

The VHF Journal

September 2002

Published by the Rochester VHF Group
Club Memorial Call: W2UTH

From the Chairman

Start of a new year **Rajiv Dewan, N2RD**

I am excited about the new contest season and year that we start in a couple of weeks with the ARRL September VHF QSO Party. This club has turned into a power house with two big multi-multi stations, a number of accomplished operators with great locations, and last but not the least, the number and efficiency of the rover operators. I think we have a good year a look forward to but we should keep in mind that with our performance last year, we are the target of all other clubs that aspire to be at the top of the listing. In this sense, our job is even harder now.

Making it to the top is going to require cooperation and a team effort. I have been contesting in the HF bands for many years and only now I am starting in the VHF bands. As you well know, contesting in the VHF and higher bands is quite different. The HF contester relies on the worldwide community of participants. Indeed, there are many who travel to remote sites and islands just for the contests. VHF contesting is very different. We can only rely on local ham community. One cannot really count on regional or even national propagation because it is rare and, besides, it helps every one – it is the rising tide that raises all boats. From a competitive standpoint, it is the pool of local participants that really makes the difference. Every additional band that one can get on and every additional operator that we can add really build up the club total score. In fact the total number of qsos for a club increases at the rate of square of the number of participants. In other words, there is an increasing marginal return to increasing participation. There are three things that we have done and must continue to do well to enhance our club score total:

1. Get on as many bands as possible. The club's projects, sharing of equipment and tune-up events help a lot.
2. Get as many local hams as possible to participate. The Rochester Cup is a brilliant tool for this. We should also liaise with other clubs to increase this number. We

could write a column for their newsletter, give talks at their meetings and build linkages with the express purpose of getting them to contact us during contests.

3. Encourage and help the rovers. Every new grid they visit is like having another participant. And what a participant he/she is – trained and with all the right equipment ready to make lots of qsos.

In the coming months, we will be focusing on these to make our club stronger and more competitive than ever.

Meeting Notice:

Friday, September 13th, 2002, 7:30 PM
111 Westfall Road, Rochester, NY

50MHz - Hope for the future! **Mark Hoffman, K2AXX**

After this past fall and winter, it may seem that we'll NEVER see any further propagation on 50MHz. I mean, we're past the peak of the sunspot cycle, right? Yeah, we are. BUT - let's think about past history.

In 1989/90, the peak of the previous cycle came and went. It wasn't spectacular, but there sure was a bunch of DX to be had. At that time, most European countries either had no allocation or limited ones on 50MHz. Thus, it seemed a big day to work PA, G, ON, DL and perhaps the odd opening to F. South America, Africa and the Pacific weren't uncommon, but the sheer volume of QSOs weren't there. Now we've got more countries in Europe (at this writing, all but Hungary and Russia itself) to work. Interestingly, 2 years past the peak in 1991/92 - there was still stuff to be worked! For instance, during the November / December peak times - I worked my first JA, FR and KH6. Also, ZS and ZS3 (now V51) in Africa were in the log.

What does this mean? Well, don't give up on the magic band. There's a real chance for further propagation. This summer, the sun has continued to be quite active, with many flares, elevated flux numbers - all adding up to a living sun! If it continues throughout the fall, we're likely in for more treats.

Don't forget to listen and monitor some of the traditional indicators of 50MHz propagation. If you've got a receiver that'll tune below 50MHz, there's a wealth of information to be found. For instance, there are TV transmitters in the 48MHz range from all parts of Europe in the R1 (or Channel 1) allocation. 48.250 is in Spain, 48.242 is Portugal or Germany, there are DOZENS of stations to listen for in the 48.234 - 48.260 range. If these are loud,

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Club website:

<http://vhfgroup.rochesterny.org/>

Co-editors:

WO2P, Fred Miller

E-mail: WO2P@aol.com

N2KXS, Judy Stonehill

E-mail: N2KXS@arrl.net

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OFFICERS:

Chairman: N2RD, Raj Dewan

E-mail: N2RD@arrl.net

Vice Chairman: N2IM, Charlie Barkowski

E-mail: N2IM@arrl.net

Secretary: N2UIO, George Lloyd

E-mail: N2UIO2@aol.com

Treasurer: KB2VGH - Jeff Luce

E-mail: KB2VGH@amsat.org

Director (Even year): N2OPW, Paul Meyers

E-mail: pjmeyers@hotmail.com

Director (Odd year): K2DH, Dave Hallidy

E-mail: K2DH@frontiernet.net

Past Chairman: K2AXX, Mark Hoffman

E-mail: K2AXX@arrl.net

Contest Chairman: N2JMH, Jim Howard

E-mail: N2JMH@arrl.net

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Articles and comments should be submitted to one or both of the co-editors at N2KXS@arrl.net and WO2P@aol.com.

look for 49.739 - 49.760 - many of these are in Eastern Europe (49.757 is in Moscow, a good indicator for GREAT propagation!). These are the TV Video, so the signal might sound like garbage - but knowing where they are from is key.

Also, watch this website if you can: <http://6m.dxers.info> - NA1CW has designed perhaps the PREMIER chat site for active 50MHz DXers. Many times, you can get a clue what's being worked where... and watch for trends to help you determine if WE are in the propagation or not! Also, keep tabs on the Solar Forecast from NIST. This can be heard at 18 minutes past each our on WWV (2.5, 5, 10, 15, 20MHz) and is updated every 3 hours. A high Solar Flux (over 200), an elevated A index (around 20) and a K index between 2 and 3 seems to be historically linked to success in DXing.

Playing serious DX takes some serious information, lots of listening, and some luck to boot! Good luck - and make sure you don't give up on 50MHz just yet!

"Any sufficiently advanced technology is indistinguishable from magic"

Arthur C. Clarke

An accurate frequency reference Rajiv Dewan, N2RD

You have a sked with another ham on 10.368GHz and you cannot find him. How many times has that happened to you? Well, if you are radio active in the microwave bands then you will be familiar with this common problem. It is very difficult to pin down the frequency in these bands. Consider the common quartz crystal found in most commercially manufactured radios. It may have a 10Mhz reference oscillator that drives the DDS and PLL chains. The commonly used crystals have a frequency tolerance of 5 to 10 ppm (part per million). Multiplied to the 10GHz band, this amounts a frequency error of 100KHz. This is assuming the other ham is spot on the frequency. If he also has rig only of your quality, then double this to 200 KHz. Try finding a weak signal with that kind of frequency error. You could spend a cold day in January in Rochester (just south of hell) and not succeed.

Let us move up the frequency accuracy food chain. If you spring for an expensive TCXO (temperature compensated crystal oscillator module) then you might get a unit that is 0.5 to 1 ppm. Such units cost close to \$200. Even this will leave with you an error of 5 to 10 Kcs for each station. This might work for wide band modes like SSB that spread the energy in 2 to Kc

bandwidth making them easier to find. These wider modes, however, may require greater 10 to 20 db signal to noise ratio to be really readable. Can one do better? You betcha. Keep tuned.

What would you pay for a time/frequency base that had an accuracy of 10^{-12} ? How about one that also gave you time far more accurately than most "Atomic" clocks that tune to WWVB? It slices, it dices... and it is by HP for only \$250. It is the HP3801A GPS disciplined double ovenized quartz oscillator. This is one smart clock. When you first set it up, you put it into a "survey" mode where it receives signals from numerous GPS satellites over a two to three hour period (or more depending on how clear a view of the sky the antenna has). During this period the unit is establishing the location of the antenna with great accuracy and neutralizing the error through averaging. After it has determined the location to a great degree of precision, far more than normal GPS receivers that just use observations over a few second period, it then uses the GPS signals to accurately measure time. The GPS time reference is used to discipline a double ovenized oscillator that has an intrinsic accuracy of 10^{-9} . The combination yields far greater accuracy - exceeding that of rubidium standard (10^{-10}) and approaching 10^{-12} . Wow!

So great, I can have this unit in the shack and it will work well. Can it be used for hill topping? Yes! Another feature that this unit has is that over the first day or two, it learns about the ovenized quartz crystal. When you disconnect the antenna (or move it), it goes into a holdover mode where it uses its learned crystal oscillator behavior to keep the reference to better than 10^{-10} for the first 24Hrs of the holdover period. This is better than the rubidium standard! Then you bring it home and connect it back to the antenna and its fixes itself for the next outing.

So how can one get one and how can one get it to work?

Ebay. Over the last few weeks, I have noticed numerous units for auction. I picked one up for \$230 plus \$15 for shipping. Or you can purchase one for \$249 from buylegacy.com and it even comes with a 90-day warranty. You can find a lot of information on the web, especially at K8CU's site www.realhamradio.com. The unit needs an active GPS antenna, a 50v DC supply, and a null modem cable to talk to the computer. I picked up a fixed station GPS antenna designed for time reference purposes for \$35 from megasurplus.com. Any good active GPS antenna should work. I have seen them for less than \$10 on ebay. The unit needs a -50V DC supply. I simply put one together using a 36V transformer, a bridge rectifier and a capacitor. The unit comes ready for RS422. To change it to RS232, you have to open up the unit, remove 5 surface mount jumpers and add 8 wire jumpers. I did this and made a 25-pin to 9-pin null

modem cable and I was set to go. (BTW, if your serial port is happy with 5V TTL signals, you may not have to do any mods in the unit.) Within hours of putting it up, the unit reported "Outputs valid", i.e., it had reached accuracy specs. It puts out a 10MHz reference signal. I am planning to feed this into my newly built DSP-10 2m transceiver (QST 1999) and eventually into a 10GHz transverter. It will also make a handy reference signal for a frequency counter - producing an instrument that will exceed NIST specs.

ARRL 10GHz+ Contest 1st Weekend Recap Mark Hoffman, K2AXX

For the past couple years, members of the RVHFG have geared up each August and September for the ARRL 10GHz and above Cumulative Contest. For those of you unaware of this unique contest, it's perhaps the most unique event of the contest calendar.

For those of you who've not participated - the format of this contest is part Field Day, part UHF Contest. In many parts of the country, folks take their gear to the field and set up to work as many stations and as far away as they can. Each new station counts 100 points, and the score is a combination of the number of new callsign points plus the distance points! You DO need to know your 6-digit Locator in order to calculate the distances! Also, you aren't limited to 1 QSO per station! So long as one end of the QSO moves a minimum of 10km (16 Miles) - you can work all over again! In Colorado, they take great advantage of this, making over 100 QSOs on 10GHz in 4 days during the contest period!

Well, I am one naturally to buck tradition! I stay here at home, with my gear firmly planted on the tower. I'm not out to win (though, the competitive juices do flow) but to make as many distant QSOs as I possibly can. My gear used to run 5w output (the pa blew up, so back to square 1!) and a 2' dish at 66'. The transverter, LNA and PA are mounted on the tower, and I've got 6' of feedline between the enclosure and the dish - NO expensive Waveguide to contend with!

The first weekend was, well, interesting! Locally, the activity seemed a bit down from the last couple years. Many folks seemed scared by the potential for stormy weather, which did come true after all. BUT - on 10GHz that can be a benefit. I'll explain that later. FIRST - The contest runs from 6am until Midnight each day, with a maximum of 12 hours per day, 24 hours per weekend. I had to babysit during the morning on Saturday, so not sure what I missed then. Once getting on the air, I

hooked up with K2DH, N2JMH, AA2WV and N2OPW in short order. After completing with Paul, something told me to tune the band. Well, what's interesting is I found a station CQing! With W2EV in the log shortly after.... I noted that there was a pretty significant rain storm to the northwest! Ev and I completed via Rain Scatter, which sounds JUST like Aurora! Well, the random luck wasn't done. Finishing with Ev, W2DYY called immediately after! Two random QSOs on 10Ghz, with distances of 54 and 28km - this isn't anything to sneeze at.

About an hour later, I was listening on 144.260 - the liaison frequency for the contest. I found KA1UAG on Mt. Washington (FN44ig) and we decided to give it a shot. Well, Dave peaked upwards of 539...over a 552km path! WOW! We completed, and as I was sending my final ROGERS in my headphones came a loud WHACK CRACKLE, and a brilliant flash of light out the window. Well, that thunderstorm I talked about was now overhead. Quickly pulling the plug, I ducked for cover in the garage while the rain poured down. WICKED storm. Two hours later, I find AF1T, NS1O and K2AEP up on Mt. Graylock (FN32jp), who all work me. Interestingly, Dale was upwards of 559 rain scatter enhanced - and noted that I was NOT all that strong. Fortunately, I was able to complete with him (1w > 2' Dish) and the other two (ranging from 100mW to 300mW). KEWL - at 375km per QSO, it worked out really well.

That did it for the day. On Sunday, the results were poor. Worked N2JMH, N2KXS, WO2P and W2DYY, all at 31km. Russ found my signal to be far from its usual strength, so I decided to remove it from the tower and see what it was doing! Well, bad news. My 5w PA is now gone, and I suspect that loud CRACKLE in the headphones was what killed it. As I type this, I notice my clock also shows signs of damage (reads 7 L 7, instead of real time!) and perhaps some other stuff along the way. Yep - I'm back to QRP power (1w or thereabouts!) - NOW I need to find a TWTA or something....

SO - that's my story. GREAT DX to all of you, and if you are at all interested in learning more about 10GHz contesting, please feel free to email me at k2axx@arrl.net. I'm more than happy to talk about gear, sites... you guessed it - I'm HOOKED on 10GHz!

RVHFG May 2002 Meeting Minutes

Jim Howard, N2JMH

The meeting started at 7:45 pm with Mark k2axx talking about the need for nominations of board members for the upcoming club year. Nominations would be accepted at tonight's meeting before the elections.

Old Business:

- The Secretary and Treasurer's reports were accepted as printed in the journal by Jeff, kb2vgh and seconded by Paul, n2opw.
- N2JMH was looking for volunteers to work the hamfest booth.

New Business:

- The club is in need of a Journal Editor for the upcoming season.
- George, n2uio discussed ATV and the possibility of getting an ATV repeater at his qth.
- RDXA will be running a Field Day operation from Webster and all are encouraged to stop by and operate.

Elections:

- The floor was once again opened for more nominations. N2jmh nominated George n2uio for secretary. No other nominations were introduced at this time. With the floor closed for nominations, the current slate is n2rd for chairman, n2im for vice chairman, kb2vgh for treasurer and n2uio for secretary as the uncontested races. The current club secretary cast one vote for these elections and n2opw motioned that it be accepted with n2usb seconding.
- The only contested election was for even year director with Paul, n2opw and Mark, kc2gmg running. Paul won the election from the membership so your current slate of officers is:
N2RD – Chairman
N2IM – Vice Chairman
KB2VGH – Treasurer
N2UIO – Secretary
N2OPW – Even Year Director
K2DH – Odd year Director

Mark k2axx motioned to adjourn the regular meeting at 9:15 with Frank, k2os accepting and Charlie, n2im seconding.

For Sale

FOR SALE: Kenwood TH-21AT 2 meter FM H.T. with TTP, wall charger, spare battery pack, soft case, manual. Clean and in perfect condition. Asking \$90.

Irv Goodman, AF2K, (585) 671-4430
AF2K@juno.com

FOR SALE: Trans World Electronics (Escondido, CA) T-1000 1000 watt HF Linear Amplifier (will do 1250w). Broadband/ Solid State / No Tune / Push-button. 1.8-30 MHz. Manual plus Installation & Service Manual. Excellent condition. A real performer and pleasure to use. Prefer to sell local or within 200 miles of Rochester. Wt. 103 lbs. Asking \$1900.

Irv Goodman, AF2K (585) 671-4430
AF2K@juno.com

FOR SALE:

AEA 2 meter Isopole \$10.00
AEA 440 meg Isopole \$10.00
C.C. 10/15/20 vertical \$25.00
C.C. AFM-4DA, 2 m. 4 pole \$25.00
C.C. 6 m. 4 el. Beam \$25.00
C.C. 220, 11 el. beam \$25.00
C.C. 446, 11x11 stack beams \$40.00
Hygain 10/15/20 (TH6-DXX) beam \$20.00
Shakespeare 11m (S-176) vertical \$15.00
Aluminum 48 ft. tower, light weight \$50.00
Steel 40 ft. monopole tower \$50.00
Many more 2m. & 70 cm. Antennas offer
Ameritron AL-811A, amp 600 watts,
1 hour on time. Like new \$450.00

Len, WA2ZNC (585) 229-5470
wa2znc@juno.com

Don't forget

The Elmira hamfest is coming up Saturday, September 28th at the Chemung County Fairgrounds, Horseheads, NY. The fairgrounds are on Grand Central Avenue off Route 17. The 'fest runs from 6AM to 3PM. If you need more details, check out the web site at <http://www.arast.org>.

The September part of the 10GHz+ Cumulative is the weekend before the Elmira hamfest. Like the August portion, the contest runs from 6AM to midnight Saturday and Sunday, September 21st and 22nd.

URLs to check out

www.kwarc.on.ca/10ghz/ Intro to 10GHz and 24GHz by VE3VXO and VE3SMA
www.ve1alg.com/24GHz%20EME_R3.pdf Detailed description of first 24GHz moonbounce QSO by VE4MA and W5LUA

Don't ya just love it?

On June 18th, Senate bill S.2893, the New York State "tower bill", passed by a vote of 49 to 19. Most people thought that New York State would be the 17th state to pass a PRB-1 law. Gov. Pataki had promised to sign it into law when it passed in the Assembly. Looks like folks were too optimistic or just plain unrealistic.

The lobby for local government, the Association of Town and the New York Council of Mayors and Municipal Officials, saw this bill as a serious threat to their ability to control our antennas and lobbied hard against its passage.

The Assembly session was scheduled to end on June 20th but dragged on until July 2nd when Assembly members left, saying they would be back this year to wrap up. There was a lot of uncertainty about when they would return but that quandary was answered when it became obvious that they wouldn't be returning at all this year.

As it was reported in the New York Times Metro section on July 28th by J. McKinley and R. Perez-Pena, "It was, by all accounts, one of the most grid locked years in memory, a sharp departure from the axiom that Albany finds a way to do business in even numbered years when officials must stand for re-election".

So, the bill will be renumbered and reintroduced in 2003 and we begin again. If we're to have the capability to experiment, design, and innovate, as well as to provide emergency communications or H&W traffic when called upon, we'll have to gear up to send our state government representatives letters and e-mail expressing our opinions and concerns --- again.



**The Annual Rochester VHF Group Picnic
Rochester area's social event of the year**

It was great fun – Thanks, Jim and Janet

**VHF Contester's Diet
Norm Krajkowski, N2GKM**

As we all know, it takes 1 calorie to heat 1 gram of water 1 degree centigrade. Translated into meaningful terms, this means that if you eat a very cold dessert (generally consisting of water in large part), the natural processes which will raise the consumed dessert to body temperature during the digestive cycle literally sucks the calories out of the only available source, your body fat. For example, a dessert served and eaten at near 0 degrees C (32.2 degrees F) will, in a short time, be raised to the normal body temperature of 37 degrees C (98.6 degrees F).

For each gram of dessert eaten, that process takes approximately 37 calories as stated above. The average dessert portion is 6 oz, or 168 grams. Therefore, by operation of thermodynamic law, 6,216 calories (1 cal./gm/deg. x 37 deg. x 168 g) are extracted from body fat as the dessert's temperature is normalized. Allowing for the 1,200 latent calories in the dessert, the net calorie loss is approximately 5,000 calories. Obviously, the more cold dessert you eat, the better off you are and the faster you will lose weight, if that is your goal.

This process works equally well when drinking very cold beer in frosted glasses. Each ounce of beer contains 16 latent calories, but extracts 1,036 calories (6,216 cal. per 6 oz. portion) in the temperature normalizing process. Thus, the net calorie loss per ounce of beer is 1,020 calories.

It doesn't take a rocket scientist to calculate that 12,240 calories (12 oz. x 1,020 cal./oz.) are extracted from the body in the process of drinking a can of beer. Frozen desserts, e.g., ice cream, are even more beneficial, since it takes 83 cal./gm to melt them (i.e., raise them to 0 degrees C) and an additional 37 cal./gm to further raise them to body temperature. The results here are really remarkable, and it beats running, hands down. Unfortunately, for those who eat pizza as an excuse to drink beer, pizza (loaded with latent calories and served above body temperature) induces an opposite effect. But, thankfully, as the astute reader should have already reasoned, the obvious solution is to drink a lot of beer with pizza and follow up immediately with large bowls of ice cream. We could all be thin if we were to adhere religiously to a pizza, beer, and ice cream diet.



It's the N2GKM Rover "On the Trail for more Qs" from FM19hx in southern PA @2200' during the CQWW VHF Contest in July

So, keep those cards and letters coming, folks.

(Translation: send articles, reports, items for sale, suggested topics, comments, and any other input for the Journal to N2KXS@arrl.net or WO2P@arrl.net)