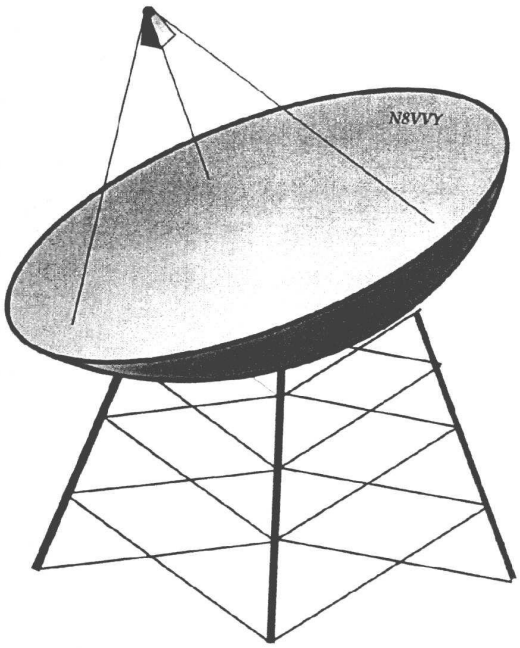
Meeting Fri 25 June, no July Mtg, Picnic/Measurements 28 Aug.

June/July 2010

ANOMALOUS PROPAGATION

Newsletter: **The Midwest VHF / UHF Society**



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MIDWEST VHF-UHF SOCIETY

Vol. 24 No. 6 www.mvus.org June/July 2010

June Meeting Fri 25st (7PM)
at the Hometown Buffet near SR 725 and Yankee Rd. in Centerville
No July Mtg (Central States Conf),
MVUS Picnic/Measurements: Sat 28 Aug at Daun's Place nr Wilmington, OH

MVUS Sunday Net at 13:30 UT (currently 9:30 AM local time, DST).
The net frequencies are primarily 144.280 Mc and 28.960 Mc.

Contents

Upcoming Events:

Central States Conf. (CSVHFS) …Thu –Sun 22-25 July
In St Louis, MO

MVUS Picnic & Meassurements At Daun, N8ASB's Place
Details follow in the August Newsletter

TAPR Digital Communications Conference
September 24-26 Portland, Oregon

Mid-Atlantic States VHF Conf. Sat 25 September
Montgomeryville, PA

Don't miss the "mouse story" on page7!

DE N8ZM

Wasn't Hamvention great this year? Great weather, great forums, terrific stuff inside and out! It might be hard to beat next year. Everyone I talked with seemed to be finding what they came for. OK, OK, enough cheerleading, but you do have to admit, it was one of the best.

If you missed the balloon launch on Saturday, I hope you caught it later that night on the Channel 7 news. If not, I think this URL still works: http://www.whiotv.com/news/23568979/detail.html

Poor Bill Brown, WB8ELK, who engineered the whole activity, caught a bug of some sort early in the week and had to cancel his trip to Dayton. Fortunately, Doug Loughmiller, W5BL was planning to be here along with several of his fellow balloonists from Texas, and they stepped in at the last minute to pull off a nearly perfect launch. Frankly, I thought it WAS perfect, but if I said that, someone would be more than happy to tell what wasn't perfect about it :-). The winds cooperated nicely so that walking the balloon out of the back door of HARA was a breeze (you had to know I couldn't resist that one!). When released, it went straight up to at least 5000 feet before starting to drift eastward. Bill's predictions of where the balloon would go were quite accurate, and the overfilled orb climbed to 69,000 feet, then popped and came down just west of Columbus as planned to avoid having it drop into downtown or possibly the Port Columbus airport. With the APRS tracking on board, the recovery crew found it within minutes of landing, although minus the bottom payload, which carried the cameras. To date, this package has not been found, but again, thanks to the GPS information transmitted from the balloon, we have a very good idea of where the string broke. The rate of climb jumped significantly just west of South Charleston, so that's where we are looking.

A lot of people were involved in making this project work: Bill and Doug and his friends. Ron Malinowski, N9QGS, who led the recovery effort. Mike Schulsinger, N8QHV, who is still working to find the dropped camera package, and making local law enforcement aware of the nature of the mysterious Styrofoam box from the sky, so that the bomb squad won't try to blow it up. And to all the folks at Hamvention and HARA who gave us permission to do the launch and helped so much with publicity and crowd control.

Next year, we'll do it again, but we're looking for a better knot tie-er.

New at the show this year was the "Discover Homebrew" area. This was the idea of Scott Myers, AC8DE, who served as Inside Exhibits chair this year. Thanks to John Human, Mike Schulsinger, Mike Suhar,and Gerd Schrick MVUS was able to staff our own booth and also keep a watchful eye on the homebrew area. There were about **a dozen participants** over the two days it was open, which, considering the short notice about it is a good sign. One fellow came all the way from New Mexico and spent almost all of the two days in the area. Another fellow had converted an ancient vacuum tube tester from 12AX7 class capabilities to 8877 level stuff. It was suggested that it was the most impressive AND dangerous device that will likely ever be shown there (think 3000 volts on an exposed anode terminal!). There are pictures around somewhere; I'll see that Gerd has them for this issue of Anom Prop. Also, Mike Suhar brought along his transmitter panel from our December and April FMT broadcasts.

Speaking of the latest FMT, Mike, W8RKO, deserves a round of applause for putting W8KSE on the air for the April test. Most of us seemed to be busy with other activities, and Mike simply did what he does best, and made it happen. Thanks!

Most of you know that our good friend and source of project ideas just begging to be over-engineered, John Ackermann, N8UR, is being transferred to Atlanta. John will be all but moved out of Dayton by the end of May, but he has promised (threatened) that he won't be totally gone. E-mail is good, but he told me he will definitely be here for the August picnic. I'm pretty sure we can count on that, as I have his recently acquired Cesium frequency standard warming up at my place, and I know he will want it just as soon as he can get his new lab organized.

John, you have been a major contributor to so much of what MVUS has become in recent years, and there will be a very large void to fill with your absence. You will be missed by everyone here who knows you. Best wishes in your new job and your new home.

With that, just a reminder that we will NOT have an MVUS meeting this month, mainly because I'm still tired from Hamvention and it's a holiday weekend.

See you all in June! Tom, N8ZM.

2010 SVHFS Conference Report - Morehead, KY

by Bob Lear, W4ZST, Conference Chair

For our 14th annual conference we ventured to a new Fourth call area state and a new type of venue. The trip to Kentucky and Morehead State University was another great success for SVHFS. Thanks so much to our hosts Jeff Kruth WA3ZKR and the Morehead State Space Science Center for making us feel welcome and supplying such a great facility.

The conference kicked off Thursday afternoon with an open house get-together at Jeff and Denise's home in Morehead. Everyone greatly enjoyed seeing what has to be one of the greatest collections of 'Good Stuff' ever assembled by one man. It was an in-house surplus tour. There were some sales going on, many radio stories being told, the 10GHz guys were set up in the yard testing their gear and making Q's, along with inspecting and listening to the N4NW beacon that Dave brought along. Hot Dogs, Hamburgers, Choice Cold Beverages and more tales swapped into the evening on the deck. Thanks again to Denise and Jeff for putting on a great time for all. Jeff estimates there were at least 50 hams there for the afternoon and evening.

Friday morning saw rain upsetting the outdoor antenna range, but Jeff has a large unfinished room in the Space Science Center that will become a clean room, but big enough for a basketball court and was successfully used for the indoor antenna range. Al Tirevold WA0HQQ ran the range with several volunteers. Twenty Three antennas were tested and the results are posted on the SVHFS web page. The morning NF testing went well and was set up in one of the nice student labs in the SSC building. Charles K4CSO, Pete WA2ODO and Gary W2ZV made the measurements on 63 pre-amps with two instruments, finishing before lunch. The NF results are also posted on the web page. The Antenna Range and NF equipment was supplied by Agilent. Thanks to Agilent, Jeff Seely and Mike Stipick for the great gear they arranged for us to use.

We had all 60 pre-registrants show up and 14 more at the door for an excellent turn-out. There were tours of the SSC building and facilities and a tour of the 21m RadioTelescope on campus during the day Friday. The control room is on the second floor of the SSC and looks up to the dish on top of the hill which is remote controlled. I was envious of the control room, having just remodeled my own shack and finding out I have fallen short of one that Captain Picard would feel at home in! Very impressive facilities for the Space Sciences program there.

The presentations started at 1PM Friday in the Star Theater/Planetarium in the SSC. A nice facility for the conference with excellent comfy seats and IMAX like A/V equipment. A program schedule and table of contents of the proceedings are on the web page. This years proceedings were on CD-ROM rather than printed. At the annual meeting after the presentations, several items were discussed by the group and the BOD election was held. Most were re-elected and the list is on the web page. Vendors were set up in the large 'clean room' area on both Friday and Saturday. Thanks to them for showing and selling their wares during the conference. A list of vendors present is also on the web page.

The Friday night flea market was held at the Hampton Inn, our HQ hotel for the conference. Many items changed hands and the room doubled as our hospitality suite for both Friday and Saturday nights. A good time was had by all with one highlight of the flea market being a dead mouse found in the W8ULC offerings. That provoked much conversation and the mouse went home with another attendee! Just goes to show that pretty much anything can change hands at a ham flea market!

The annual BOD meeting was held Friday night with officers elected. Our new President is Charles Osborne K4CSO and our new VP is Tom Wright N4HN. The Secretary Chuck Hoover K0VXM and Treasurer Brian McCarthy NX9O continue. Several conference related items were discussed in the BOD meeting and all committee positions for next years conference were filled. Steve Kostro N2CEI and Robin Midgett K4IDC will be next year's Technical Program co-Chairmen. The complete committee list will be posted on the web page. SVHFS will make monetary donations to the the ARRL Frequency Defense Fund and AMSAT as well as continue to help with funding for beacons in the SE area.

The Saturday sessions went off without a hitch and were enjoyed by all attending. Thank you to all our program presenters who came forward with papers for the conference. I know they were enjoyed by all attending and much knowledge was transferred. A Planetarium show about the space race from Sputnik to the Moon landings was given after the presentations ended. Thanks to Jeff's volunteers and students for their help in the SSC. A few items were auctioned off with proceeds going to the SVHFS treasury.

The banquet was Saturday night with 76 folks enjoying Roast Beef, Chicken, Pork loin, salad, vegetables and dessert. Thanks to the campus caterers, ARAMark for putting on a great meal for us. The blessing was given by Joe Lynch N4CL, we had our excellent meal and later had announcements about future conferences, NF and PreAmp competition winners and winners of the Fall Sprints Our banquet speaker was MSU Professor Ben Malphrus KJ4HVE. He talked about the development of the SSC and the great commitment that the state of Kentucky is making in Space Sciences and Satellites like the cubesats and others. Ben's vision is responsible for the new SSC building and programs. He is the head of the Space Sciences department and director of the SSC. Thanks to Ben, MSU and the SSC for the conference facilities. We had plenty of door prizes, enough for all attending to go to the table to pick one. Bob W4ZST and Janis K4ATS drew the tickets and announced the numbers. Thanks to all the prize donors and especially DEMI for their usual great donations and Yaesu for an FT-857 transceiver. A list of donors will be posted on the web page.

We retired to the Hampton Inn in a rainstorm for the Saturday night hospitality suite. Thanks to all who donated for the hospitality suite where we had the traditional SVHFS Texas Margaritas and plenty of other refreshments. A very good turnout and good time. Thanks to Tom N4HN our hospitality suite chairman for handling things.

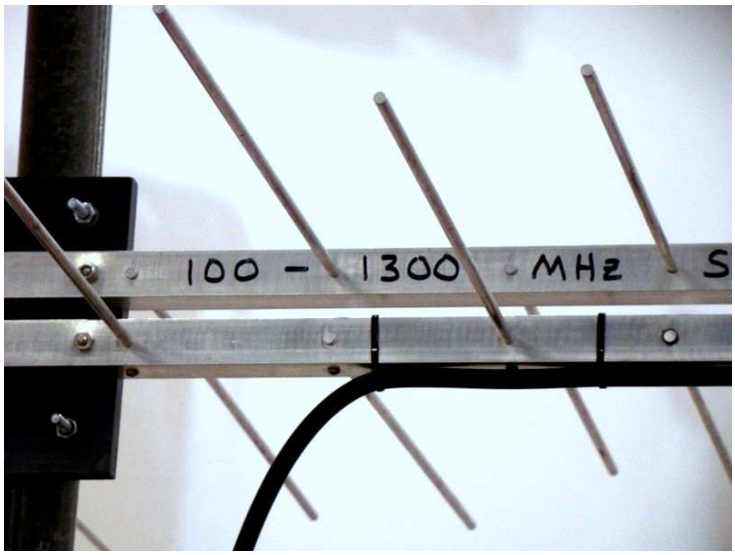
Thanks to all who attended and all the volunteers that make a conference happen. We had a lot of first time attendees this year from the Midwest states and we thank them for coming and hope that they will continue to join us in the future. I think the 8 and 9 calls outnumbered the 4 calls this year.

Make plans to join us next year in Huntsville AL for a repeat visit. We had a fine conference there in 2004 and our hosts for the April 29-30, 2011 conference, Ben Lowe K4QF, Jimmy Long W4ZRZ, Craig Compton K4XR, and their friends in Alabama promise another good one. All details about the conference will be posted on www.svhfs.org The 2012 conference will be held in Charlotte NC.

Reprint from the SVHFS Website

Space Science Center

The 60-foot Radio Telescope



Wideband Source Antenna

Indoor Antenna Range (it was raining outside!)

Fleamarket

Banquet MVUS Contingent

SouthEast VHF Society Conference in Morehead, KY, 23/24 April, 2010

2010: Morehead, KY

SVHFS-Conference Antenna Measurements
23/24 April, 2010
Al Tirevold, WA0HQQ

144 MHz

KD4NOQ	HB 3-EL Yagi	4.50
	Total Antennas: 1	Average Gain: 4.50

222 MHz

N4HN	Modified Commercial 16-EL Yagi	12.90
W2CV	HB 8-EL Yagi	8.90
	Total Antennas: 2	Average Gain: 10.90

432 MHz

N4VOS	HB 22-EL Yagi	13.30
W2CV	HB 10-EL Yagi	12.40
W4ZST	HB Double 4-EL Yagi	8.50
KD4NOQ	HB 6-EL Yagi #1	7.90
KD4NOQ	HB 6-EL Yagi #2	5.90
KD4NOQ	HB Double Diamond	5.70
WB8IFM	HB 5-EL Yagi	5.20
	Total Antennas: 7	Average Gain: 8.41

903 MHz

WB8IFM	HB 10-EL Yagi	16.30
KD4NOQ	Commecial 14-EL Yagi	13.20
	Total Antennas: 2	Average Gain: 14.75

1296 MHz

K3MF	HB 23-EL Yagi	15.70
KD4NOQ	HB Can-Tenna #2	10.90
KD4NOQ	HB Can-Tenna #1	10.80
KD4NOQ	Commercial 10-EL Yagi	8.80
KD4NOQ	HB Double-Double Diamond	0.02
	Total Antennas: 5	Average Gain: 9.24

2304 MHz

KD4NOQ	HB Can-Tenna #1	14.60
KD4NOQ	HB Can-Tenna #2	14.30
WA2ODO	Small Slot	13.70
K4OVK	HB Helical Without Cone	11.60
K4OVK	HB Helical With Cone	6.30
WA2ODO	Large Slot	0.00
	Total Antennas: 6	Average Gain: 10.08

Commercial Helical Filters for LOs

Mike Suhar, W8RKO

A critical component for our transponder (70 cm/ 23 cm to 13 cm) oscillators are the filters that select the desired harmonic of the x-tal oscillators. One needed was for 571 Mhz, the other for 735 Mhz. Previously we used stripline filters. I have also done copper pipe filters. These are rather large and I was looking for something smaller, possible available on the market.

Looking in the Digikey catalog I found filters by Toko. If you were buying a million of these filters I am sure Toko would make them exactly to your spec. For ham use in single quantity we have to take what is offered in the catalog. Of course the catalog selection was made without consulting us hams to what we might need. The chance of finding something in stock value that is useful approaches Epsilon.

Much to my surprise I found a helical filter for 734 MHz with a 10 MHz bandwidth. Ok, lucked out on that one. However for 571 the closest I could get was 550 MHz. Could I tune it up to 571? This small two-section filter has tuning screws at the top of the cans. The screws were near the top and it looked like there might not be much left to tune higher. As it turned out I was able to tune up to 571 MHz. Checking the range I came up with: Minimum Fo = 494.1 MHz; Maximum Fo = 586.0 Mhz (Nominal 550 MHz)

I don't recall the published insertion loss but I was looking at about 4dB with a +- 1dB ripple. My test jig was not ideal for grounding the cans, terminating the filter, and making connection to the RG188 Teflon cable so I am sure I introduced some error in the response.

Insertion loss and bandwidth was increasing as I approached the upper limit.

For this filter I was able to pull the frequency about 8% from nominal center but the catalog frequency was already near the top of the range. This would be unknown to the purchaser until after they examined the product.

If you need a filter check the catalog offerings from Digikey and Mouser. You may luck out and find something that might tune to the desired frequency but I would not try to go beyond 8 to 10 percent.

For reference this part was a Toko Helical Filter, # 252HXPK-2736F)

Part number **252HXPK-2736F** (Digikey #TK3307-ND) Frequency 550MHz Center Bandwidth 7MHz Insertion Loss 3.5dB Ripple1.5dB Attenuation at +15 Mhz 20 Db at – 10Mhz 23db Mounting Through Hole Cost ca $ 6.50 (single)	

Solar Panel Efficiency η (Ref: AP 4-10)

Solar Constant (total solar radiation on top of the atmosphere) 1.366 kW/m^2

Attenuation through the atmosphere 50% 683W/m^2

Ottner: 10 kW/75m^2 133W/m^2

Efficiency η 133/683>> 19.5%

Mike, N8QHV, and John, N8VZW, at our Booth


Getting ready for the Balloon Launch

Part of the Arena Indoor Exhibits (228 Exhibitors)


Fleamarket (a total of 2,269 Spaces)


Neat


A well deserved Rest in the Shade

Scenes from the 2010 Dayton HAMVENTION

This and That 6-10

- **Hamvention.** It was a big success. The wx was good, the crowds distributed. Attendance was 19,750 and the exhibitors were happy. Hope you had a good time. Cu next year! Gerd, WB8IFM.

- **End of the Light Bulb**. The conventional light bulb is already phased out in Europe. We in the US have until 2012 to convert to fluorescent, "compact fluorescent" or LEDs thereby reducing substantially the electricity being used for lighting. Oleds, which are even more efficient, could also be used for select applications. Here are typical numbers; Oleds: 102 lumens per watt; fluorescent: 50 to 75 lumens per watt; and incandescents a miserly 15 lumens per Watt. (60W bulb) [Gary.Boas@Photonics.com]

- **108 Years Old.** William Elvis Smith (Kettering) lives life on his terms as he has for more than a century." I asked him when we first met, what his secret to a long life was and he said 'breathing' " said Kevin Kauffman, administrator of the Sanctuary at Wilmington Place. [Debbie Juniewicz]

- **Kiss 2.** The second most important rule is anything which is left out can't break, leak or otherwise cause a problem. When in doubt about the need for a goodie forget it. [Passive Solar Pamphlet]

- **Direction.** The great thing in the world is not so much where we stand, as in what direction we are moving. [Oliver Wendell Holmes]

- **Sunlight.** The 89 petawatts of sunlight reaching the earth's surface is plentiful - almost 6,000 times more than the 15 terawatts of average electrical power consumed by humans. Additionally, solar electric generation has the highest power density (global mean of 170 W/m² among renewable energies. [Wikipedia]

- **A Trip to Lake Como**…Trips to Lake Como (where the names of hotels all sound like expensive puddings)… [Stephen Green, "My Turn", Newsweek, May3-2010]

- **The Big Tent.** There is a reason a circus takes place inside a tent, and it's not to keep you dry when it rains. They want to charge you to watch the big show. [Daniel Lyons, "Fortress Apple", Newsweek, May 3-2010]

- **Encyclopedia Salesman**. Says dad: "We don't need encyclopedias. I have a teenage daughter who knows everything." [Cartoon in the January 29, 1989 Parade Magazine]

- **Advertising**. It says on the label "Pure Heart Seedless Watermelon" (all caps) and then in fine print: "May contain occasional seeds". Sure enough there is a bunch of those. I say one thing though: they are too small to spit out. [Gerd, WB8IFM]

- **Our Dark Universe.** According to our present knowledge of the universe only 5% of it is "our stuff", the rest: 70% is dark energy and 25% is dark matter.

- **Retail Therapy.** A mom brings her 8-year old to gymnastics practice several times a weak and she doesn't like the coach yelling at the children, what should be done? "So, since this is painful for you to watch, my advice is for you is: Drop your son off, go indulge in some retail therapy, and then go pick him up." [John Rosemond / Parenting advice]

- **Our Water.** From all the water on Earth 97% is in the oceans, 2% is in ice and less than 1% is left to be used by humans, who are 2/3 water. "We are not important to water. It's the other way around." [Barbara Kingsolver in the April 2010 issue of National Geographic]

- **Time and Money.** "Time maybe a kind of cosmic currency-a stand-in for other things we value, in much the same way that money is a placeholder that represents items of value in our transactions. Einstein's general theory of relativity conceptually may have wiped away the need for time in physics decades ago, but researchers are only incorporating that fact now." [Marietta Dichristina in Scientific American, June 2010]

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First Class