have to find some cheap transformers. Anyone know a good source for them?

When he's not wondering what he's going to do with more than 400 vacuum tubes, KB6NU works CW and PSK on the HF bands and blogs about ham radio at www.kb6nu.com. You can reach him by e-mail at cwgeek@kb6nu.com.

[[NOTE: A photo of one of the tubs can be had off my website at

http://kb6nu.com/wp-content/uploads/2007/12/tuboftubes.jpg]]

REPEATERS AND STUFF

By Don Russell, WA8YRS

At the beginning of the year, most active club members turn their thoughts to what the club may accomplish during the year. It is easy to think big in February; a bit harder to maintain that enthusiasm in the summer months and towards the end of the year. With that thought in mind, I would like to suggest a few things that the club might be able to do. Keep in mind that if the club is to have an active year, we must have participation from individual club members.

Our club is small, maintaining forty to fifty members for the last five years or so. Even so, it has been fairly active; with Special Event Stations, Field Day every year, Volunteer Communications when asked to do so, and participating in disaster drills when ask. Not to mention the popular Wednesday night dinner that the club hosts each week thanks to Dick Huggins, N8RDH.

I would like to present a list of potential activities that club members may be interested in doing this year. I may even go overboard and present to much. But then we can pick and choose, add to, or whatever members are interested in doing.

Field Day

Field day is of course the number one activity for the club. I am sure the club will do FD 2008. Field Day is always the last full weekend in June. This year, the dates are June 28 through June 29. We will most likely set up June 27 (Friday afternoon or early evening. There has already been talk. I suggest we get a committee together during the February meeting so we can start to address issues and questions that have already come up. I will not go into detail on this event, since it is an annual event and everyone should be familiar with it.

The Ohio QSO Party

Several years ago, I hosted the club at my QTH to participate in the Ohio QSO party. The turn out was not great, but those that showed had a really good time. We had a little cookout and did a little bit of operating. The nice thing about the Ohio QSO party is that Ohio and especially Knox county (as far as the club is concerned) are the sought after stations. This makes it fun to sit there and call CQ and let the stations come to us.

This years running of the Ohio QSO Party is scheduled for August 23 through August 24. We will need to verify the dates, as I could not find a contest calendar that goes out to August 2008.

I think the club should put Knox County on the map by participating in this QSO Party. One station would be fine. Two would be better. We could do it Field Day style, or from a base station.

Fox Hunt

A couple of years ago we did a Fox Hunt. For those wondering what the devil a fox hunt is, it is simply a transmitter locating exercise.

The standard procedure is that one person, or a group of two persons working together is selected to be the fox. When they get to their “secret” location, the rest of us, using direction finding equipment (home brew antennas for most of us) try to find out where the “Fox” is located. It is more fun to work in groups of two.

At the last fox hunt, everyone had a really good time and wanted to do it again. Of course after the excitement wore off, we never got back to it.

It would be great to have at least one Fox Hunt this year, and possibly two.

Special Event Station

As President Mike McCardel, KC8YLD, mentioned in lasts month Newsletter, our club will be celebrating fifty years affiliation with the ARRL come September. Hey guys, that is half a century!

I would like to see the club set up a special event station in a public place. Have an information both, call the papers and radio. Whatever we need to do.

We should use our club call, K8EEN, and not a one by one call for obvious reasons. The club call has been K8EEN for at least fifty years!

Alternately, we could select several base stations to run the special event, each on a different band and each using K8EEN.

Of course, we would need to design a special event QSL card. Maybe we could have a QSL design contest.

I think this would be a lot of fun and perhaps a lot of publicity.

These are just some ideas. Lets talk about being radio active at the club meeting

CYCLE 24 HERE, EXPERTS SAY

(From the ARRL Letter, January 11,2008)

With the appearance of Sunspot 981 -- a high-latitude, reversed polarity sunspot -- on Friday, January 4, experts at NASA and the National Oceanic and Atmospheric Administration (NOAA) said that Cycle 24 is now here. "This sunspot is like the first robin of spring," said solar physicist Douglas Biesecker of the Space Weather Prediction Center (SWPC), part of NOAA. "In this case, it's an early omen of solar storms that will gradually increase over the next few years."

Solar physicist David Hathaway of NASA's Marshall Space Flight Center in Huntsville, Alabama concurred, saying that new solar cycles begin with a "modest knot" of magnetism, like the one that appeared on December 11 on the east limb of the Sun: "That patch of magnetism could be a sign of the next solar cycle. New solar cycles always begin with a high-latitude, reversed polarity sunspot." The region of magnetism that appeared back in December achieved high latitude (24 degrees North) and was magnetically reversed, but no supporting sunspot appeared until 25 days later.

Reversed polarity describes a sunspot with opposite magnetic polarity compared to sunspots from the previous solar cycle. High-latitude refers to the Sun's grid of latitude and longitude. Old-cycle spots congregate near the Sun's equator; new-cycle spots appear higher, around 25 or 30 degrees latitude. Sunspot 981's high-latitude location at 27 degrees North and its negative polarity leading to the right in the Northern Hemisphere are clear-cut signs of a new solar cycle, according to NOAA experts. The first active regions and sunspots of a new solar cycle can emerge at high latitudes while those from the previous cycle continue to form closer to the equator.

While experts vary in their predictions on when the solar cycle will peak and how strong it will be, NOAA, in April 2007, in coordination with an international panel of solar experts, predicted that the next 11-year cycle of solar storms "would start in March 2008, plus or minus six months, and peak in late 2011 or mid-2012." In the cycle forecast issued in April 2007, half of the panel predicted a "moderately strong cycle of 140 sunspots, plus or minus 20, expected to peak in October 2011. The other half predicted a moderately weak cycle of 90 sunspots, plus or minus 10, peaking in August 2012. An average solar cycle ranges from 75 to 155 sunspots. The late decline of Cycle 23 has helped shift the panel away from its earlier leaning toward a strong Cycle 24. The group is evenly split between a strong and a weak cycle."

NASA's Hathaway, along with colleague Robert Wilson at a meeting of the American Geophysical Union in San Francisco last month, said that Solar Cycle 24 "looks like it's going to be one of the most intense cycles since record-keeping began almost 400 years ago." They believe the next solar maximum should peak around 2010 with a sunspot number of 160, plus or minus 25. "This would make it one of the strongest solar cycles of the past fifty years -- which is to say, one of the strongest in recorded history." Four of the five biggest cycles on record have come in the past 50 years. "Cycle 24 should fit right into that pattern," Hathaway said.

According to Carl Luetzelschwab, K9LA, "As for improvement in propagation on the higher bands, we still have a way to go before that happens, and it depends on the magnitude of Cycle 24. The Solar Cycle 24 Prediction Panel has published predictions for Cycle 24, but unfortunately the panel did not reach one consensus prediction. If the larger of the two predictions comes true, we should expect consistent F2 propagation on 10 and 12 meters to start toward the end of 2009. If the smaller prediction comes true, this will be delayed about one year."

Luetzelschwab, who writes the column "Propagation" for the National Contest Journal (NCJ), continued: "While we wait for improved high band conditions, don't forget the low bands. Around solar minimum and for the next year or so, the Earth's geomagnetic field is at its quietest. This is good for low band propagation. Thus, right now is the time to start (or add to) your 80 and 160 meter DXCC efforts."

According to NASA's Tony Phillips, many forecasters believe Solar Cycle 24 will be big and intense. "Solar cycles usually take a few years to build to a frenzy and Cycle 24 will be no exception. We still have some quiet times ahead," says Hathaway.

Editors note: This is the second column by Dan in this newsletter. I was behind one column and thought I would make it up here…..Don, WA8YRS

Know Your FCC Rulemaking Process

By Dan Romanchik, KB6NU

Around Christmas time, a furor arose over a petition to change the rules regarding the use of digital modes. The petition number is RM-11392. You can find it on the FCC website by going to

http://gullfoss2.fcc.gov/prod/ecfs/comsrch_v2.cgi

and entering the petition number in the Proceeding text box. The petition will be the highest numbered document returned.

While the petition is interesting in and of itself, what's more interesting is how some hams got all excited about

this petition. Many thought that rules changes were imminent, and they urged everyone to rush right over to the FCC website and comment. While it's a good thing for hams to be vigilant about proposed rule changes, this petition was nowhere near being turned into a rule.

On the Web page, "FCC Rulemaking Process" (http://www.fcc.gov/rules.html), the FCC describes the four steps that occur before a petition is translated into rules changes:

1. Notice of Inquiry (NOI). During this phase, they gather comments on the petition.

2. Notice of Proposed Rulemaking (NPRM). If they determine that a petition has merit, they move to this stage. These are the rules changes that the FCC itself proposes to make, based on the petition and the comments received.

3. Further Notice of Proposed Rulemaking (FNPRM). Changes may be made to the NPRM after receiving comments on the NPRM.

4. Report & Order (R&O). The R&O is the document containing the rules changes or an explanation of why no rules changes are being made at this time.

At the time when everyone was getting excited about this, there was no NPRM in the list of documents relating to RM-11392. The petition was filed on 3/27/07, released for comments on 8/28/07, and the first comment wasn't entered until 11/20/07. Only two other comments were entered until all the recent publicity. This particular petition is still a long way from becoming a Part 97 rule, and if I had to guess, I'd say that it will never even get to the NPRM stage.

Don't get me wrong. I am not saying that it isn't important to read and comment on petitions. But before you get your knickers in a twist over a particular petition or proposal, you need to know where it is in the process. This process can be excruciatingly slow sometimes, but slow is not always a bad thing. By not rushing petitions through the rulemaking process, the FCC ensures that it gets comments from all concerned and that all those who are interested in an issue can take their time to draft a really cogent comment.

When he's not scanning the FCC website or eHam.net for the latest ham radio controversy, KB6NU works CW and PSK on the HF bands and blogs about ham radio at www.kb6nu.com. You can reach him by e-mail at cwgeek@kb6nu.com.

February Meeting Program

Mike McCardel, KC8YLD

At the February 11 meeting (7pm at the Red Cross) we will see a video clip from AmateurLogic TV on how to solder. Bring some small gage wire, a soldering iron, solder and, if you have any, some old/used PC boards on which we can practice soldering. We will also continue video taping members who haven't told their story about how they became a ham.

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Project OSCAR is a monthly column written for Newsletter Editors. Columns will appear as space permits. You may download all the columns yourself at: http://www.projectoscar.net/beacon.php

Members are encouraged to send articles pertaining to ham radio, with an emphasis on local activities, equipment reviews, and personal experience to wa8yrs@arrl.net or Don Russell, WA8YRS, 815 Brookwood Road, Mt. Vernon, Ohio 43050

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