

Mtg Fri 6:30 June 26 at the
MCL Cafeteria in Kettering

June/July 2015

ANOMALOUS PROPAGATION

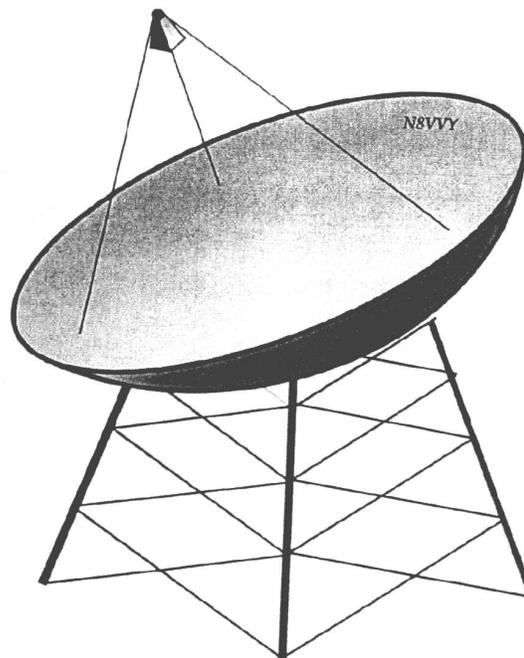
Newsletter: *The Midwest VHF/UHF Society*

Editors:

Gerd Schrick, WB8IFM
4741 Harlou Drive
Dayton, OH 454 32
(937) 253-3993
WB8IFM@ARRL.net

Steve Coy, K8UD
3350 Maplewood Dr.
Beavercreek, OH 45434
(937) 426-6085
K8UD@ARRL.NET

Material from this publication may be copied
with due credit to the source



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



Vol. 29 No. 6

www.mvus.org

June/July 2015

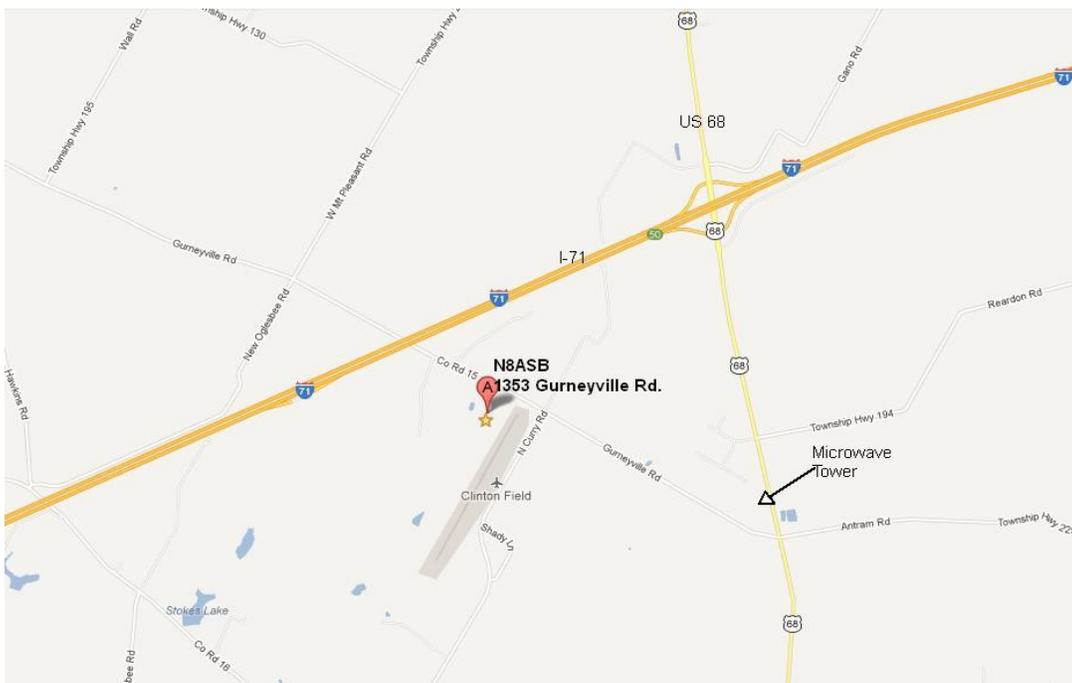
Beacons: 1296.079 **W8KSE** EM79ur Dayton, OH---- 2W to Big Wheel at 800' AGL.

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

De N8ZM.....	3
Breakout Box.....	3
This and That.....	4
Around the World.....	5
Solar Observatory.....	5
Three Things.....	6
Amazing Facts.....	7
10 GHz Activity.....	8
SE-VHF-Soc. Conference.....	9
A Glimpse at Our Future.....	10

***Achtung!** Since the August bulletin is possibly coming out late, here is an important date you don't want to miss:*

Sat. 22August: Our Annual Picnic & Measurements at Daun & Karen's Place near Wilmington, OH.



DE N8ZM: Here it is almost halfway through 2015 already. Where does the time go? Too many things I want to get done and too many interruptions. And then there is the tendency for projects to take longer than I recall them taking when I was younger. Is that because I have made them more complicated by adding requirements? Or is it simply that I have projects on the to-do list? Probably some of both. Time to get serious about weeding out some projects that don't have a chance of being completed.

Speaking of projects, there are several on the MVUS books, including in no particular order:

1. Finish the 1296 Beacon transmitter so that W8RKO can have his radio and transverter back.
2. Upgrades to the 2m and 432 beacons at HARA
3. A 2304 beacon
4. A 900 MHz repeater
5. Noise Source 2.0
6. And maybe a couple more I don't recall at the moment. *) (is that a meaningful lapse?)

So these need to be discussed and maybe some go/no-go decisions made about each.

Moving on, now that it is the end of June, our August picnic is not far away. So I'll interrogate Daun about whether he is willing to host it again and what date(s) work for him. This is the social highlight of the MVUS year, of course, and always a lot of fun. We have a great time testing and measuring whatever people want to bring, and the food ain't too shabby either! As soon as I have a date for it, I'll spread the word so you can put it on your calendars.

I'm going to miss the meeting this month due to a business trip to Denver, so VP K8TQK will be in charge. And I'm sure Gerd will have a few things to say as well. So be there!

By the way, I need to address a couple of business issues. First, in order to get this newsletter electronically, we need to have an accurate and up-to-date email address for you. This will allow us to get Anomalous Propagation to you almost as soon as I finish writing this column each month. Isn't that what you live for?

The second topic is that many of you have fallen a bit behind on your dues, and while we are not about to file Chapter 11, we do need a little bit of income to pay for the few expense we do have that keep us operating, and to fund our projects. So please get your dues paid up soon; the details are on the front page of this edition. Hey, for \$1 a month, why not?

So that's it for now. Have fun at the meeting and be kind to Bob while he's running the meeting, and don't forget to tip the nice young ladies who keep your glasses and coffee cups filled.

73, Tom.\

Break Out Box. By Gerd, WB8iFM

The noise generators the club built have served us well. But it is time to move on. So, at the last meeting (May, after the H.V.) I suggested my 555 pulser and I have been thinking about this since.

As with the noise sources, it is imperative to come up with a configuration that is simple, easy to understand and put to use. So here is my take: assemble a small breakout box.

This box would contain the pulser (plus an on/off switch) and provide individual standard jacks for a microphone (including electret), PTT, a low voltage for accessories, relay voltage for a linear and 2 headphone jacks. It's possible I forgot something, so some room should be there for additions. Of course, now this box needs to be provided with a multi wire cable which hooks up to the multi pin jack of the fancy transceiver. We would offer a generic box with the pulser built in and the user would connect the proper plug (with the 8 or 9 or 10 pins?) to connect this box with the transceiver.

This and That. 6-15

Bad Days. Makers of medieval calendars marked two days of each month as evil days. Called them the "Dies Mali." During which nothing good was supposed to happen. Their label came down as our word "dismal."
[L.M. Boyd]

His Epitaph. "Tomorrow is the most important thing in life. Comes into us at midnight very clean. It's perfect when it arrives and it puts itself into our hands. It hopes we've learned something from yesterday."
[John Wayne]

Happiness. "In fact, one of the best ways to find happiness is to stop looking for it!"
[Agapi, sister of Arianna Huffington]

Volcanoes. There are around 1,500 active volcanoes in the world. Up to 20 of them will erupt at any one time.

They are openings in the Earth's crust. Here lava (molten rock), ash, gases can escape from beneath the surface. In some places the lava gently oozes out, while in others it is flung clear of the volcano with explosive force. One in 10 people in the world lives close to an active volcano.

The **Earth.** Our home planet is a ball of rock 7,916 miles (12,740km) in diameter. At its center is a (molted) iron core, surrounded by a large mass of moving rock known as the mantle. Above this is the thin rocky crust that supports all of the planet's life. If planet Earth were the size of a peach, the part that humans inhabit would only be the thickness of the fruit's skin.
[Book: "Talk Nerdy to Me" 2014, last 3]

Purpose. We do not inherit the earth from our ancestors; we borrow it from our children. [Chief Seattle]

Boat anchors and AM. Be for warned, AM operation is addictive, and once you let a boat anchor into your shack, more are certain to follow. [from: "Propagation and Radio Science," by Eric Nichols, KL7AJ]

Do Something. Write something worth reading or do something worth writing. [Benjamin Franklin]

Marriages. "They say marriages are made in heaven. But so is thunder and lightning. [Clint Eastwood]

What Happened? In 1967 Walter Cronkite proclaimed: "Technology is opening a new world of leisure time. One Government report projects that by the year 2000 the United States will have a 30-hour workweek and month-long vacations as a rule.
[From the Evening News]

Worst Passwords. A software security firm has isolated the 25 worst passwords to use on line. These included "123456," "qwerty," "letmein," and the worst "password."
[ABCNews.com]

EPA-Banned Chemicals. The Environmental Protection Agency has tested just 200 of the 80,000 chemicals registered in the US. The total number banned: five!
[The Washington Post]

War Games. The video game "Modern Warfare 3" has set a sales record for the entertainment industry by grossing \$ 775 million in global sales during the first five days on the market. The game, which retails for about \$ 60.-, sold 6.5 million copies in the US and the UK on its first day alone. [New York Post]

Progress isn't made by early risers. It's made by lazy men trying to find easier ways to do something.
[Robert Heinlein]

Article Published by MVUS Goes Around the World

By AI, KP4AQI

We recently published an article on the MVUS Bulletin on “**VSWR: Why It Does Not Mean As Much As You Think**” which has gone around the world and was also picked up by the Dayton Hamvention ATV Forum.

The article was initially picked up (from the MVUS Bulletin) by the TCO Amateur Television Newsletter in Columbus, Ohio who published the article in their Newsletter.

The Columbus Newsletter was then read by the Western and Northern Suburbs Amateur Radio Club of Melbourne, Australia who published the article on their WANSARC News publication (February 2015 Issue).

At the request of Mr. Art Towslee, WA8RMC, the publisher of the Amateur Television Newsletter in Columbus and also the Chairman for the ATV Forum at the Hamvention, he requested that I present the article in slide form to the ATV Forum attendees. Such action was executed during the Hamvention.

Many requests for a copy of the presentation were made by email by numerous hams.

So fellow MVUS members, be aware that our presentations are being monitored by hams around the world.

5 Year Anniversary Observing the Sun

The Solar Dynamics Observatory ([SDO](#)) celebrates its 5th anniversary since it launched on February 11, 2010. This time-lapse video captures one frame every 8 hours starting when data became available in June 2010 and finishing February 8, 2015. The different colors represent the various [wavelengths](#) (sometimes blended, sometimes alone) in which [SDO](#) observes the sun. For more about [SDO](#), please visit <http://sdo.gsfc.nasa.gov>.

credit: [NASA Solar Dynamics Observatory \(Little SDO\)](#)

Highly recommended to watch, only takes a few minutes! (Ed.)

I've had a number of HF transceivers over the years. My present one is the Drake TR-7. It still uses the 4-pin Mike connector. Ralph K4NKO posted a website recently on the Bellbrook reflector with all the different mike connectors that can be found today which is astonishing*. What is also astonishing is that the headphone connector has not changed at all, except headphones with those ¼ inch plugs are hard to find. Well right there- at the mike connector and headphones where I make amends. First I want to use my own mike and my own PTT (push to talk) switch, ergo I have to separate the two. This is easy.

Next I want to use one of these new **electrets microphones. They only cost around a dollar now are very small and of excellent quality. They are used in broadcasting, Hollywood practically everywhere else also, unless you don't want to throw away the old mike that cost a fortune when new. What caught my attention are the Mike headphone combinations that are offered for computers, these are indeed very good they are affordable and they do the job very well. I've been using them, bought at ham fests for \$ 10, for quite a number of years. Looking at a combination like that you will notice that the phones and the mike have separate cables with 3 conductor connectors. They are the 1/8-inch phono types. Why three leads? Well the phones for stereo and the mike for a voltage that provides bias and impedance match for the mike.

Fortunately, the Drake 4 pin-connector had one pin free and it was an easy to connect +10 V (from somewhere in the Tr7) for the mike. All phone jacks are mono ¼" and when you change that to accept the 1/8" plug, just connect the two stereo leads together. Of course, you do this using short pieces of shielded cables. I do not recommend changing the jacks on the transceivers. They are way too repair/modify unfriendly to be done by the average ham.

The third modification, requiring room for a small tones generator, made me put everything in a small box. In essence it is something like a breakout box. You take all the leads from the mike, phone connector and a low positive voltage (often now available on one of the many pins of the mike connector) to this box and then redistribute them to the appropriate jacks for mike, headphones, and PTT.

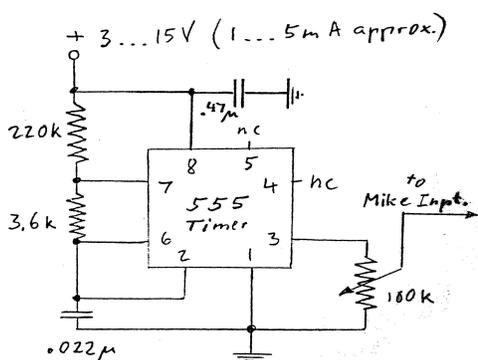
Tuning up your transmitter connected to the antenna was and still is a problem, requiring some skill and patience. The development to automatic tuners is nice but it removes you further from real problems and does not help with you with solving them. CW, of course, is easy. You just use a carrier, reduce power if you can. This is still the most used approach today and for phone the same method is used. A better method would be to use voice, but by its nature it is difficult to produce a sound that does not wiggle the output meter and makes it hard to maximize. Meters using LEDs are better, I used one until years ago it fell victim to a lightning strike and although the insurance covered it the company had gone out of business and I reverted back to meters with the needles.

Voice consists of many tones constantly changing. One tone is easily generated, but for tuning purposes it is only a little better than the carrier. Adventures hams would build a two-tone generator, but that is where it stopped. And we are still stuck in the situation described so far!

Ideally for tuning you would use multiple tones and measurements have shown that approximately 10 tones are needed to simulate voice. At the time I was thinking to build a 10-tone generator I was heavily involved at work (this dates back to the late 1960s) checking out a new "computing instrument" an optical correlator. This was an experimental instrument designed to accept two functions (waveforms, frequencies or tones if you prefer) and determine the similarity of those. The process had a lot to do with Fourier transform a method to convert a time waveform (like a pulse) into a bunch of frequencies or tones. Turn's out it is easy to generate the ten tones I was looking for. Not only that but the tones would also be phase-coherent meaning the peak value of the these ten tones would add up to a PEP ten times that of a single tone.

Subsequently I designed a number of circuits that would produce a pulse from various transistor circuits to finally settle on the ubiquitous timer, the good old 555, still in production. I've been using this circuit since that time, as have a number of my close friends. The sound of this thing is unique and usually baffles hams that stumble on it. A marine friend of mine compares it to a steamboat whistle. To tune, I activate the circuit with a pushbutton and then quickly tune the linear or a tuner by max PEP output). It's as easy as cake, tunes the linear for real (PEP) operation with a minimum of fuss! The circuit is very small just the 555, two capacitors and 3 resistors, see fig 2.

So, there you have the three things I do to my transceivers to make operating more enjoyable.



Two Amazing Facts!

By Gerd, WB8IFM

On a recent trip to Morehead Ky, where the University of Kentucky maintains a 70 foot radio telescope, Jeff, WA3ZKR, related to us a calculation that he had done to come up with the amazing claim, that their telescope could deliver 100% of their transmit power to the surface of the moon. Of course, visitors would not believe it and immediately started talking about the inverse square law, which we all know governs the propagation of radio waves (actually all electromagnetic waves, including light, x-ray and gamma...). But when you stop and think about it; here we have a extremely large (for hams) beam antenna, the wavelength is relatively small in the area of a few inches, leading to a beam of a fraction of a degree. That beam contains most of the power fed to the antenna, only a small percentage is spent in the sidelobes. And wenn the beamwidth is the angle under which the moon appears from the earth, than the entire energy that emanates from the dish is intercepted by the moon. The other assumption, of course, is that there is no loss through our atmosphere and space. Finally, if we were going to pick up this power, we also have to use an antenna, covering the entire surface of the moon, a pretty big antenna. When you make those calculations, you use power and antenna gain for the transmitter site, and capture area and receiver sensitivity for the receive site. Makes sense!

Another interesting explanation I recently came across looking at some old notes, an very simple explanation of super conductivity. We explain resistance, or the inverse: conductivity, by the motion of electrons through the various media, like copper wires. Here the electrons are moved through the atomic copper structure with some deviations, in a resistive material, however, the electrons get deviated or bounced around quite a bit which creates resistance, slows them down, creating heat in the process. therefore losses.

Now if this you do this with a super conductor we find that the electrons move because of its structure, parallel to one another and no collision takes place, no losses, no heat.

You might want to know where I came across this bit of wisdom. Well, it confirms my experience that you find the most surprizing answers to problems in the most unsuspecting places, This came from an envelope in which I had saved brief comments from a newspaper writer...L. M. Boyd. Here is what Wikipedia writes about him: “ **Louis Malcolm (Mal) Boyd**, popularly known as **L. M. Boyd** (June 9, 1927 in [Spokane, Washington](#), died January 22, 2007, in [Seattle](#) was a [newspaper columnist](#) whose nationally [syndicated](#) column was a collection of miscellaneous [trivial](#) and amusing facts. “ There you have it.

Of course, if you ask a physicist about superconductivity, he will tell you a lot more, the difference being you may not understand much at all! Scientists , of course, are known to speak their own language and have great difficulty to speak to a normal person in simple language.

HV-Notes — MVUS-Booth

First we want to recognize John, N8VZW and Mike, N8QHV for setting up and manning the booth most of the time. Others also spent time as well, thanks to them.

We had an experiment set up showing that a frame with relatively big holes (a 1” hole chickenfence) could block a 70 cm signal. Few people were curious enough to stop and check this out, however, our x-tal detector with a micro ammeter was a total loss. We sure underestimated the power modern HTs can produce.

18 members stopped to pay their dues, some for multiple years, and we also signed up 3 new members.

Gerd, WB8IFM, (Treasurer).

2015 Activities so far

By Lloyd, NE8i/Rover

May MAD report.

After a long winter, and not much activity. Arranged some microwave activity with Tony WA8RJF and KB8U. Drove down to GP Hill, EN82em in New Hudson Mi. Was pleasantly surprised when WA8VPD, WB8TGY, W8ISS and K8RAY also showed up. We enjoyed really nice weather. As well as MAD, it was the San Bernadino MS contest, and the ARRL microwave sprint. We compared some station equipment. Traded microwave stories. WW8M EN72xf showed up, and we worked him. Then Tony WA8RJF in EN91kt, across Lake Erie showed up. Activity and emphasis was on 10 GHz. I made 9 contacts. We made some future plans for events and places, through October. We all got to try out changes, improvements we made to our stations. **Several of the group, noted signals off the local water towers worked pretty good.** 24 GHz maybe next time. Signals were good. Best early in the morning. Don WW8M, noted he heard some activity on 144.260 from 9 land and Lake Michigan. He can copy the KF8QL beacons in Grand Rapids. Lake Erie paths and activity were great.

Glad to see everyone, and make activity happen.

Likely we will be back to GP Hill regularly.

a few pix from GP Hill,
EN82em
This view is looking South East.
Towards Lake Erie.



At The Southeastern VHF Society Conference

Joe Muchnij, N8QOD

Several MVUS members got together to attend the 2016 SVHF conference held at the Space Sciences Institute in Morehead KY this April. Although it formally was scheduled for Friday & Saturday, it really began Thursday afternoon with a delightful pre-party at the home of the conference chairman & host, MVUS member Jeff Kruth, WA3ZKR; thank you Jeff!

After the party we went to the Institute's planetarium for a spectacular laser show followed by an introductory astronomy class.

Nineteen talks were given on diverse subjects - much too many to discuss here, but I'll bring my copy of the Proceedings to the next couple MVUS meetings for attendees to browse.

One presentation I found surprisingly interesting was by Tony Emanuele, WA8RJF, about his 10 GHz DX attempts across Lake Erie and along the Gulf of Mexico last year. For the Gulf outing he drove over 3600 miles in six days and operated from 10 locations in TX, LA, MS, AL and FL.

Glen Little, WB4UIV, described the first Ham band ATSC Video transmitter running at 1266 MHz in San Diego. ATSC is the digital television broadcast standard for North America, so transmissions can be displayed by TVs we all have.

I was also intrigued by presentations given by Paul Wade, W1GHZ, who brought several examples of VHF/UHF filters he designed and constructed. Ben Lowe, K4QF gave a very good treatise on significant factors to achieve good antenna gain.

Jeff gave tours of their 21m dish, and their spacecraft fabrication/evaluation facilities. At the Saturday evening banquet, he gave an overview of the Institute's continuing advances, especially inclusion in the NASA Deep Space Network, and a contract to develop a spacecraft to look for water at the moon's poles.

More on the Hamvention

Nothing like driving a golf cart in the daily rain at Hamvention. One of the nice things about driving the golf carts is getting to talk to the visitors as you shuttle them around. I was glad to see the posters about the remodeling that HARA will be going through, as it is long overdue. Walking the Flea Market on Sunday is good exercise. Jim, WB8VSU

Meeting an old MVUS member. There was Sam, immediate recognition, but I could not remember his call or last name. We had a good time and walked around the exhibits for a while, looking at some modern probably "digital stuff". Sam made a remark that stuck in my mind since, he said: "If you don't understand and can't repair it, don't buy it!" In my book that is the difference between a Ham and an appliance operator. Three days after the Hamvention Sam's last name popped into my head: it is "Laube". And from there it was easy to find his call (WB8ZDF) and with his call you find the address etc. Gerd, WB8iFM

A Glimpse at our Future

Two years ago I got involved with the Marinette and Menominee Amateur Radio Club in Michigan's Upper Peninsula. They were instrumental in the VE exam for my granddaughter Emma, KC9ZOD. The M&M ARC hosts a weekly youth net Saturday evenings on the club repeater W8PIF-R and Echo Link node #481872 7 pm CST. Ed Engleman, KG8CX, is net control of The YACHT Net, **Y**oung **A**mateur **C**ommunications **H**am **T**eam.

The weekly youth net has grown since 2007 to 122 members in 23 states plus Canada, Europe, South Africa and New Zealand. Ed contacted Carole Perry, WB2MGP, our long time HamVention Youth Forum Moderator, about the YACHT net and its youth involvement. Subsequently, four YACHT youth were invited to speak at this year's Youth Forum. (Half the total speakers.)

The eight presenters did a fantastic job, all receiving nice gifts from Icom, MFJ and others for their efforts. The high point was lunch with Astronaut Mike Fincke, KE5AIT arranged by the ARRL for all eight presenters plus eight more kids chosen from the forum. Nice. The excitement the youth brought to the speakers' mic was something to see and would definitely put a smile on your face.

For the YACHT group and anyone else who could come I organized a Saturday youth dinner at Marion's. This was attended by 10-12 youth and parents. Looking around, the only unlicensed kids were those being carried in. A good time was had by all.

My daughter Sharon, KC8JRS and I left the group after about an hour and a half to prepare for Sunday but when the Echo Link net started the HamVention contingent of YACHT were all checking in from Marion's as the party continued. The kids and parents' primary contact has been through this Echo Link net. Face to face over dinner was a chance to get better acquainted, talk about what they did and saw at the show and what they do at home. One funny thing on the week's net: when asked by the backup net control Justin, AC8PI (a teen in the UP) what was the best part of HamVention, lots of things were mentioned. The big one was that they got to meet "Bob and Gordo," Bob Heil and Gordon West of Ham Nation fame. It's funny because four of these kids had lunch with an Astronaut.

At dinner Saturday Sharon and I challenged the kids who would be attending Sunday to stop by the Special Event station and make some contacts. When we walked by the next morning two of the boys were manning the stations and busily making contacts!

I think we locals can tend to take HamVention for granted but seeing the excitement in these young first timers was a glimpse into the future of Ham Radio.

73's Mark Tessneer,

KB8ZR

Youth Forum: <https://www.youtube.com/watch?v=eBZC-dRyivo>

Menominee DAR Radio Club <http://www.grz.com/db/k8dar>

M&M ARC <http://w8pif.webstarts.com/index.html>

YACHT <http://yachthams.webstarts.com/index.html>