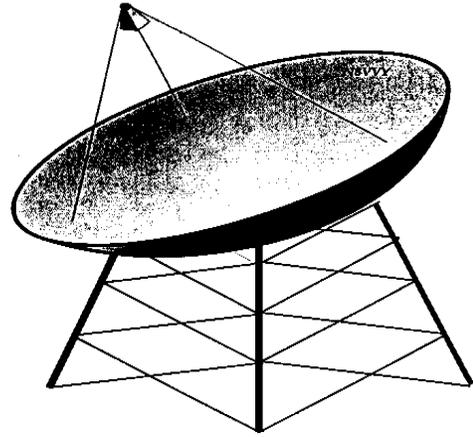


Anomalous Propagation

The home page of

The MIDWEST
VHF-UHF
SOCIETY



Vol. 17 No. 7

September 2003

Club Memorial Call W8KSE

10 GHZ Beacon: 10368.750 KA8EDE EM89ap OH Xenia (50 mW 16 slot waveguide at 89°)

Our **September Meeting** is on Fri. 26th at 7:30 PM at the Perkins Restaurant at SR 73 and I-75.

The Midwest VHF/UHF Society brings together hams with strong interest in building and experimenting at the higher frequencies including microwaves & light. The society provides exchange of ideas with monthly meetings and a technically oriented newsletter (called Anomalous Propagation). Noise figure and antenna measurements are performed at the Hamvention or on demand. Building projects are undertaken and surplus or special parts are procured. The society has presently 90 members, most from the tristate area (OH,KY,IN) but also from other parts of the US. Why don't you join us, membership is \$ 8.- per year (foreign \$ 15.-). Mail your check (made out to Gerd Schrick) with name/call, address & telephone number to: Gerd Schrick, WB8IFM, 4741 Harlou Dr. Dayton OH 45432.

The Society meetings are on the 4th Friday of the month at 7pm except for May, July, and December when the Hamvention, Central States Convention and the Christmas Party take their place. The meetings are held at the Perkins restaurant located at the NE-corner of I-75 SR 73.

The Newsletter appears monthly except for May, July and December.

Officers for 2002/2003: President Tom Holmes, N8ZM (937) 667-5990

Secretary Steve Coy, K8UD (937) 426-6085

Treasurer Gerd Schrick, WB8IFM (937) 253-3993



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Silent Keys

With great sadness we report the passing of these fellow hams:

Earl F. Price, W8MGJ (81)
Harold Parshall, N8FRP (73)
Dave Bostador, N8NQS (53)

Upcoming:

The Mid-Atlantic States VHF Conference (Packrats)

Saturday October 11, 2003 / Hamarama (Fleamarket) Sunday !

Details on Page 10

Lloyd's Plans [NE8I]

October 4 uWAD I plan to be active from Lake Erie Metropark.
November 1 uWAD. ???? Guess Lake Erie Metropark. And
Dec 4 uWAD ???? Guess Lake Erie Metropark.

Additionally, I may do some other sked work with other stations from time to time. Being retired, I am generally available. My 10 GHz rover, consists of a DB6NT system, 16W amp and a 2-foot (66 CM) dish. On 24 GHz DB6NT 1W and a 2 foot (66 CM) dish. On 47 GHz a DB6NT and a 1foot (33CM) dish. 5.7 GHz a DB6NT 16W and a 2-foot (66CM) dish. I have some loaner stations available.

De N8ZM

Elsewhere in this issue of Anom Prop, Gerd will have a report and pictures from the **antenna measurements** and **the picnic**, so I won't go into this, but in my humble opinion, we had another successful event. Not as large a group as in the past, but we had a great time and plenty of eats, and a lot of good discussions. Daun's antenna spinner worked very well, and the Rubidium frequency standard, courtesy of N8UR and WB8GXB, provided for some interesting brainstorming. The weather even cooperated one more time to make for a very pleasant day in the country. Now if we could just find a cure for those annoying little bees!

So far, we have received little feedback from you about the **electronic distribution** of Anom Prop, but then I realized that we haven't really started to do it yet. Some of the current edition is already being posted on our web site, courtesy of Steve, K8UD. Some organizations, rather than e-mail out their newsletters, simply e-mail a notification to the subscribers announcing that the new edition is available on the web. Then they can either read it as a set of web pages, or download it. This cuts down on the size of e-mails and the attendant fears of viruses that plague all of us, and allows you to read and/or print the newsletter at your leisure. An on-line archive of back issues could also be kept, so that, if you keep every issue in your files like me, your physical storage space requirements could be reducing. This would do a lot to put me in better graces with my better half, who fails to see the value in having every magazine and newsletter I have ever received stored away for potential future use. I know that she has a sense of humor about it because she told me my behavior is laughable! Where was I? Oh yeah, the electronic distribution of Anom Prop. Anyway, I think we should try to do something along those lines. We do want to do it in the way that best serves the membership, so if you do have any thoughts or ideas on the matter, please let me know so that we can get it close to right the first time.

The ARRL **September VHF contest** was this past weekend, and although there weren't any great band openings like there were in January and June, the N8ZM contest team made a very respectable showing, once again. I know we worked several MVUS members, and we thank you for taking the time to participate. If you did get on, please send your log into the League, via the Cabrillo format, so that the statistics for participation better reflect the activity. If you need help with getting your log into the electronic filing format, contact me and I will be glad to help you.

Concerning the 3 cm band, I am looking for some pieces to finish out the GPS locked beacon for that band. In particular, we need a 10 GHz oscillator brick that locks to a 100 MHz (approximately) input reference. Also, I am looking for something in a horizontally polarized omni directional antenna. A 1-watt or higher power amp would be a nice touch as well. Although MVUS is not exactly flush with cash, we are willing to pay a fair price for these items. If someone knows of a good antenna design that could be readily constructed and can be made weatherproof, that info would be quite useful. Once we get this on the air, I'd like to see us follow through on our plan for other microwave band beacons as well.

Well, as of this point in time, my work schedule looks promising for me to make the September 26th meeting. I hope yours does too.
73, Tom, N8ZM

Editor's Comments.

Our e-mail database is not yet compatible with our other database, which means we have no good method to know who doesn't need (or even want) the "paper bulletin". So for the time being, we are "playing it by ear" sending everybody on our e-mail list the electronic copy! A handful of members, who have indicated so, will also not receive the paper copy. We are using the "word format" which is relatively easy to manipulate and fairly low in bytes, which includes B+W pictures. You can, of course, print the 10 pages on your own printer at somewhat higher cost than we would pay for the Xerox. And we save a lot on postage. Naturally this should reflect on the yearly membership dues. I feel these could be cut in half for those who elect not to get the paper copy copy. This leaves enough money to keep the Organization going as before supporting activities enumerated in our charter. Steve & Gerd.

This and That 9-03

- **Japanese Stations on AO-40.** Taya, JS1XGS (JA0IO), examining the AO-40 logs from 18 active JA hams, found a total of 209 different calls (including special stations). [Forum, AMSAT-DL-BB]
- **Biggest Rocket.** The Saturn 5 was our biggest rocket with some impressive facts. 15 of this three-stage rocket were built, 13 were launched and two remain as museum pieces. The rocket stood 363 feet and weighed 3000 tons. It could lift 285,000 pounds into orbit or 100,000 pounds to the moon.
- **Car of the Future.** Transportation on the planet needs improvement. Today there are more than six billion people of which only 12% have powered vehicles. The math is sobering. What happens when even a fraction of the other 88% become mobilized? [Robert C. Stempel, Chairman, Energy Conversation Devices]
- **Spam and Viruses.** "In the pure protocol of e-mail, you could read your messages without fear of downloading viruses, however, vendors like Microsoft have decided to enhance that by giving you automatic HTML in your e-mail, so you can download things you don't want without knowing it.[Ross Rapoport]
- **Hackers Paradise.** Software by Microsoft is riddled with security holes and therefore easier to exploit than other operating systems, such as Macintosh or Linux. [Bob Keefe]
- **Blackouts.** Power outages are not that uncommon, but you don't hear much about them unless New York is in it! Here is a good description what happened in a storm on July 22 in Memphis....The storm left 7 people dead and cut power to 320,000 homes and businesses. For nearly two weeks, extension cords crisscrossed streets, generators ran at full bore, and residents got by with flashlights and splashes of water on their face.... [Woody Baird]
- **More on Blackouts.** Comment of a young New York girl to an interviewer: "We should do this every year, my whole family just sat around and did nothing and talked. It was cool." [Gregory Ramey]
- **About Inventions .** "We should be glad of an opportunity to serve others by any invention of ours, and this we should do freely and generously." [Benjamin Franklin]
- **Checking for Your Mail.** This from a time a hundred years ago when the automobile was new and about to replace the horse and buggy: "We feel it in here. Man used to come for his mail once a week. Now he comes every day, sometimes twice a day. He just can't wait for his damn catalogue. Running around, always running around." [The King City Postmaster in "East of Eden" by Steinbeck]
- **Heisenberg in Economics.** "Uncertainty is not just an important feature of the monetary policy landscape, it is the **defining characteristic** of that landscape." [Mr. Greenspan]
- **Troublemaker.** ...Human beings are the biggest troublemakers. That is clear. I imagine if there were no longer any humans on the planet, the planet itself would be safer! Certainly millions of fish, chicken, and other small animals might enjoy some sort of genuine liberation. [Dalai Lama]
- **Winged Migration.** This is a phantastic movie all about the migration of birds. Otto Lilienthal observed flying birds, built and flew gliders inspired by the birds. The book he wrote in turn inspired the Wright brothers to get involved in flying machines. If the airplane hadn't been invented by now the movie certainly would get people thinking. 450 people (5 teams) among those 17 pilots and 14 cameramen worked on the movie. Planes, gliders, helicopters and balloons were used.

MVUS Picnic, 2003

This year's picnic and measurement session was scheduled for Sat, Aug 9 and the newsletter and e-mails were sent out Tuesday, so there was not much time to plan ahead.

I had packed my good old '78 VW-van all morning with the test antennas and stuff and was caught by surprise when I checked the time and it was approaching noon. We had agreed on a 12 o'clock start with the picnic at 4, assuming one or two guys would actually show up by that time.

I got there shortly before 1 PM and found almost everybody present. Not only that but the two canapés were set up, chairs and tables ready, and the equipment plugged in ready to go. We just needed my antennas.

Checking what antennas were there to be measured, another surprise, there were hardly any. We did have a few small 432 MHz yagis and a bbq type 2.4 GHz AO-40 antenna, however.

Quickly we set up the 70 cm source antenna at 5'8" height and an 80' range. We just used a piece of pipe, pounded in the ground for the support of a ten-foot mast. On the test end, Daun, N8ASB, had set up a tripod with mast rotator and a test antenna (at about 8'). We were ready to take pattern measurements.

This is something that Daun has been working on in his new Consulting Business and he was eager to "give it a field test". I will let him describe some of the details in a separate article below.

Taking measurements every 3 degrees and at half a dozen different frequencies, though automated, still takes a long time. Something to get used to. Daun was looking at the data as they were plotted on a laptop PC. Unfortunate, in the bright light under the white roof of the tent, it was rather difficult to see anything. To overcome this, Daun sent the data (wireless!) to a printer in the house and got the plot on a nice white sheet of paper.

Right from the start the patterns had a very coarse, zig zag type, appearance, not the way we were expecting it. Immediately, reflections were suspected as a probable cause. There were cars, of course, the tents with the equipment and the hams, the house, a big metallic barn and various trees. I didn't dismiss this idea, but cautioned there might be numerous "other"

reasons to consider and: let's take more data and maybe it will come to us. I also asked Daun, whether he was operating with the right power levels and had sufficient dynamic range.

By 3:30 PM I counted 14 hams and but there were only 3 XYLs and NO harmonics.

As in years past, Barbara, N8EYW, did an good job of purchasing food, drink and ice, and Tom, N8ZM, did the usual honors of getting the burgers and brats fried without hurting himself or (what would be worse) burning the burgers! Since it was not so hot (estimate was 83F), and we had a bunch of coolers, we didn't use too much ice as in previous years, although we splurged with the other supplies expecting a bigger crowd.

Back to the measurements. Daun continued to look intensely at the developing plots on the dim laptop screen when he suddenly exclaimed: "Lets check the cables!" There were four cables in use Three made up a length of 118 feet, like 88+15+15. Low and behold, one of the 15' cables had a center pin missing in one connector. That reminded me of a case where I had a center pin in a hard-line connector leaving just a tiny gap with enough capacity to fool me for several months before I found it. A similar case happened here: The potent signal fed enough energy through the connection to give us readings, but there was a tremendous SWR on the line, which totally falsified our data.

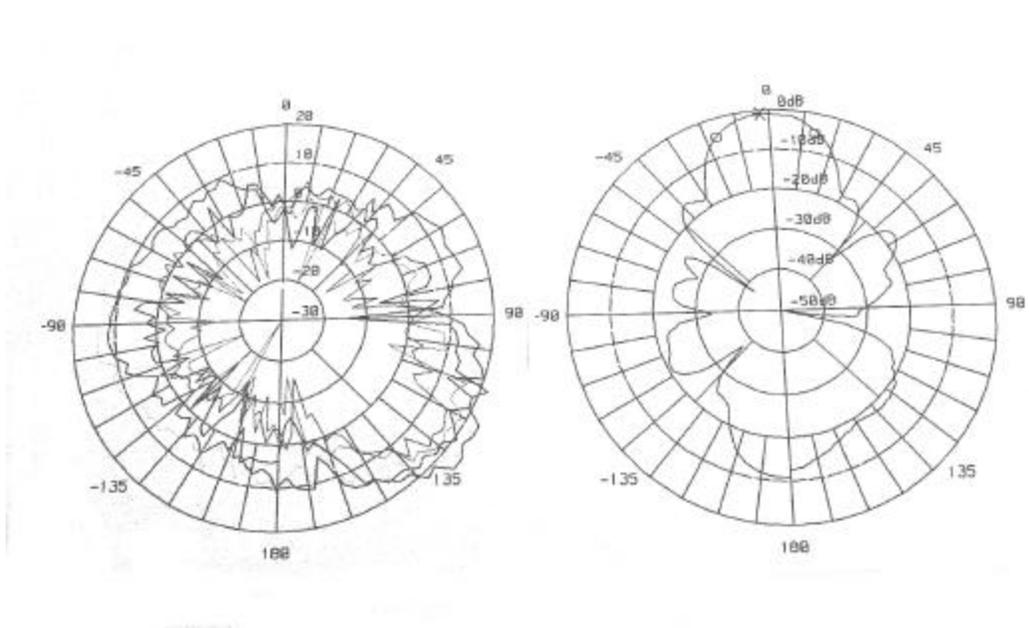
Once we had this problem licked, the patterns turned out to be more like you find them "in the book". Below we reprint a few samples.

In the meantime, Tom, N8ZM, was checking out a Drake down-converter for AO-40 (K8UD), and a couple of 10 GHz converted "white boxes" (WB8GXB, N8QOD).

Finally, we converted the antenna range to 2.4 GHz and ran patterns for a BBQ dish (K8UD). We also tried to get some gain figures, which is more difficult to do at microwaves because of uncontrolled reflections from the ground. Anyway, around 6:15 PM dark clouds started gathering and we commenced tearing things down when suddenly Daun lost his signal, somebody

had removed the source antenna. At that point he was taking data at one-degree intervals, he got about 30% of a plot done.

By 6:45 PM all was taken down and packed, I got to help take the canopies down, a real simple procedure, since all stays in one piece. We had another successful measurement session and picnic. [WB8IFM]



(Left)Several tries with a BAD connector (Right)Now, this looks better. 70 cm Yagi



Left to right: WB8IFM, Gerd, N8VZW, John (partially hidden), KA8ABR, Mike, N8QOD, Joe, ND8I, Bruce, N8ASB, Daun, N8UR, John, N8ZM, Tom, KB8ZR, Mark, WB8GXB, Mike, K8UD, Steve, W9AYA, Bill, K4EFD, Brad, not in picture: W9NBS, Tom, KB8UUT, Ron and W2RG, Rich. XYLs: Karen, N8CXS, Barbara, N8EYW, & Traudl (WB8IFM)

MVUS Picnic, August, 2003

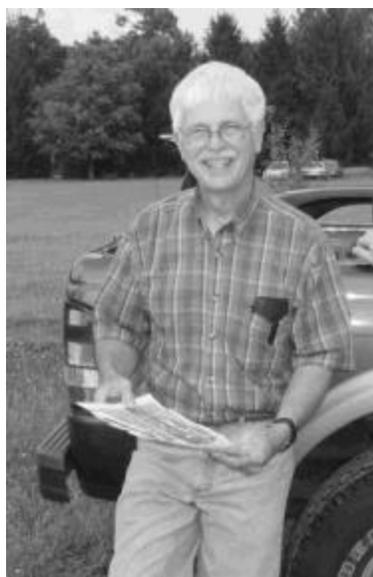
The Discussion

From the left; Brad, K4EFD; John, N8VZW;

Bill, W9AYA; Bruce, ND8I



Mike, KA8ABR: "What is the problem?"



Problem solved! Bill, W9AYA.

Tom, W9NBS, and Steve, K8UD taking it easy



Our "high priced" Equipment.

Antenna Measurements at the 2003 AMSAT-UK Colloquium

From G4DDK, Sam's Microwave Page

Antenna gain measurements at 2.4GHz. These results were measured using an open air test range similar to those used in the USA at CS VHF and Microwave Update. All results are based on reference measurements against a known gain reference horn. This produces linear polarization. Circular gain figures are calculated taking the average gain for horizontal and vertical gain and adding 3dB. Gain should be accurate to within approximately +/-0.5dB. Axial ratio (circularity) is a measure of how circular the pattern was from each antenna. You should not get too hung up on this as the loss in sensitivity of signals from a circularly polarized transmission from, say, AO40 does not deteriorate as rapidly as you might think.

Call sign	Antenna Type	Measured @ 2.4G	Axial Ratio / Circularity
K5OE	Dual band patch on 18 inch offset dish	17 dBic	3dB
G8AWB	Patch mounted in round cup	8.5 dBic	4dB
G8AWB	Square patch	8.0 dBic	10dB
DH2VA	4 phased K3TZ patches on circular base	8.5 dBic	9dB
G3WFK	9 turn helix	13.75 dBic	0.5dB
DF2ZK	W0LMD dual band patch	8.5 dBic	1dB
G3VZV	Wimo dish feed (enclosed helix?)	11dBic	0dB - Equal V + H
DH2VA	Single K3TZ square patch on circular base	8.5 dBic	9dB
G3LYP	Horn with rectangular wave guide feed	15.5 dBi	Linear polarization

Many thanks to all those who brought antennas and preamps to measure. Without your participation there would have been no measurements, as David, G0MRF and I would have had nothing to measure! Sam, G4DDK

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"THE COMPUTER SAYS I NEED TO UPGRADE MY BRAIN
TO BE COMPATIBLE WITH ITS NEW SOFTWARE."

The Mid-Atlantic States VHF Conference (Packrats)

Saturday October 11, 2003 / Hamarama (Fleamarket) Sunday !

**Radison, North East
2400 Old Lincoln Hwy. @ US Rt. 1
Trevose, PA 19503-6894**

Hotel Reservations 215-638-8300 Call Hotel Direct

**Room Rates: \$99.00 + 9% Tax
Mention Block Code "Pack Rats" for special room rate.
Hotel deadline for room rate is September 22, 2003**

Pack Rat Conference Status:

Make your reservations now for the upcoming Mid Atlantic States VHF Conference. This year the conference will be held at the Radisson, NE located just off of US1 near Exit 28 of the PA Turnpike. We have a block of 30 rooms reserved at a special rate of \$99 per night. The block of rooms and the special rate will expire on September 22nd. The hotel tells me that there is a soccer tournament happening the same weekend as the Conference so the rooms will fill up fast after the 22nd. Call the hotel directly [215-638-8300] to make your reservation. The 800 number does not recognize group activities. Don't forget to mention "Pack Rats" or "Hamarama" to get the group rate.

The list of speakers is not complete but this is what we have scheduled so far:

- 1) K2UYH - Small Station EME
- 2) W3IY - topic to be announced
- 3) W2PED - 47 GHz Filter Design
- 4) N3FTI - LO Lock Circuit Board Design
- 5) PCS Base Station to 2304 PA Conversion
- 6) N1ND - topic to be announced

We also have WA2OMY working the local reps for free stuff to give away at the conference and banquet. Anyone who has ever attended our Conference knows that we always have lots of good prizes. We hope to see everyone in Pennsylvania in a few months. TNX, kb3xg

PS: Everyone that registers by October 3rd will get an additional door prize stub. Get a copy of the form by clicking [here](#), or make up your own form and mail your check or money order to:

Mt. Airy VHF Radio Club
2003 Conference
P.O. Box 682
Hatboro, PA 19040

Name, Call
Address
City, State Zip

2003 Pre-Registration \$20 (No later then 3 October 2003) Admission at the door - \$25