

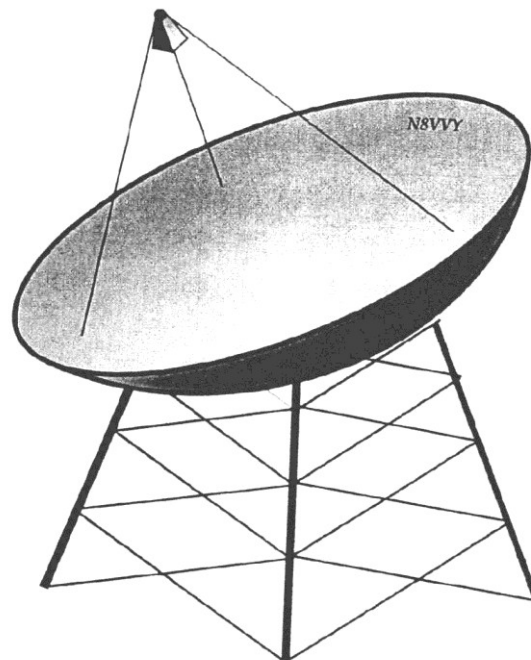
ANOMALOUS PROPAGATION

Newsletter: **The Midwest VHF / UHF Society**

Editors:

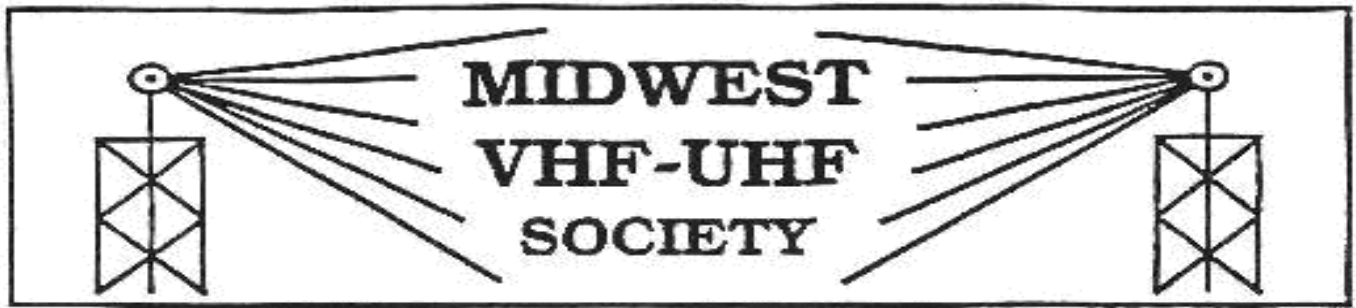
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Annual Society membership is \$ 10.00. Please
make checks payable to Gerd Schrick



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www.mvus.org

October 2009

Monthly Meeting Fri 23th
at the Hometown Buffet near SR 725 and Yankee Rd.
in Centerville

MVUS Sunday Net at 14:30 UT (currently 10:30 AM local time, EDT).
The net frequencies are primarily 144.280 Mc and 28.960 Mc.

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Upcoming Events:

Microwave Update: Oct 23/24 in Dallas TX

Ft. Wayne Hamfest: 14/15 November

Think about and Get Ready for the Spring2010
South Eastern VHF Conference at Moorehead, KY

De N8ZM

I suppose it's a good thing that MVUS has migrated to mostly electronic distribution of Anom Prop, given that I ran on for the better part of two whole pages last month. If there was real paper at stake, I suspect I'd have had a call from Gerd about which paragraphs to rewrite or leave out. Of course, as Editor, he has the ultimate authority to decide what stays and what goes, so maybe he didn't feel the need to call. Which is just fine with me, as it is his editorial judgement which makes Anom Prop so apropos for this group. There is always a wide range of topics and something to new to learn (or something I'd forgotten to re-learn!). If you get the chance, let him know that you appreciate his efforts, or something new you would like to see covered. He'll appreciate your feedback and suggestions, I know. He might even ask you to write something for an upcoming issue, but don't be afraid of the task because you don't think you are the author type. Gee-whiz golly, look what I get away with writing each month! The thought occurs to me that we could accept guest editorials so that you would get a break from my monthly ramblings. So take a shot; you might get to see your name in print!

A brief note on the Noise Source project. I have to admit to not having worked on it for about a month, mostly due to other activities diverting my focus. However, I need to get on with the development work, as I know there are several of you who are interested in having one of these, and anyway, the club could use the extra few bucks.

Another project of interest is assisting with a balloon launch for the 2010 Hamvention, working with Bill Brown, WB8ELK. Some of you may know that Bill is an avid balloon launcher, and has developed many gadgets to fly as payloads, including cameras, telemetry, APRS beacons, and more. His talk at the TAPR DCC in the engineering of these modules was quite fascinating. I am

hoping that we can muster a crew of 3-4 of us to work with Bill to pull this off. There is work to put the balloon together, get things organized for the launch, and chase it to wherever it lands. If you are interested, shoot him an email at n8zm@mvus.org. Thanks!

Not much to report on the 1296 beacon antenna installation, as the TV station is still working on getting a contract for the tower painting, and with budgets tight everywhere, I suspect this project might be one that they feel can be put off a while longer. Again, the idea is to piggyback the antenna installations with the painting to save some money for the amateur groups involved.

By the way, I noticed that Hamvention already appears to have their web site running, so if you are planning to go, no need to wait to get your tickets, Flea market space, or inside booth. Which naturally leads me to once again ask whether MVUS wants to have a booth at the show again in 2010? And also I'd again like your ideas for things to attract attention to the booth and to VHF/microwave hamming.

Another interesting development for MVUS to consider is related to the ARRL Frequency Measurement Tests. There is interest at HQ in having these tests conducted by folks, such as ourselves, who have distinguished themselves in the field of time and frequency measurement with behavior that can only be defended with the phrase: "It's a hobby!" I'd like your thoughts on this as well. Well, enough for now, so see you at the meeting on the 23rd! **Tom, N8ZM**
PS: Read para one again. Ed.

Although mentioned among the test equipment guys (last month) on pg. 5 para 5, we forgot to include Mike, W8RKO, in the attendance list on the bottom of pg 6. SRI.

This and That 10-09

Human Computing. In the 18th century... computations were done by hand. A “factory floor” of between 60 and 80 human computers added and subtracted numbers to fill in line after line of the tables...It was grunt work, demanding no special skills above basic numeracy and literacy. In fact, most “computers” were hair-dressers who had lost their jobs – aristocratic hairstyles being the sort of thing that could endanger one’s neck in revolutionary France. [from “Computing” by Martin Campbell-Kelly in Scientific American, Sept. 2009]

Ready for an Upgrade? There was a time when I would have responded, but nothing good ever seemed to come of that. The updated computers never were any better at doing the things I wanted to do than the old ones. And there’s always the possibility that I could trigger an inadvertent disaster. [Gail Collins]

Do the Math. DirectTV, transmitting in the Ku band (12-18GHz) claims weather related signal dropouts are a myth and claims the signal is delivered 99.9% of the time. Wow, everybody is happy! But if you multiply for example 30 days (one month) by 24 (hours in the day) and then by 60 minutes in an hour you come up with 43,200 minutes for the month. Now multiply those minutes by the good signal time fraction which is $1 - .999 = .001$ and what do you get. That’s a little over 43 minutes. That is over the course on one month. [Gerd, WB8IFM]

Hara Arena. This place, well known to all who ever came to the Dayton Hamvention, is not idle other times of the year. It just (August, 2009), hosted the Paranormal Convention. [ohiocon.southernohioparanormal.org]

Concept of Zero ...Did you know that neither the Greeks nor the Romans were capable of using the concept of zero? It was...the Mayans, who first contemplated the zero. The absence of value. True story...A negative times a negative equals a positive. Why? [*the whole class looks at him blankly; he sighs deeply and shakes his head / movie Stand and deliver*] [Jaime Escalante]

”Burning River.” That’s the name of a beer by the Great Lakes Brewing Co. in Cleveland. They have other colorful names and pretty labels to help sell their

beer, but as usual, essential info is lacking. [Gerd, WB8IFM]

Two by Four. We all have learned that we are NOT talking about inches here. The other day I had trouble reaching some items with my six-foot stepladder. Although the ladder measured 6 feet in stored position, it contracted by 3 inches when setup. [Gerd, WB8IFM]

A Mystery. (This is regarding a computing SWR meter.) “We’ve received reports of a momentary jump in SWR when the transmitter is first turned on... This is somewhat of a mystery. Possible causes are: (three are listed. ED.)... If you see this phenomenon, it is not the fault of the WM-1. If you can’t determine the reason you’ll have to ignore it. [AUTEK, WM-1 Instructions]

Crashing into the Moon. “What has the moon ever done to us that we have to spend more than \$ 100 million attacking it?” (There have been crashes in the 60’s, if I remember correctly. These were probes that took pictures as they approached closer and closer until they crashed. ED.) [Speak Up /Dayton Daily News]

Catechism of Electricity, 1899. *** “The great forces of the world are invisible and impalpable; we cannot grasp or handle them; and though they are real enough they have the appearance of being very unreal. Electricity and Gravity are as subtle as they are mighty; they elude the eye and hand of the most skilful philosopher. In view of this, it is well for the average man not to try to fathom, too deeply, the science of either; neither Edison or Tesla have done that yet. [Nehemiah Hawkins M.E.]

*** Steve, K8UD, has this book in his extensive collection. When I read the above (first) sentence in the introduction, I thought it would make a good item for “This and That”. I was getting ready to call and have Steve type it and e-mail it to me. Then I checked the Internet, and the entire book is reproduced there. It makes interesting reading:
<http://books.google.com/books?id=kKx-AAAAMAAJ&pg=PR7&lpg=PR7&dq=catechism+o>

Subject: Line Noise

by Mike Gray, WA8HNS (8-09)

When I worked for the power company, this was one of my jobs. While the locating equipment is much better than what I had available, the problem has not changed. Utilities do NOT take noise seriously nor have they taken the necessary steps over many years to deal with the problem. One of their comments is, why spend OUR money to enable some nut's hobby? Basically, they consider hams a PIA, nothing more!

So what DOES cause noise and how can it be eliminated as well as efforts at long-term prevention?

There are Lightning arrestors. These are sealed against moisture. Sadly, those seals fail. During dry weather the thing is quiet. After high humidity or rain they can get VERY noisy! Said noise is often intermittent - you can almost set your watch by them! If they get enough water inside, they can (and do) explode. Better seals would help, of course. Being more diligent about replacing bad ones when discovered would also help. Utilities WILL generally replace noisy arrestors when they are located unless they have formed an adversarial relationship with a particular complainant. However, arrestors make up only a small part of the noise problem, maybe 5 - 10% at most.

More noise comes from a type of insulator. We called them "strain insulators". These are a cup with a rod which has a button on the end insulated by ceramic. Makes a WONDERFUL capacitor!! I should pick one up and measure how many PF it really is! Think of a string of these capacitors in series with the resistance of a pole, the butt of which is at ground potential. 7000 volts on the line side. The metal parts of the insulator are galvanized but time, weather and friction wears that away, allowing the steel to rust. Soon, there is an oxide layer that is VERY thin. There is enough voltage to cause an arc across the oxide layer and thereby noise. (Spark transmitter, anyone?) As the wind blows, things move. That movement changes the frequency of the noise as well as the amplitude, sometimes to zero. These things can generate HUMUNGOUS amounts of noise and over a broad range of frequencies from 1Mhz to 450 MHz or more! The noise CAN make TV useless as well as FM broadcast - not to mention ham radio. In SOME cases, rain will cause this noise to cease - but not always.

Then there is an installation practice that aggravates the problem, the so called "slack span". The noise from these is just awful - and

unnecessary! There are other types of insulator that work well here and are no more costly - just poor engineering and contempt for noise complaints often prevents their use. Anyway it has "always been done that way". An attitude that is hard to change.

There are also newer, silicon rubber insulators that vastly reduce the problem by having only a very tiny amount of capacitance (the only cure I can think of). Work pretty well but cost a little more.

A long-term solution requires the engineering of a better insulator. If a perfect one were built today, however, it might take 100 years to get them in the field in high enough numbers to solve the problem!!

Oh well.....

There are other noise sources but the two above are the vast majority. Loose or broken tie wires, armor at pin insulators, burning connections (self correcting - it burns down) to name most of them. Consumer sources like door bell transformers, welders, furnaces, universal motors etc, etc. add more possibilities but these are rather low in energy and rarely travel very far. Contrary to popular belief, transformers do NOT make noise. Well, they can make one very large BOOM when they fail but that is about it! Yes, Tom (and group), I had a good time!!

Regarding your noise issue, I would be happy to help. Further information would be helpful - does the noise come and go over seconds, hours or days? Is it affected by weather such as rain, humidity or wind? Can you pick it up on a mobile or handheld rig, preferably AM? (OLD CB often works well.) Have a good quality tape of the noise from said AM receiver?

Strain units are almost a singing sound, moderately high in pitch MOST of the time. Often come and go in the wind. Sometimes stop in the rain - but not always!

Lightning arrestors are a "rough" sound and sometimes quit during a long dry spell. Never seen one go quiet in the damp!

Much of the effort beyond listening is looking at the type of construction in your area, distances to primary and transmission lines, etc.

Bottom line, I would be happy to discuss in detail whenever you like.

E-mail: MikeG41@adelphia.net

Random Thoughts (Sep.-09)

DE Lloyd NE8I/r EN74 etc.

This is important

Years ago, figured it was important to provide things to print in the MVUS bulletin. After all, Gerd only has what we send. Our contribution to keep things going. Hopefully, small enough to fit in. Add to this, a printed bulletin gets read, and it also gets re-read. So, not being a writer nor journalist, I do what I can. No, don't ask my English class grade in college.

This is how I do it. Got home, sitting by the station log and started writing on the back of an envelope, collecting subjects. 885 miles, 9 grids, 115Q, no 24 47 3 10. GR WX. QRP, spotty act, etc etc Start to expand it into sentences and comments. Moving stuff around. How smooth it reads depends on how much effort I put in. What is the score? Don't know. Won't until I send in the log. Thing is, this is more about the fun making the contacts, and the score is not all that important.

Had 6 through 47GHz equipment, all worked. No contacts on 24 or 47 GHz. Just 3 to 10 GHz. Activity was spotty this year. 2 big swaps that weekend, Findlay Ohio and in Illinois. Most activity heard and worked was in Ohio and 9-land. 902/903, me still stuck on 903.

About Power

Ran mostly QRP this year: 5 watts or less. Only on 2M did I run 160W and 20W on 222. Meaning, I missed an awful lot of contacts. To quote W9ZIH, "power on the microwaves, is a necessity, not a luxury." Murphy, however, was kind to me this time. Nothing failed! No smoke! Fantastic weather too. Really nice. It all worked.

Jumbotrons and Visitors.

One thing I noticed driving along, were these jumbotron billboards. Kinda like a huge TV. They peg the S-meter. I wonder if they stay within FCC limits. Getting near one, the trash factor would override any and all signals heard.

Had several visitors. My thoughts are, rovers are a great opportunity to present Ham Radio, and hopefully in a positive light. So, I carefully explain things. And when I get a question about ET or something weird, I avoid the

temptations for a cute reply, keep it very serious. Try and undo the years of TVI and other black eye PR we have collected. Could use some nice ARRL brochure to hand out, with a non tech description of Ham radio, and what is going on. This is why I have "WWW.ARRL.ORG" on the side of my rover. All the pix that get taken, refer who ever took it, there. Something for the curious.

Grid Philosophy

My basic rover philosophy is to activate grids, increases activity in general, especially ones that have not been on. Driving along I-75/US-23 from Standish to Troy Ohio produces the most fast grids, and 70 mile an hour roads help. Driving ears up time. Along Lake Michigan is a big pile of activity in 9 land. Thus the Jack AB4CR rover philosophy. Drive along I-94 or I-96 to US-23 and South. Works pretty good. The other "trick" is to operate near grid corners. Cuts down driving. Also flat areas, such as Lennon Mi EN72/82/82/83, open farm land, or Ottawa Oh EN70/80/71/81 work pretty good. The way it works: spend say a few hours operating, move 2 miles, more operating hours etc. Minimal driving. Saves gas etc.

Too many Trees.

Up here in hilly Northern Michigan, one has to look at rover spots in a different grids, and drive between them. Then, there are the trees, not corn. Both are RF sponges. Corn, is pretty easy to get over. 70-foot trees are another story. Lots of rover hills in Michigan. Look great on the map. But 360 degree trees, useless above 1296... Would need a logging permit and a well oiled chain saw. There are many scenic overlooks, but they are not maintained. Overgrown by vegetation. Takes persistent calls to the state and counties to get cleaned up, cut for the view (and for rovers).

More.

For those familiar with Mark WB8TGY's Michigan Microwave Resources page on Geocities, well, it's going away. Geocities is shutting down. It had a really good collection of rover sites and maps and relevant general information.

10 GHz cumulative report next time.

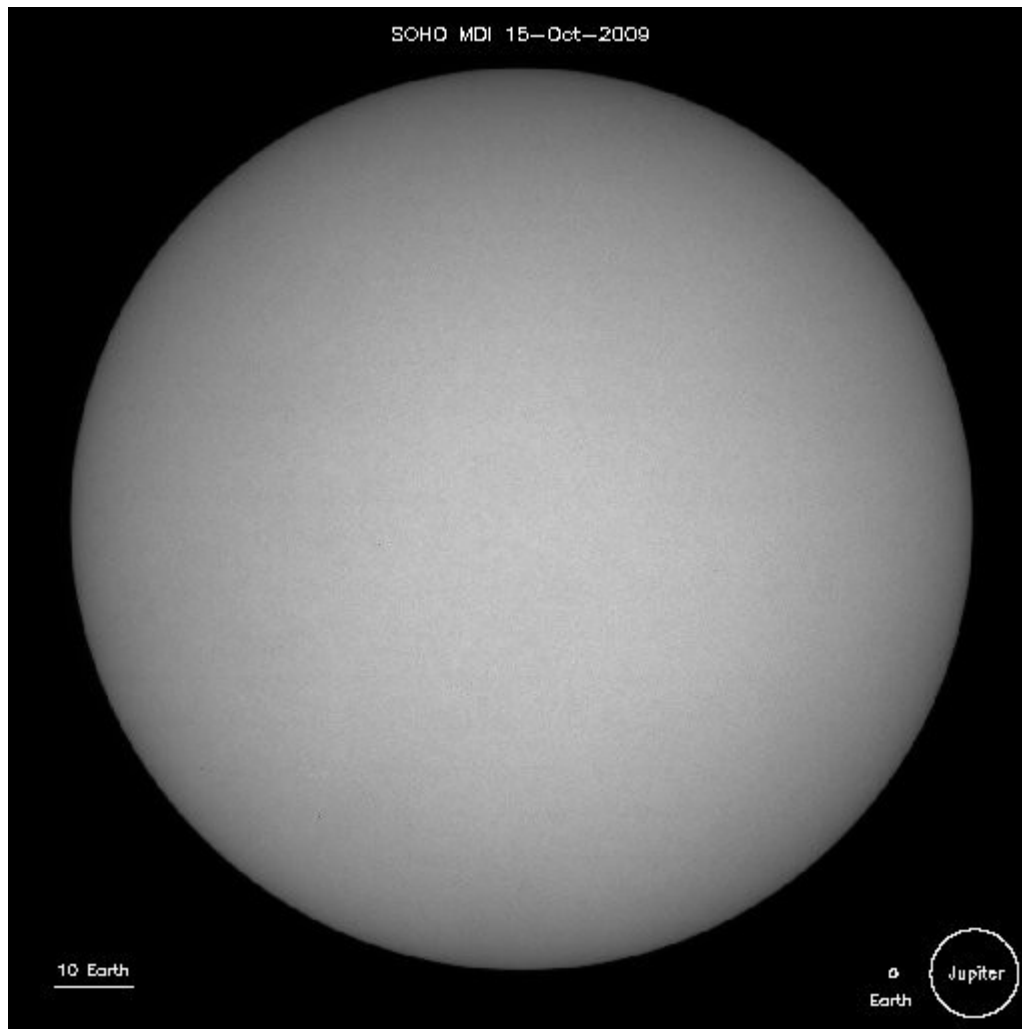
73, Lloyd NE8I/r EN74 etc.

Float and Trickle Chargers! WIKIPEDIA 9-09

The difference between a float charger and a trickle charger is that the float has circuitry to prevent overcharging. It senses when the battery voltage is at the maximum level and temporarily shuts off the charge (floats voltage at zero or a very minimal charge until it senses that the battery output voltage has fallen, then resumes charging). It may be kept connected indefinitely.

A trickle charger, on the other hand, will charge no matter whether the battery is fully charged or not, so it needs to be connected and disconnected periodically. If left in place too long, it will eventually boil the electrolyte out of the cells or damage the plates. Trickle chargers will work to keep the battery charged, if used once a month or so for a day or two, but the float chargers can be left connected indefinitely without potential harm to the battery.

The Spotless Sun



From the
WM7D Web Site

**Current
Solar Flux report:**
SFI: **71**
A-index: **1**
K-Index: **2**

Report last
updated:18:16 utc **15
Oct 09**

Highs for Cycle 23
Flux: 298 -
26 Oct 2003
Sunspots: 401 - 20
Jul 2000

**Current Sunspot
Count: Zero**

Murphy's Laws of Computing / passed on by Daun (6-09)

- When computing, whatever happens, behave as though you meant it to happen.
- **When you get to the point where you really understand your computer, it's probably obsolete.**
- The first place to look for information is in the section of the manual where you least expect to find it.
- When the going gets tough, upgrade.
- For every action, there is an equal and opposite malfunction.
- He who laughs last probably made a back-up.
- **A complex system that does not work is invariably found to have evolved from a simpler system that worked just fine.**
- **The number one cause of computer problems is computer solutions.**
- **A computer program will always do what you tell it to do, but rarely what you want to do.**



**The Big Event
<<<Measuring
& Picnic>>>**

August 2009
at Karen and
Daun Yeagley's
Place
N8ASB



Picnic:
Tom our
Master
Chef

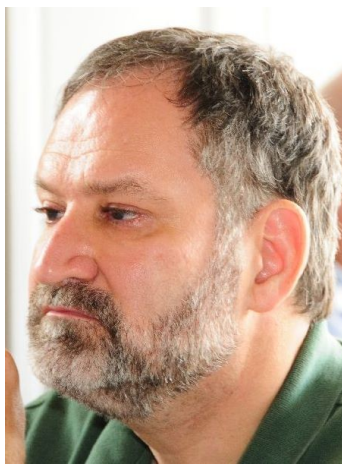
**Motley
Gang
Snapshots**
Photos:
DaveLundy



Tom, N8ZM



Mike, W8RKO



John, N8UR



Steve, K8UD



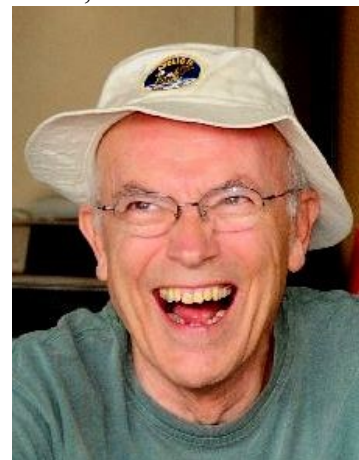
Jim, KE8BV



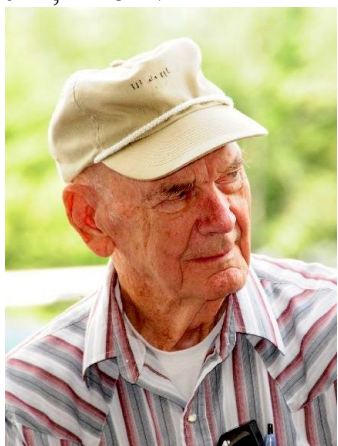
Tom, W9NSB



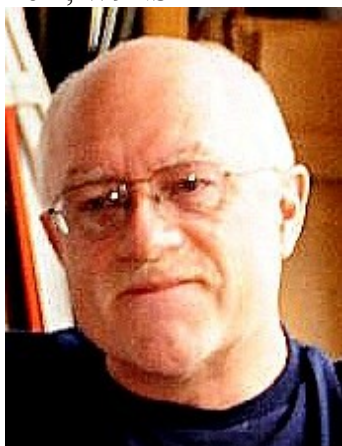
Gerd, WB8IFM



N8QOD



Ed, WR8A



Bruce, ND8i



Red, W8ULC



Daun, N8ASB

Photos by Dave Lundy. All pictures can be viewed at <http://www.yeagley.net/MVUS2009/>

The 2009 TAPR Digital Communications Conference (DCC)

By Tom Holmes, N8ZM.

One of the ham radio get-togethers I have learned not to miss is the TAPR DCC. As you may know, TAPR (originally Tucson Amateur Packet Radio, but like many outfits nowadays just goes by its initials) was organized to promote Amateur Packet Radio, and created one of the first successful Terminal Node Controllers (TNC). Over the quarter century since then, TAPR has spread out into many other aspects of ham radio, but consistently with a focus in things digital. The DCC came about as a way to allow the hams who were the movers and shakers in the digital hamming world to network face to face. The DCC is now a 2-1/2 day affair along the lines of the Central States VHF Conference or Microwave Update. And you are likely to see some of the same faces at all three!

This year, I attended the conference in Chicago, along with N8UR, N8QOD, and AD8I. Each of us found something interesting and educational there. There were talks on topics related to emergency communications, D-STAR, balloon launches, surface mount construction techniques, digital ATV, APRS, digital voice, and a few home-brew projects. Some of the topics are quite sophisticated, even in the non-amateur world! I'll cover just a few of them here.

One of the DIY projects (although the developer was selling it as a kit) was a wireless RS-232 cable utilizing the ZigBee protocol. ZigBee is a Bluetooth-like wireless scheme that offers a bit greater range. The application that John Hansen, W2FS, had in mind for this innovation was programming the mobile rig in your car from the computer in your shack. It saves pulling the radio out of the car, or dragging a PC out to the garage. Since most of us still have a few RS-232 devices around, maybe there are some other applications for this gadget. I'm thinking that if you have an RS-232 controllable rotor on your tower, you could mount the control box closer to the rotor, say at the top of the tower. This would save on expensive rotor cable, as you would only need to run 110 VAC wiring up the tower. Yeah, I know that not everyone likes the idea of having that kind of juice at the top, but I am simply offering the idea as an example.

Another interesting project was using your keyer paddles along with a PIC processor to emulate a keyboard and mouse. Once again, the application may not be one that fits your needs, but the main purpose for this one was for the presenter to learn how to program PIC's to do something more than turn on an LED or two. It was interesting to learn from his experience in designing the hardware and writing the code.

Unlike reading a magazine article, during and after all of the presentations you have the opportunity to meet the presenters and ask questions about their talks. There is a lot of brain-picking going on all weekend! Got an idea to share, or looking for someone with a little more

experience in an area that interests you? This is the place to be. For example, if you are into APRS, then the name Bob Bruninga is familiar. Bob is at the DCC, and he always gives an entertaining talk about new ways to use APRS for more than just tracking position. And he will be around all weekend to answer questions about APRS.

Another topic was digital Amateur TV, which has generally adopted the DVB-S format, mainly for reasons of equipment availability. There were two very good talks on this subject. One was more theoretical, while the other was very practical, describing the first digital ATV system on the air in the US, run by the ATCO folks just over in Columbus, OH.

One fascinating presentation was by Brennan Price, N4QX, of ARRL who is heavily involved in planning for the next World Radio Conference, coming up in 2012. A number of issues that are critical to giving amateurs around the world the regulatory framework for developing software-defined and cognitive radios were highlighted. The effort that needs to go into this is not trivial, and is considered very important to the future of ham radio if we are going to stay at the leading edge of technology development. The current regulations don't really give hams the clearly defined freedom needed to create and use the technologies that are now common in cell phones and wireless network devices. In my opinion, we need to leapfrog those technologies. The talent is there, but the supportive regulations aren't.

On Sunday, there were two tutorial sessions. The first was about programming Field Programmable Gate Arrays, or FPGAs. A lot of consumer products use these devices instead of a microprocessor because of the flexibility to create the specific functions needed, such as A/D converters, memory, and I/O, without having to find a best-fit commercial product, and the FPGA can be reprogrammed in the field so that updating a product to perform new functions or fix bugs is quite easy and inexpensive.

The second presentation was by our own N8UR, who demonstrated how to install the software to run the TAPR HPSDR Penelope and Mercury transmitter and receiver boards. While not a difficult process, there are a number of steps to the process, and John's talk helped clear up a lot of confusion. He was ably assisted, I should add, by yours truly as the guinea pig software installer. Just call me Vanna!

There were several more talks at this year's DCC, but I suspect I have used more space than is available, so I will quit here. Just allow me to finish by saying that the weekend is well worthwhile if you have any interest at all in digital hamming. See you there in September 2010!

Homebrew, Experiments, and Design in Amateur Radio

By Rick Campbell KK7B

I've been thinking about three concepts lately: what makes an amateur license unique; how do we contribute technically; and how does a beginner start experimenting.

When I make a presentation to an amateur radio group I am often asked the question: "how did you learn how to do all of this cool experimental stuff?"

I get a similar question from students and young professionals wanting to know how to become a professional radio designer. Those have always been hard questions to answer, because I don't remember a time when I didn't make changes and modifications to practically everything I own. But I do remember when I was a young boy and discovered amateur radio, years before I earned my license. In amateur radio, your license encourages you to modify, experiment with, and even design and build your own transmitter and antennas. That is different from every other radio service.

Amateur radio is a big tent, and covers all sorts of interesting activities: traffic handling; emergency communications; collecting QSL cards; working DX; and many others. Those games all develop useful skills that provide "a pool of trained radio operators" when needed during natural and man-made disasters. But there are other people with those skills. What has always excited me about amateur radio is the game of taking something that doesn't work and getting it on the air. It could be a radio that worked yesterday and doesn't anymore; an old TV set that could be turned into a transmitter; or a radio on a VHF band that might be modified to work on the next higher band.

That last activity: Getting to the Next Higher Band, occupied most of my youth and early adulthood in my amateur radio hobby. As a sophomore in college I built a SSB exciter for 2m, and in the few years after graduation I modified it to work on the 1.25m and 70cm bands. When I went back for graduate school, an amateur friend W7YOZ encouraged me to explore the higher bands in my spare time. By the time I finished grad school, I had a SSB-CW signal on every band up through 3456 MHz. The microwave bands required different techniques, and I had to invent some inexpensive ones as I went along. The alternative was to use converted hardware developed for the military and satellite communications--very capable, but Not cheap! The No-Tune Local Oscillator and

Transverters allowed a generation of microwave experimenters to get on the air with low-cost technology, and are still featured in handbooks.

They also caught the attention of the cell-phone industry, who needed to make inexpensive handsets that operated on the microwave bands. My "Next Higher Band" experience was exactly what they needed to design integrated circuits that operated on the next higher cell-phone band. This is the second important point: the free, unrestricted technical explorations of radio amateurs are a laboratory for next-generation technical developments. The basic ideas may come from somewhere else, but radio amateurs have the unique ability to combine a new idea with whatever parts are available, and make it work on the air.

That is the essence of Design.

The final question is: how does a beginner start experimenting? That's easy. Once you know you are allowed to dig inside and poke around, all you need is a radio that doesn't work quite well enough.

In the 1950s and 1960s, amateurs learned to experiment by converting surplus military hardware to work on the ham bands. The receivers we could afford during those years were big open boxes that didn't work very well. While our high-school friends lifted the hoods of their cars and modified the engines, we lifted the covers of our receivers and improved the circuits. Kids in the 1980s and 1990s did the same thing with their computers. For those of us with the urge to experiment, all we need is something that doesn't quite work, preferably something inexpensive enough that we aren't afraid to open up the case and look inside. It helps if the case already has a few extra holes, dents, and scratches. Experiments can be very simple: recently I added an external speaker to a radio that didn't have an external speaker jack. Now I like the way it sounds.

I have friends who are just as excited about emergency communications, collecting QSL cards, and owning the latest, most expensive transceiver. That is good--amateur radio needs them too. But for me, hacking my radio, getting on the next higher band, and coming up with something interesting enough to write about is the unique opportunity offered by amateur radio. My amateur radio license is a "License to Experiment." Homebrew, Experiments, and Design in Amateur Radio