

Mtg Fri 6:30 Mar 25 at the  
MCL Cafeteria in Kettering

Mar 2016

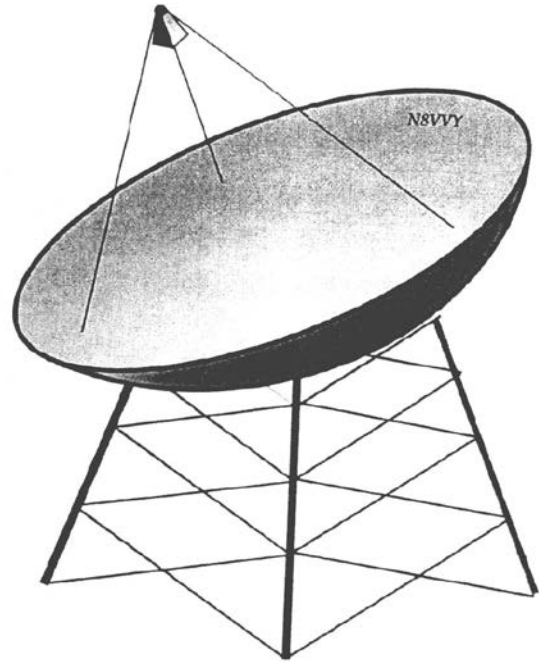
# ANOMALOUS PROPAGATION

Newsletter: *The Midwest VHF/UHF Society*

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

Listen for the **K9AYA Beacons** at EM79qk, 2W @ 10,368.000 MHz  
 both are copied by K4TO daily. 1W @ 5,760.000 MHz

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**Hamvention** 20/21/22 May,

VHF/UHF Forum Sat 3:15Pm, See page 5

MVUS Booth: Silver Arena # 2

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**DE N8ZM:** The meeting this month is on March 25<sup>th</sup>, which isn't significant except for a couple of things. The first is that it is my grandson's 21<sup>st</sup> birthday, but since he is away at school I don't expect much flak from senior management about going to the MVUS meeting. But I COULD be wrong. The second thing is that it is Good Friday, however we discussed that conflict last month and other than increased competition for the seafood items on the MCL menu, that wasn't a concern either. The third item of significance is has escaped me as I was interrupted for dinner about halfway through this paragraph and that's much too long to preserve a thought. Oh wait, it's coming back. It happens to be the anniversary of one of the deepest snowfalls we've ever seen in these parts, some 25" or more in 24 hours. Hopefully we won't have a repeat of that event on its anniversary date.

With that irrelevant lead-in, I'll dive right into more important, and hopefully interesting, matters. Like a certain ham radio event coming up in May. I expect that we will have the same booth, SA0332. I also expect that most of the same loyal crew will be working there, but I need to hear it from you before I order badges and parking passes. So please get in touch, or I'll have to put 'the touch' on you. Thanks!

Joe, N8QOD, is putting together the balloon launch this year, and Mike, W8RKO, has been whipping the 2m and 70 cm beacons into shape. All good!

Setup and teardown always need a few folks to help it go faster, so please let Gerd know that you can help him on Thursday and Sunday. And staffing the booth during the show isn't too hard, but Mike, N8QHV, can't be expected to carry the whole weekend by himself. As a matter of fact, he told me that he simply can't be there the whole weekend this year so we need others to step in for him. Again, please let Gerd or me know if you can help out.

As always, I am looking for neat stuff to show or demo in the booth to attract attention to MVUS. Fireworks, volcanoes, and other such semi-perilous activities are probably not going to cut it with the Fire Marshal, so keep thinking!

Gerd tells me that he has obtained the speaker roster for the VHF/Microwave forum at 3:15 on Saturday, so look for that elsewhere in this issue, or on the Hamvention web site eventually. I'm sure that Tony has put together an outstanding lineup, so don't miss it.

Other fun stuff at the big show includes the AMSAT forum which should be very exciting as they recently put a new bird in orbit and have several more set to go up in the next 18 months. Great to see that they have been able to get their momentum back to a high level. Also, there will be forums on various digital radio topics, such as SDR, System Fusion, D-STAR, and of course the TAPR forum. If bouncing bits get your blood racing, check these out!

I think Gerd is planning to print the club roster as a part of this edition, so check it out for accuracy, and be sure to get your dues caught up while you are at the show. That's one of the reasons for having the booth there. The other reason being that it is a great place to tell your friends to meet you and hopefully get to see some folks you don't get to talk with except that one weekend in May. Stop by the booth and see who is there!

Well, enough for this month. See you on the 25<sup>th</sup>, and keep April 22<sup>nd</sup> and May 27<sup>th</sup> open for the next two MVUS meetings.

De Tom, N8ZM.

## This and That 4-16

**Nonsense.** He said: *“I like nonsense; it wakes up the brain cells. Fantasy is a necessary ingredient in living; it’s a way of looking at life through the wrong end of a telescope.”* [Dr Seuss ]

**Pest Control.** Plants “hear” the man-made sound of insects chewing vibrations and release chemicals to protect themselves. [Farmer's Almanac, 2016]

**Overeating.** Think about “airline food” delivered to the home. [F.A. 2016]

**By the Numbers.** 12% of Americans eat dessert after supper. 1,128 is the number of snacks the average American eats each year. 91% of us snack daily. [F.A. 2016]

**Diamond Test.** When you breath on a mirror, containing moisture, this breath will form a visible film that stays for a while. Do this with what you think, might be a diamond. Look at it the film should disappear relatively fast. The diamond, pure carbon, heats up and evaporates the film fast.

[inspired by “Antique Roadshow”,

WB8IFM]

**Inflation.** *Americans are getting stronger, twenty years ago it took two people to carry ten dollars worth of groceries. Today a 5-year old can do it.*

[*The Devil's Financial Dictionary*]

**Surprise.** *Nothing astonishes men so much as common sense and plain dealing.*

[*Ralph Waldo Emerson*]

**Solar Stroke.** *Researchers in New Zealand found that strokes are 19% more likely to occur on days with geomagnetic storms caused by solar activity especially to people under the age of 65.*

[*Farmers Almanac, 2015*]

**Good Question.** *Can vegetarians eat animal crackers?* [F.A. 2015]

**Fortune.** *“It requires a great deal of boldness and a great deal of caution to make a great fortune; and when you've got it, it requires ten times as much wit to keep it.”*

[*N.M. Rothschild, 1835*]

**Opportunity.** *“If opportunity doesn't knock, build a door.”* [Milton Berle]

## **Hamvention VHF/UHF Forum 2016, Sat 21 May 3:15 to 5 Pm, Room 5**

Moderator: Tony Emanuele WA8RJF

### **Microwave Learnings by a Sophomore Microwave Enthusiast: Bill Koch, W2RMA**

A ham for over 50 years, Bill has lived in, and operated DX from, Italy and Ireland as well as VHF/UHF in the USA. Two years ago at Dayton, he caught the 'microwave virus' and now has rover capability on 1296/2304/5760/10368. He will present some of his learning's on the pure fun of microwave communication, some insights on 'how tos' and 'where to gos' on some technical aspects, and the importance of 'Elmering' and microwave groups to newbie success.

He notes that the US amateur microwave allocations provide about 600 MHz of bandwidth, more than DC through 450 MHz combined. He fears that hams will lose spectrum unless the activity grows. He will include some thoughts about this..

### **Building a Super Rover Terry Price, W8ZN**

The presentation is a discussion of do's and don't when building a V/U/Microwave rover vehicle. Topics include DC power distribution, equipment selection, antennas, placement and supporting structures and ergonomics. This is centered around the new W8ZN/K8GP rover van that K1RA and W8ZN are working on now.

### **10 GHz Horn using a Metal Beverage Bottle Jeff Wadsworth, KI5WL**

A Bud Light® metal beer bottle and similar metal containers have dimensions close to a conical horn antenna for the 10 GHz amateur radio band, as described by King, Volakis and others. The trick to turning one of these bottles into an X-band horn is where to place the feed and what to make it of. This presentation will describe how to make the horn at minimum cost and irritation.

### **How to Work Long Distance Paths for 1.2 GHz Lauren Libby, W0LD**

### **ISEE-3 Reboot Project The Arecibo Tales Dana Whitlow, K8YUM**

The Arecibo Observatory is occasionally able to take time out from normal scheduled work to help with a special project, and the most memorable in my mind was our participation in the so-called "ISEE-3 Reboot" effort in mid 2014. This was a "citizen science" project aimed at restoring communications with an old "out to pasture" NASA research spacecraft, with the goal of bringing the science payload back to life, adjusting the S/C trajectory, and continuing with the original mission. Arecibo served primarily as the uplink transmitting station, but to some extent in the receive capacity as well. In the course of this effort we met a bunch of wonderful and dedicated people from various organizations and had a great time. The presentation includes numerous photos, some slightly technical information about our efforts, and a few interesting tales.

## Activity on the higher bands last year 3-13-2016

By Lloyd, NE8I , Rover: EN 73 nv

Sadly, not much activity. But what I am working on. VHF activity was down last year. When I started to rover, it was to drive around to where there was activity. Get within range. Then work everyone that I could. Drizzle here as well. Calling random CQ on 10368.100, Nada. There again, the dish is not up all that high. Otherwise, I run a beacon on 10368.300. I have used it a few times, looking at rain and snow scatter. Again, it is not very high up. So far, I have not heard the Grand Rapids KF8QL beacon here.

Since 6 and 2M are the highest activity VHF contest bands, I put a fair bit of thought and design into my 6M mobile. At various times, I tried every 6M mobile antenna out there. With the Exception of the Moxon beam. Never found one at a price I could afford. At times, I had 4 different 6M mobiles mounted on rover, and compared them. Then with testing, eliminated the poor performers. The highest performing mobile 6M antenna, proved to be a full wave loop. That works out to about 54 inches per side. Which, as it works out, is about the distance across the back of my pick up. So, with 2 5 ft (60 inch) bamboo poles, one in each post holder on back of the pick up. I stretched the full wave loop. Fed at the center of the bottom, produces horizontal polarization. What most stations run on 6M. For vertical polarization, feed at a corner. Fine final adjustment is simple. Make the loop either slightly longer, or shorter for best best SWR. For economics, since the feed impedance is 50 ohms, a simple length of RG58 works as feed line. Although the antenna works fine without a balun, I recommend one. It produces a slightly better, more circular radiation pattern. Also, reduces RF currents where you don't want them.

Totally rebuilding rover this spring. Engine died after 270K miles. Broke the budget to fix. Also currently totally rebuilding the Sackrider Hill special. Work bench is overloaded with projects.

VHF activity this winter from EN73 has been very scant. Mostly the 144.205 net. And some local 6M nets. A couple of openings. Above 2M, there is a net on Tuesday evenings on 222.100, SE Michigan EN82. 8PM?, then 432, 1296 then 10 GHz, if you are curious about where people are. Some of us are on 24 and 47 GHz.

Might remind everyone of Microwave Activity Day. First Saturday morning of every month. Last few, I have been looking and calling on 144.260. Microwave coordinating frequency. Next one is Saturday, April 2, 2016. I am willing to drive down to GP Hill, Lake Erie or over to Luding-ton SP on Lake Michigan, given activity, reasonable weather. If cold, windy, next month.

Crossroads swap the 19th (in Kalamazoo). With WB8TGY, WW8M and WA8VPD, planning to bring, and set up some 10 GHz stations for show and tell. I will have my portable 10 GHz beacon. Possibly also 24 GHz. Also some ATV. Likely also at Dayton.

Making a few plans for group activity this year. Mostly for 10 and 24 GHz. Some 47 GHz. Mostly on Lake Michigan and Lake Erie. Will see how things develop. Have been giving some thought to driving down to the St Louis Area this year and see if the activity is any higher. Don't forget the super conference in April at Dulles Virginia. Then Central States, and MUD.

## New displays on older test equipment

I know I mentioned this a couple of months ago but Gerd has asked me to write up something a little more detailed, so here goes.

A couple of years ago, I purchased used an **HP 8566A Spectrum Analyzer** for a reasonable price (reasonable in the eye of the beholder, since She Who Must BE Obeyed might see that differently). It sat in my garage for about 18 months while other projects came and went. Finally, last November I decided that it was time to actually fire it up and check it out. I had been told by the seller that there were a few issues but that it fundamentally was in working condition, and my checkout proved that to be true.

The list of items needing attention included a very dim CRT, a non-functional rotary knob (RPG in HP parlance, as in Rotary Pulse Generator, not Rocket Propelled Grenade for you warfare minded types), a couple of dead steps in the input attenuator, leakage damage from the internal NiCad's, and some minor cosmetic issues. As the CRT was so dim as to be almost invisible, I decided that it should be one of the first issues addressed. The first was actually the RPG as the seller had provided one and I simply needed to do the part swap.

Now new or rejuvenated CRT's for these boxes are not easy to find, as this product line was introduced in 1977, so we are looking at nearly 40 year old technology and hardware. The last 8566's were made sometime in the mid-90's, a 20 year production run! There were *more than 10,000* of them made, and there are a few businesses where they are still in use, so for us hobbyists it is an interesting situation. On the one hand, there are many of them still around and thus are available for not much money ( OK, compared to the \$50 k they brought new) but service parts are not so easily had because the folks still using them have bought them up to keep their businesses running.

Sure, the modern instruments can run rings around the '66 in terms of speed, features and accuracy, but for a hobbyist, these critters still perform quite well. They were the standard reference measurement device for over 20 years. But I digress, as is often the case. Speaking of the case, this thing comes in two 19" rack mount cases, each weighing at least 40 pounds, so get a friend to help you move either half of one. Oops, digressing again.

Anyway, after fixing the RPG and cleaning up after and replacing the batteries, the tired CRT was next on the list. As it happened, I had learned of a company in California called **Simmconn Labs**. They (well he) makes a very nice LCD replacement display specifically for the 8566 family. This package is very well engineered and thought through. Installation can be handled in one of several ways, including having him do it for you, or you can tackle it yourself. The one somewhat difficult part for most

hobbyists is that the front bezel needs a bit of machining in order to accommodate the larger LCD that he offers. BUT, no problem! For a few extra bucks, he will swap your old bezel for one he has machined, so it's a simple matter sending yours to him when you order and wait for the parts kit to show up. And the work is first class; no burrs or shavings to be found. You can DIY, he'll provide the drawings, but why bother?

Included with the kit is the LCD display panel, the machined bezel, several printed circuit boards, and all the hardware and even the pieces of wire needed to perform the installation. The instructions for the installation are available on his web site and a set also comes with the kit.

And what makes this deal work is that the instructions are quite detailed, although there were a few places where I sent him some feedback about improving the clarity of the descriptions. Nevertheless, he details every step of the conversion so that once you are done you have a high level of confidence that it is all going to work. And work it did. Actually, I was completely shocked (the more pleasant kind) when I turned on the '66 for the first time because instead of waiting for 15 seconds for the CRT to come to life, the display popped to life immediately! How cool! Even modern boxes don't do that! And the brightness and clarity of the display is what you'd expect for an LED back-lit LCD, including color. Oh, yeah, that's another cool thing since the CRT was ancient monochrome green.

Other benefits include a weight reduction in the display box, and a bit less power consumption; all good. All in all, I am very pleased with the kit and it was well worth the **4 hours or so** it required to install. Some might think the kit a bit pricey but frankly, once you see the result, not to mention knowing that you've given new life to a 40 year old instrument, you'll know it is worth every penny.

But enough rambling from me, his web site is <http://simmconnlabs.com/>, and the specific model is the NewScope8. Watch his video demo to see how great it looks. He does make replacements for other instruments, which you will see on his web site, including one for the HP 8753 series Network Analyzers, which Mike, W8RKO, installed in his. I know Mike is every bit as happy with his update as I am with mine, especially since his cost less. The usual cliché disclaimer applies here, no affiliation, just a happy customer.

Even if you never have a need for one of his display kits, you'll be impressed with the level of excellence he has achieved with this product. And if you send him an email with a question, either before or after your purchase, he responds very quickly and helpfully. A lot of businesses could learn from this guy.

And every time I see that display snap to life, I still go  
WOW!Tom, N8ZM

# How many Carpenters Does it Take to Change a Light Bulb?

By Gerd, WB8IFM

We all have heard this saying in one way or another and usually not paid much attention. Hams are usually well versed in electricity and can manage. But hams are a very small minority, and the average person might feel different.

So when one of the headlights was out in our 2003 VW, as Steve, who I picked up for a meeting noticed, I wasn't going to worry much about it. Certainly, no priority, could be done sometime...

A few days later, I made the mistake to mention it to the xyl and she wanted me to change the bulb asap. As it is "her" car, she insisted that it was done!

In a sense, I am glad she did, as I now have something to write about.

These headlight bulbs had given us problems before, they didn't seem to last long. I had changed them before and remembered it was a bear! At one time I took the battery out to get to the bulb. The battery is on the driver's side and, of course, the defective bulb was there. The other side is easier, but no picnic either.

To save time, I was going to study the INTERNET and the manual for hints. In the "old days" all you needed was a screw driver, unscrew (usually) a ring that held the light and reflector in place, change the bulb, and that was it. Not so today, it is indeed a major operation.

Well I bought a new bulb and went to work. Checking the Internet, I came across a u-tube video where the author started out with great confidence to take off the front bumper, actually that good-looking piece of plastic that covers up the real thing (still required). It is the modern equivalent of the ring, that used to hold the light in its place. Fortunately, I found another entry that said, you don't need to do that and had a few hints, how to go about it.

What did VW have to say to this? Well, there were no instructions. All they said, have it done by your friendly VW dealership. Looking up the VW maintenance records we keep, we actually found some notes, where twice before I had done this myself. Once we had it done by our mechanic who once a year looks the car over and does the usual maintenance things including repairs etc. Fortunately, I had made some notes, at the time I changed the bulbs, that gave me confidence and were quite helpful in the procedure.

If you ask me, what is the most important part, if you try to fix anything today? I would have to answer: "It is confidence!"

Not only did it go relatively smoothly, I also learned a bit about the VW lighting system/philosophy that explained some observations I had made, mainly the fact that those headlights didn't last all that long! I learned that this single bulb, one filament headlight does double duty: it is the daytime running light (DRL) AND the headlight at night. Supposedly, during the day those lights are "throttled in power, so as to make the bulb last longer. I don't know how they do this, but all I can say the difference in light is barely noticeable, and sure would not extend the life of the bulb much. If it were not such a bear, getting to these bulbs, I would like to make a few measurements.

Of course, the high beams are entirely separate bulbs, never had to replace those or the other bulbs also up front. Finally, as to the carpenters, how do they do it? As one carpenter holds the bulb, the other one pounds it in!



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