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Meeting Fri after Thanksgiving 28 Nov
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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Achtung!

We are close to turning on our translator! John, N8VZW, did a super job of getting the antennas and the control cable installed, There are only a few minor things left to prepare. We were caught by the present cold snap and are waiting for a break! We hope to have "first light" before x-mas.

We will send out e-mails etc when things are working. For refreshing your memory: the translator has inputs on the 70 and 23 cm bands and a single output on the 13 cm band. You figure the output frequency (basically subtracting the input from the local oscillator frequency) per these formulas:

$$F_{out}(13cm) = 3670.725MHz - F_{in}(23cm)$$

$$F_{out}(13cm) = 2837.025MHz - F_{in}(70cm)$$

Merry Christmas & a Happy New Year 2009!

DE N8ZM

Having a strong interest in VHF contesting, I am always looking for new tools to work more grids squares and stations. Anything that improves the S/n is highly desirable, along with any gadget that will make it easier to operate the station for long periods of time with minimal fatigue.

More power is always desirable, whether obtained via amplifier or antenna. Amps are generally more costly, and there is a legal limit to how far you can push things, but antennas always offer the hope of more signal output on transmit, and more signal recovered on receive. So, I tend to be fascinated by the tools and developments that enable engineering better performance. One such tool is a free antenna design program found by Mike, W8RKO. He has written about his experience with it in an article further back in this issue of Anom Prop. I can't wait to read it.

Preamps and Noise Figure have also always interested me, and I recently came across a new instrument that makes a great leap forward in NF measurements, reducing the measurement uncertainty, and giving a more detailed picture of the preamp's performance. If I can get my grubby paws on one, we may be able to have a NF measurement session with surprising results. I might be forced to write a real article for Anom Prop on the subject.

Speaking of a measurement session, anybody interested in having one this spring? Late March or early April seems like a good possibility. Let me know what you'd like to do.

The 23 cm beacon antenna is completed, and we are now just waiting for the tower crew. There has been some impatience on the part of the hams who hope to get the benefit of this site (mostly for FM repeaters), and given that it has taken us several years to get to this point, that is understood. Keep your fingers crossed that we'll see something up in the air soon.

I have scheduled our next meetings for November 28th (day after Turkey Day), and December 26th (day after Christmas). I hope this works OK for everyone. And I hope everyone has a pleasant and happy holiday season, with lots of time to play radio, especially VHF and up.

One last reminder: please keep up with your dues to MVUS. Even though we provide Anom Prop electronically, not everyone wishes to receive it in that format, and we have other regular expenses, such as filing our State of Ohio registration, and other minor items. Being a small group with minimal fix expenses like these, our dues can be kept to \$10 a year, which is pretty cheap these days. So please, renew your membership to help keep us afloat so that we can invest our meager savings in fun and useful VHF projects, instead of using them to pay the routine expenses. Thanks!

de Tom, N8ZM.

Thanks!!!

I'd like to acknowledge the membership renewals received, several for a few years into the future. This certainly helps, as we do have "stragglers" and we don't like to drop them.

Came across an article from Bill Pasternack, WA6ITF, where he discusses ham radio in emergency communication. Like it or not, this is how most of the public and the government sees us. I will try and print an excerpt from Bill in the next bulletin.

The new direction in this country to achieve energy independence and at the same time use the wind and the sun to get there, is another area where the hams ought to be in the forefront. Anybody active in that department, please let us know how it is being done.

73, Gerd,
WB8IFM

This and That 11-08

Importance of Numbers When you can measure what you are speaking about, and express it in numbers, you know something about it. [Lord Kelvin 1824 – 1907]

Galveston in 1900. The population of Galveston was 37,789. There were 40 miles of streetcar lines, 2,202 telephones, and two automobiles in Galveston. The island was between eight and nine feet above sea level at its highest point. Most streets were approximately 4.5 feet above sea level.
[www.owlnet.rice.edu/~geol108/yoong/galveston_flood_1900.htm]

Appreciation. A typical microwave oven ramps up the electricity from a 120V wall outlet to an “incredible 3000V or more and safely cooks food in just a minute or two, yet it costs less than a pair of good shoes. And we can watch the show through the handy window.[Mark Fischetti, Scientific American]

Oil Guzzler. A Russian billionaire has launched a new 350-foot yacht that looks like a futuristic warship ...the ship is equipped with two swimming pools, a helicopter, and a master bedroom that rotates on a giant turntable. It burns 700 gallons of fuel per hour. [Wall Street Journal]

”No Win” Situatio. I’ve done the calculation and your chances of winning the lottery are identical whether you play or not! [Fran Lebowitz]

Real Tired. A man who is tired of complaining is tired of life. [Julian Baggini]

High Tech Waste. Can you believe this? In the US there are 130,000 computers discarded every day! [60 Minutes]

Gedankenexperiment. Marvelling at the 200 inch Hale Telescope on Mount Palomar, Einstein asked one of the engineers what they do if they make a mistake, as all he has to do is throw away a sheet of paper and get a new sheet.

Still a Difference. On TV the news is there one minute and the next minute it is gone. I still prefer the paper to check on the news, read it at a time of my choosing and get more details. Admittedly, TV has more pictures. [Andy Rooney]

Recession. The Ft Wayne hamfest was scaled down this year but still quite well represented by a good cross section of exhibitors and flea market venders. The crowd was good Saturday, the forums well attended. Sunday morning was disappointingly quiet, seemed like a few stragglers still made it. But sales were flat. With not much going on, we looked at the ceiling, where strange noises were heard from an exploding final transistor in the pa system and noticed the numerous high powered lights. Just then we noticed a breeze, the heat had been turned off, time to go home. [Gerd, WB8IFM]

Loopt. That’s the name of an Apple introduced GPS powered function (on their I-phone) that alerts friends when you’re nearby, in case you’re in the mood for a spontaneous get-together.[Daniel McGinn]

Red Light Cameras. Cobra has added a GPS function to their radar detectors. The devices constantly check the car’s position against a database of verified camera-equipped intersections. When drivers are approaching such a danger zone, a voice announces:”Photo enforcement ahead!”[Daniel McGinn]

Stay Away...from arrogant, negative operators who know all the answers. They just haven’t thought of all the questions. Encourage them to take their anger and hate to the Internet. Every minute they are on the Internet is a minute they aren’t on Amateur Radio. [Riley Hollingsworth]

46" AIR Wind Turbine Battery Charging Use alone or with Solar Modules

This wind generator is compact and easy to mount. The world's most popular small wind generator. Over 100,000 have been produced. It has a brushless permanent magnet alternator, aluminum cast body, carbon matrix rotor blades. Mounts to a 1.5" inside diameter schedule 40 steel pipe (about 1.9" O.D.) for proper blade clearance. Has built-in adjustable voltage regulator with micro-processor for more accurate charging, more power, lower startup speed and quieter operation (except on industrial model). 46" rotor diameter, 6 mph start up speed, 200 watts at 28 mph. Governs in high winds with blades flexing and Autobraking. 3 year factory warranty.

Recommended Accessories: Brake switch, Circuit breaker, Volt or Amp Meter. Add a simple analog amp meter or TriMetric meter to monitor output current.

Marine Models are better protected for salt air environments with a powder coat finish, stainless steel bolts and anodizing.

Industrial Models are like marine models but heavier duty for prolong high winds. It has heat sink fins for extra alternator cooling. Nice for telecommunication systems, offshore platforms, ships, monitoring stations, navigational aids and cathodic protection. Regulator and dump load are not included. The C40 or TS45 Solar Charge Controllers are used as a diversion regulator.



Energy Production
kilowatt hours per month for various wind
speed averages

<u>Wind speed average</u>	<u>8</u>	<u>10</u>	<u>12</u>	<u>14</u>
kWh per month	12	22	38	50

www.KansasWindPower.net **Kansas Wind Power -**
W,13569 214th Road, Holton, KS 66436
785-364-4407, 785-364-5123 fax

This is an interesting Company
They sell among many other
items 120 hour candles, solar
cookers and astronomical
telescopes, and, of course, wind
and solar power components [ED]

Rotating Wind Turbines [ED]

Smaller wind turbines are rotated using a vane, very much like a weather vane on top of a church steeple that shows us the direction of the wind.

The big turbines, however, use sensors and motors to adjust the position. The forces involved here are considerable and, of course, depend on the size of the turbine.

Our beams are built with minimum wind resistance in mind, but for a wind turbine the opposite is true. So the technology applied here is similar to how a good sized radio telescope dish is moved. One method is with motors turning in opposite directions. A hefty brake is applied when stopped.

One interesting facet: the electrical output power generated is fed through a cable to the ground in such a way to permit a maximum of five complete turns in both directions. A counter registers the turns and after reaching 5 turns in one direction the blades are stopped and the Wind Generator is moved back to the center position.

VHF/UHF/Microwave Pioneer, Reg Galle, VK5QR, SK

By Wally, VK6KZ

All those interested in long distance VHF/UHF/microwave propagation will regret the death of on 12 September 2008.

Reg was a leading pioneer of the use of these amateur radio bands.

On 31 December 1951, Reg made a 144 MHz Australian record distance of 2122 Km with a contact with the late Rolo Everingham VK6BO in Perth (just short of the then world record of 2253 Km). He then continued to seek answers to questions regarding the propagation of the higher bands.

Reg became the Adelaide end of record breaking distances on 432, 1296, 2304 and 3456 MHz across the Great Australian Bight with Wally Green VK6WG in Albany.

Reg and Wally, as true amateurs with no professional engineering backgrounds, built equipment for these UHF/microwave bands and were nearly 2 000 Km apart so that there were no "local" tests with each other. There were no precedents in Australia, and few in the world, for trying to make contacts over this distance.

In 1977, they bridged the 1296 MHz path on 25 January for a world record distance of 1885 Km.

The following year, on 17 February 1978, Reg and Wally made their first contact on the 2304 MHz band. Reg used SSB that was processed in a divide by 6 circuit and mixed to 28 MHz. The 28 MHz signal, with processed SSB, was then transverted to 384 MHz and then tripled and doubled to 2304 MHz. This multiplication by 6 restored the original SSB! To give you a feel of the type of gear in use 30 years ago, Wally Green VK6WG used a modified World War II SCR522 which, from a 7 MHz crystal, produced 128 MHz. This was then multiplied to 384 MHz with a BAY96 varactor tripler to 1152 MHz in a modified Microwave Modules MMV1296 and then doubled in by a 2C39 which drew 90mA at 600V.

In 1986, Reg and Wally completed their first 3456 MHz contact using CW. This distance of 1885 Km and that on 2304 MHz remain the Australian record distances.

Both Wally and Reg built equipment for the 5.7 GHz band and made tests on that band without success although Reg claimed that they could have had a contact had Wally not been in the midst of making apricot jam on that day!

Reg gradually lost interest in pushing the boundaries further and has been in poor health in recent years. His death followed several strokes. The most recent one returned him to hospital just over a week ago but he insisted that he wanted to go home despite living alone and with no close relatives in Adelaide. His niece watched over him and he was able to fulfil his wish of dying at home in his own bed! Reg was 96 years old!

Farewell to a tremendous pioneer on the higher bands! [ANS thanks Wally, VK6KZ, for the above information]

Nov 16, 2008 ANS

Antenna Modeling Using MMANA-GAL By Mike Suhar, W8RKO

We all know that antennas installed in the winter perform better. If you are like me I will give up some performance to install them in warmer weather. For me a severe winter is when the temperature goes below 60 degrees F. You don't have to put your antenna work on the shelf until spring. Using analysis software you can start designing your antennas and be ready to build come spring. There are various packages you can get for free or for a price. Many are built around the miniNEC model. This model is in the public domain so the work in the software is designing the user interface you will use to get to the analysis engine. This article will discuss one of the free packages named MMANA-GAL that uses the miniNEC engine. It was written by JE3HHT, DL1PBD, and DL2KQ. The web site is <http://mmhamssoft.amateur-radio.ca/>

Before you start designing with this package you need to understand limitations of the miniNEC model. Space does not allow me get into the details here. Read the article written by Roy Lewallen, W7EL, in the February 1991 issue of QST <http://www.arrl.org/tis/info/pdf/9102018.pdf>

On the MMANA web site you will also find NEC-2 module. NEC-2 also has limitation but between the two you should be able to model most situations. There is also a NEC-4 engine but that is not in the public domain so you won't find any free versions of that engine. Most users will just run miniNEC program and I hope understand the limitations.

Installing the software is straight forward on Windows XP or Windows 2000. It should run on Vista but I did not check. A help manual is built into the product. Click on "about" to find the help manual. If you have never used one of the miniNEC programs I suggest you spend some time in the help file to understand how the user interface works. There are also several sample antennas you can load to see how they configured the antenna. You will find it straight forward and will be entering antennas in no time.

The basic idea is any antenna can be modeled using wires. Wires can be the diameter of a wire or the diameter of a tube as in a yagi. In this program the wire diameter is entered as the radius. Even objects such as a car body can be modeled as an assembly of connected wires. Each wire in the antenna is broken down into a number of very short wires. Analysis is done on each wire. The number of wires is limited to 8,192. That

should cover just about any situation you can model. Complex situations such as the effect of multiple objects around your antenna can use a lot of wires. The program can analyze the antenna in free space or over ground. Ground can be perfect or simulate actual ground given soil parameters. By loading the sample antennas you will get the idea of how to construct your antenna.

The default unit of measure is the meter. You can enter data in inches or feet by including a conversion factor. For example if entering 19 inches enter the data as 19*I. The data will convert to meters.

Modeling the antenna prior to installation can give you some idea if the antenna will work. For example last winter I installed a 160 meter inverted-L off of my tower. The tower also had a 40-meter inverted-V attached at the center. The horizontal run of the 160-meter antenna paralleled the one leg of the inverted-V. I was concerned about interaction between the two but installed the antenna anyway. Prior to installing the inverted-L I took SWR measurements of the inverted-V. After the installation I checked the inverted-V again. The SWR had changed. The inverted-L interacted with the inverted-V. I then decided to model the installation of both antennas looking at the load changes of the inverted-V. Sure enough it showed the undesired interaction. Through the model I changed the installed configuration until I found a layout that did not interact. I re-installed the inverted-L to the design. A check of SWR indicated I was back to the original numbers before the inverted-L was installed. I could have saved myself time by modeling before I wasted time on the original installation.

This software package is a good package considering the price. I think Roy Lewallen's EZNEC V5 provides better documentation and features. EZNEC also checks for configuration settings that may produce inaccurate results. Of course EZNEC version 5.0 is not free as you are paying for the added detail and his expertise in the subject. You can get a demo of version 5.0 and there is a free version of EZNEC named EZNEC-ARRL on the CD that comes with the antenna book. This one is based on a special version of version 3 and/or 4 he donated to ARRL. Start with the free tools and if you get into modeling check out the full featured EZNEC version 5.0.

Give antenna modeling a try while you are waiting for the snow to melt.

Couple points.

Years ago, when I got on 2.3 GHz and then other higher bands. Noted the same factoid, that I needed a second station. Something or someone to listen to.

On 47 GHz, this is especially true. I build a beacon transmit station, that I can set up and let run.

Observe propagation over a few miles. In the case of 47 GHz, it is a 15 mW transmit only station, into an Endgate dish, with a CW ider. One of the test paths, Port Clinton Ohio to Monroe Michigan, 30 odd miles over Western Lake Erie, this works fine. Me on one end, WW8M on the other. Can watch the band change with time. Most interesting. Lots of theories. Going to automate it with some computer technology, one of these days. Create a paper or two. This last Cumulative, VE3TFU brought along a 10 GHz beacon and let it run on Lake Erie. Great to check stuff out. Watch the band change. Why we knew when the band went dead. What is the beacon doing? Sometimes, a beacon is the most intelligent thing on.

To Answer James W8ISS original question. OK, a list. My version All opinion and other disclaimers apply here. Advance apologies and all offered. Many of these ideas have already been mentioned recently. Want some free advice? I have plenty that I am not using.

1) normal electronics repair bench stuff. VOM, solder station, tools and power supplies. Some normal electronics experience. Difference between red and black. Never look in the open end of a chunk of waveguide. That is the given understood here.

2) Shoestring budget is considered normal. Just have to be selective, and make the best choices you can, as funds become available. Care about overloading otherwise empty basement, shack, garage space. Collections will grow to fill all available empty space. Even overflow it. Learn to be careful about salesmen claims.

3) Information. Reference materials. Library. I know there is the Internet. Plenty of sources. Be aware. Plenty of stuff NOT on the Internet. I am a books fan. Buy books, related magazines, proceedings. Newsletters. Read them. Study them. Some of them on the stack of reading material by the throne. Be wary of some sources. Look around for freebies and things. Garage sales and non ham flea markets. Old college class books. Amazing what you can find when you look. Even look at old books. Want a new idea? Look at an old book.

4) Join a group. Hang around with people who actually do things. Build things, and operate. Subscribe to a newsletter or two, or three. Attend a conference. Plenty to choose from.

5) First microwave test equipment. a power meter. Problem is, you need to know how much you have. Have some idea of how much is there. RF voltmeter. Tube types, with bolometers, can be affordable, but break easy. Finicky. You learn the ropes this way. Think it through first. Try not to blow it up. If you do blow it up, it is called a learning curve experience. If you don't blow up something, you must not be doing much of anything, or really lucky.

"When you can measure what you are speaking about, and express it in numbers, you know something about it."

Lord Kelvin 1824 - 1907

6) Collect bits and pieces as you can afford them. Directional couplers, attenuators. Semi rigid UT.141 UT.085. SMA connectors Adapters. Waveguide. Isolators, circulators, hens teeth, loads, dishes, horns. Learn what these bits do, and how to use them. Keep the collection reasonable. Learn to be careful about salesmen claims.

6a) Create a microwave first aid kit. Parts, pieces, spare fuses, cobble clip lead fuses, adapters, hens teeth, unobtainium.

6b) Then build stuff. Keep that soldering station busy.

7) Learn how the technology works. See books and reference materials. Set up and try experiments. Learn calibration basics. Learn and practice safety. Learn to not look into the open end of a piece of wave-guide. Or stick your hand or fingers in.

8) Create a plan. OK, go for one band first, and make it work. Say like 1296. Once that works, then try another band. Maybe 10 GHz, then something else. Easy to go into overload. K I S S works.

9) Remember. This is a hobby. Have fun. Try things. Things are going to blow up, not work right, do funny and strange things. Die for no apparent reason.

10) Oh, a frequency counter is nice. Whatever you can find. Afford. Small battery operated portable counter is even nicer.

11) Some sort of signal source. Signal generator, 1152 signal source is handy. Local beacons.

12) Other test equipment, as you can find it, and afford it. First, ask yourself the question. What am I going to use it for? What will it do? How will it help me get on the air, stay on the air, improve my signal and station? Future trading material? Learn to be careful about salesmen claims. I like a spectrum analyzer. Nice to know where a signal really is. Where the power is. How clean the signal is and all. Learn to measure and test everything. Learn how the word assume is spelled.

13) Theory vs practical. Commercial goals and standards are a pile different from Amateur Radio goals and standards. Ask yourself, what are your goals? Oh ya, K I S S, it works.

14) On the air, like 2M FM or something? Well, find technical people, and keep your conversations technical. They are there. They exist. Many enjoy a good conversation to exercise their minds a bit. Discuss ideas, and experience. But do avoid the closed mind traps. Can't do that groups. Sit there and only talk and drink coffee. The microwaves fall off the earth at the 30 mile horizon, and need 1W per mile club and such. Learn to wear boots, and avoid arguments and back biters. Learn how the word "expert" is spelled. Be prepared to hear tall tales.

15) Operate. Get on the air. Activity happens, because we get on the air, and make it happen.

16) Rover or portable station? Invest in a proper LARGE reliable battery 12V source. "Deep cycle, marine duty". Lots of buzz word descriptions here. Take your pick. OK, bicycle or mountain climber, will have to be smaller, but same idea. Reliable, and big enough to get the contact(s) made.

17) Insert plug here for Microwave Activity day here. Created by W3IY Bill Seabreeze. Next, Saturday Sept 6. And hey, it is NOT labor day weekend! After labor day, etc, etc. Just sits on the shelf collecting dust and problems, or use it.

73, Lloyd NE8I (10-08)

Oki claims 160Gbit/s optical transmission record (4-2-08)

by **Richard Wilson**

[Oki Electric](#) claims to be the first to demonstrate an optical fibre comms system which will transmit a data stream of 160Gbit/s over long distances.

To achieve this Oki has demonstrated regeneration of a 160Gbit/s optical signal using an all-optical regenerator, which uses a specialised optical-repeater technology with functions for re-amplification, re-shaping to remove optical signal wave distortion, and re-timing to avoid timing jitter accumulation.

“This result proves that we can now transmit data at 160Gbit/s data, a speed equivalent to transmitting four movies, approximately eight hours of data, in a single second. This amount of data at this speed can be sent over distances greater than the length of Japan, which is about 3,000km,” said Takeshi Kamijo, general manager of the corporate R&D Center at OKI.

160Gbit/s data transmission uses an ultra high-speed optical communication technology that will not be commercialised before 2010.

In a conventional optical communication system, an optical amplifier is placed every 50 to 100 km to compensate for propagation loss. Because signal distortion and timing jitter accumulate during transmission, the faster the speed of transmission, the shorter the transmission range.

To achieve longer distance, optical signals are converted into electric signals before the transmission limit is reached and converted back into optical signals and re-transmitted after the signal processing is completed. This is the process which Oki has demonstrated for a 160Gbit/s data stream.

40Gbit/s and 80Gbit/s transmission using all-optical 3R Regenerators has been done in the past.

OKI achieved a maximum regenerator spacing of 380km, which is equivalent to transmitting at 160Gbit/s between Tokyo and Osaka with just one optical 3R regenerator.

Mobile phone subscriptions to reach 4 billion by year-end: ITU 9-26-08

The number of mobile phone subscriptions in the world will reach four billion by the end of the year driven by growth in developing economies, the International Telecommunications Union said Friday.

"Since the turn of the century, the growth of mobile cellular subscribers has been impressive," the ITU said in a statement.

The ITU stressed however that its estimate does not mean that four billion individuals each have their own mobile phone, as many people in developed countries have more than one.

Earlier this year the ITU said that the number of mobile phone subscriptions topped 3.3 billion by the end of 2007.

Continued progress in 2008 is chiefly due to the growth in major developing markets such as Brazil, Russia, India and China.

"These economies alone are expected to account for over 1.3 billion mobile subscribers by the end of 2008," the ITU said.



China surpassed the 600 million mark by mid-2008, becoming the world's biggest mobile phone market, while India had around 296 million subscribers by the end of July.

"Market liberalisation has played a key role in spreading mobile telephony by driving competition and bringing down prices," the ITU noted.

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Nature's Solar Panels

