Wisconsin EC

The Wisconsin ARES/RACES Emergency Coordinator

AMATEUR RADIO EMERGENCY SERVICE

VOLUME 1 NUMBER 11 **NOVEMBER 1999**

WISCONSIN SECTION EMERGENCY COORDINATOR, CHIEF RACES RADIO OFFICER AND EDITOR:

Stanley Kaplan, WB9RQR
105 Martin Drive
Port Washington, WI 53074-9654
(414) 284-9346
skaplan@mcw.edu
WB9RQR@N9PBY.EN63BI.
WI.USA.NA

The WEC Newsletter is sent monthly to all American Radio Relay League Emergency Coordinators in the State of Wisconsin. It intended to provide a forum for ECs to share ideas concerning the organization and training of their respective groups, and as a source of news concerning ARES and RACES activities in the state.

Comments, suggestions and articles (finished or in rough form) are solicited from the readers.

NVIS Communications in Wisconsin HF Emergency Operations

Ron Yokes (W9BCK) is a member of the Ozaukee Radio Club. He is, among other things, highly skilled in HF propagation. Although not a member of ARES or RACES, Ron passed along a tip which hold promise to be valuable to those who are.

NVIS stands for Near Vertical Incidence Skywave propagation. It certainly cannot be called a new method, for it was used successfully as long ago as D-Day (1944). It was designed for Allied Forces by Dr. H. H. Beverage, a well-known early American radio pioneer. This HF propagation method has been proven useful repeatedly since then by our military forces, during both Korea and Vietnam, and it has been used by the Russian military as well. Indeed, hams in California use NVIS routinely for repeatable, reliable RACES/ARES HF links within the state.

So what is it all about, then? The basic idea is to send your 40 or 80 meter signal straight up, at an 80º - 90º angle to the surface of the earth. It then hits the ionosphere and is reflected back to the earth in a shower, much like the shower of water that would occur by pointing the stream from a garden hose straight up. The zone covered by the signal shower returning to earth is several hundred miles in diameter, and it is omnidirectional. An even neater property of this technique is that it results in no skip zone! Stations from a mile to several hundred miles from the transmitter all will receive solid signals, up to 24 hours a day. Pictorially, the aim is to change what most of us usually strive for, a low angle radiation pattern, as

shown here in Fig. 1.

Fig. 1: Vertical section through the "warped donut" profile of an HF signal with a low angle of radiation. The horizontal line is the surface of the earth.

In NVIS radiation, the aim is to reach what we usually strive to avoid, a high angle (ideally 90º) pattern, as shown in Fig. 2.

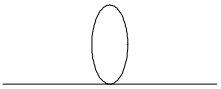

Fig. 2: NVIS radiation techniques aim at producing a single lobe, which goes straight up.

This time a single lobe goes more or less straight up so that it hits the overlying ionosphere and bounces back to earth in a narrow (few hundred mile) shower.

Seems like a simple concept, doesn't it? Everyone who has played billiards knows that if you send a ball into a bumper at a perfect 90º, it will bounce directly back to you. On the other hand, if you send it into the bank at an angle it will careen off to some other spot on the table.

Well then, how does one go about getting this single, vertical lobe? First, one must use a dipole or some variation of a dipole. Vertical antennas simply will not work. Indeed, when the military must use NVIS communications from a vehicle, they bend the mobile whip antenna to a horizontal position! Verticals are out. (I can just see EC Dave Barrow, N9UNR, grimacing at this point. We just installed a brand new, expensive vertical in Ozaukee County for HF use!)

So, think dipole. Regular or folded, single band or multiband with traps, or some variation thereof (rhombic,

triangular or what have you). Tune it to the lowest operating frequency, and get it up. But not too high!

The final secret to NVIS propagation with your dipole is that it must be close to the ground. Between seven and 20 feet off the ground, but no higher! Proximity to the earth forces that radiation pattern up, instead of horizontally. If constraints make it impossible for you to mount it that close to the ground, mount it as low as you can and then drop the feedpoint 10 - 15 feet below the ends. That will improve the NVIS performance.

Sounds like the opposite of everything we were taught. Well, here is one more opposite. We all know that the signal radiated from a dipole is strongest broadside to the antenna. That is, the signal we radiate is weakest in the directions the ends of the dipole point. Right? Wrong with NVIS. A dipole optimized for NVIS propagation radiates an omnidirectional signal. The signal is equally strong toward every compass point! Just look at Fig. 2 and you should be able to visualize this. The signal goes up symmetrically, and the "rain" of signal that comes back down (not shown in the figures) is also symmetrical.

Are there any special calculations? No. The length of a half wave NVIS dipole is the same as any other dipole:

L - 468/f (MHz)

Stan Harter, KH6GBX, ACS/RACES Coordinator for the State of California, calls this beast, pronounced "niviss", a "cloud warmer" antenna. You can read more about it in:

Fiedler, D.M. and E.J. Farmer 1996 Near Vertical Incidence Skywave Communication: Theory, Techniques and Validation. WorldRadio Books, PO Box 189490, Sacramento, CA 95818. The book is a compilation of articles by military, engineering and amateur radio experts and includes many practical examples. It is definitely recommended reading.

Sending Packet Traffic to the WEM Hamshack

By Ray Meyer, N9PBY (n9pby@execpc.com)

[Ray wrote this for OZARES members, but it applies to any ARES/RACES station in Wisconsin, so I asked his permission to reprint it here. Keep packet alive! It is an excellent ARES/RACES tool.]

OVERVIEW

Several ingredients make up an effective packet message. The particulars are largely dependent on the utility of the message. In general, the message should contain at least the following items:

- Priority
- Time/Date
- To
- From
- The message itself

One should consider adding a message identification number for future reference, which matches the number on the prepared paper copy. Using the Packet BBS (PBBS) numbering by itself only works effectively when the packet traffic is being exchanged through only one PBBS. Using the message number assigned by the PBBS can become downright confusing when more than one PBBS is used, because the message number assigned is only specific to that particular PBBS. The number assigned by the next PBBS will be entirely different. That is why its important to add a message number within the message itself.

SENDING THE MESSAGE

The first part to any packet message is establishing to whom the message is being sent. Sending a message to the WEM Hamshack goes to the WEMBBS, whose call is WC9AAG. Therefore, you would start by issuing the send command:

S WC9AAG @ WC9AAG

Note that more specific addressing and send commands can be added as desired, such as:

ST WC9AAG @ WC9AAG.#SCWI.WI.USA.NA

The full address becomes more important the more PBBS 'hops' the message has to make. In nearly all cases, S WC9AAG @ WC9AAG is sufficient.

The title line comes next. Here is where some of the more pertinent message ID and message origin information should go. Although there has been standard set, you should attempt to create a boilerplate title so that referencing is made easy. Some examples of title lines:

Ozaukee Co. - Routine - Msg# 15

NR 15 R - Ozaukee Co.

Msg 20 URGENT - Ozaukee Co.

Again, there are a variety of ways to title messages. Develop a scheme and try to follow it as closely as possible.

The next part is the message itself. The message format may be entirely generated on the fly or it could be a simple copy (as close as is possible) of a traffic form. Whichever form it takes, it is important that the message contain:

- Time
- Date
- To
- From
- Priority
- Some other items that may be helpful include:

- Disposition
- Reply requested
- Voice Frequency being monitored.

Once the message is complete, end the message with the standard /EX or CTRL-Z

Wait! You are not done yet. If there is a voice contact with WEM, be sure to notify them that message number so and so has been sent to them. By doing so, the operators at the WEM ECC will be aware of incoming packet traffic and will look for it.

SOME DO'S AND DON'TS

DO establish a voice communication link if possible to facilitate packet traffic notification. Most of the time, operators do not have the time to constantly scan for new messages.

DO use the closest PBBS, which participates in ARES/RACES traffic handling. These systems know how to route messages to WC9AAG and will do so in a timely fashion.

DO use an @BBS field of @ WC9AAG or @ WEMBBS to facilitate message forwarding. Some PBBSs will not recognize where to send messages addressed only with: S WC9AAG

DON'T link up a node route to WC9AAG to send the message. You are simply taking up that much more time to get the message passed. If your link-up should fail, you have lost whatever part of the message you had sent. Let the automatic forwarding capability of the PBBS handle routing of the traffic. Even from the most distant PBBS in the Wisconsin Amateur Radio Packet System, the message should take no longer than 30 minutes to reach WC9AAG. Most often, it will be close to the average - about 5 minutes. Each PBBS is configured to use whatever paths are at its disposal to get the messages through, and will try and try again until successful. Use node linking only as a last resort.

DON'T rely upon the PBBS message-numbering scheme to identify messages. The message numbers change from PBBS to PBBS.

DON'T use packet to send emergency traffic. Packet is a high precision, low priority mode when compared to voice, which is low precision, high priority mode. Use packet for lists, names, addresses, phone numbers and directions. Use voice for emergency traffic.

State RACES Net Check-ins

Did you know that there is a Wisconsin State RACES Net? Tune in at 8:00 a.m. Sundays to 3.9935 MHz to listen in, or better yet, check in yourself if you hold a General ticket or higher. Here are the RACES ops that checked in on 1999-09-19. The first person was Net Control Operator for the day:

1.	K9RTB	Bob	Luxemburg
2.	N9EMD	Fred	Wautoma
3.	K9FA	Dick	Oshkosh
4.	KA9FVX	Adrian	Poplar
5.	W9IBL	Rich	Ft. Atkinson
6.	W9IEM	Fergie	Pine River
7.	W9IHW	Gus	Port Edwards
8.	K9LX	Bruce	Spooner
9.	KN9P	Mike	Hilbert
10.	KG9PG	Val	Grantsburg
11.	WB9RQR	Stan	Pt Washington
12.	W9TQD	Lee	WI Rapids

Check in! The group will be glad to have you.

The "Tom Shuffle"

As predicted a couple of issues ago, there have been some changes made to two Special EC positions in Wisconsin.

Tom Weeden, WJ9H, has resigned as Special EC for CWRA Baraboo/ Severe Weather Operations. Tom says he believes the title Net Manager for South Central Wisconsin Skywarn Operations is a better descriptor for the position. He is leaving the job to spend more time with his family, and we thank him for his several years of effort and service.

Tom Weeden has been replaced by Tom Fleming, N9SZF, who himself vacated the position of EC, National Weather Service - Sullivan in order to assume the EC, CWRA position.

Think you have it clear? Well, yet another Tom is involved. The EC, NWS-Sullivan position, vacated by Tom Fleming, has been filled by Tom Kucharski, KA9EWJ, of Dousman. Congratulations to N9SZF and KA9EWJ for their new positions, and a special welcome to brand new EC Tom Kucharski.

Aspinwall Steps Down; Rowe Takes Over Dane

The title says it all. After many years of service as EC of Dane County, Bob Aspinwall (WB9RND) has resigned so that he can re-shuffle his activities (we all need that now and then). Sam Rowe, KG9NG, was appointed to replace him as EC on 4Oct. A big WELCOME to Sam!

New Roster

It is time to send you all a revised roster because of the number of changes that have occurred in the past few months. A new edition which reflects the new folks mentioned above, along with other changes, is either included with this newsletter or you will receive it in a separate mailing very soon. Please check out your own listing in the revised roster, to make sure that it is correct. If not, let me know soon, so it can be corrected for the next edition!

RACES Registration Marches On

The push is on to complete integration (read integration, NOT merger) of ARES and RACES in the state well before the year's end. Needed from EVERY EC is data for the members of their ARES group: call, name, home address, city, county, state, zip, home phone and class of license. Whom do you include? Those hams which YOU consider active members of your group. Whom do you exclude? Those hams which YOU consider not to be active members of your group. The decision rests with each EC.

When you send in your data, I personally enter it into the official RACES database. The only thing I add to the data you send is the date of registration, which is effective the date your data reaches me. I will print a copy out a copy of the new data and send it to you for checking and for your file. Any hams previously on the list for your county, which were not on the list you sent in are deleted. Once in the database, a ham is a registered RACES operator. Those who are not in the database are not.

Any EC can request a copy of their group's data at any time, and I will be glad to print a copy and send it to you via snailmail, or I can email it to you if you prefer. When you add hams to your group, or phone numbers change, or a ham moves away, or any other change, a simple note to me via email or snailmail will suffice. I will update the record as you indicate and send you a new report for your group. The process is very simple.

Updated copies of the Wisconsin RACES database are shared with Mack Brophy (N9NTB), WI State Hamshack Manager in Madison, who will make the info available to Al Wohlferd, the Communications and Warning Officer, during emergencies. No one else gets copies of the database. On the other hand, there is no information in the database can't be had by anyone with the latest copy of Buckmaster or some other callbook program, so confidentiality is not really much of an issue. Please reassure the members of your group and yourselves concerning this point, since it does seem to be an issue with a few individuals.

ECs, please get your data in. This is not an optional program, but rather a full-blown statewide effort to integrate ARES and RACES. It will mean better service to the citizens of your county and the state during emergencies that require ham support. Isn't that what we are all about?

Counties that have completed registering their ARES members as RACES operators are:

1. Adams
2. Brown
3. Burnett
4. Calumet
5. Dane
6. Dodge
7. Dunn
8. Eau Claire
9. Grant
10. Green
11. LaCrosse
12. Marquette
13. Oneida
14. Ozaukee
15. Polk
16. Racine
17. Rock
18. Sawyer
19. Walworth
20. Washburn
21. Washington
22. (Watertown)
23. Winnebago
24. Wood

I want to personally thank the ECs of these counties for their work in gathering and sending in the data. I really do appreciate it!

Trempealeau Supports Jackson County Exercise

I received a terrific Public Service Report from Jerry Knudson, KB9PJN, EC of Trempealeau County. Jackson County, just east of Trempealeau, had a major full-scale exercise on 18 September. For those of you who are not familiar with exercise terminology, a full-scale event tests all or major components of the emergency response system, including movement of people and equipment in the field. It is rated as a high stress, realistic exercise with responders, policy, coordination and operations people taking part. The scenario was set at 2000-01-03, with people returning to work after an uneventful Y2K. A train derailment occurs, with release of an unknown toxic substance from a pierced tank car. In a nutshell, the exercise tested derailment and HazMat response, evacuation and shelter operations, government operations, decontamination and hospital admission, and law enforcement response following loss of mutual aid when power and phone lines fail. What a mess!

Jerry's hams, along with hams from Jackson and Eau Claire counties, made up a 9-ham contingent that provided emergency communications during the test. They "worked well together and did what needed to be done", according to Jerry. Most important, when communications became a problem (as it always does in such situations) the Amateur Radio ops came through with needed support. This strongly impressed some of the local government officials with the value of Amateur Radio.

Well done, Jerry! In addition, the pictures and newspaper article you submitted with your report were impressive.

ARES-ARRL RACES-WEM
WISCONSIN