

September Meeting: Friday, the **24th**, at 7:30 PM at the Perkins Restaurant at SR 73 and I-75.

Contents

De N8ZM.....	3
This and That.....	4
MVUS Picnic and Antenna Measurements.....	5
Hamvention Report.....	6
New HP Transistors.....	7
Helical Antenna for P3d.....	7
Wireless LAN Specs.....	9
Error Correction / 13 CM Preamp from last month.....	9
23 rd Midatlantic States VHF Conference.....	10

Upcoming Events

Mid-Atlantic States VHF Conference (Packrats) Sat. Oct 2 (see backpage)

AMSAT Space Symposium at San Diego Oct. 8 to 10 Web: www.AMSAT.org
Hanalei Hotel
E-mail contact: KO6BT@AMSAT.org

Microwave Update at Plano TX Oct. 21-23
Registration: Al Ward, W5LUA 2306 Forest Grove Est. Rd. Allen Tx 75002 Tel 972-562-6018

British Microwave Handbooks For Sale.

The club has a few sets of the 3 volume British Microwave Handbook, edited by M.W. Dixon, G3PFR, for sale to its members. Cost is \$ 50.- + \$ 5.- for shipping. Contact Gerd, WB8IFM.

Well, another summer is almost gone..

And as I write this column, late as usual, I am once again struck by the fact that so many of my summer radio projects are unfinished, or even unstarted. Frustrating, very frustrating. Probably shouldn't complain too much, though, cause if I'd really wanted them done, they would be. Must admit that one or two that I wanted to see completed almost made it, but still need a few hours to finish them up. Seems like every project becomes a major effort, taking more time than it ought to, with no way to speed things up. (Geez, what a whiner!) Well, fall is here and maybe I can get a few more done before the snow flies. Have I got you sufficiently depressed now?

Well cheer up a little and remember the fun we had at the picnic, measuring antennas, eating too much, and trying to trick Keith, KB1SF, into spilling the beans on when and where P3D will be launched. Of course, he couldn't be had, at least not by someone as lacking in subtlety as I am, but we did get a fine report on the latest status of many other aspects of the project, which just makes the waiting more difficult. This bird is going to offer a lot of microwave capability, and I expect to see a lot of MVUS members active on it.

For those who might be interested in working P3D on S band (2.4 GHz), or other terrestrial work at that wavelength, the club has obtained a reasonable number of reflector type antennas that were used for wireless cable TV service. Thanks to Fred, W8LLY, for the tip on these. Some are approximately 30" parabolic dishes, while most are parabolic reflector segments. All are wire frame construction, so gain on other ham bands may not be good. These are claimed to range from 15 to 23 dBi from 2.1 to 2.4 GHz, depending on size. Unfortunatley, not all of them have the feed included, but we have enough that we can determine the critical dimensions. Depending on the size and condition, I figure they are worth \$3 to \$10 each. They will easily mount on a vertical or horizontal 1-1/2" pipe. There are also a couple of voltage tuned downconverters that will mix the 2.4 GHZ signals down to the 200-400 MHz range. Call me if you are interested, I'll bring a few samples to the meeting.

Speaking of the meeting, it will be this Friday, the 24th, at the old standby, Perkins Restaurant on SR 73 at I-75. The entertainment will be potluck, although I have dug up a couple of ideas for experiments that we can discuss.

See you there.

de N8ZM.

This and That 9-99

- **High Speed Data.** Within a decade, most people in developed countries will have access to Internet connections that are tens if not hundreds of times faster than the ones in common use today. Although that development may not sound exactly earth-shaking, it will in fact herald an entirely new stage in the evolution of that global network. [David D. Clark in Scientific American (10-99)]
- **Father of the H-Bomb.** Now 93 years old, he had a stroke a few years ago. At the time, a nurse quizzed him to probe his lucidity: "Are you the famous Edward Teller?" "No", he snapped, "I'm the *infamous* Edward Teller." [Scientific American]
- **How Much in Common.** A mouse has 85% of its DNA in common with a human, for a chimpanzee it is 98% and for every other human it is 99.9%. [Museum of Discovery, San Jose, CA]
- **Red Snapper.** Red is absorbed the most by seawater while blue penetrates the furthest. So when you want to hide dress with red. And when you want to see use blue light! Obviously the red snapper doesn't want to be seen. [Aquarium, Monterey, CA]
- **How Bad were the Perseids of '99.** They were so bad that the number of unsuccessful schedules exceeded the number of completions by factor of five. Visually observed "sporadic" meteors exceeded the number of Perseid meteors. The peak was simultaneous with the null. On the 12th between 16 and 18Z, I checked the calendar to confirm it was not the 10th. Three times. [Ed, N6YM in "The VHF Journal" Rochester, NY]
- **San Francisco Summer.** In SF we do summer, but we don't overdo it. A couple of days with lukewarm sun, then on to fall. [Scott Ostler, SF Examiner]
- **Conspicuous Consumption.** SF Bay area highways are jammed with expensive cars, exorbitant sums are paid for tiny houses, and cell phones and palm pilots are brandished by a flush population obsessed with the movement of electrons. [Jack Boulware in "Bay Insider" 7-28-99]
- **Idiot Boxes.** One wonders: will computers and the Internet be tomorrow's "idiot boxes"? Techies in the (Silicon) valley don't think so. But then, neither did the '40s TV developers.
[Mark Richard Barna' Berkeley, CA]
- **Menu.** A red tail hawk during the span of a year eats: 1069 mice, 98 small birds, 20 gophers, 18 rabbits, 15 squirrels, 15 shrews, 9 game birds, 7 snakes, 4 rats and 2 weasels. Life persists because "Life eats Life."
[Coyote Museum, San Mateo, CA]
- **Amazed.** I am simply amazed to find myself on a ball of rock that swings around an immense spherical fire.
[Alan Watts, Coyote Museum]
- **Educational Toy.** A young mother was looking at a toy for a small child. "Isn't this awful complicated for him?" she asked the salesman. "That, madam," he replied, "is an educational toy, designed to prepare the child for life in to-day's world. Any way he puts it together is wrong." [Compendium]
- **Hardware or Software.** Not much has changed in computers when it comes to a fault. It is either a hardware or a software problem. Often hard to determine which is which. Of the Internet servers that go down and are sent in for hardware repair only 10% actually require it, the rest is in the *goofy* software.
- **Reboot.** The Windows operating system, 13 years old, is still unstable and needs rebooting often. Imagine a car that you'd have to drive on the side of the road every two hours and "reboot".

MVUS Picnic and Antenna Measurements, 8-21-1999

The weather was just about as perfect as it could get. A cool morning, warming up to the low 80thies by sunshine and blue sky and a breeze of fresh air from here and there. No sooner had I arranged various handouts (including magazines and books) on a table so the wind would not blow the pages open, when the wind would change direction; so we held the stuff down with surplus equipment that was there for "show and sell".

The crowd was not as large as in other years (I counted 18) and we only had a handful of antennas to measure. I cannot remember a year when I personally had so many conflicting events. There are numerous conferences, festivals and "family affairs" going on, particularly this time of the year. And, of course, the reason we had the picnic one week "early" was Bruce's wedding date the following Saturday.

Without Bruce the antenna tests would just not be possible, he brings all the "GHz" antennas and some sources. Daun, of course, provides his excellent location in the country and the fb HP- equipment, and I bring the "low frequency" antennas, cables and the masts.

We got started around 10AM and shortly after noon we were ready for measurements that took us right up to picnic time. As usual, the ladies had done a super job arranging all the appetizers and desserts and our fearless leader had the burgers and brats done perfectly. As a bonus we got some excellent corn, which came fresh from the farm. Soon we heard complaints about being "full"...to bad because there was a choice of a wonderful cake, a cherry pie and three kinds of brownies.

Tom, N8ZM, gave a brief speech about club affairs and Keith, KB1SF filled us in on the P3d situation. Looking ahead, he suggested the club might look into building a small "payload" for a future small satellite. This maybe just the right idea after we get through with the present beacon project.

Everybody "behaved" well enough, so we dared ask the hosts to have the event again at their place next year.

Sam, WA8ZDF, brought his complete (compact) 10 GHz station and this being a 10 GHz activity weekend, called "CQ" a couple of times pointing the dish a little skyward. But with no rain clouds about and the lack of stations in the immediate area there was little chance of a contact.

Below are the measurement setup we used and the results.

HP 8753 E Network Analyzer 30 kHz to 6 GHz

150'				
Test			Sources	
2M			70CM	
Call	Antenna	Gain (dBd)	Reference	

Reference	8el, 144"	11.1 dBd	11el, 50"	9 dBd
KB1SF	2el, HB9CV Type	4.1 dBd	KB1SF 7el, 31" Arrow	8 dbd
"	3el, 31"Arrow	6.9 dBd	KB8UHY 10el, 48" (OSCAR)	9 dBd
N8ASB	14el, 182" Hygain	11 dBd	WB8IFM 11el, 60" (Cheap Yagi)	11.1 dBd
KB8UHY	5el, 60" (OSCAR)	8.8 dBd	" 5el, 23" Arrow	7.7 dBd
			N8ASB 19el, 154"	15.2 dBd
			WB8IFM 5el, 20" (Foxhunt)	5 dBd
			" 13el, 93" Flexiyagi	13.2 dBd
			W8ULC 5el, 20" (Foxhunt) off Frequ.	.5 dBd

Hamvention 1999

Another Hamvention came and went. Attendance seemed to be pretty close to what it was last year (28,200). The weather cooperated, Friday was overcast and 64F, Saturday was partly sunny and 75F and Sunday it was mostly sunny and 81F. So it was easy to get around and there were only occasional "hot spots" with a larger crowd.

No longer was a lottery system applied to assign fleamarket spots and every one who needed a spot could have gotten one. The situation with the inside booths was similar.

No complaints were heard about transportation, the remote parking and bus transportation worked fine. Getting in and out was pleasantly simple and quick. Personnel was for the most part friendly and accommodating.

Our booth (#718), in a corner of the original "Ball Arena", was well visited and often a meeting place for VHFers. On display we had a few 432 MHz cavity amplifiers from Karl, DJ9HO and the "attention getter": an 8 tube kW cavity amplifier (I call it the "octopus") built by John, WA9OUU.

We had four renewals and ten new members sign up for the society. This brought the membership up to 104. The stack of sample newsletters just about disappeared and other related handouts were decimated.

Thanks to our members who helped manning the booth, in particular Ken, N8AEG, Clyde, KB8HV, Red, W8ULC, Sam, WB8ZDF, Harold, KB8VSX, and others.

If, as hams do, you looked up (to search for antennas), you probably noticed the festive balloons hovering over the booth. When helping with setting up the AMSAT booth on Thursday, I noticed Keith, KB1SF bringing in a bunch of balloons, I thought this to be a good idea and arranged having some for us on Friday as well.

Just before closing time on Sunday Mike, N8QHV showed up with Sylvia, 2E1CYL from the RSGB. Seemed like an awful deal to pay the high postage and ship a bunch of microwave books back to England, much better to leave them here so we could offer them to our members for a good price. A deal was struck, see offer on page 2.

The forum on Saturday Morning, hosted by Merle, W9LCE and Red, W8ULC was well attended and received. The numbers for the five sessions were in order: 84, 104, 70, 54, and 64. Many good comments were heard.

The Friday Night Banquet with a limitation of 135 was sold out, many late parties had to be turned away. How about looking for a bigger room for next year, Tom (WA8WZG)? You could finally see the operators that you hear on the air "in person". The food was excellent and a number of good door prizes were given away, almost everybody got something.

Noise figure measurements were held at the banquet

Our guys in the flea market were active selling stuff including radar detectors for the club. The treasury got \$ 75.- from that.

HP's Second Generation PHEMT process FETs and amplifiers are so consistent

(From the Web: www.hp.com/go/consistent)

Introducing the first products in HP's Second Generation PHEMT process - a process designed specifically for repeatability and high performance. These new parts allow predictable designs, better yields and fewer surprises in your base station, handset or other wireless application.

In fact, we're so confident of their performance that we include distribution charts of key specifications right on the data sheets. An industry first.

Already designed into several major CDMA handsets, the MGA -72543 LNA's integral switch allows you to bypass the amplifier, reducing system current needs. The ATF-34143 FET with its low noise figure and excellent linearity at 4V, is perfect for base station LNA applications. The ATF-35143 FET offers economical low noise performance for portable applications.

Typical performance @ 2 GHz

Products	Bias	NF(dB)	GA(dB)	IP3(dBm)
MGA -72543*	3V, 5-60 mA	1.5	14.4	3.5-14.8(in)
ATF-34143	4V, 60 mA	0.5	17.5	31.5(out)
ATF-35143	2V, 15 mA	0.4	18.0	21.0(out)
ATF-38143	2V, 10 mA	0.5	16.0	22.0(out)

Coming soon

*as a switch (amp bypassed): insertion loss = 2.5 dB, IIP3 = 35 dBm

Want to find out more? For the latest technical and design information, go to HPRFhelp in our website: www.hp.com/go/rf. Also, visit our on-line Small Quantity Order Site for prototyping orders of other RF products.

Helical Antenna for P3d (2.4 GHz)

By W00QC

Taken from his web page: www.havilandtelco.com/homepages/gregwycoff

When I first built the Helix antenna, I matched it with a 1/4 wave matching section as shown in the ARRL Antenna Handbook. I connected the Drake Converter directly to the antenna feed point. A freak lightning storm (for Kansas) in January blew out the input amplifier to the Drake converter. I redesigned the matching section to provide a short to ground for the low frequency (less than 100 MHz) lightning and static discharge pulses. I also installed a foot of RG8 cable between the antenna feed point and Drake converter input to act as a pulse filter. The 1/2 wave matching provides a low frequency short across the input to the converter. The tap was determined experimentally using a signal and should be 1 inch from the ground end plus or minus 1/4 inch. (Thanks to W0EKZ Bud for the idea of the 1/2 wave matching section.)

Use it or loose it! The microwave frequencies are more and more taken over by commercial enterprises. Below find as an example what is going on in the area of the “wireless” Local Area Networks (LANs).

At a Glance: Wireless LAN Specs

Specification	Status	Maximum Data Rate	Spectrum
IEEE 802.11	Used by most existin Wireless LAN products	2 Mbps	2.4 GHz
IEEE 802.11b	Expected to be ratified This fall	11 Mbps	2.4 GHz
IEEE 802.11a	In Development	24 Mbps to 54 Mbps	5 GHz
HiperLAN	Developed by European Telecommunications Standards Institute	24 Mbps	5 GHz

Error Correction.

Last month's 13 cm Preamp article had some errorres in the addresses for obtaining the boards, kits and complete amplifier. Here are the correct sources :

PC boards and kits are available from:

Eisch Electronics
Abt-Ullrich-Str. 16
D-89079 Ulm-Goegglingen
Germany
Tel: (from the US) 01149-7305-23208
Fax: “ 01149-7305-23306

Complete Amplifiers are available from:

Kuhne Electronics
Birkenweg 15
D-95119 Naila / Hoelle
Germany
Tel: (from the US) 01149-9288-8232
Fax: “ 01149-9288-1768
E-Mail: Kuhne.DB6NT@Hof.Baynet.de
Internet: www.db6nt.com

23 rd MID-ATLANTIC STATES VHF CONFERENCE

Saturday, October 2, 1999

Hampton Inn 1500 Easton Road (Rte. 611) Willow Grove, PA

Hotel Reservations 215-659-3535 or 800-426-7866* Rates are \$89 to \$99 + 8% tax* Local number preferred for the Hampton Inn. Other local hotels can be found at www.bccvb.org/hotels.html or use the link on the packrat web page.
Conference Admission: \$24

Free Admission to Hamarama Flea Market with Conference Ticket on Sunday Oct. 3 Hospitality Suite at Hotel Friday and Saturday Night at 7 PM Lunch and Conference Dinner Saturday at the Hotel Door Prizes at the Conference Dinner

We look forward to seeing everyone on **Saturday Oct. 2nd**. Registration at 0800, conference starts at 0900
The Hospitality suite will be open Friday (7 PM) and Saturday Night.

Free Ticket to the **Hamarama Hamfest** the following day, Sunday October 3rd. just off of Rt. 232 Middleton Grange Fairgrounds in Wrightstown, PA north of Newtown. See the Pack Rat Web page for additional information:
<http://www.ij.net/packrats/HAMARAMA.HTM>

Tentative Conference Speaker List:

Frank Potts, NC1I - 432 EME/Limited Multi-Op Effort

Matthew Reilly, KB1VC - Line-of-Sight Plot Server

Brian Justin, WA1ZMS, Douglas A. Sharp, K2AD, Gordon Howell, WA4RTS - 1st 75 GHz VUCC

Buzz Miklos, WA4GPM - 6 Meter Power using a 4CX1500B

Paul Drexler, W2PED/John Sortor, KB3XG - 1 Watt, 24 GHz Power Amp

David Meier, N4MW - Microwave Activity from FM17

Brian Skutt, ND3F - A Unique Rover Operation

Peter Anderson, KC1HR - A Direct Digital Conversion Receiver

Al Katz, K2UYH/Tom Dinyovszky, KB2AH - 60 Foot EME Dish Project

An **afternoon technical session** will be held from 2pm to 6pm. It will not be a Noise Figure contest. This session allows hands on data taking, tweaking, and optimization consultants will be on hand to troubleshoot dead equipment. We will have same compliment of HP equipment as last year consisting of a HP network analyzer to 6 GHz, HP Noise Figure meter to 18 GHz, HP Spectrum Analyzer to 22 GHz, Power Meters, Power Supplies, coax adapters, spare GaAs fets, and soldering equipment.

For further information, contact Conference Chairman, John Sortor, KB3XG at 610-584-2489, 610-613-9360 or e-mail at JohnKB3XG@aol.com.

Visit the **Mt. Airy VHF Radio Club** at: <http://www.ij.net/packrats/>
Check the June 1999 VHF Contest Photos at the Web site

Info on VHF/Microwave Nets, Beacons & Subscription to Cheesebits

Beacons from FM29JW

50.080, 144.284, 222.065, 432.295, 903.071, 1,296.251, 2,304.037, 3456.220, 5,760.200 and 10,368.200 MHz