

September-Meeting: Friday, the **25th**, at 7:30 PM at the Perkins Restaurant at SR 73 and I-75.
Meeting topic: Sam, WA8ZDF, latest improvements for the 10 GHz Radar detector modifications.

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Upcoming Events

Mid-Atlantic VHF Conf (Packrats) Oct 3, Horsham PA

Microwave Update Oct. 15-18, Estes Park, Co Contact: Bill, K0RZ 303-441-3069

AMSAT Symposium Oct 16 - 18, Vicksburg, MS

EME Contests

Oct 10/11 & Dec 5/6, and non competitive **Microwave ONLY** on Nov 7/8

See QST Sep 98 pg 102

Daun, N8ASB, has been working on the ant. plots from the August measurements. We hope to present these next month.

Trip to **Greenbank, W. Va.** in Nov. We like to get a “carload” together to visit the Radio Telescope Facility. Make your interest known to Gerd, we will then discuss the details...

Fall is officially here,

or at least will be by the time you read this, and the ARRL September VHF contest is now history. As reported last month, W8PLZ, KD8FO, N8IDS and I did go on the air as a rover station and put five grid squares on over the weekend. We had a ball! While we did not work a lot of stations or grids, we proved to ourselves that we could put together an effective contest effort by pooling our resources and talent. The only hitch was that the contest rules limit the number of operators of a rover station to two, while we were obviously four in number. I am not sure why there is a limit on the headcount for rovers, when a multi-op entry can be any number from two on up, but so it is written in the rulebook. Regardless, we all agreed that we'd like to do it again for the June event. (I don't know why no one suggested the January opportunity?). But rover or fixed, it is loads of fun. Does anybody have any gear for 2304 and above that we could borrow?

At the August meeting, we discussed what to do with an endowment made to the MVUS for seeding a club project. A big "Thank you!" goes to John, WA8OUU for his generous contribution! After some discussion and a short brainstorming session (which went quite smoothly.. thanks, guys!), we decided that the project would be to put up an array of beacons throughout the VHF bands to 10 GHz. Sam Laube, WA8ZDF, agreed to be the project leader, which is not the same function as chief designer or builder. That needs to be a team effort involving all of us. Sam and Bruce, KA8EDE, have started working on some design concepts that might allow using some harmonic relationships to generate several of the carrier frequencies, but there is still more thought being put into this. Ultimately, there will be a need to actually build the pieces that will go on the air and I hope that each of you will participate in some way. Construction is more than just soldering, drilling, and such. There will be help needed just to track down and obtain the parts needed, to test the actual hardware, and to get it installed. One task is to determine a site suitable to locate the beacon and help with the arrangements for locating the beacon there. This might be at KA8EDE's place, but that is not certain yet. There might be a better offer out there.

We also discussed the need for a call sign for the beacon and agreed that MVUS needs its own. Quite independently during the course of the discussion, two separate small groups arrived at a common idea. If it is available, we will try to get Jules Wittebort's call, W8KSE. Many of you remember Jules as a wise, friendly, and knowledgeable fellow who was always interested in the latest technologies. My assignment is to investigate the possibility of honoring Jules for being the example of ongoing curiosity that is the spirit of MVUS.

Finally, the program for this month will be the long awaited and oft delayed 10 GHz transmitter project presented by Sam, WA8ZDF. This is the companion project to the radar detector conversion he shoed us a few months back, so when the night is over, there shouldn't be any reason for a lack of 10 GHz activity in the SW Ohio area. We will be at the Perkins Restaurant again, at I-75 and SR-73. Join us for some good food and good times. CU there!

de N8ZM.

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 and at the August picnic. Building projects are undertaken and surplus or special parts are procured. The society has presently 100 members, most from the tristate area (OH,KY,IN) but also from other parts of the US and the world. Why don't you join us, membership is \$ 8.-per year (foreign \$15.). Mail your check with name/call, address, telephone no., e-mail etc to:

Gerd Schrick, WB8IFM, 4741 Harlou Dr., Dayton OH 45432, USA.

Officers for 97/98: President	Tom Holmes, N8ZM	(937) 667-5990	e-mail.. Tom_Holmes@HP.com
Secretary	Bob French, N8EHA	(937) 847-8082	" Robert.French@nextel.com
Treasurer	Gerd Schrick, WB8IFM	(937) 253-3993	" WB8IFM@AMSAT.Org

This and That 9-98

***Space food.** Preflight I had assumed that the repetitive nature of the menu would dampen my appetite, but to my surprise I was hungry for every meal. We ate Russian and American dehydrated food that we reconstituted with hot water. We experimented with mixing the various packages to create new tastes, and we each had favorite mixtures that we recommended to the others. For breakfast I liked to have a bag of Russian soup - usually borscht or vegetable - and a bag of fruit juice. For lunch or supper I liked the Russian meat-and-potato casseroles. The Russians loved the packets of American mayonnaise, which they added to nearly everything they ate. Shannon Lucid.

***First Light.** The first of four 8 m optical telescopes went on line this past May. Part of a half billion dollar project of the eight country European Southern Observatory (ESO), this telescope is being built on top of mount Cerro Paranal in northern Chile. When completed the power of the four telescopes combined will equal a 16 m mirror, which is more than ten times the power of the 5m mirror of Mount Palomar.

***Seeing is Believing.** Red, W8ULC, and I recently drove out into the country to visit John, WA9OUU, and look at his 23 cm EME installation. John has been busy designing, building, and testing tube amplifiers for that band, and the power and efficiencies have been going up. A 15 foot perforated dish with a home-brew Chaperal circular feed and all home-brew mechanics support and steering electronics is an impressive view of his front yard. Using a DOS based Nova tracking program for a demo he positions the dish on the sun and voila, there you see the S-meter going up more than 3 S-units. The moon was not in sight at the time, but John played a tape recording of his echoes from the moon later over the telephone.

***40 Years ago.** With the invention of the electric chair and the lie detector, a new era was launched in the field of crime detection and punishment. The "state of the art" (if I may call it that) has progressed through ingenious wire tapping devices, long range microphones, and wireless "snoopers". And now we have reached the "ultimate weapon", the radar speedmeter. Donald L. Stoner, W6TNS

***Mechanical Filters Coming Back?** A recent ad by Rockwell announces: "Collins Mechanical Filter ...Low-Cost Product Line Expanded." A picture shows a filter between two large scale integrated circuits on a typical modern PC board. Volume pricing as low as \$ 20.-

***Networking.** Often you see such computer terms as "networking" and "multi-tasking" mentioned in job applications. "Why do people think, they are better off acting like computers?" David J. Swift

***Wireless is IN.** About recent professional conferences you read the following: Gone are the sessions of years past on Electronic Warfare (EW) Systems and Avionics Radars, replaced by sessions on Cellular-Handset Design, Broadband Wireless Access Systems, and Wireless Systems and Wireless Local Loops (WLLs).

***Powerful Technology.** "Our technology has become so powerful that - not only consciously but also inadvertently - we are becoming a danger to ourselves ... Here, if anywhere, public understanding of science is essential." Carl Sagan

***Windows.** After years of setting up and fixing computers I was looking forward to the new, improved Windows versions. To my big disappointment the real pressing issue of multiple serial ports was never touched. If you need any more than two serial ports you are usually in serious trouble. KB8RTD

Water and Vapor Cooling

by Merle (Cliff) Rummel, W9LCE

We used water cooling at the UHF-TV transmitter. We could figure on 1 G/min of water flow dissipating 2 kW of heat. One G/min is a little less than 4 in per second. If we assume a dissipation of 1 to 1.5kW then we should have a flow between 2 in /sec and 4 in /sec for cooling of our tube.

For winter usage, to prevent freezing, we used a 50% solution of Ethylene Glycol. This is the pure base of antifreeze, without the additives used in an automotive cooling system.. Additives that would damaging to an electronic tube. This does reduce the heat dissipating rating of the water cooling, but using 3 in /sec or even 4 in /sec flow would more than compensate for this

Vapor Cooling was what is used on the new Transmitter up at Ball State Univ--letting the tube lose heat through boiling water.

The GI7b for example could do this efficiently with the present air-cooling cap. The concept was presented in 73 Mag. July 1969 p27- "Power Perk" by Robert Larkin W2CLL --simply turn the tube/amplifier upside down and stick the cooling cap into a reservoir of water.

Using the 540 Kcal heat value per Liter of water - will give us a little over 6 KW/h per Gallon. (be sure and use **DISTILLED Water**-even of the commercial grade -else you will get sediment evaporated on the cooling cap --and PROBLEMS!)

We require water vaporization of :

1 1/4 cu in per minute for 750 Watt/hr heat dissipation

1 3/4 or 2 cu in/min -for 1 Kilowatt/hr heat dissipation

I would suggest placing a good plastic shield between the cooling cap and the tube/amplifier -to keep the steam out of the amplifier. Possibly a slight slope on the shield would force the steam out to one side. I would suggest a storage reservoir beside the cooling reservoir, to keep the water depth up close the tube, but to prohibit it from over-flowing (a hole near the bottom connecting the two is all that is required). A small carburetor float valve would allow water in (gravity flow), when it began to lower.

This then would require a third (an upper) reservoir -for the water to flow out of --and I would place a small pump in a lower reservoir, to keep water flowing up to the upper reservoir, with an over flow back down to the lower reservoir (complicated enough?)

Have this lower reservoir larger, so it will store enough water for continued usage. The cooling reservoir would need be little larger than the cooling cap, and the storage reservoir beside it need only be the same depth, with enough size for the float valve. The upper reservoir need not have much size -tube from pump IN; overflow spout out -tube to lower reservoir; tube from bottom spout -to float storage reservoir.

16TH AMSAT-ANNUAL MEETING AND SPACE SYMPOSIUM Oct 16-18 at Vicksburg Miss.

On the web: <http://pages.prodigy.com/DXHF93A>
This site is also linked with the AMSAT-NA page.

Presentations:

- * The History of the Amateur Radio Satellite Program
by Martin Davidoff, K2UBC
- * Antarctica and Amateur Radio
by Ron Ross, KE6JAB
- * Working Satellites From Over 100 Grid Squares
by Chuck Duey, KI0AG
- * Intermediate Circular Orbits for Amateur Radio Satellites
by Ken Ernandes, N2WWD
- * The Year 2000 Transition - Your PC and AMSAT Software
by Roy Welch, W0SL
- * J-Station - An Update
by John Melton, G0ORX
- * A Self-Phasing Turnstile for Mode J Satellite Reception
by Tony Monteiro, AA2TX
- * TRACKNET: An AMSAT Mobile Satellite System
by Bob Bruninga, WB4APR
- * Development of Yet Another Housekeeping Unit for P3d
- by James Miller, G3RUH
- * SETI on the Cheap: Affording the Ultimate DX
by Paul Shuch, N6TX
- * An EZ-Sat Update
by Fred Winter, N2XOU and Ken Ernandes, N2WWD
- * The Citizen Explorer Mission
by Jeff Baltrush
- * SAPPHIRE: Stanford's First Amateur Radio Satellite
by Bob Twiggs, KE6QMD
- * The MOST Space Astronomy Mission
by Kieran Carroll, Robert Zee, and Jaymie Matthews
- * JAWSAT Update
by Randolph Kohlwey, N7SFI
- * International Space Station Status
by Will Marchant, KC6RCL
- *The P3D Spacecraft Thermal Design
by Dick Jansson, WD4FAB and Keith Baker, KB1SF

The 1998 Pack Rat Conference will be packed with technical presentations, an interesting speaker lineup and several technical sessions, including noise figure measurements. Network analyzers, spectrum analyzers and power supplies will be available for measurements.

All equipment will be operational up to 10 GHz.

The conference is on Saturday, October 3, 1998. Presentations will include the following:

- * Aurora Detector by Dave, K1WHS
- * Patch Antennas by Chris, WB2VVV
- * Coplaner Microstrip Design by WA3ZKR
- * 28 GHz, 10 Watt Solid State PA by Mike Gaffney
- * EHF Imaging by WA1MBA
- * Andrew Products and EME by Tom, WA8WZG
- * High Speed Meteor Scatter by W1FIG and KO0U
- * New Microwave Devices by N2CEI

<http://www.ij.net/packrats> Ron Klimas, WZ1V