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www.mvus.org

June / July 2008

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.

June Meeting: Fri 27th, July Meeting: Fri 25th

Meeting 7:30 PM at the Hometown Buffet near SR 725 and Yankee Rd. in Centerville

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Upcoming Events

Field Day.....28-29 June

SARA* Meeting,.....June 29 to July 2 at NARO Green Bank WV.

Picnic and Measurements.....August 23rd Statring at 1 PM

At Sacket-Wright Park (just outside, South of Bellbrook)

2006 Microwave Update Proceedings, just a few copies left

Send check (\$14) to Gerd Schrick, 4741 Harlou Dr, Dayton, OH, 45432-1618

***Society of Amateur Radio Astronomers**

De N8ZM

If you guys weren't on for the ARRL June VHF Contest, you may have missed one of the best 6 meter openings in a long time. The band has been open now for the better part of two weeks. The N8ZM team worked both coasts and a lot in between, and considering that 2m and the higher bands were not much help, our score was one of our best ever on 6m. But that opening was there for everyone, so I am sure that there were a lot of high scores that we will be competing against. Most important, though, is that we had a great weekend!

On the subject of our picnic, I'll just remind you that the date is August 23rd, at the shelter in the park where the Bellbrook club does Field Day. It's called Sacket-Wright Park and is just outside and to the south of Bellbrook. We'll have the capability to do our usual tech stuff, and even better, you'll be spared from my cooking! There is a really good carryout place close by that I am told will make it easy for us to have a real feast, without the usual flames. So instead of bringing a dish to share***, just bring a few bucks to chip in for the chow. Of course, MVUS will provide the drinks and will kick in towards the eats.

Gerd tells me that we picked up several new members at Hamvention, as well as a number of renewals. I hope that these new folks will see how much fun we have playing with the many different facets of the techie side of ham radio, and will jump in to contribute to the chaos. After all, a lot of the fun is in working together and sharing ideas, all while sharing stories and experiences and collective accumulated knowledge.

By the way, many years ago, we decided to not hold meetings in July because many of the guys were going to the Central States VHF Conference. In recent years, the number of you going to CSVHF has been small, so I decided that we will have a July meeting to see how it works out. The date is July 25th, so mark it in your calendars now.

In case you missed it, the results of the 2nd MVUS FMT are posted at <http://www.febo.com/pages/mvus-fmt/April2008/results.html>. This can also be reached from our www.mvus.org web site.

BTW, Steve has updated the MVUS web page and it has a much cleaner layout. There are many links there to other VHF and microwave groups, so check it out.

De Tom, N8ZM.

*** There is really just a supermarket that specializes in "broasted chicken" which is what the Bellbrook Club feasts on and what we will have, so I recommend to still bring something for the side dishes. As Tom says we can always supplement this from the supermarket. Gerd.***

This and That 6-08

That was Easy. Need to reset your oil change reminder: “On this car, you turn your key to the ‘on’ position (without starting the engine), and then press the gas pedal all the way down three times within seven seconds. Next turn the key off, and then start the engine. The light should go off after a few seconds. You might have to try it a few times to get it right. But that’s all you have to do.” [Tom and Ray]

Microbes. It is a fact of life that wherever humans go, microbes follow. Biologists estimate that every human body has at least a trillion hitchhiking microbes, accounting for as much as 2% of a person's total mass. Most live in harmony with native human cells; others can make you sick. [NASA]

Vulcan Laser. The world's most powerful laser has heated matter to a truly sweltering 10 million Celsius.

The Vulcan laser’s concentrated energy is the equivalent to 100 times the world's electricity production into a spot just a few millionths of a meter across. [Jonathan Fildes, BBC News]

Suburbia. Greater Atlanta has roughly the same population as Greater Berlin – but Berlin is a city of trains, buses and bikes, while Atlanta is a city of cars, cars, and cars. [Paul Krugman]

Kill Ratio. Sharks kill 6 people per year. But people kill 26 million sharks. [Time 5-12-08]

Geons, Black Holes & Quantum Foam. ...Black holes teach us that space can be crumpled like a piece of paper into an infinitesimal dot, that time can be extinguished like a blown-out flame, and that the laws of physics that we regard as “sacred”, as immutable, are anything but.

[John A Wheeler, 1911-2008]

Black Hole. For the earth to become a black hole, its entire mass would have to fit into a sphere no bigger than a pea. [Robert Irion, Smithsonian, 4-2008]

Bad Boys of Aviation. Let’s say you’re the captain of a Boeing 747 out of Anchorage for Chicago. Except no self-respecting cargo pilot calls himself –or, rarely herself—anything so leaden, so utterly earthbound as “captain”. You are instead proudly and defiantly, a “freight dog”, a nome de guerre freighted, so to speak, with many connotations, not all of them positive. [Michael Walker]

Ham Radio. Ham radio, like fishing, is something I've always admired, but never had much luck with. [Joe DePriest]

Hot Air. It’s not as bad as “fire on the wire.” [Greg, WG8Z]

Inventor. The inventor looks upon the world and is not contented with things as they are. He wants to improve whatever he sees, he wants to benefit the world... [Alexander Graham Bell]

Supernova. Alicia Soderberg and Edo Berger of Princeton were just finishing up dinner when they decided to take a look at the data coming in from NASA’s Swift spacecraft. “There was nothing interesting on the TV. I decided to take a quick look at the observation.” said Berger. The telescope ‘s X-ray detector was picking up an extremely intense, five-minute burst of radiation, which signaled that a star had run out of nuclear fuel, was collapsing under its own gravity and then exploding outward. Soderberg says she was so exited. “I didn’t sleep for a week.”

[The Week, June 6-2008]

Smoking News. Only 21% of Americans now smoke, down from 45% in 1971. Persuading the 45 million smokers in the US to quit may be difficult ... [The Week, June 6, 2008]

Hybrid. An electric car with a pot-pot and an oversize battery. [Gerd, WB8IFM]

Remember- Old Hams never die, they just short to ground. [Mentioned by Dave - KB0PE]

Re: Digital TV over the Air

Updated, 6-14-08, By Gerd, WB8IFM

I have been receiving digital TV for a few years and can state that there will be a big problem when analog TV goes off the air next year unless some changes are made. Right now we are still sailing through uncharted waters.

And there are quite a few misconceptions floating around on the order of: "Frog can't hear" type! So here are my observations and comments.

All stations that are presently on the air and want to continue in digital have at least one program on the air right now (usually this is the same as the present analog one).

One important comment. The digital format provides for 5 standard TV programs or one HDTV and a few standard! In my area (Dayton, OH) only public TV has 5 programs on the air. In other words they are running the final full version. All programs are "multiplexed over the entire 6 MHz channel bandwidth, so if there is a drop out, all programs are affected. The commercial stations have just one or two programs. Unless one is a HDTV the channel is "not fully occupied" and probably works with no dropouts! That is Not a valid test, of course. So if you experiment keep this in mind.

Many articles have appeared in papers and magazines but they are all written to sell the new digital TV and praise its advantages. They forget to mention that there might be problems. What is left out are actual "try outs" by average TV viewers and their experience over some period of time.

The problem with the digital TV is in the propagation of the signal. And that is where we hams can do a lot of good. I urge everybody to get a converter and hook it up to a regular TV antenna; the output of the converter is video, so your old TV needs to have a video input (all but very old TVs have that). To my knowledge there is no box that has a TV2 or TV3 output. I don't think there is any VCR or DVD box out there with this feature either!

If you receive analog (many converter boxes have a bypass for that) than you should receive digital as well, because the digital signal does not have to be as strong as the analog. However, a digital signal is either there or not! There is no bad digital signal. However, a "contaminated" signal has "dropouts" and that looks pretty bad. Also the sound will immediately disappear. So a weak signal is in 90 % of the cases *NOT* the problem. The Problem is a modification (modulation of signal strength and phase) of the signal as it travels from the broadcast antenna to your TV antenna. We are talking propagation here!

The modulation format that the FCC chose unfortunately at the UHF frequencies that are allocated (470 to 800 MHz) has problems. One is called multipath and I have been trying to eliminate that from my reception.

In my tests I came to the conclusion that multipath, at least in my situation, was not the problem and it may not be the main problem in general. Presently my troubled signal is at channel 58, which is channel 16's future digital channel. This signal is at 740 MHz, which corresponds to a wavelength of only 16 inches, and a quarter wavelength is 4 inches. Now compare this with the size of tree branches, twigs and leaves that will move even in a light breeze.

Seems like the FCC recognized a problem here. They have now removed all frequencies above 700 MHz and reallocated lower channels to the stations that are transmitting presently at higher frequencies.

I observed my dropouts almost always in windy weather. Conversely, a few times I had good reception it was always extremely calm. So I surmise the leafy trees (since in the winter it is better also) are modulating the signal to cause dropouts. A chimney mounted antenna will most likely receive a signal that had passed through a number of neighborhood trees. The solution, get the antenna high enough to have a clear shot to the TV transmit antenna.

Fortunately I have a 100' tower and so I mounted my small Yagi at the 75-foot level. A 100-foot of RG-6 cable runs to the TV set.

Now the digital TV reception on all local channels is excellent and the signals are very strong. I can crank in all 42 dBs of my step attenuator and still have a perfect picture! That means, adding the loss of the cable, that even one hundred thousands of the signal pick up will do. This confirms again that signal strength is not a problem. Channel 58 comes in with very few "dropouts". These are brief and occur infrequently. They might be originating from the station. At one time an airplane was flying over which could have caused a reflection. This situation needs to be observed for a while!

Finally: the antenna might not need to get up quite that high. But the situation here is this: how many people can or are willing to put up a tower (support) that will place the antenna clear above the neighborhood trees?

Lake Erie Report,

By Lloyd, Ne8i 6-7-08

Met up with James W8ISS this morning at Sterling SP, EN81hv, Monroe Mich.

Set up 10 GHz, managed to work KB8U, EN71sw, about 10:37. His signals hit 559, much QSB, I call it wind QSB. Plus, signals built up and down with time. Overcast. In the light breeze the peak kept shifting, heading for max a little bit. You could follow it, but it kept shifting. Let James do some of the aiming so he could get a feel for it. Tried to work KD0AR, EN91.

Listened for the cross border contest, looking for rain scatter activity. None heard. Called CQ a pile of times out that way.

Nice chat with the Park Ranger. Place had a very small crowd. With fuel prices, attendance has been way down, even on Memorial Day weekend. Behind us, watched some of the RC planes working out.

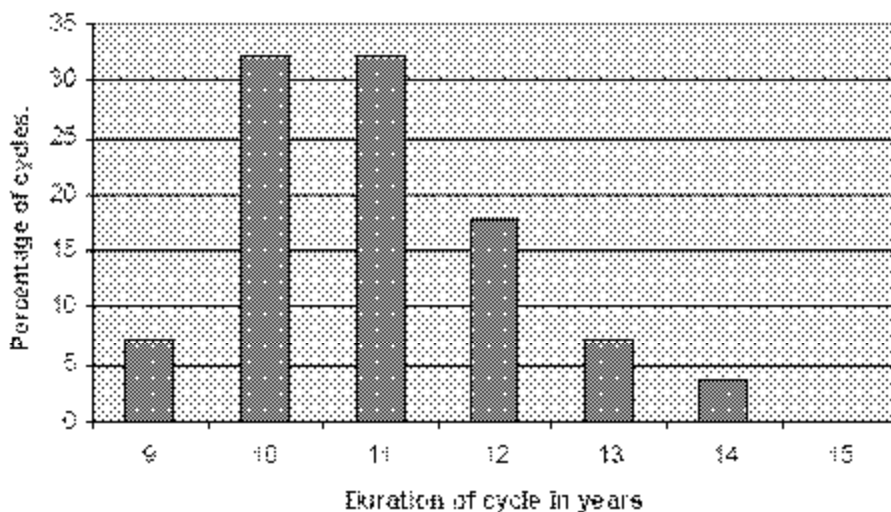
One unusual condition. Last August, we could see across the Lake to Port Clinton pretty good. But the Lake Islands were not visible. Today, overcast skies, we could see, I am guessing, Pointe Pelee, Kelly's Island and Pelee Island, due to the direction and apparent size. They came and went several times. They were visible just above the Lake Horizon. Tried to tie (aim) into that duct a few times. They are not normally visible. There was a very thin wispy layer of white haze at the horizon. The Islands, Point Pelee were above that layer.

On 2M, heard K8MD, K4TO, KB8U, K8TQK. K8MD; worked K4TO on 1296. Listening to descriptions, UHF bands were not all that good.

It would be nice to have more beacons!

What I am hoping, is that the groups decide to go for Lake Erie and Huron in the August cumulative, and Lake Michigan in the September cumulative.

73. Lloyd, Ne8i.



Lingering Solar Minimum

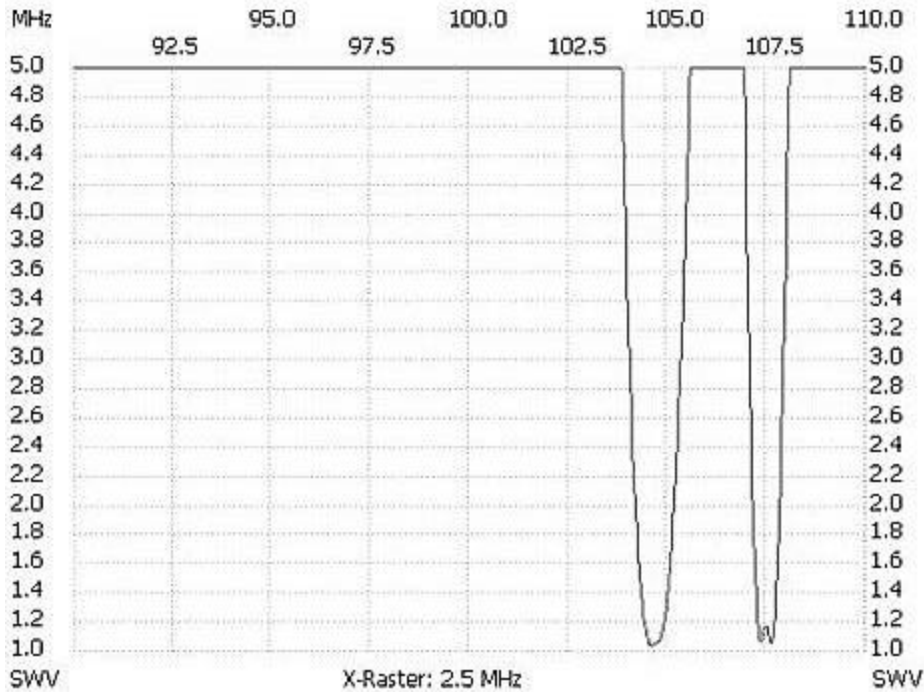
We expect the solar cycle to be 11 years, but there have been solar cycles longer than that and also shorter. 18% of the cycles have been 12 years as the chart on the left shows.

From
"The Current Solar Minimum"
By Ken Tapping, 4-17-08

Good Use of a Portable Drill



Rupert, OE6FRG,
tuning the duplexer of a
5 kW FM TX



Start Freq. 90 MHz
Stop Freq. 110 MHz
Step 20.021 kHz
1,000 Points

SWR min 1.03 at
104.595 MHz

SWR max 17.39 at
90.020 MHz

Reviving Dead NiCad (or NiMH) Cells

By Harry Lythall, SM0VPO (Web)

In some cases a NiCad cell can go down completely, but the chances of a full revival are quite good. I use two techniques together to bring dead batteries (short-circuit) back to life.

- 1) Give the cell ONE good "thwack" with a hammer, square on the bottom. Be very carefull not to hit it so hard that it causes a dent. Make sure that you hit it square on the bottom with the flat part of the hammer.
- 2) Charge the cell for 1/4 second at 20 times the rated capacity (10 amperes for a 500mA/Hour AA type cell). Wait a minute for it to cool down then repeat until the battery voltage comes up to 1.25-volts. Give up after about 10 - 15 attempts have failed.

Conductive crystals build up between the battery plates and these make the cell a total short-circuit. These two techniques can shatter these crystals so the rest of the cell will function again. A cell may develop these metallic crystals on overcharging when the plates are stripped of coating and fine conductive hairs or crystals grow between the plates.

If a cell is found to be open-circuit then the chances of revival are much lower. The application of a small current (10mA limit) at 30-volts or more may often cause the cell to begin to draw current again. Allow this to continue until the battery voltage has fallen to under 2-volts, then charge in the normal way. Cycle charge/discharge two or three times, checking the capacity at each discharge. It should be seen that the capacity increases with each charge/discharge cycle.

(I tried the described technique No.2 with cells that were not completely dead and it worked just fine. Ed)

Cable Losses with Temperature

By Glen Kropuenske / SENCOR (Web)

Not only does cable loss vary with cable size, type, length and signal frequency, the temperature of the cable can also have a subtle effect on cable attenuation. As a rule of thumb, the following formula can be used to calculate a cable attenuation change related to a temperature change. (% change) = 1% per 10 degree F A temperature change of 50 degree F can cause a 5% cable attenuation change. If a particular length of cable offers 20dB attenuation to a signal, the 50 degree temperature change would result in an approximate 1 dB attenuation change. An increase in temperature causes an increase in attenuation while a decrease in temperature decreases the attenuation.

The attenuation change caused by temperature can be ignored for short cable runs in a home or most small commercial buildings. However, for long cable runs where the cable is exposed to large temperature changes, it should be considered. Extreme elevated temperatures can increase the attenuation of the cable, reducing signal levels on the output of the cable. Extreme low temperatures can increase signal levels on the output of the cable. These increased signal levels may overdrive amplifiers causing signal interference.

Channel 2 ? Future Digital TV Channels

From Propagation Bulletin ARLP021 of 5-16-08

By Tad Cook, K7RA, Seattle, WA

...Fred Stone, W8LLY of Bellbrook, Ohio is Director of Engineering for WPTD-TV in Dayton, Ohio, and he noted that post- (digital) transition television will be broadcast on Channels 2-51. He said FCC records show Channel 2 stations in Flagstaff AZ, Grand Junction CO, Bangor ME, North Platte NE, Las Vegas NV, Rapid City SD, and Jackson WY.....

Re: Digital TV

By Daun Yeagley, N8ASB, wrote (2-10-08)

A digital TV signal only requires about 13 dB signal to noise ratio, where a conventional NTSC signal needs a minimum of 30-35 dB, depending on how much snow you can tolerate. For a Cable company to "sell" their picture, they are *required* to have at least a 43 db carrier to noise ratio.

Actually, it has been shown that too strong a signal can make matters worse! Some time ago they were trying to fix problems using preamps. Turns out this just made matters worse as the preamps caused overload and non-linearity! The real culprit was multipath (ghosts). Actually, when properly processed in a digital TV receiver, the ghosts CAN be used to enhance the signal!

The early receivers did not handle multipath very well, but we are up to at least fifth generation* receivers now, and the equalizers in these newer receivers are able to correlate out the multipath and use it to enhance the signal!

* Although software can do wonders, I am skeptical. In any case the manufacturers working hard as the "fifth generation" comment suggests. Unfortunately I don't know how one could find the latest version converter box. So you are buying a pig in a poke! But the government will give you some "play money" [ED]

Wait and See for our Friends in Canada

Our Canadian neighbors are going to use the same TV standards and modulation as the US but they take a wait and see attitude postponing the introduction by 2 ½ years. Here an excerpt from Wikipedia:

May 17, 2007 RTC announced that it is setting August 31, 2011 as the deadline for over-the-air (OTA) television transmissions to go digital. In Broadcasting Public Notice CRTC 2007-53, the commission outlines that OTA broadcasts should be digital in all markets, with possible exceptions in northern and remote communities where analog transmissions will not cause interference.

This follows the United States' Federal Communications Commission (FCC) decision to go all-digital on February 17, 2009. Canada had been taking a wait and see approach, and the federal regulator sees a need for more Canadian content in High-definition television (HDTV). The decision to go completely digital should be a catalyst for more Canadian content. The commission expects broadcasters should be able to re-equip their stations within the next four years.

Announcing Digital Ham Group

6-16-08

This group is dedicated to the discussion & development of amateur /ham radio use of communication techniques utilizing all digital voice & data modes.

This is the only group with dozens of Files & Links covering All the digital voice & data modes.

Join the group to exchange ideas & information and learn about operating the digital modes. Hams from all areas are welcome.

<http://groups.yahoo.com/group/illinoisdigitalham/>