

The VHF Journal

Published by the Rochester VHF Group

December 2000

<http://vhfgroup.rochesterny.org>

Club Memorial Callsign: W2UTH

~~N2CEI FOR PRESIDENT~~



To Present at
the December
Meeting on
the 8th



SIX DIGIT GRID
SQUARES and
sun-alignment by
K2RIW



WEAK-SIG
News
by N2JMH



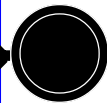
RESULTS
OF THE
November
TUNE-UP
CLINIC by
K2DH



VHF
ACADEMY
...a Wrap-up
by K2AXX



902 vs. 903:
We try it
again!



Your write-in
entry
HERE



Mark by punching out only **ONE** place on your Journal cover.

This offer may or may not be valid only in Florida.

VHFBILL



Welcome to the December edition of the RVHFG VHF Journal.

Well well- you'd think it was April already. But let's not go too far... we'll have to save it up for later.

Enjoy the 902 vs 903 article this month- evidently nobody missed it last month... that's good because the Packrats published the first half, but we've got an exclusive on the rebuttal!

We've got some great stuff in here from K2RIW, K2AXX and N2JMH, to name a few.

MANY THANKX to everyone who got their stuff in early and on-time so the Journal could be laid out and printed in a timely fashion this month- aren't holidays great? Where does the time go? For now, in the words of Jasper Friendlybear, *"sit back, close your eyes, and imagine that you are better off than you really are..."*

73 es DX2U, EH ...de VE3IEY

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Commentary and articles: via e-mail to editor VE3IEY: tantonr@kingston.net. Use standard ASCII text, Corel's Word Perfect or send as a regular e-mail message. Photos and drawings: via e-mail, and can be sent in any format that is available (JPG, GIF and TIFF are the most common).

Assistant Editor, printer, membership & data-magician: N2KXS

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The Rochester VHF Group

Club memorial call: W2UTH

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Jeff, KB2VGH sez: "There is only *one* mailing list [you'll ever need...]" Rvhfg@vhfgroup.rochesterny.org

It is setup to broadcast to all RVHFG members



Your Andrew Cable Connection!

TOM WHITTED, WA8WZG
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PHONE: (419) 732-2168 FAX: 732-2944
 E-MAIL: WA8WZG@WA8WZG.COM



December Meeting Notice

Date: Friday 08 Dec 00

Time: 7:30 PM

**Place: 111 Westfall Road,
Rochester, NY**

Program: Steve Kostro, N2CEI

Mr. DEM himself comes to chat with the RVHFG at the December meeting. Come armed with your questions and be prepared to learn something new about operating a ham-based business...

New satellite! Soon...

ARRL bulletin forwarded by K2AXX

The next-generation Phase 3D Amateur Radio satellite was scheduled to go into space Tuesday, November 14, from the European Spaceport in Kourou, French Guiana.

Phase 3D will be the largest Amateur Radio payload ever put into space. Once launched, Phase 3D will be nudged by its onboard thrusters into an elliptical orbit that will put it some 2500 miles from Earth at its nearest point, and nearly 30,000 miles at its farthest.

For more information, visit the AMSAT-NA Web site, <http://www.amsat.org/>.

CAC club competition study

From: "Jim Pratt" <n6ig@hotmail.com>

forwarded by W3IIT, Editor of Cheese Bits.

The ARRL Contest Advisory Committee has been asked to look into the rules surrounding club competition in ARRL contests. We are taking a top-to-bottom approach to this, not just tweaking the rules here and there. Questions are being asked like why is there a club competition, how can club competitions be made better, are there enough club categories, should there be teams, should a club have to be affiliated to compete, etc.

Three subcommittees have been established to look into this matter, and we report to Ned, AA7A, our fearless leader. I have volunteered to lead the group which is discussing "eligibility". I have solicited input from my Division's contesters, but I have seen very little discussion about this here on the reflector(s).

Serving with me on this committee are K1HT, K2WR, K4RF and N0IJ. We would certainly love to hear from you with your comments on this matter. And, of course, so would your Division's CAC representative! We are to report to the Membership Services Committee in the middle of 2001, so we have some time to discuss this. Please let your feelings be known!

73

Jim N6IG CAC Representative,
Pacific Division Chair, Eligibility Subcommittee

Editors note: I sure don't recall hearing that the ARRL's ATLANTIC DIVISION CAC representative had asked the RVHFG's opinion. Ahh, but that's right.. we're only a VHF club... not REAL hams like the ones that compete in the November HF SS Club

Competition...

As you can see from the above article, we get our ARRL news from the left coast, just like other Atlantic Division clubs like the Packrats (who forwarded this to the editor... evidently this is how they heard of it too).

If you are going to try cross-country skiing, start with a small country.

For all your UW Roving Needs...



50MHz to 10GHz transverters preamps PA's antennas components

Steve, N2CEI

Downeast Microwave Inc, Frenchtown, NJ
(908) 996-3584 fax:(908) 996-3702 <http://www.downeastmicrowave.com>

RESULTS OF THE NOVEMBER, 2000 RVHFG PREAMP/CONVERTER TUNE UP CLINIC

By Dave Hallidy K2DH

This year's session was interesting. You'll note that there were no 50 MHz units of any kind- unusual in the RVHFG. Also, we had the use of a 13 GHz Network Analyzer and 26.5 GHz Spectrum Analyzer. Several folks used them to check out their dual-band 5/10 gig feeds and to troubleshoot converters whose LO's wouldn't start.

Here is the listing of preamps and converters I tested at the clinic- if yours wasn't there to be evaluated and compared to the others, why not?

BAND	OWNER	C(ony)	H(omebrew)	NF	GAIN
		P(reamp)	C(ommercial)	(dB)	(dB)
144	K2OS	P	H (MGF1402)	0.32	23.8
	K2AXX	P	H (MGF1302)	0.47	24.5
	K2AXX	P	H (MGF1302)	0.68	22.8
	N2KTU	P	C (ARR SP144VDG)	0.72	24.1
	KC2EBH	P	C (TE SYS 1452G)	1.64	14.3
222	K2OS	P	H (MGF1402)	0.30	23.1
	K2AXX	P	H (MGF1302)	0.45	23.5
	KC2EBH	C	C (MMT220)	2.82	33.3
432	K2AXX	P	C (PD-440S)	0.84	17.5
902	N2KXS	C	C (DEM903-144)	0.96	20.3
	WO2P	C	C (DEM903-144)	1.00	16.5
1296	K2DH	P	C (DEM 23LNAH)	0.36	16.9
	KB2VGH	C	H (UNKNOWN)	0.61	16.2
	K2OS	P	H (2X MGF1302)	0.98	21.5
	K2AXX	P	C (ICOM AG-35)	2.20	14.8
	N2KXS	C	C (DEM1296-144)	5.4	38.8
	K2LDT	C	H (UNKNOWN)	8.45	19.9
2304	K2TER	C	H (UNKNOWN)	1.62	30.2
3456	K2TER	C	H (UNKNOWN)	1.57	26.8
10368	K2AXX	C	C (DEMI)	5.00	19.3
	N2JMH	C	C (DEMI)	5.41	18.3

Equipment used was graciously loaned by MDS- THANK YOU for the use of it and the facility. For Noise Figure measurements, we used an HP8970B and 346A Low ENR noise head. As well, we had the use of an HP8563E 26.5 GHz spectrum analyzer and an HP8719C 13 GHz Network Analyzer.

Special thanks also go to my colleague Greg Mills K2LDT and my friend Duncan Brown K2OEQ for helping out where needed.

Weak Signal News

DE: N2JMH

First off let me apologize for not getting my monthly article into the journal last month. My computer is giving me a hard time, it's in the mail or my dog ate it, you choose whatever excuse you see fit. I don't think I can be fired so if you are tired of my senseless ramblings then you should write an article for the journal, as I am sure mine would be the first to be pre-empted to gain space.

Looks like I am the Contest Chairman by default I accept this position with no qualms although you might be better served with someone that has more time. What I have in mind for this position, pre-contest, is to give a brief talk at the January meeting and then turn it into an organized question and answer period. Please be prepared to give details of your expected operating times and bands you will be on. This meeting should and better be well attended by a showing of the attendance numbers at some of the other meetings. **Don't forget you must make 2 club meetings during the year to be eligible for club competition.** I also will have a hand out packet available with activity hour times, rover schedules and whatever other information I can gather up.

What I would like from you is if you are in another local club please talk it up and remind others of the Rochester Cup as well as the importance of getting on the air. I also need past years club results sent to me to gather some information.

I want to share with everyone a comment I heard on the air by an east coast station during the All Band Sprint that was disturbing to me. By me repeating this I am not trying to offend the person who said it so don't take it that way. In all actuality the truth hurts. **"There is not much activity in Rochester, not like there used to be"** We have to have one of the highest per capita ham populations in the country and for someone to say to me on the second day of a contest "Thanks for the new grid (fn13)" it just makes you wonder why. There is a solution to this and it is easily obtainable. Fit some operating time into your schedule!

Last week I had a chance to talk on the air with the club's newest member, **Dana VE3DSS**, welcome aboard. Dana is active on 6 and 2 meters right now and is in the process of getting some microwave equipment up. As Homer Simpson would say "AAUUGG,



microwave activity from fn03" He should be very popular from his qth.

On the lighter side here are 2 pictures from the annual tune-up clinic held at MDS each year, attendance was down but the amount of equipment brought in is up. We are very fortunate to be able to get to use this facility and the high tech equip-



ment available there. Make sure you thank Dave, K2DH when you see him.



This picture is Mark, k2axx after working DX on 10 gig with 40 watts and his head in the dish. Will you follow our leader?

Look at the blank stare from those glassy eyes and choose your answer carefully. Actually he is hard at work during the tune-up clinic and this is the expression you get when I shove my digital camera in his face. **Be warned that no one is safe when I control the camera.**

That's it for now, by the time you read this you will have less than 6 weeks to be ready for the Big One, the January VHF Contest.

From the Treasurer:

By Paul N2OPW November 13, 2000

CHECKING ACCOUNT

Previous Balance..... \$681.64

Income:

Dues collected..... 29.23

50/50 profits..... 00.00

Mug Sales..... 0.00

Expenses:

Newsletter Supplies..... -45.73

VHF Academy..... -100.00

Sponsorship QST Plaque..... -60.00

Current Balance..... \$505.14

SAVINGS ACCOUNT

Previous Balance.....\$1267.57

Income:

Interest:..... 0.00

Expenses:..... 0.00

Current Balance.....\$1267.57

Balance on Hand:

Checking..... 505.14

Savings..... 1,267.57

Total.....1,772.71

NOTICE..... DUES FOR THE NEXT YEAR ARE NOW DUE! Pay at the next meeting.

How do I Join the RVHFG?

3 easy steps:

1) Mail \$10 US or \$15CDN with your name, callsign and address to the RVHFG mailing address (see the back page!)

2) Indicate MAIL (B&W) or WEB (Color) delivery for the RVHFG Journal

3) Enjoy!

(Caution: This last step can be more difficult some months than others, and for members of certain political parties on BOTH sides of the border :^)

VHF Academy



Wrap-Up

... de K2AXX Mark_Hoffman@notes.monroe.edu

I would like to thank Ev Tupis for all his efforts and hard work. Without him, this past VHF Academy would never have happened! From what I could see, everyone had a good time, learned something, and walked away with some valuable information. I was impressed by the quality and quantity of questions we all received for presentations. It meant that we were getting across!

Thanks especially to George Lloyd, who made a difficult project come off without a hitch! That was a LOT of work for one person, but he did it and did it really well! All in all, this weekend was tremendous for the Group.

Hopefully some of the people will attend the regular meetings, and continue to stay with the club for some time.

Thanks all, for the hard work! This was a memorable event (waiting for the photos to publish to the website!) that will be repeated periodically! I'd LOVE to consider this as our Hamfest agenda (at least a subset of it to fit 2 hours). Think it would fill the house, like we did years ago!

My grandmother started walking five miles a day when she was 60. She's 97 now and we don't know where she is.

Twelve Cipher Grid Squares (and Their Advantages), plus Sun Tracking

K2RIW: "Richard T. Knadle"
<rknadle@suffolk.lib.ny.us>

Introduction — The use of 12 cipher Grid Squares came about because I became interested in the math of Grid Squares and I wrote an HP-28S program (in 1992) to carry out site reduction with a resolution to tenths of a second of arc in Latitude and Longitude. That fixes your location to better than 20 feet (6 meters) on the surface of the earth. That's approximately the accuracy you can derive when using the US Geological Survey maps, or a very good differential GPS receiver. The US Geological Survey states that more than 63% of the features on their maps are located to better than 40 feet of their "true" location (that's their one sigma elliptical error probability [EEP]).

However, along the way I discovered a few advantages of the 12 cipher Grids — such as compactness, transposition elimination, and user-friendliness. Portions of the Grid Square address are in a base 24 numbering system, because Grids use alphabetical ciphers "A" through "X".

12 Ciphers versus 14 numbers — For instance, WA1MBA's home QTH is at 42D 28M 45.0S North, 72D 25M 00.1S West — now we know where to send that Cruise Missile during a UHF Contest, HI. That address of his tower requires 14 numbers to transmit (it would be 15 numbers in California, a Longitude of 120 Degrees instead of 72 Degrees). However his True Grid of FN32SL95XA90 only requires 12 ciphers to send. At first, this may seem like a small advantage. So, here are two examples:

Concerning Transposition — If you were sending Tom's address over a voice circuit, there is a good likelihood that someone would transpose some of the 14 or 15 digits. But, when you send the 12 ciphers of his True Grid, the recipient knows that he will receive an address of two letters, two numbers, two letters ... etc., and the chance of transposition are greatly reduced.

Concerning Compactness and User-Friendliness — In my HP-28S hand held (pocket) calculator (a 1989 machine) I have stored a large number of addresses for my favorite SHF operators, and the mountains (or other locations) from which they go roving — all in an 18 cipher format. For instance Mt. Equinox is stored as "FN33KE50MA00Equinox", Tom, WA1MBA, is stored as "FN32SL95XA90WA1MBA", Russ, K2TXB, is stored as "FM29PT29AX09->K2TXB". In all cases the Complete 18 cipher Address has 12 ciphers of True Grid followed by 6 ciphers of call letters of abbreviated mountain (or location) name.

My HP-28S version of a Bearing Distance (BD) program knows to only look at the first 12 ciphers, before doing a calculation. I know to look at the last

6 ciphers to figure out whose address it is. The resultant 18 cipher Complete Address (and name) easily fits on the calculators' LCD screen that is 23 characters wide. I merely look at the list of Call letters or location names, point to the pair that I'm interested in, and tell the program to tell me the answers — which are Bearing and Reverse Bearing, followed by

Distance in Miles and km, or True Grid to Lat/Long conversion.

That pocket calculator is extremely portable, and the internal batteries are good for two years. The result is a very handy tool for a field operation. During almost every 10 GHz Cumulative Contest there are operators who end up in a location that you didn't anticipate, when you made up your computer print-out list, before you left for the field. It is very gratifying to be able to calculate their Bearing and Distance (on the spot), or to be able to help a friend (over the liaison circuit) who

It is well documented that for every mile that you Jog, you add one minute to your life. This enables you at 85 years old to spend an additional 5 months in a nursing home at \$5000 per month.

doesn't know the Bearing to a desired target station.

SUN Alignment of Azimuth (and Elevation)—I also have made a pocket calculator program that predicts the sun's azimuth and elevation for any location or time, in 10 minute (time) increments. This becomes very handy when you are in a brand new rover location and want to set your tripod's Compass Rose accurately. A magnetic compass can easily give you tens of degrees of error. The sun will give you an accuracy of better than 0.1 degree. Even on a cloudy day the sun will allow that accuracy, because you can "see" the sun noise in your 10 GHz receiver when you are peaked up on it. That's also a great way of confirming your receiver system's Gain to Temperature (G/T) ratio.

12 Cipher Esoterica — I get a fair number of requests from operators who want to know their 12 cipher True Grid location, just for the fun of it. Quite often at the VHF/UHF Conferences in New England, operators are asked to stand up and tell their call letters and Grid Square. The more esoteric operators are proud of knowing their 12 cipher True Grid address.

Another Crazy (Serendipitous) Advantage — I have two towers on my property that are 70 feet apart. I have stored a separate True Grid address for each of the towers. I use the bearing of one tower to the other as a means of calibrating the azimuth of rotators, but I often forget that bearing. By running my version of the BD program for those addresses ("FN30HT84DC27->K2RIW" and "FN30HT84CD52RiwOld") I quickly find that the true Bearing and Reverse Bearing is 295.95 degrees from the new tower to the old one, and 115.95 degrees from the old tower to the new one.

The Bad News of Program Availability — I'll anticipate a problem that could happen. After each one of my mini-talks on 12 cipher True Grid squares — and the pocket calculator program that calculates them — I receive requests for a print-out or CD ROM of the program. You'd better be computer-language-savvy before making that request. The good news is that the HP-28S Calculator speaks 6 languages — Algebraic, Reverse Polish, BASIC, FORTRAN, LISP and FORTH. You can write one

line of code in all 6 languages (with proper syntax) and that crazy machine knows what the heck you want. Each language has its advantages of compactness and user-friendliness (self-documentation, when you desire to understand or modify the source code at a later time). I wrote each of my pocket calculator programs in those 6 languages. Therefore, it will require some labor (on your part) to convert the programs into your favorite computer language, before you can load them into your machine.

I hope that someday there will be an enthusiastic computer maven who will volunteer to convert these programs into a more transportable form, so that others can appreciate the advantages of 12 cipher True Grid squares, and Sun Tracking in the field.

73 es Good SHF/EHF DX, Dick, K2RIW.
World Grid: FN30HT84DC27.

New NA 145Ghz Record Claimed

On Nov. 6th at 00:58z, Brian Justin WA1ZMS/4 and Geep Howell WA4RTS/4 had a QSO on 145GHz over a path of 34km. Signals were weak but copyable using CW. TX power on each end was around 5mW. ICOM R-7000 receivers were used as the IF radios.

WA1ZMS was on the Blue Ridge Parkway 37-31-17N 79-30-13W, FM07fm WA4RTS was in Lynchburg, VA 37-21-48N 79-10-21W, FM07ji

Distance calculated both on 6 digit grids and true Lat/Long both give just over 34km. (Although I'd like someone to verify my math!)

No receive margin was to be had on the WA4RTS end, so we reached the limit of what we can do for now with the exception of weather conditions.

Weather at the time of the QSO was 45F, 58% RH. A full description of the stations with photos and a WAVE file will be available in the near future.

73, Brian, WA1ZMS/4

902 VS. 903 MHZ: A VIEW FROM TEXAS

Kent, WA5VJB

About 15 years ago when we first started using the 33cm band, much of the country used the traditional Band Edge + 100 kHz, or 902.1 MHz. The North East Portions of the US went to 903.1 MHz because commonly available LO Xtals could be used.

Now as millions of consumer devices start to share the 33cm band with us we may need to revisit some of our operating patterns to better avoid interference.

The various Spread Spectrum systems are constantly jumping about in frequency, but there are tight FCC Part 15 limits on how much 'out of band' energy is permitted. The precise number changes a bit with bandwidth considerations, but in general the Part 15 transmitter emissions must be -70 db at 901.99 MHz Vs 902.01 MHz. So they must be squeaky clean at 901.99 and 928.01 MHz. The only practical way (Read that as Cheap) to keep the emissions below the limits is to avoid hopping near the band edges.

In Metropolitan areas we are starting to see as much as a 10 dB difference between the 902.1 and the 903.1 MHz noise floors. The long term future of 33cm weak signal work may be at 902.1 MHz. You might want to keep this in mind when designing your next 33cm station. It's not hard to be able to run both.

902 VS. 903 MHZ: A REBUTTAL

(Steve, N2CEI)

Well he is right about the specs. But as for being less of noise on 902 vs 903, this is incorrect.

It is true that the intentional radiators legally don't go out of the band edge but [the] synopsis of the problem is flawed. Signals, because of their modulation, type of spreading, type of frequency hopping, type of what ever [baloney] they can throw into the mix, will only produce 3dB less noise at the most at 902 vs 903 Mhz. Yes this

is a difference in favor of 902, but if you look at the complete picture of what is going on in the 33 cm band, it becomes more clear.

There are other players on the band. The systems that can not tolerate the "spreading systems" move to the band edges. Standard cordless phone are in the 902-903.5 , 926.5-928 portion. They have standard FM modulation with small deviations (2.5kHz) but setup on "Open" channels. Wireless LANS that people hook to their TV sets, outdoor music systems, and computer terminals also abuse these band edges.

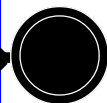
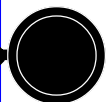
Then, couple in the noise produced by your local cell site, that has out of band noise because their limits are -65 dB for out of band radiation if not harmonically related, and 902 quickly goes to s**t. This is my problem and I am surprised the Texas guys haven't figured it out yet. My guess if you live in a thick population density, 902 will be better if you do not have a Personal communications tower within 5 miles of your QTH. If you do, then 903 is better.

What's the best?? Depends on where you live and it's not a East coast vs. Texas thing. It's what ever service is in your area, including your wife's cordless phone! The temporary fix is to be frequency agile, have robust front ends, forget about super low noises figures and use the band to find out what's happening.

What gets me is during a contest, a station will want to move you up to 33cm and they haven't had their gear on in a year. So they pick a frequency that has a problem and the contact isn't made because they were not aware of the problem

Then the other thing about the 902 vs 903 stuff: Texans don't want to move and they are trying to move the rest of the world. 902 is worse than 903 for me: 927 is the best for me, so lets move to a new calling frequency at 927.200. From now on, the calling frequency in NJ is 927.200! OK? :^)

I used to think that we needed to get on one frequency. Its too late for that. Now we need to use the band as much as possible. In general, East of the Mississippi is on 903, Texas is on 902. Minnesota is on both. The west coast is all mixed up. The north is on 903, CA is on 902.



This Month's program : Steve Kostro, N2CEI from Doweast Microwave examines the mysteries of the internal combustion transverter, compares and contrasts the limitations of water and air cooled yagis, and using real OEM repair parts instread of cheap imitations available at the NAPA store!

Learn how you can replace that coal-fired vacuum driven power source by harnessing the Americurium radionucleides presently residing in your household smoke detector! Send your WHOLE HAMSHACK on a moonbounce expedition with thermonuclear generation power* (helmet and space suit suggested before energizing)!
* (9 volt battery not included.)



The January VHF SS is only 9 Weeks Away!

Are you ready???

**The VHF Journal
The Rochester VHF Group
PO Box 92122
Rochester, NY 14692**