

Nov Meeting: Fri 30<sup>th</sup> at the MCL Cafeteria in Kettering  
x-mas Party Dec 28<sup>th</sup> same place

Nov/Dec 2012

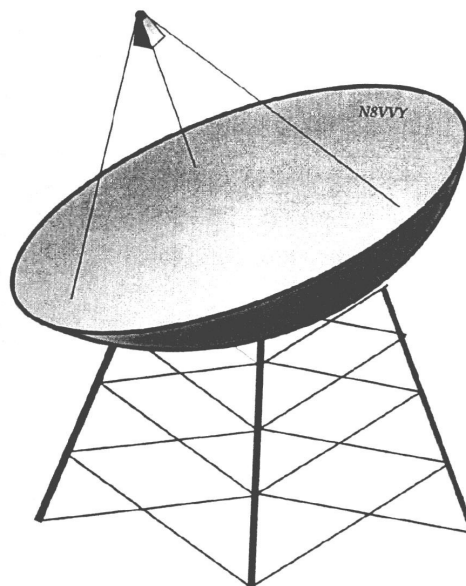
# ANOMALOUS PROPAGATION

Newsletter: *The Midwest VHF/UHF Society*

**Editors:**

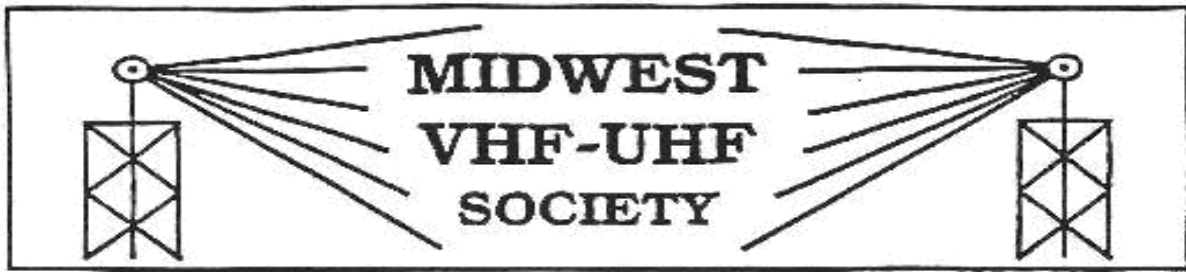
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Annual Society membership is \$ 12.00. Please  
make checks payable to Gerd Schrick



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Nov/Dec-2012

Beacon: 1296.079 W8KSE EM79ur Dayton, OH---- 2W to Big Wheel at 800' AGL.

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***Wishing all of You  
a Very Merry Christmas  
and a Happy New Year***

The Midwest VHF/UHF Society has **noise sources** available in two frequency ranges: 50 MHz to 3 GHz, and 3 GHz to 11 GHz. Both versions are fully assembled and tested with ENR data provided. The lower frequency version is currently in stock at \$50 including shipping in the USA. The 11 GHz version is \$90, but delivery is about 8 weeks ARO. Contact N8ZM at [n8zm@mvus.org](mailto:n8zm@mvus.org) for more details.

## **MVUS Officers**

Pres. Tom Holmes, N8ZM  
Vice Pres. Bob Mathews, W8  
Secretary, Steve Coy, K8UD  
Treasurer, Gerd Schrick, WB8IFM

**DE N8ZM**

Hoo Boy! It has been a busy month, with a lot of travel for work as well as projects around the house, etc. And the next 4 -5 weeks don't look to let up on that much. BUT, there is always just enough time to squeeze in an MVUS meeting, this time on November 30th at the MCL. Hopefully all of you received a message about it being postponed from the 23rd; if not you have only me to blame. So see you this Friday.

Two weeks ago was the Fall Frequency Measurement Test, and Mike, W8RKO, saw to it once again that W8KSE was on the air contributing to the fun. Thanks, Mike! Your efforts are truly outstanding and provide some great PR for MVUS. I hope that at least some of you took a shot at measuring the several signals that were transmitted from around the country. If you did, drop Gerd a note about how you made the measurements and what your results were. Even if you aren't N8UR, your participation merits mention in this journal of nerdiness!

Due to being tied up with other matters, I haven't made much progress on the design of the 2304 beacon other than think about how to implement it. Mostly, I am a little stumped for an antenna concept. It is desirable to have it be omni-directional and horizontally polarized. A bit of gain would be useful too, of course. The common solution seems to be the Alford Slot style, which is a good antenna and not too difficult to make IF you have a reasonable facility with metal working machines. Sadly, that is not something that is in my already limited repertoire; I have enough trouble mastering electrical stuff ;-). So if I can come up with a decent design, is there anyone out there who could help me build it? Please let me know via e-mail, phone call, or even snail mail delivered by a dog sled! Well Winter is coming this way, you know.

Getting back to the topic of meeting dates, since the 4th Friday in December does not really interfere with Christmas day this year, we will have our meeting on the usual 4th Friday, the 28th. So mark your calendars and get your travel authorizations from senior management approved now!

See you guys (and gals) this Friday!

De Tom, N8ZM.

## **How can I extend the life of my laptop battery?**

Li-ion laptop batteries will wear out slowly over time, providing ever shorter battery run times. You can extend the life of your battery by providing some basic ongoing maintenance.

**Keep your battery from wearing out prematurely due to lack of use.** Many people assume that the battery is being used when the laptop is plugged in. This is not the case. When your laptop is plugged into the wall, your laptop runs on its primary power source, electricity from your AC adapter cable. While plugged into the power cord, your battery is in a stand-by state. Your battery will only power your laptop once you unplug from the electrical cord. If your laptop is plugged in for extended periods of time, your laptop battery is literally withering on the vine from lack of exercise. It is true that the battery will lose a small portion of its charge each day and that the AC power cord will "top-off" the battery, but this is not enough exercise to keep your computer battery in top form. Running on battery power for 30 minutes to an hour once a week is sufficient to keep your notebook battery active and in good shape. This is perhaps the most common reason computer batteries wear out prematurely.

[From LaptopBatteryExpress.com ]

## This and That 11/12-12

**The Tourists vs the Amish.** The tourists laugh at us because we look so different, we smile at them because they all look the same. [Amish tour guide]

**Solar Storms:** New findings that improve predictions still fall short of giving humanity a heads up on the havoc a solar storm might wreak on Earth. [Saswab R Das, Aug 23, 2012, Scientific American]

**I-Pad.** ...but for a lot of us, I suspect, an iPad is a want, not a need. A toy. A gadget we could live without. And that was the genius of Steve Jobs ... to ask what will people want? Even if they didn't know they wanted it. [D.L. Stewart]

**Hurricane Sandy.** Even the most prepared were not prepared enough. [Anne Thompson, NBC]

**Rocket Science.** With NASA's Rocket Science 101, you don't have to be a rocket scientist to launch a spacecraft. NASA's Launch Services Program (LSP) is turning over the virtual selection, construction, and launch of a mission to players who will decide the best rocket to assemble to launch a spacecraft. Rocket Science 101 is available for iPad users via iTunes at <http://bit.ly/Mn1xLr>. [NASA Tech Briefs Oct 2012]

**Use of Radio.** Radio is for when you need to do something too hard for a wire... You can't put a wire on everything right? That's what radio does best - it provides a solution for hard problems. Easy problems are for wires. [Chris Anderson, Spectrum Design Solutions]

**No Bond** (James Bond that is). ...Bond makes me feel like such a weenie. Not only have I never beaten up a gaggle of villains or had a bevy of beautiful babes hanging all over me, I drive 50 miles an hour on Interstate highways. [D.L. Stewart]

**No Digital Guy.** ...Or maybe I just have trouble with all those high-tech gadgets. I'm definitely low-tech. When we switched from daylight saving time, I spent half an hour trying to turn back the digital clock in my car. [D.L. Stewart]

**Looking for Cold Medicine** When there are so many choices of cold medicines offered, then this is a sure sign that really nothing yet works or word would have gotten out. [Eckart von Hirschhausen]

**Temptation.** On the 4 corners of a football field are 4 doctors: a surgeon, a radiologist, one good and one bad pediatric surgeon. In the center of the field is a pot with \$ 50,000. Starting at the same time, the doctor who gets to the pot first gets the money. The bad orthopedic surgeon gets there first. Why? The rules are too complicated for the surgeon, for the radiologist the lousy \$50,000 is not worth it, and a good pediatric surgeon does not exist. [Eckart von Hirschhausen]

**Coal Train.** The typical coal train is 100 to 120 cars long-a mile of coal! Each hopper car holds 100 to 115 tons of coal which (may) lasts only 20 minutes fueling a power plant. Bigger surface mines may load two or three Unit Trains of coal a day. Currently, eighty trains leave Wyoming every day. In 1999 we shipped out 25,882 trains. That's 25,882 miles of coal-more than the circumference of the earth. [Wyoming Coal]

**Barges.** (ploughing the nation's rivers and canals) carry 20% of the country's coal and more than 60% of its grain exports. [Jim Salter, AP]

**Nice X-mas Present.** This from 釘 ed and Bath Pillow Pets/ Dream Lites (\$30). The pet has a battery powered projector of some kind in it that projects stars on your bedroom ceiling. You might wake up and ask yourself: 祢's the roof still on? [Gerd, WB8IFM]

## Reset the Clock.

Where is AMSAT headed?

Monday, Oct. 29, 2012

I hadn't been to the yearly AMSAT Symposium for a while. Sure, I had tried to keep up with what was happening and usually picked up the proceedings or had faithful Keith Baker pick one up for me. But, as I learned, there is nothing that beats live presentations by authors and the personnel contact with the 100+ attendees of this year's symposium.

There were several reasons in particular that contributed to this decision. The symposium was held in Orlando, a place that I fondly remember from those days in the late 1990s, when we went full-speed ahead to build and finish our P3D satellite, which provided some short service as Oskar 40 in 2000.

I was certain to meet some old friends from the P3D team and indeed that was the case. There were, of course, the locals: Lou (W5DID) and Dick (KD1K, formerly WD4FAB), then Bill (W3XO) and Bob (KF4KSS). None of our European friends were there though. The closest we got to remember Werner (DJ5KQ) was to have lunch at the "dentist". That was the way Werner pronounced "Denny's", which he liked very much, especially for breakfast.

President Barry Baines (WD4ASW) asked which hams had traveled the farthest, and just a few hands went up. As it turns out, one ham had traveled from Israel. Even though a ham from Seattle had not traveled the farthest, he positively was the oldest with 99 years and he was still mobile including climbing stairs. His younger xyl had to use a walker. Then there was Hector (CO6CBF), the young ham from Cuba, which makes his home closer to Orlando than many of the other attendees. Hector gave a presentation and his satellite station was truly home-brew in the old sense in that you used whatever was at hand and could fill the bill: Like using a motor from a dialysis machine as part of a rotor. I remember when the amateur radio handbook recommended that newcomers take an old broken TV apart for parts. This can develop into a habit and I still take broken kitchen gadgets apart, if not to save some parts but to see how they are built, and it's amazing what you can learn. Taking apart modern ham equipment has the opposite affect. You keep shaking your head and you cross your fingers, hoping that you never have to look inside in earnest.

Another reason for the trip was that there were three of us, which made it feasible to drive the 900+ miles in one day by switching drivers. There was Steve (K8UD), an active satellite guy, and Ken (N8SPW), who is getting close to retirement, and had become interested in satellites. So, for him, this was the perfect way to get an introduction. Then there was me, an "old-timer" reminiscing of the good old days of the phase 3 satellites and trying to keep the flame burning, hoping that one day there will be another real satellite up there.

But this conference was all about the little guys, called cube sats and their cousins. That is so un-American, where everything is "supersized" and most cars or small trucks are big and powered by huge engines. Our Oscar 40, which was considered big by the cube sat standard, actually, when you look at charts for commercial or military satellites is amongst the smallest of them. We just got some good lessons about the size and weight of the now retired space shuttle. One of these was moved along boulevards of Los Angeles to a science museum. It was a lot heavier than a fully loaded 18-wheeler and whenever there were water or sewer pipes underfoot, big steel plates were installed for protection.

I'm not sure how many cube sats have been launched to date (as of October 2012). But with so many universities world-wide jumping on the cube sat bandwagon, I would imagine it is getting very crowded up there! The average cube sat is planned to function for ~5 years of service and thereafter would add to the orbiting junk. This poses a great danger of collisions with other satellites

So it is no wonder that there is talk of designing a satellite capable of sweeping up defunct satellites and other debris from a low earth orbit. These "janitor" satellites chase and catch defunct sats or debris, then deorbit together, harmlessly burning up when entering the atmosphere.

A few good words about the cube sats: They are an excellent tool for students to get hands-on experience on how to build a satellite, and for hams to get involved with the communications aspect of it, and NASA, funded by the US Government, is providing launches, usually for several cube sats at a time. Ham experience with the arc jet could further experimenting with propulsion, allowing navigation and station keeping.

The standardization of the satellite structure, basically a 4x4x4 inch cube, simplifies the design and makes mass production feasible. There is room for a stack of 4x4 inch circuit boards. As you insert one board after another they are interconnected with male/female multiple connectors. The 6 side walls have connectors where solar cells can be plugged in, and on the four corner posts are holders for small bar magnets that make the cube act like a compass needle following the Earth's

magnetic field. This keeps the satellite from tumbling, which would wreak havoc with the radio signal.

Where schools and AMSAT cooperate, AMSAT usually provides the lower boards with the communication modules (receiver/transmitter), the housekeeping computer, and the power supply (batteries). The upper part is reserved for the “experiment” and students take care of that aspect. After deployment and conducting the experiment like measuring radiation or particles in space, the still functioning satellite is available for ham use for the rest of its functioning existence.

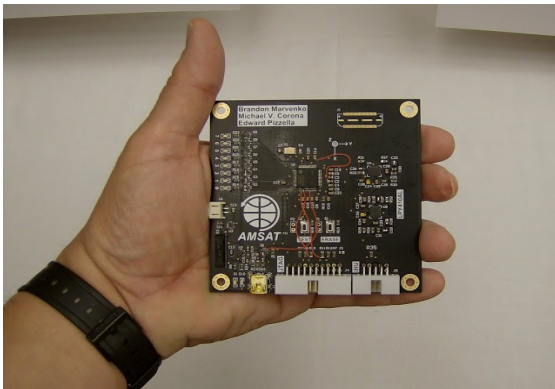
As for antennas, springy wires are wound around knobs on opposite sides of the cube. After deployment, a fuse wire is burned and the wires pop out to form the antennas. Usually 70 cm is used for the up-link and 2 m for the down-link. The philosophy here is, that on 2 m it is easier to generate power. The low height of only ~500 km (versus 47,000 km of the synchronous sats) limits its coverage. So it's a lot better than your local repeater but only permits occasional longer international connections.

The only serious contender for a higher orbit is the German P3E which is kind of a duplicate of the highly successful AO-13, but it has trouble to find an affordable launch. Furthermore, the Germans had proposed a Mars mission, P5A, using the P3D design under the leadership of Karl Meinzer (DJ4ZC). This mission, initially encouraged by the German Government, was just recently abandoned.

However, not all is lost and talks are underway with the Chinese. Peter Guelzow (DB2OS) president of AMSAT-Germany, writes about this in great detail in the September AMSAT-DL journal.

There were 12 presentations in all and the proceedings book was thicker than usual. The one presentation that stood out (for me) was the one by Bruce Robertson (VE9QRP). He was talking about a low bitrate (1200 bps) voice codec (see pg. 7), designed and owned entirely by hams. Afterwards he gave me a personal demonstration. I could hear my own voice and was surprised by the fidelity. This, of course, indicates that the compression could be taken quite a bit further.

I will go through my notes and pick a few more highlights for the next AP.



Ken, N8SPW, Steve, K8UD and Gerd, WB8IFM,



A PC-board for a cubesat, cubesat w. circuit boards, 2 solar panels .... photos by Keith, KB1SF

# The Codec2 Low-Bitrate Voice Codec and Amateur Satellite Operations

Bruce Robertson, VE9QRP Revision 2012-10-06

## Introduction

Anyone who has used an mp3-player knows how programs that encode and decode digital sound (so-called 'codecs') can change the world. Transforming the impractically large music sound files into ones that are much smaller, yet still pleasing to the ear, these make it possible to carry in one's pocket a 4 GB library of hundreds of hours of music that once would have filled a room, all thanks to the decoding software in the player.

In a related manner, the mobile phone industry is built on codecs that are specially tuned to encode and decode voice, thereby reducing, in this case, not storage requirements, but rather the resources needed to make a call. Just as with an mp3-player, the important factor is how much computer information (measured in kB, for instance) it takes to encode a certain duration of speech (measured in seconds): a factor known as 'bit-rate'. The commonly used AMR system adjusts to the situation and uses codecs with bit rates varying from 12.2 kbit/s to a very small 4.75 kbit/s. For radio use, lower bit-rates mean a better signal-to-noise ratio for the same amount of power, quality of antennas, etc.

The advantages that the cellphone industry gains from voice codecs apply also to amateur radio operators, especially those of us who use amateur satellites. Historically, indeed, amateurs have been happy to trade the fidelity of voice reproduction for better 'reach': voice compression circuits and microphones especially made for DX communications are two examples of this approach. To find this advantage in digital voice codecs, however, amateurs need very low bit-rates, lower than the lowest AMR codec.

Such specialty codes have existed for some time, and various 'digital voice' systems based on these are in use by amateurs.[1] Perhaps the most popular is the AMBE codec used in the D-Star standard. It operates at 2400 bit/s, and uses an additional 1200 bit/s in encoding and forward error correction.

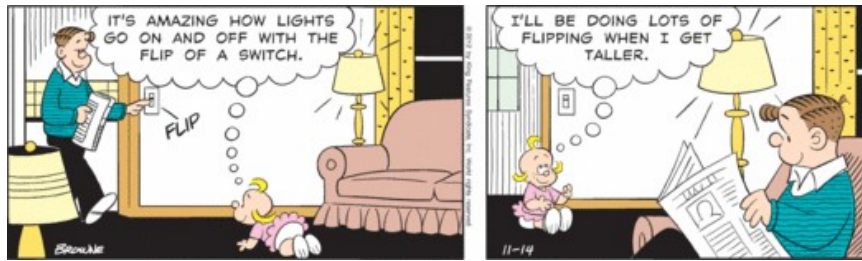
## History

However until now, non-technical factors have deterred many amateurs from whole-heartedly adopting digitally-encoded voice. This is because no low-bitrate codec has been available under a open-source license; and typically, in order to preserve their intellectual property, the owners have required that the codec be implemented in hardware, with a separate chip required to perform the encoding and decoding. (It is for this reason that one must have a USB dongle to hook a computer up to use the audio component of the D-Star network: although in theory the computer itself has all the power needed to perform the codec, the dongle contains a specially devised codec chip.) This situation not only makes the use of low bit-rate codecs more expensive, it also makes it difficult to perform the sorts of experiments that might fine-tune a codec for niche applications, like amateur satellite operations.

Bruce Perens, K6BP, recognizing this need, encouraged David Rowe, VK5DGR, to take up the cause, specifically by repurposing the work in his Ph.D. thesis. David has not only worked openly and assiduously, but he has built an effective community of co-enthusiasts, producing Codec2, an open-source low-bitrate voice codec ideally suited for amateur radio operators. This work so far has won him the ARRL technical innovation award for 2012 and the best talk of show award at linux.conf.au. The full article can be found in the AMSAT Symposium Proceedings for 2012.

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## The Contrary Laptop



What started out to be a simple on/off pushbutton has now become a major headache for all but the very young who cheerfully consider pushing buttons a part of their life. But we of the older generation remember when a push button was reserved for doorbells mostly and as kids a major sport was pushing those door bell buttons in the neighborhood then run away quickly. Those pushbuttons were closing an electric circuit which contained a battery ( or a transformer) and a bell. Closing the circuit made the bell ring. You might ring just briefly or longer, or you could ring twice or apply some kind of a code.

Unfortunately today's pushbuttons are becoming extremely complex to operate and any attempt to describe the many ways would probably be futile as the next gadget will be changing much of what you learned.

My cheap second hand laptop was doing just fine after I replaced and actually "upgraded" the (Lithium) battery for longer use. I still use the laptop mostly unplugged. This is in itself already unusual as most laptops I see in public places are somehow all plugged in, and the airports even provide outlets in the waiting areas for that purpose. So do they all have weak batteries? No, it has just become a habit. Monkey see monkey do.

After a couple of years, my laptop, slowly losing battery capacity started to act up. Pushing the on-button would not awake it from the sleep mode. And, even, after a good "overnight" charge, it still would not come on. That really baffled me. I could not check the battery status since that indicator only works if the computer is turned on and it didn't turn on! Taking the Battery out, however, I measured 11.8V!

Laptop voltages can be either 7.2 9.6 10.8 11.1 or 14.4 V nominal, depending on what kind and how many individual cells are used. My voltage would either be a good 11.1 v type or a poor 14.4 one. Assuming my battery was the 11.1 V type, it should be ok. But now, it looked like the computer was at fault and for a long time the problem remained unsolved.

On and off, I tried various turn-on procedures, all w/o success. But then, suddenly, I found that, after I fully charged the battery, then let it sit for an hour or longer, it would start, same as with the power supply connected. So I kept using it that way, but it was an unsatisfactory situation, where you had to constantly cross your fingers.

Getting ready for the Ft. Wayne hamfest, where Steve, K8UD, and I were conducting a forum, I loaded our power point presentation, making a few changes, then checking it one last time before our trip.

You guessed it. The laptop didn't come on. I kept pushing that button, and, of course, if the first push didn't succeed I tried again, and again, knowing how to look for action with the red and green indicator lights. But no luck.

Of course, Steve had his laptop, and the presentation was on a "stick". So all went well!

Next to our booth was a used computer parts booth and I determined from the conversations going on that the young man, selling, was very knowledgeable. So on Sunday morning, when there was little traffic, I told him about my laptop problem and he had an "anecdotal explanation:" there were other laptops with this problem, something with the video board, maybe a hair-crack that closed when cold and open when warmed up. Some backed the whole unit at 250F. I remembered that at one time I had found a cold solder joint by looking at a circuit board with a good magnifying glass and fixed it by resoldering. I asked: "could I use a soldering iron?" "No! That was not possible". So I am thinking of trying the "heat treatment" What could I lose? Stay tuned...

[Gerd, WB8IFM]



## Elliptical Waveguide

By Lloyd, NE8I/r

I have received several notes and questions about elliptical waveguide. So, here is a bunch of comments.

Elliptical Waveguide. I know Andrews makes it. The commercial industry modern way of moving around microwave power. Their coding on it is EWxx? xx being the size . I have played around with EW159, EW90 and EW42; 5, 10 and 24 GHz respectively.

Elliptical Waveguide, is hollow copper tube. Elliptical in shape. Hollow tube. For commercial purposes, it is often pressurized. Dry Nitrogen gas. So, the fittings, have to be gas tight, massive, and have a gas line connection. The transition from rectangular waveguide to Microwave N, also has to be gas tight. Most ham set ups with it I have seen, are not pressurized.

For some time, it was available on the surplus market fairly cheap. Until the recent rise of prices of scrap copper and brass. What I have seen in the used market, meaning taken down from a commercial installation, prices run from around \$1 per foot and up. Then you need connectors/adapters. They are the real expensive bits. Don't be surprised to see \$50 plus, used. Then, sorry, connectors are often available in the rolls they take down. But usually not if you get just 25feet. But if they have a 300ft roll, then you have it with connectors. If it comes with kinks, you have to buy the entire thing. No discounts for the kinks. Thing is, they know the scrap metal prices, and will not go below them.

Last time I bought some, it was a 275foot roll, with kinks. \$275. Connectors, at the time, were \$30 each. Scrap metal price. Oh, that is the connector, which goes from elliptical to waveguide, then a transition to Microwave N connector. 2 separate sections. Sorry, you only need a basic connection, and their connector has air fittings and all the other stuff you don't need. No discount.

Commercial goals and standards are very different from what hams want. Where they have a long list of considerations, hams usually consider 1) price 2) max power 3) minimum loss 4) transition 5) SWR/match.

As a result, since we don't worry about the commercial list much, larger size EW can be used for higher frequencies than the specifications say. EG 10 GHz down 5GHz EW. Works fine. Yes, about all it does, is mode. Changes polarity. There are many ways to fix this, if it is a problem for you. Most of us, it is not a problem. So, as a result, one EW159 run, can be used for 5 and 10 GHz. Just a simple set of relays does the job.

When you need transitions, dealers are too expensive. Try to make your own. It can be done, but it is a little tricky and time consuming. One idea is to close off the wave-guide (just a plain old short). That will produce 100% reflection. Now you insert a probe (think of it as a ? wave vertical) that extends from an N-connector. They are ok to 18 GHz. The trick now is to change the position and the length of the probe to minimize the reflections. Another methode, usually employed by the commercials, is to make a conical adaptor down to the size of the outer conductor of your cable and then use the ? wavelenght probe approach. Here you just need to adjust the lenth of the probe for best match. It is probably ok to use a smooth versus a rippled surface for the cone.

Results. I recall a good run of EW159, had about a 5dB measured loss in 100 feet of it at 10 GHz. I was not impressed with EW90 or EW42. The EW42 was the only thing I have ever found to move 42 GHz 100 feet or so. You still need to mount a preamp at the antenna feed.

To get around the rotor at 5 or 10 GHz, a length of Andrews Super Flex FHSJ works. It is good to 11 GHz. For 42 GHz, etc, a chunk of flexible waveguide is in order. Important thing here is, as always, measure it or you really don't know what is happening.

Price on the flexible waveguide. Last time I bought a 4 ft. run of flexible WR42, it ran me about \$40. Then you need to consider it is only going to bend around the rotor so many times you before need replace it.

# Microwave Update 2013 News

By Jeff Kruth, WA3ZKR 2013 Conference Chairman

After a wonderful MUD 2012 conference in Santa Clara, it is time to think a bit and start planning for MUD 2013, to be held at the Space Science Center of the Morehead State University, in Morehead KY.

First, let me say that this years conference was great. I have attended many MUD's (not as many as some, but more than a couple), and this years was extremely professionally done and a lot of fun. Quite a target for me to have to hit!

However, I consider myself lucky in that so many have offered to help out. I would like to marshal the forces and plan the time line a bit, as I know the days and months slip by fast!!!

Here is what I recently committed to paper and some thoughts: Date has been set with the University for **October 18 & 19, 2013** for the conference proper.

The only caveat is I am going to keep checking with them to ensure that they do not (re-)schedule homecoming weekend then. As of now, homecoming is the following weekend. Only concern is the campus clogging up, but the powers that be seem to feel we could handle it, if that should happen for some reason.

So here is a tentative schedule:

Thursday Oct. 17: For early arrivals, there will be a (no-cost, my way of saying thanks for coming) get-together picnic "Meet, eat & greet" at WA3ZKR's QTH as there is no opportunity for a "surplus tour" in Morehead!

Start 2 PM goes until 8 PM or whenever the fun runs out....

Friday Oct.18: Conference in the Space Science Center begins, runs till

5 PM, swap meet in the evening, either at the school, OR (as we did for the SVHFS conference) at the main hotel, in a conference room.

Saturday Oct. 19: Conference continues. Presentations end at 5 PM, with Banquet at 7 PM

Sun Oct 20: Free Hamfest in parking lot at Space Science Center

(Tentative, will try to arrange for people to come in from surrounding states, see what happens!!)

We will attempt to conduct this one as all the others have been, with labs happy to have Kent, WA5VJB, running the Antenna Range, no better guy for this job!

We have the main Star Theater for the primary presentations, and also have auxiliary classrooms as well if someone wants to do a workshop or something.

N2CEI has graciously agreed to put together the Conference Proceedings, I roped KB8VAO into the prize table effort, and have called upon WA8RJF to act as the master of ceremonies (introduce conference speakers, etc.) freeing me to put out the inevitable fires that will arise.

We will do tours of the 21 M, control room, clean room, anechoic chamber, labs, etc. at times throughout the conference. I have students to call upon for this and will have a shuttle bus to take people to the dish site.

We have two automated "ham type" satellite tracking stations that can be used as well, should there be an interesting bird making a pass. There is a chance that the 21 meter dish will be configured by then for 432 MHz operation and we may have the chance for 432 moonbounce operation during the conference (will look at moon times, etc and keep interested parties apprised).

We have approximately 12 hams here in the Space Science Center, who will help out, plus I have an excellent support structure here at the University.

Morehead State is excited about having this conference and, I am sure, based on past performance, will help me out greatly!!

Closest airports are Lexington KY, 1 hour to west, Huntington WVA, 1-1/4 hour to east.

Big airports at Cincinnati OH, approx 2-1/2 hours Northwest as is Louisville KY, for those who have friends there and want to visit, etc.

I was asked about transport to & from the hotels. We tried this for the SVHS conference we had here in 2010. I set up a bus for morning and evening runs, 3 times in AM and likewise in PM. There were no takers! We had about 80 people then. It was so easy to drive back and forth (2 miles or so) & park at the school that no one bothered with the bus. I cancelled it after the first day.

If those who have spoken to me already about helping out would send me an email, I will put together an email list for the conference. If there are any hams in the area (hint, hint MVUS guys...) that want to join in and help out some, I would appreciate it.

For those who have not heard me drone on about Morehead and what we are doing here, look at the web site for Morehead State University and follow the links to the Space Science Center ( <http://www.moreheadstate.edu/ssc/> )

( <http://www.moreheadstate.edu/ssc/> ). We have a lot going on, from Radio Astronomy and satellite mission operations with a \$3 Million 21 meter dish, to building and launching cubesats, along with a great facility to teach and train new generations of America's engineers and scientists!

I appreciate your comments, criticisms and suggestions.