

Mtgs Fri 6:30 Apr 22 & May 27 at the
MCL Cafeteria in Kettering

Apr/May2016

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 Joe Muchnij



Vol. 30 No. 4

www.mvus.org

Apr/May 2016

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
This and That.....	4
Electret Microphone.....	5
70 years ago.....	5
Lot's of Power.....	6
Nuclear Meltdown.....	6
10 cm Solar Flux.....	7
Regenerative Breaking.....	8
No Red Lights.....	8
Beacon Lists.....	9
HAMVENTION FORUM	10

Hamvention 20/21/22 May,

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

MVUS Booth: *Silver Arena # 332*

MVUS Officials:

Pres. Tom Holmes, N8ZM,
Vice Pres. Bob Mathews, K8TQK
Secretary, Jim Bacher, WB8VSU
Treasurer, Joe Muchnij N8QOD
Bulletin Editor, Gerd Schrick, WB8IFM
Membership: Joe Muchnij, N8QOD
E-mail: Jim Bacher, WB8VSU

*

Membership/correspondence/payments (\$12/year):
Joe Muchnij, N8QOD
1214 Cottingwood CT
Bellbrook, OH 45305-8765

DE N8ZM: Hamvention is just a month away! Need I say more? Probably not, but I've never let that stop me. Our booth is confirmed in SA 332, as it has been in prior years, and the N8ASB/N8ZM flea market space will be in its usual location in spaces 1902-5.

Mike, W8RKO, confirmed for me today that the **2 m beacon** will be on for sure, and that he is 'cleaning up' the **432 beacon** so that both will be ready to be on the air from HARA a day or two prior to the show's opening on Friday. If they hold up well, we plan to leave them running as long as HARA will let us. They've not indicated that they have any objections, so until there is a change in the business situation there, we are good to keep going.

Last month Gerd printed the VHF/UHF/Microwave forum schedule, provided by WA8RJF, the moderator. Thanks, Tony! The full forum schedule for the weekend should be on the Hamvention.org web site by the time you read this. There are several good forums on digital stuff as well, and some new topics. Check 'em out!

Want to find me at the show, the Prize Booth is the most likely place this year. Please stop by to say HI!

If any of you were able to make it to the VHF Super conference, I'd really appreciate it (and so would Gerd) if you could write up a page or so about who went, what you heard, who you saw, all that good stuff. Make those of us who didn't go feel really bad about missing it, PLEASE! It was an ambitious undertaking and I hope it was wildly successful. Getting those three groups working together to put on one big conference makes a lot of sense to me and I hope they will want to do it again.

The April meeting is on the 22nd NOT THE 29th. 5 Fridays again this month. The May meeting will be on the 27th, the Friday after Hamvention. This is the annual survivor's show and tell (lies) meeting, and I am expecting a lot of great stories.

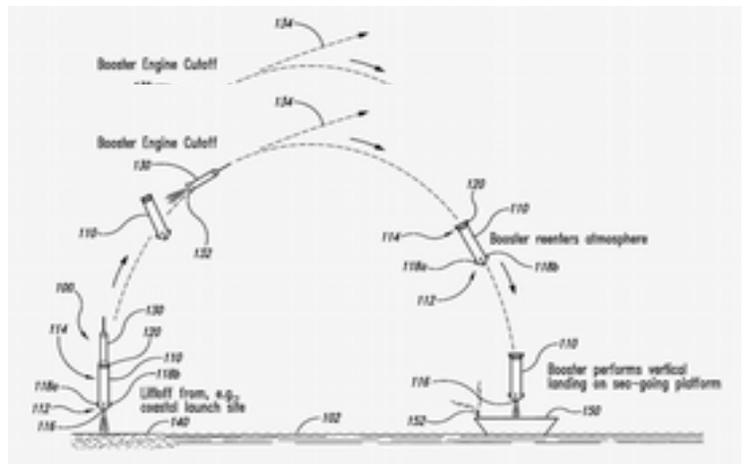
That's all for this month. I hope to get to see as many of you as possible at Hamvention.

Tom, N8ZM.

Space X Success

On Friday, April 8, 2016, SpaceX successfully delivered a cargo ship, carrying an [experimental, balloon-like habitat](#), to the International Space Station and pulled off a nearly impossible at-sea landing of its rocket booster.

"Fifth time's a charm!" a SpaceX webcast commentator said, as cheers erupted at company headquarters in Hawthorne, California.



No Gears. The electric car can go from zero to top speed without shifting any gears. Controlling your “gas pedal” (of course no “gas” involved) is all that is needed. [Gerd, WB8IFM]

Wrist Watch Accuracy. My Swiss railroad watch, after an estimated 30 years of service, finally gave up. My new replacement is a “run of the mill” American replacement. Naturally I wanted to know the accuracy. Well, wrist watches are sold now by the type of arm band and other insignificant accessories. But since 99% or more are controlled by x-tals, they basically all have good accuracy. Measuring mine myself I found the time error per week is less than one second. That adds up to less than one minute per year! [Gerd, WB8IFM]

Alarming News. Read where now more pedestrians get killed on American roads than in past years. Trying to understand what is going on, two things come to mind: Action, or better no or late action of the pedestrian and higher speed of the traffic. Walkers doing alright selecting to walk on the left, facing the traffic, but they forget that drivers may not see them or see them too late, so they ought to make extra room. Of course, to-days cars are usually over powered and drive too fast also. [Gerd, WB8IFM]

Fast Talkers. The problem with people that talk too fast is that they often say something they haven't thought of yet. [Bits and Pieces, Vol D/no. 1B]

Problems. The best way to forget your own problems is to help someone else solve theirs. [ditto]

Evils. “When I read about the evils of drinking, I gave up reading.” [Henny Youngman]

Goddard's Rocket. In March of 1926 Goddard completed the first successful launch of his liquid fueled rocket in Auburn, Mass. The 10-foot rocket achieved a height of 41 feet and an average speed of 60 miles per hour. [Writer's Almanac by Garrison Keillor]

Parachute Jumping. “When you first jump, it's sky, ground,sky, ground, plane. You just see everything. And then it's poof, nothing. No noise. It's just you and you're looking down and its fantastic.” [Specialist Scott Ramon, 24,Paratrouper]

Every Day. “One ought, every day at least hear a little song, read a good poem, see a fine picture, and , if it were possible, speak a few reasonable words.” [Johann Wolfgang Goethe]

Years go by. “In masks outrages and austere—The years go by in single file—Yet non has merited my fear-- And none has quite escaped my smile.” [Tennesy Williams]

And it's not the Cows. There is a lot of methan released into the air, it it comes from the fracking process. This was revealed in a paper from the Harvard scientists. Now, methane is more powerfull in trapping heat than is the infamous carbon dioxyde. This is bad news. [Geographical Research Letters]

Firing Up People. “I have learned that nothing gets readers so fired up as sayingsomething everyone knows is true. My next piece will be called 'Water is wet!’” [Hope Jahren]

Year 2000. Since 1950, the number of people on earth has doubled. Since 1950, the number of cars on earth has increased tenfold! [L.M.Boyd]

Environment. Let me tell you about the real environmentalists of old. England passed its first smoke abatement law in 1273. Enforcers in 1306 convicted a manufacturer of burning coal, and beheaded him. [L.M.Boyd]

Electret condenser microphone Wikipedia 3-26-2016

Main article: [Electret microphone](#)

First patent on foil electret microphone by G. M. Sessler et al. (pages 1 to 3)

An electret microphone is a type of capacitor microphone invented by [Gerhard Sessler](#) and [Jim West](#) at [Bell laboratories](#) in 1962.^[21] The externally applied charge described above under condenser microphones is replaced by a permanent charge in an electret material. An [electret](#) is a [ferroelectric](#) material that has been permanently [electrically charged](#) or *polarized*. The name comes from *electrostatic* and *magnet*; a static charge is embedded in an electret by alignment of the static charges in the material, much the way a magnet is made by aligning the magnetic domains in a piece of iron.

Due to their good performance and ease of manufacture, hence low cost, the vast majority of microphones made today are electret microphones; a semiconductor manufacturer^[22] estimates annual production at over one billion units. Nearly all cell-phone, computer, PDA and headset microphones are electret types. They are used in many applications, from high-quality recording and [lavalier](#) use to built-in microphones in small [sound recording](#) devices and telephones. Though electret microphones were once considered low quality, the best ones can now rival traditional condenser microphones in every respect and can even offer the long-term stability and ultra-flat response needed for a measurement microphone. Unlike other capacitor microphones, they require no polarizing voltage, but often contain an integrated [preamplifier](#) that does require power (often incorrectly called polarizing power or bias). This preamplifier is frequently [phantom powered](#) in [sound reinforcement](#) and studio applications. Monophonic microphones designed for [personal computer](#) (PC) use, sometimes called multimedia microphones, use a 3.5 mm plug as usually used, without power, for stereo; the ring, instead of carrying the signal for a second channel, carries power via a resistor from (normally) a 5 V supply in the computer. Stereophonic microphones use the same connector; there is no obvious way to determine which standard is used by equipment and microphones.

Only the best electret microphones rival good DC-polarized units in terms of noise level and quality; electret microphones lend themselves to inexpensive mass-production, while inherently expensive non-electret condenser microphones are made to higher quality.

70 Years Ago in the Scientific American (July 1946)

Radio transmission between two points on the earth after reflection from the moon may enter the realm of practicality, now that it has been demonstrated by radar that the space surrounding the earth is not impassable to radio waves. If an ultra-high-frequency pulse was beamed at the moon from an antenna, the receiver could be located at any place on earth where the moon could be 'seen' at the same time as at the transmitter. Hence the blocking action of the earth's curvature to high-frequency line-of-sight transmissions would be eliminated, and nation-wide television broadcasts from a central station might become practical.

Lots of power, lots of responsibility

*Jaime @ Elektor Labs
Translation from German*

The Sun is not so much a heavenly body as it is a huge fusion reactor in space. As most luminous stars, hydrogen nuclei combine and in that process generate an enormous amount of energy. This does not happen on earth, it is not quite hot enough. The temperature needed for fusion is in the order of 150 million degree C. This corresponds to 10 times the temperature inside the sun. However, when fusion starts the energy is simply gigantic. That this is possible on earth was demonstrated in 1952 by the first thermonuclear Hydrogen bomb named “Ivy Mike” which completely destroyed an island of the Marshall archipelago in the Pacific. This bomb was ca 750 times stronger than the Hiroshima bomb....

Editors comments: *The use of fusion for peaceful purposes has been elusive. There are presently quite a number (several dozens) of experiments underway and eventually the problem might be solved. Estimates go from one year to maybe 6 years, the numbers change! Past accidents have shown that these experiments are not without danger as the two major and many smaller events at nuclear power stations have taught us! The solar and wind approach for generating power is not only feasible but also w/o the danger of blowing us up!*



The nuclear meltdown continues

*Editorial / Asahi Shimbun
[The Week, 3-2016]*

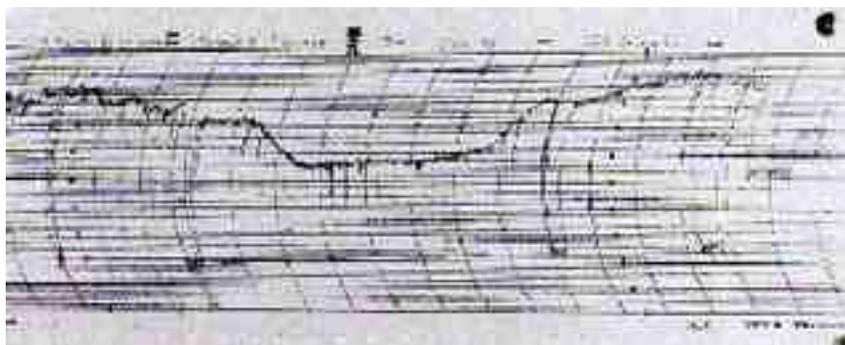
Five years after nuclear meltdown, the disaster at the Fukushima Daiichi power station is still unfolding, said the Asahi Shimbun. The plant was fatally damaged by 2011's deadly earthquake and tsunami, which killed nearly 16,000 people. Ever since, Tokyo Electric Power Co. (TEPCO) has been pumping hundreds of tons of water a day to cool the melted cores, where nuclear reactions are still ongoing. Even after processing, the water must be stored in massive tanks, more than a thousand of which now cover the parking lots and open areas around the plant. "Eventually, space will run out." Meanwhile, the utility "has yet to fully tackle the more difficult and time-consuming task of actually decommissioning the ruined nuclear plant." The radiation level is still so high that the spent fuel can't be retrieved—even robots sent in to scout the scene end up fried. TEPCO and the government are going to have to develop entirely new technology and equipment to remove the fuel as well as a whole new way to keep it stored. Once a plan is in place, the decommissioning process will take 30 to 40 years. This nuclear disaster is not in the past. We are still living it, and will be for decades.

The History of the 10.7cm Solar Flux *Nastural Resources Canada*

The history of the 10.7cm Solar Flux is intimately tied in with the beginnings of Canadian radio astronomy. Immediately after the Second World War, Arthur Covington and his colleagues at the National Research Council in Ottawa used bits of military surplus radar and test equipment to make a radio telescope. The antenna was a 4ft (1.2m) paraboloid from a Type IIIC Gun Laying Radar, mounted on a prototype mount casting for a Model 268 radar. By leaning the mount so that the azimuth axis was pointed at the Pole Star, it was converted into a simple polar mount, which made tracking the Sun much easier. The receiver was a Dicke switching receiver used during the war to test silicon mixer crystals for radar applications. The radar system operated at a frequency of 2800MHz, that is a wavelength of 10.7cm.

The instrument was pointed in the direction of various celestial objects, including Jupiter, the Milky Way, aurora borealis, and the Sun. It was too insensitive to pick up any cosmic source apart from the Sun. However, as time passed, Covington and his colleagues realized that the Sun's emission at 10.7cm wavelength was varying. They did not expect this. Thinking at that time was that the solar emission at centimeter wavelengths would be simply black body emission from a ball of hot gas. This led to the question of whether this was a variation in the emission from the whole disc or that smaller, variable sources were present, perhaps associated with active regions and sunspot groups.

The poor angular resolution of the radio telescope (a few degrees) made it impossible to distinguish between these two possibilities. However, an opportunity to address the question offered itself on 23 November, 1946, when an eclipse of the Sun occurred in the Ottawa area.



The actual recording of the radio emission during that eclipse is shown in this Figure.

The observation showed convincing proof that strong contributions to the total emission at 10.7cm originated in the vicinity of sunspots. The eclipse record shows a strong dip in signal strength after 11:40 local time, when the Moon covered a large sunspot on the solar disc.

Covington then showed that the 10.7cm Solar Flux correlates with indices of solar activity such as sunspot number and total sunspot area, with the advantage over those indices that the measurements are completely objective, and can be made under almost any weather conditions. Since it is closely correlated with magnetic activity, it correlates closely with other activity indices and, since magnetic activity modulates the Sun's energy output, with solar irradiance.

The emission Covington had found is now known as the *Slowly-Varying* or S-component of solar radio emission. It was subsequently established, through both observation and theory, that the best wavelength to observe this component of solar radio emission is around 10cm. That Covington decided to make observations at 10.7cm wavelength was decided his using radar components designed to operate at that wavelength. The choice had nothing whatsoever to do with astronomical considerations, and must count as one of the more significant coincidences in astronomy.

The 10.7cm Solar Flux is currently one of the best indices of solar activity we have. It now forms a consistent, uninterrupted database covering more than 50 years. Only sunspot number counts cover a longer period, going back to at least the 17th Century. However, these data are subject to subjective effects in observation and evaluation, and are affected by the weather.

Between 1946 and 1990, the measurements were made in the Ottawa area. In 1990, following the closure of the last good observing site in the area, the programme was relocated to the Dominion Radio Astrophysical Observatory, where it will be for the foreseeable future.

Regenerative Braking *Creating Energy*

As mentioned earlier, a conventional braking system's disc and drum brakes use friction to slow and stop modern cars. However, most hybrid and electric vehicles use regenerative brakes due to the added benefit of recharging electric batteries.

Vehicles with regenerative brakes achieve braking by driving the motor in reverse. As the driver steps on the brake pedal, the vehicle's electric motor is placed in reverse mode, causing it to run backwards. This operation not only slows the car's wheels, but also acts as an electric generator for the car. The reverse motion produces electricity that feeds into the car's battery. Hybrid and electric vehicles also have friction brakes that act as a backup system when the regenerative braking is not supplying enough power to stop the vehicle.

Reverse motor motion can be achieved by using the vehicle's own momentum. The electronic circuitry and the car's onboard computer determine when to use the conventional frictional brake system or whether to put the motor into reverse. A slight reduction in the car's momentum, determined by the driver's force on the pedal, causes the vehicle's electronics to activate the regenerative brakes and place the motor in reverse. In contrast, if the vehicle needs to come to a quick stop, to avoid a collision for example, the conventional brakes will be engaged.

Electric street cars and, of course, trains have been using this method for ever. I remember this from the time a was a "little boy", which was quite a while ago. (Ed.)

Driverless Car 12-2015

Not at Fault

Turns out, though, their accident rates are twice as high as for regular cars, according to a [study](#) by the University of Michigan's Transportation Research Institute in Ann Arbor, Michigan. Driverless vehicles have never been at fault, the study found: They're usually **hit from behind** in slow-speed crashes by inattentive or aggressive humans **unaccustomed to machine motorists that always follow the rules** and proceed with caution.

"It's a dilemma that needs to be addressed," Rajkumar said.

[News]



A Round About. No Redlight Crossing

Beacon List by Bob, K8TQK (that I copy from EM89je).

Wd9bga/b 144.296 en53ba 426 mi. in southern WI.

Wd4gsm/b 144.286 em86 185 mi. near the TN border, also: Wd4gsm/b 432.345,

Wa3tts/b 144.301 en90xn 193mi. near Pitsburg, also: Wa3tts/b 432.322,

Wa4zko/b 144.276 em78rp 81mi. sw of Cincy.

Ve3tfu/b 222.055 en93vd 314 mi. near Toronto, also Ve3tfu/b 1296.325,

W9sr/b 222.068 en70iq near FortWayne

K8TQK's station setup by band:

6m Kenwood, IF DEMI transverter, 500 W, 1x 7 ele ant.

2m Kenwood, IF Demi transverter, WA6PQL PA 750 W, SSB Preamp, 2x 5wls

222 Kenwood, IF Demi transverter, PA 400 W using PA 6155 amp, 2x 7wl, SSB Preamp

432 Yaesu 736R If 450 wtts using a WA6PQL amp 33 ele ant SSB Preamp

902 Yaesu 736R If with a Demi transverter, 100 wtts 47ele looper

1296 Yaesu 736R If with a Demi amp 2x 55ele loopers SSB Preamp

The following bands are tower mounted

2.3 Yaesu 736R IF Demi transverter, 80 wtts 76 ele looper

3.4 Yaesu 736R If Demi transverter, 40 wtts 45 ele looper

5.7 Yaesu 736R If Demi transverter, 10 wtts 1m dish

10 GHz Yaesu 736R IF with Demi transverter 2W, 1m dish

Western Michigan List

VHF/UHF/SHF Beacon List - KF8QL

KB9NK/B	28.285 EN76hp	MI Upper Penn
K8TB/B	50.065 EN63	Holland
WD9BGA	144.297 EN53ba	?
K8MM/B	144.295 EN83fa	Davison, MI
Future?	222	
W8GVK/B	432.299 EN63	Holland, MI
KF8QL/B	902/903 EN72et	KF8QL to install 6/2016
KF8QL/B	1296.301 EN72et	Grand Rapids, MI
KF8QL/B	2304.308 EN72et	Grand Rapids, MI
KF8QL/B	5760.3 EN72et	Grand Rapids, MI
KF8QL/B	10396.86 EN72et	Grand Rapids, MI
KF8QL/B	24G EN72et	NE8I loaned, install planned 6/2016

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 learnings 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, K15WL

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 Long range tropospheric propagation has long been a subject of interest for amateur operators in the VHF/UHF frequencies spectrum. Extreme distances of 500 miles and more at amateur power levels are possible with amazing regularity. In the late 1950's experiments from Cheyenne Mountain near Colorado Springs were performed with receiver sites at 150, 400 miles and 600 miles from the transmitting site. This research indicated that frequencies from 100-1000 MHz. could be propagated at extreme distances given enough power and large enough antennas.

Cary, NCHow to Work Long Distance Paths for 1.2 GHz Lauren Libby, W0LD

Long range tropospheric propagation has long been a subject of interest for amateur operators in the VHF/UHF frequencies spectrum. Extreme distances of 500 miles and more at amateur power levels are possible with amazing regularity. In the late 1950's experiments from Cheyenne Mountain near Colorado Springs were performed with receiver sites at 150, 400 miles and 600 miles from the transmitting site. This research indicated that frequencies from 100-1000 MHz. could be propagated at extreme distances given enough power and large enough antennas.

This presentation will illustrate the necessary requirements for regular 300-500 mile QSO's on 1.2 GHz. It will also illustrate extreme distances at 2 meters over water paths. It will enable the listeners to calculate the limits of communications given station parameters. In short, the talk will cause the casual VHF/UHF operator to explore extending the capabilities of existing stations.

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.