

Mtg Fri 6:30 Jan. 27 at the MCL Cafeteria in Kettering

2017-01-01

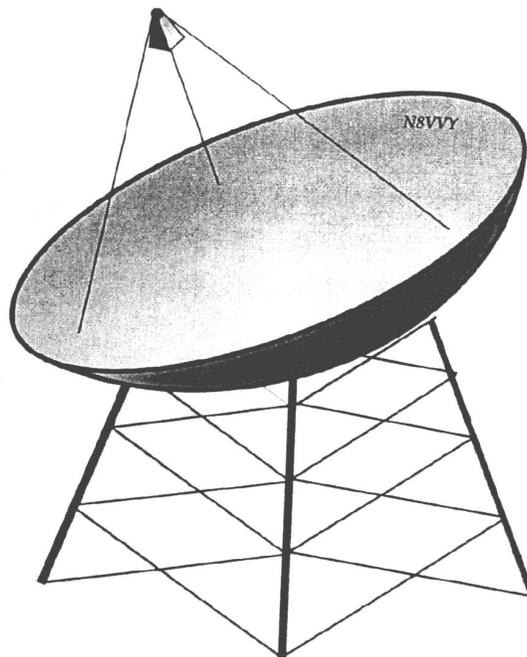
ANOMALOUS PROPAGATION

Newsletter: *The Midwest VHF/UHF Society*

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Annual membership is \$ 12.00. Make checks
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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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Gerd's Rules for the Road:

Don't trust the other driver!
Keep the Speed Limit!
Don't follow too close!
Signal your intentions (blinkers) well before you do the maneuver, AND watch if the
other guy complies.
Don't get mad!

DE N8ZM (1-2017) : This column is being written on the day after the January VHF Contest, so if I appear to drift off to sleep in the middle of a thought while still managing to type a complete sentence, don't be too hasty to point it out. Wait until this Friday at the meeting; you'll have an audience and can share the laughter.

I have talked to the Hamvention folks about our MVUS booth and they have told me we should be able to have one, I just need to get the paperwork submitted as soon as they are ready to take orders. No idea where we will be located yet, as the comp'd booths are the last ones they'll worry about putting on the map. It may turn out to be in a tent, so we need to be thinking about that in regards to what we want to have in the booth. Also, Mike Schulsinger, N8QHV, our ever-reliable booth staffer during the show, has told me he is moving to Louisville and will very likely not be available to live in our booth as in past years (Many thanks, Mike!) so we need to have a new plan for staffing this year. We can discuss this on Friday.

Hopefully, by the time Hamvention rolls around, we will have the 2 m and 70 cm beacons installed in Englewood, at a higher location and with new antennas that should let us be heard far-er and wider. As they will be permanently installed (yeah, we thought we'd accomplished that at HARA too) using the W8KSE club call sign, SW Ohio will finally have a signal for checking radios and propagation from this area. Many thanks to W8RKO for his efforts on this.

There are a lot of details still to be determined, like the date, but we are moving forward with the plan to host the Microwave Update (MUD) 2018 conference here in the Dayton area in October of, your guessed it, 2018. I expect that it will require at least 10 of us to tackle all of the various tasks involved so that no one (that means me, mostly) will have to shoulder the whole burden. Inquiries into hotel capabilities, pricing, and schedules have been started on our behalf by Evelyn, XYL of WB8ART. She has a lot of experience in these matters so we are glad to have her working on it. Once we know where that stands will get serious about putting together the committee to organize the conference, so now is the time to run and hide.

MUD is focused on any and all topics related to ham radio operation in the microwave bands, so the presentation topics range from building microwave devices (up through 76 GHz!) to operating techniques, best practices, station layout, antennas, software...you name it, it has probably been covered. It attracts both the experienced and the newbies, all of them there to share and learn. I don't get to attend every year but I always enjoy learning from the guys who are out there doing it and seeing many friends. I'd say old friends but not all of them are on Medicare yet. These are people I can ask for advice and in turn share what I know with them. A few are good storytellers and always can be counted on for an amusing anecdote. It can't get much better than that!

At the top, I mentioned the January VHF contest conducted over this past weekend. Propagation openings may not have been present (one ham said he was happy about that, we had a level playing field everywhere!), so we had to work a little harder for the contacts we got but the participation appeared to have been pretty good anyway. Of course, the bands were mostly dead while the Panthers beat up on the Packers, but that wasn't a big surprise. For us, the equipment worked pretty well, with only the failure of the 432 mast-mounted preamp as the one frustration. Especially on 6m, there was a lot of digital activity aimed at picking up grid squares while the higher bands (all of them up to 1296) were used to rack up contact points. I think this mode is going to become ever more important for VHF contesting, he said after the fact.

Well, I've used up my allotted space and more for this month, so come see us on Friday the 27th at the MCL. At 6:30 PM. See you there!

This and That

Dogs. One dog's clearly better than two dogs. And even better than one dog is a goldfish. [D.L. Stewart]

The right size. People think Premium Gas is better because it says "premium" and it's called high grade gas. That's called "marketing." Premium is just like a bigger size shoe, it is meant for specific engines. [Ray from "Car Talk"]

High School. During high school we develop the most vigorous adult bodies we will ever have. At the same time, we possess the least amount of sense we will ever have. This combination produces many memorable moments. [Marilyn]

Problem with cars. Most cars, for their purpose are too powerful. And most drivers are speeding, don't use turn signals and after so many years, still do not use a seatbelts. No wonder there are so many accidents. [Gerd, WB8iFM]

Airtime. We have gone from 10 minutes per QSO to 10 QSOs per minute. This does away with "communication" and gets us into the category of collecting stamps. Sad. The good thing is: no longer is it hard to find a clear frequency except for weekends with contests. [Gerd, WB8iFM]

Camping. Edison, the Ascetic slugged abed until 10 AM and ate pie "by the yard". [John Burroughs]

Predictions. I feel confident about my first prediction: "2017 is going to be a horrible year for predictions." [Joel Stein]

There is Money in Coffee. Along the line of the 5c cigar what, a century later, this country needs, is a \$12.... 12 ounce cup of Coffee! [Howard Schultz]

Starbucks. The "designer coffee store". Today, you cannot swing a dead cat without hitting a starbucks store. [George F. Will]

Best Advice she got. "No one knows what they are doing either."
[Ricky Gervais to Jenna Coleman]

Keep it Short. George Washington's acceptance speech was very short, only 135 words!.

VHF/UHF Beacon Receiver Project - Proposal
Joe Burke, WA8OGS

How many amateur radio beacons are there on the vhf/uhf/microwave bands? Your search will uncover many outdated lists. A recently updated 144 MHz and up listing is **VHF/UHF BEACONS by WZ1V**, updated in December 2016 (see <http://www.newsvhf.com/beacons2.html>). A recently updated 50 MHz list is: **G3USF's Worldwide List Of 50MHz Beacons** (see: <https://www.keele.ac.uk/depts/por/50.htm>).

We listen for beacons sometimes when testing equipment but more frequently to check propagation conditions. A beacon typically transmits a cw signal providing the call sign, usually the grid square location, and sometimes additional location information. Some beacons vary the transmit signal level, to give a better understanding of propagation conditions.

On our way to the 2016 Microwave Update Conference, Tom Holmes, N8ZM, and I had a good discussion about VHF/UHF beacons. Wouldn't it be neat if you could be listening for every beacon, all the time, to know when there is enhanced propagation at your QTH? Or to know which beacons are being received 50 miles away - so you could start to listen for that weak signal as propagation signals improve? Wouldn't it be beneficial to have a history of past beacon reception details, to study and use for future predictions etc.?

One way to find beacon reception details is to check the internet for spotting reports made by others after they have heard a beacon - if reports are posted on one of the internet spotting sites. The HF bands have such a system showing reception reports of the beacons using Faros software and the Reverse Beacon Network. This is called the **NCDXF/IARU International Beacon Project** (see: <http://www.ncdxf.org/beacon/monitors.html>).

A good Beacon System requires several important parts: 1) beacon transmitters in many geographic locations; 2) beacon receivers that continually listen for beacons; 3) software used with a beacon receiver to decode/extract the signal information; and 4) automated alerting (based on user input criteria) and automated posting whenever a beacon is heard.

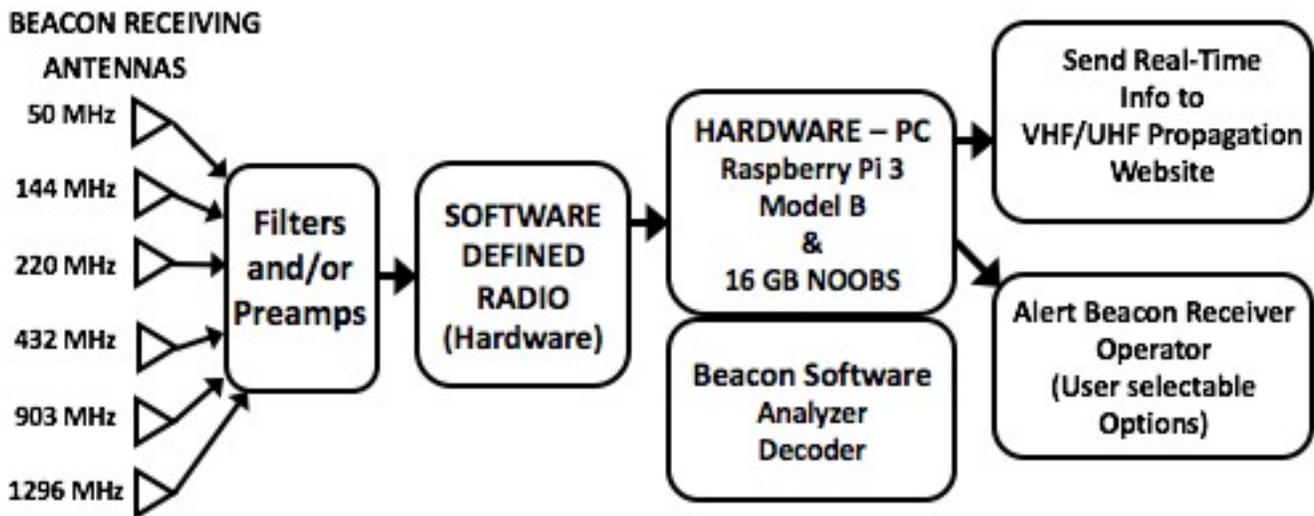


Figure 1 – VHF/UHF Beacon Receiver – block diagram (proposed draft).

Beacon receiver and decoding software: An ideal beacon receiver might be a software defined radio (SDR) that covers all of the VHF/UHF bands of interest, such as the 50, 144, 220, 432, 903, and 1296 MHz bands. Each beacon band would need its own antenna input connector. A few SDRs include two receivers, and LimeSDR with two receivers/transmitters will be available in January 2017. The design of this project should include options of how the operator might set up the beacon receiver hardware and pc software to monitor all 6 bands mentioned. The beacon receiver operator would also choose the antenna type that best meets his objective, such as a yagi or a omni-directional antenna.

Software might include *CW Skimmer* (see: <http://www.dxatlas.com/cwskimmer/>), a multi-channel cw decoder and analyzer or something similar. This software simultaneously decodes all cw signals in the receiver passband, up to 700 signals, identifies the call signs, and exports the results.

Faros is an automated HF beacon monitor for 18 beacons on five bands promoted by the Northern California DX Foundation (NCDXF). This software has many nice features (see: <http://www.dxatlas.com/faros/>). But our proposed **VHF/UHF Beacon Receiver Project** would involve many many more beacons on many different VHF/UHF frequencies. Current VHF/UHF beacons are managed by numerous clubs and individuals, and there are currently no specific format standards (that I'm aware of) for their operation.

Automated Alerting Function: Alerting should include user selectable options, such as sending a text notification to your cell phone, posting the received beacon information to specific websites, and/or notifying your local ham friends of the beacon reception. In contrast, the HF **Reverse Beacon Network** is a "network of stations listening to the bands and reporting what stations they hear, when and how well" (see: <http://www.reversebeacon.net/index.php>), so it is quite different from this VHF/UHF beacon receiver project proposal.

Project Implementation:

Many VHF/UHF beacons already exist, giving the station call sign and grid locator in cw. **Phase I** of this project might be 1) proposing beacon receiver hardware options, and 2) writing software (for decoding and alerting options) that would run on a low-cost system such as Linux running on a Raspberry Pi 3. **Phase II** would upgrade the beacon system to include a digital mode, to be able to detect weaker signals. This might be a suggested upgrade kit for beacon transmitters, so that they would transmit both the current cw signal and also the digital information. It would also require software modifications to the Phase I beacon receivers.

This **Beacon Receiver Project** is seeking your input for this beacon receiver/software design that automates a network of station listeners and provides real-time notification whenever the receiver hears appropriate beacons. Parts of this project may already exist. If so, please provide us with the details: email **The Midwest VHF/UHF Society**, mvus-list@febo.com and Tom Holmes N8ZM, tholmes@woh.rr.com. Please join this development project, contribute your ideas by making suggestions, and/or write an article about for this newsletter.

How space debris can affect technology here on Earth

Hundreds of thousands of pieces of space junk are tracked as they orbit the Earth.

More than 500,000 debris remains are tracked as they orbit the Earth at speeds up to 17,500 mph, a speed fast enough for a small piece to damage a satellite or spacecraft. The growing amount of space debris increases the danger of all space vehicles, more specifically the International Space Station, space shuttles, and other spacecraft with humans aboard.



It's required that a satellite de-orbit and burn within 25 years of launching. A primary way to ensure this is to use a natural process called atmosphere drag, which is a result of recurrent collisions of gas molecules with a satellite. Atmospheric drag causes a decrease in the altitude of a satellite's orbit, causing it to re-enter Earth's orbit or burn up entirely.

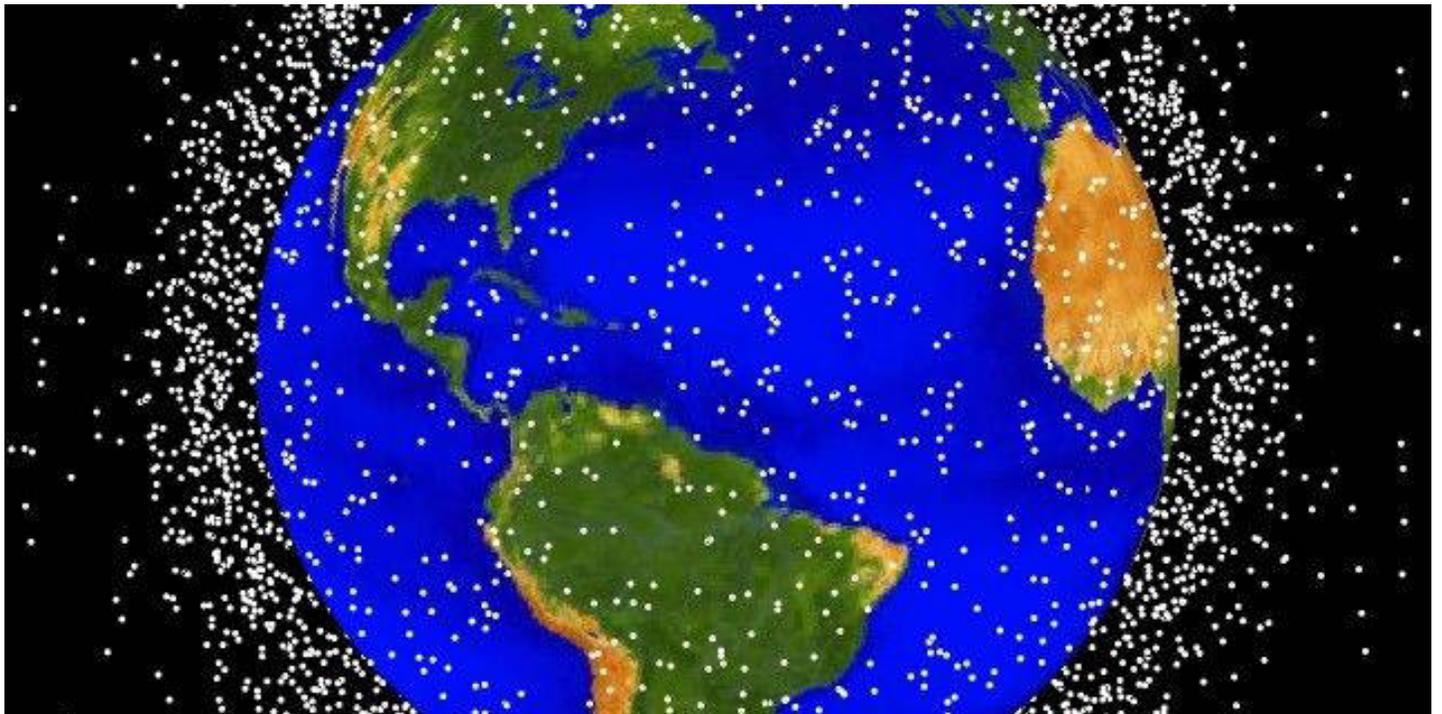
Satellites are beneficial to technology and research on Earth, but having a growing number of dead ones floating around in space would only contribute to the growing space pollution issue.

Additionally, satellites can get in the way of other functional satellites in orbit. The most catastrophic collision occurred in 2009 between an Iridium communications satellite and a Russian Cosmos 2251 satellite at 7.2 miles per second over northern Siberia. That occurrence and a Chinese anti-satellite test in 2007 created two-thirds of all trackable debris.

Another aspect that has an influence on Earth's technological systems is space's weather effect on satellites, which is responsible for ground-based radio communications, as well as GPS.

If the sun changes based on a solar flare, this could ultimately cause radio waves to stop bouncing, and we could witness a radio blackout. At the same time, GPS used on our smartphones for navigations and in military and aerospace processes could also be significantly affected. Instead of a GPS being a meter off, it has the potential to be tens or hundreds of meters off.

Currently, there is no way for scientists to predict a major solar event that could affect Earth and technology. Space agencies have shifted from trying to keep debris numbers down to active removal.



In 2018, the Swiss École polytechnique fédérale de Lausanne plans to capture a CubeSat with a satellite called CleanSpace One, which will use a large net to capture the 4-inch square object. If the mission deems satisfactory, the CleanSpace One will reenter the atmosphere and burn itself up.

Another suggested plan by the U.S. Defense Advanced Research Projects Agency (DARPA) proposed that a craft called Phoenix would use a net to capture satellites. The idea would then include retrieving any reusable hardware.

But active removal is a complicated process. Aside from having to identify, locate, and approach each piece of junk, space treaties require permission from the original owner before anyone can do anything to it. But by spreading awareness, this could prevent any life-threatening events from happening in space.

Via Phys.org and NASA

The Spotless Sun in Sky&Telescope

By: [Sean Walker](#) | 1-12-2017

Since the start of 2017, only a single small sunspot has made a brief appearance on the solar disk.

Although 2017 heralds the first total solar eclipse to be seen from the continental U.S. in more than 30 years, the Sun itself has become a featureless ball — at least in visible wavelengths. Following the weakest solar cycle in more than 100 years, the minimum of Cycle 24 appears to have arrived for the duration, at least for observers.

According to Tony Phillips of [SpaceWeather.com](#), the Sun hasn't been blank for so long since May 2010. Only a single tiny sunspot briefly appeared then vanished on January 3rd, followed by a continuing stretch of spotless days.

Even the usually dynamic chromosphere visible at the wavelength of [hydrogen alpha](#) is nearly as featureless, with only several tiny prominences visible along the solar limb.

Long-time *Sky & Telescope* contributor Tom Fleming notes this is the first spotless week following a steady decline throughout the last half of 2016.

But not to worry, the situation can change very suddenly. [NASA's STEREO A spacecraft](#), which monitors the Sun from a point ahead of us along Earth's orbit and sees a good portion of the solar disk that has recently disappeared from our view, shows an active region on the Sun's far side. This region should come around and be visible in about a week or so, assuming it doesn't dissipate.

And just because there are no sunspots doesn't mean the Sun is completely inactive. The solar wind buffeted Earth's magnetosphere several days ago, producing aurora activity near the Arctic Circle. Although no coronal holes are expected to face Earth in the coming days, that too can change.

Fix or Toss

By Dana, K8YUM, Arecibo / Puerto Rico (updated slightly since last year)

I hope you're aware that solder blob inter-pin shorts are not fatal- just clear them with desoldering braid after the fact. It helps greatly if you can find the kind of braid with flux impregnated into it, or else add flux yourself with a so-called "flux pen" (not related to the famous flux capacitor) just before use. Note that sometimes the solder removal works too well and leaves a pin completely unsoldered with a gap between the pin and its pad. This mainly occurs when the pin was not in contact with the pad for some reason. If this happens, add solder and try again. It is really helpful to do all this under magnification, preferably with a low power stereo microscope (5-10X works well).

My big question is: how in the dickens can you track down the problem to an IC like that with any confidence? And where do you find a */new/* (not stripped from a throwaway board) replacement part?

Myself, I value my time more than anything else, so unless I suspect something fairly simple like a power supply problem I'll make no effort to repair the unit. Call it "old (but now gainfully *unemployed*) man's bias".

My last foray into a repair job was when my previous TV/DVD player quit working. I had to open it up anyway to rescue the DVD which had gotten trapped by the failure, and took time to check all the myriad fuses I could find, to no avail. I boxed it up with the intention of offering it to one of the techs here, but then had second thoughts when I discovered how poorly the replacement unit I bought works in comparison. So now I hang onto both units, thinking that maybe */some day/* I'll find the ambition to dive into this thing again.

My treasured ICOM R-8500 has also failed, seemingly with a power supply problem. So my next repair effort (again, probably post-retirement) will be that.

Speaking of ham stuff, I remind everybody that this coming weekend is the "Puerto Rico ARRL State Convention", at Hatillo, PR (slightly west of Arecibo). It sure ain't Dayton, but it's still a nice excuse for getting out of the cold for a few days. I'll offer any takers the cook's tour of the ground-level technical facilities at the observatory. Note that this year, 2017, the convention will feature two renowned technical speakers:

1. Nobel Laureate Joe Taylor, on his weak signal software.
2. Professor Jim Breakall from Penn State, on Nikola Tesla. Jim usually speaks of more practical antennas, but decided to break the mold this year.

Dana 1-23-17 e-mail