VCARC / Radio Club Newsletter

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This newsletter uses only 100% recycled electrons.

Tornado and Severe Weather Awareness Drill
by Ray KB9CBL

The week of April 11–16 was designated as the annual Tornado and Severe Weather Awareness Week across Wisconsin and Michigan.. Knowledge is key to keep you and your family safe during severe weather. We also need to practice what we learn.

On April 7, Oneida County Emergency Management hosted a Severe Weather Spotter Training Webinar in Rhinelander. Thirty-five local personnel from Oneida, Vilas, Lincoln and Forest counties were in attendance to learn what conditions to watch for and where to report observations. This training should be completed at least every other year to be involved with Amateur Radio Emergency Services (ARES).

Checking into nets not only tests our equipment, but provides training of procedures used in actual emergencies. Using the Incident Command structure, we practice the same procedures used by public safety personnel. Learning to listen and follow instructions is critical as your safety, and that of your community, is at risk. So is the reputation of our entire organization. A lot of people listen to what we report.

We have procedures in place and practice them. We can all learn and teach others by providing a good example on a daily basis. In that respect, if you hear someone doing things different than the rest, it probably isn't the right way. Speak clearly using proper names and, if a message should be written, don't talk faster than the listener can accurately write. Get to the point, say what needs to be said, then LISTEN until it's important you speak again. We are volunteers and you don't get paid by the word.

We are fortunate to have the communication systems we have, and should always strive to get better. In our area, the ARES net will be on the Rhinelander 146.940 – Willow 147.120 linked repeater system. Echolink is available by connecting to the W9RRA-R Node# 452874. An ARES net is practiced every Sunday at 7 pm to test your equipment on the '94 System. All amateurs are encouraged to participate.

In actual situations, a liaison station will connect to the Three Lakes 147.195 and Eagle River Ministry 145.150 repeaters to receive reports and pass information to and from the '94 System for anyone that can't connect directly to the '94 System. A liaison must be able to listen and talk on both systems using two radios. We are counting on you to pay attention to your assignment and not be distracted by monitoring too many things – just as the primary net control must concentrate on their duties.

Tech Talk
by Paul N7EKY

Roger (KD9EPX) and Paul (N7EKY) presented "Grounding Your Shack" on Wednesday, April 13, at the 6 pm session just before the regular business meeting. The presentation covered four different types of grounding including safety grounding, lightning protection, RF ground and grounding for EMP. Paul mentioned that there appears to be some difference of opinion regarding creating an earth ground outside the station with traditional methods calling for large diameter copper ground cable as short as possible and other literature calling for cables spaced two times the length of the ground rods. Grounding for mobile operation was covered as well as methods of troubleshooting ground loops and other problems that may be related to improper grounding.

Finally, some discussion was offered regarding grounding a station against an EMP attack. Although there are products available, the best way of protecting equipment is to disconnect from all cabling and place equipment in Faraday cages or enclosures. It was clear that EMP protection will be of interest to club members in the future. Paul mentioned that the Iron Range club was planning on presenting a demonstration of a QRP transceiver enclosed in a Faraday cage along with general discussion of EMP protection. This is scheduled for Tuesday, April 19 at 7 pm at the Iron Range ARC in Iron River. VCARC members are invited to attend the presentation. Paul will send a notice out to the club about the presentation.

Slow Scan TV and the International Space Station (ISS)
by Paul N7EKY

Astronauts and cosmonauts were sending Images to the world on 145.800 MHz from the ISS, apparently to commemorate the first Amateur Radio on the International Space Station (ARISS) contacts. Several images were received by at least two club members, Tony (KC9SZW) and Paul (N7EKY). Nothing special is required to receive these Slow Scan TV images other than a 2-meter radio tuned to 145.800 MHz and some connection to your PC running a suitable SSTV program. The bonus here is that one doesn't need to be at your station. Just set it and forget it.

Repeater News
by Paul N7EKY

Anyone frequenting the Ministry repeater 145.150 will tell you it has been erratic and unreliable. It may emit a single tone just before doing its CW-ID every ten minutes and will shut itself down periodically for no apparent reason. Tony (KD9SZW) had purchased a repeater down state, an MSR-2000. This repeater is crystal controlled and, therefore, not easily adaptable to our use as a temporary repeater. The goal was to temporarily take the repeater down and see if it can be repaired.

At the meeting on April 13, the subject of the Yaesu DR1X was raised. It is reported that other clubs in the area who have purchased the DR1X are very happy with it, that is has a fantastic receiver section, and includes some minimal controller functionality. The issue with the DR1X is that it is basically a 20 watt repeater and may need an amplifier.

The club voted unanimously to purchase the DR1X to replace the MSF-5000 now in use at Ministry and then the old repeater taken for troubleshooting and repair. On April 14, Paul (N7EKY) ordered the new repeater.

Amateur Radio in the Classroom
by Paul N7EKY

John (KD9DQZ) has been working with two teachers at Northland Pines High School (NPHS) to engage students in amateur radio and the possibility of forming a High School Amateur Radio Club. There was quite a bit of behind the scenes work to get permission to form the club and to interest NPHS students. The two science teachers, Lisa Swaney and Peter Aerts, arranged for a first introduction to the hobby of amateur radio at the high school on March 15 and this led to a meeting with students to find out if they wanted to move forward with a club.

Tony (KC9SZW), Andy (N9NBC) and Paul (N7EKY) presented a very short overview of amateur radio and the Vilas County Amateur Radio Club, Inc. There were 11 students who signed up to form the new club with the first "official" club meeting to be held on April 5.

The first full club meeting and Technician Class took place on Tuesday, April 5, when Paul (N7EKY), Andy (N9NBC) and Roger (KD9EPX) were present with science teacher Lisa and several students. Three modules were presented from the Gordon West/W5YI Technician Book. Unfortunately some kids had to leave early but some stayed to nearly 5 pm. Reading assignments and a schedule set to meet twice a week on Tuesdays and Thursdays. With 20 lessons in the program, the goal was to go through the program in about five weeks, including an exam session.

The VCARC advisors and school teachers received feedback from students. Students would prefer to read the book on their own and go through the Q&A with VCARC advisors, then cover some subject or conduct a demonstration such as antenna design and construction.

At the next class on Tuesday, April 12, Andy and Paul went through a practice examination from QRZ.com, taking care to explain each question when needed. It was very clear that some in the class had already studied their text.

When Paul (N7EKY) started looking for financial support for the club and mentioned this during the ham breakfast on March 26, Dr. Paul (WW9J) immediately said that the American Board of Surgical Assistants, Paul F. Weeks MD, CEO, will cover the cost of the books. Thanks Dr. Paul and Martha Weeks! The books will remain the property of the Northland Pines ARC so that future members can take advantage of them also.

The Raspberry Pi and Ham Radio and APRS Special Interest Groups
by Paul N7EKY

The March monthly Raspberry Pi in ham Radio Special Interest Group (SIG) meeting was combined with the APRS SIG at the classroom immediately after the ham breakfast. Although the new antenna wasn't mounted (waiting for brackets), it was erected temporarily on a ladder outside of the classroom and provided much needed 2-meter communications during the two sessions on Saturday, March 26. Fred (KD9CCE) demonstrated his TinyTrak connected to his Baefeng HT and was able to get his status transmitted to the Sayner gateway.

Paul (N7EKY) presented the Raspberry Pi 2 Model B running DireWolf, a terminal node controller that can also act as a digipeater and iGate. Paul set up the program as an iGate and the participants were able to see traffic intercepted and sent to the iGate server and on to aprs.fi. Paul provided a handout "Your First Pi" to attendees. This document was designed to help those new to Raspberry Pi get started and provided tips on selecting a Pi and installing an operating system.
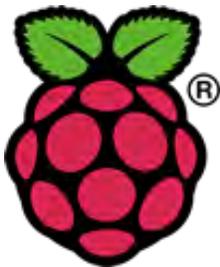
Choose Your First Raspberry Pi

There are several places where you can purchase your first Pi. In my opinion, I would recommend that you shop around to find the best price on the Pi you want. I saw a Pi for sale on Amazon at a very low cost, but it was a model B, which only had 2 USB ports. The latest Pi is the Raspberry PI 3 Model B, which has just hit the market in February 2016. It has some advantages to the previous Raspberry Pi 2 Model B including a faster processor at 64 bits and Wi-Fi onboard. I found one here: http://www.mcmelectronics.com/product/83-17300_utm_campaign=e14&utm_source=e14community&utm_medium=forum&utm_term=83-17300&COM=superwidget-link_RaspberryPi+CMPNULL.

Amazon wanted $10 more for the same board. You may wish to purchase an enclosure/case and a Power Brick at the same time. Note that the Pi 3 draws up to 2.5 amps vs the Pi 2 B which drew only 2 Amps maximum. You usually can purchase a Micro SD card with NOOBS (New Out Of Box Software) at the same time (See Operating Systems).

OPERATING SYSTEMS

Several Operating Systems are available for the Raspberry Pi but Raspbian Jessee is the latest OS based on Linux Debian, which is what most projects will call for. I recommend that you use this unless your project calls for something different. This doesn't mean that you shouldn't experiment with something different.

NOOBS is probably the easiest way of preparing your Micro SD card. Download NOOBS https://www.raspberrypi.org/downloads/. Place the file somewhere where you can find it later and unzip it. Of course you can order a Micro SD card with NOOBS already on it. You will also need to format the Micro SD Card using the SD Formatter 4.0, which you can download here: https://www.sdcard.org/downloads/formatter_4/. Of course you will need a SD slot on your computer for the SD card. Note: Be very careful when using the SD Formatter to select the correct drive letter for the SD card. ANY DRIVE FORMATTED WITH THE SD FORMATTER WILL HAVE ITS' CONTENTS LOST FOREVER. After the SD card is formatted, copy the extracted NOOBS files onto it from your PC.

Now you're ready to get started. Insert the Micro SD card with NOOBS into the Pi, connect the network cable or Wi-Fi, keyboard, mouse, and HD monitor, then connect the power and wait until the Raspberry Pi Graphical User Interface (GUI) appears.

Select America and make sure to choose the US keyboard (There is a difference between the US and UK keyboards), then choose Raspbian to install. This install will take some time, depending on the speed of the Micro SD Card, up to an hour.

Press Enter on your Keyboard to reboot Raspbian and finally the GUI will reappear. Click on Menu, Preferences, Raspberry Pi Configuration. This is where you can select your county, time zone, keyboard, and other options. Make sure that SSH is enabled under Interfaces, then reboot the Pi.

Once the Pi's GUI reappears, move your mouse under the two Computers in the top right corner of the screen until you see the IP address of the Pi. Write the IP address down as you will need it if you decide to connect to the Pi from a different computer. Now let's make sure that our Pi and Raspbian Jessee are updated: From the GUI start the terminal at the top of the screen and at the command prompt run the following commands:

Sudo apt-get update   Sudo apt-get dist-upgrade   Sudo rpi-update

The sudo command stands for "superuser do". Without using this before other commands, you would be asking to conduct updates without the proper privileges. The apt-get utility is a powerful command line program that is used to perform the installation, removal, or upgrade new software packages. You will see apt-get many times. By the way, unlike DOS, case is important in Linux, both in commands but also folders and files.

Really the best way to get started with the Pi is to just dive into it. There are many ham radio related projects for the Raspberry Pi mentioned on the internet, so just get started.

New and Upgraded Hams
by Paul N7EKY

Members of the Vilas County Amateur Radio Club, Inc. conducted a two-day Technician ham radio class April 9-10 in Eagle River. At the end of the class volunteer examiners conducted the examination for the Technician Class license which is issued by the Federal Communications Commission (FCC). All seven students, Jeffrey Kitz of Eagle River, Scott and Kyle Ruesch of Two Rivers, James Smaglick of Lac Du Flambeau, Brian Polzin of Minocqua, Jeremy Ruetz of Rhinelander, and 12-year-old Shelby Loback from Goodman, passed the examination for their Technician Class FCC license. Shelby also won a Yaesu Tri-Band portable transceiver donated by Mike Bresnahan (KC9ZJF). Thanks Mike, that was perfect!

The examination was also offered for those wishing to upgrade from Technician to FCC General Class license. Congratulations to VCARC Members Roger (KD9EPX), Dr. Richard (KD9FIM), and Thomas (KD9FIN) who successfully passed their upgrade examination.

The class was taught by Andy Falkenstern (N9NBC), Roger Schutt (KD9EPX), Don Korbas (KD9EPY) and Paul Clay (N7EKY), all members of the Vilas County Amateur Radio Club, Inc. The class covered electronics, radio and antenna theory and rules and regulations, everything needed to pass the examination which qualifies for the FCC Technician Class license.

Three amateur radio volunteer examiners conducted the examinations. They were Mike (KC9ZJF), Andy (N9NBC) and Paul (N7EKY).

Volunteer examiners and successful Technician and General examination participants with 12-year-old Shelby Loback (inset) who proudly shows the Tri-Band Portable Radio he won in a drawing after passing his Technician Class FCC examination.

Local Nets
by Paul N7EKY

Net	Day / Time	Frequency/ + - /PLL Type
Northwoods		
ARES	Thursday 19:00	146.940 – 114.8
		ARES / Traffic**
		147.120 – 114.8 Linked
		EchoLink W9RRA=R or Node 452874
Merrill	Sunday 19:30	146.640 – 114.8 Traffic
		EchoLink Node 364965
Iron Range	Sunday 20:00	145.170 - Traffic
Blackjack	Sunday 20:00	146.760 - ARES / Traffic
Rib Mountain	Sunday 21:00	146.820 – 114.8 Traffic
Tomahawk	Monday 19:00	145.430 – 114.8 Swap Net
VCARC/Ministry	Monday 19:30	145.150 – 114.8 Traffic
Iron Range	Monday 20:00	145.170 - SSTV*
VCARC/Ministry	Tuesday 19:30	145.150 – 114.8 SSTV
Three Lakes	Wed 19:00	147.195 + 114.8 Traffic

*Winter /months only
**Last Thursday of the Month

Our Supporters for 2016
by Paul N7EKY

These fine businesses have decided to support the Vilas County Amateur Radio Club, Inc. for 2016:

715-547-6212

Eagle River Tire
126 E Division Street
Eagle River, WI 54521
715-479-8820
www.ertire.com/

Boat Sport Marina
3624 WI 70
Eagle River, WI 54521
www.boatsport.com

Stateline Accounting & Tax Service LLC
4366 County Road B
Land O Lakes, WI 54540

American Board of Surgical Assistants
Paul F. Weeks MD, CEO
(Northland Pines HS Club)

Mrs. Karen Schluter

Short Takes

— Donated Antenna installed at the Manufacturing Incubator Building—

Vilas County Economic Development has graciously allowed us to install an antenna on the side of their building close to the classroom window. This will better allow us to conduct demonstrations and events in the classroom that require good VHF communications. Ray (KB9CBL) has donated a new, high quality, Slim-Jim antenna to the club for this purpose. Don (KD9EPY) donated a 30-foot section of COAX, Paul (N7EKY) will provide the mounting brackets, and Mike (W9BHL) the mounting pole and coax. Thanks to all for your donations!

Roger (KD9EPX) and Bob (N9HSAQ) installed the antenna on Tuesday, April 12. It was a first-class job and in time for use by net control for the severe weather drills on Thursday, April 14. The coax is in a waterproof plastic bag and outside of the building. This allows the feedline to be used from inside or outside of the building. Great job Roger and Bob!

— Contest News —

Andy (N9NBC) was recently notified that he placed #1 United States, #1 North America, and #5 in the World in the 2015 CQ World-Wide DX Contest SSB, Single Op Assisted – QRP – 20 Meters. Congratulations Andy! Contact Andy n9nbc@arrl.net if you are interested in Contesting.

— VCARC Newsletter Articles Needed —

Members are encouraged to submit articles and photos involving club members or Amateur Radio in general. Read any good articles or posts. Want to submit a review of a piece of equipment you have or recently acquired? Your submissions are welcome! Please send them to pclay@nnex.net.

— The Club Received Donated Vintage Military Radio Receiver —

Paul (N7EKY) recently received a call from Mrs. Karen Schluter who explained that her father had owned a Military Vintage radio and that she wanted it to go to the Vilas County Amateur Radio Club, Inc. Mrs. Schluter identified the radio as an R-366/TRR-5.

On Thursday, April 14, Andy (N9NBC) and Paul met with Mrs. Schluter and received the rig. It was transferred to Roger (KD9EPX) to clean up and check out. If this rig works, the plan will be to set it up at a club meeting so that everyone can experience a WW II-era U.S. Navy Receiver.

— For Sale by Members —

This is a new section in our newsletter to list equipment members wish to sell or swap. Submit listings for your personally owned amateur radio equipment to pclay@nnex.net. This is not intended for someone who makes it a business to buy and sell equipment.

For Sale: Yaesu FT-101-E with CW filter & Cooling Fan, very clean radio. Original owner, it's my Eagle River rig. Asking $350 or best offer. Call 1-847-274-8433. Bill W9ZCL

For Sale: K3 100 watt transceiver with LP Pan and accessories. Serial #4831. 1.8 and 250 Hz filters, IF board, LP Pan Adapter, USB sound card with cabling. USB radio serial cable. Available May, call Bob KC9RF 608-481-0297 or email sail_ski@yahoo.com $2,175.00 firm.

Club Membership

The Vilas County Amateur Radio Club, Inc. now can count **82** members!

Automatic Packet Reporting System - Part III
by Paul N7EKY

This month we will concentrate on some important Automatic Packet Reporting System (APRS) configuration options. We won't try to cover everything, but rather, discuss some of the more important topics. How one makes configuration changes will depend on the APRS solution used. Those with radios ready to do APRS right out of the box will have configuration menu screens for these options. In other cases, there may be configuration files that must be edited to select the configuration desired.

The call sign and Secondary Station Identifiers (SSID) is how you are identified on the APRS network. There are 16 SSIDs in use on the VHF APRS Network, as listed in table one.

SSID	Explanation	SSID	Explanation
None	Fixed stations (message capable)	-8	Marine mobile, land mobile
-1	Generic additional Station Digipeater, Mobile, Weather	-9	Primary Mobile – Message Capable
-2	Generic additional Station Digipeater, Mobile, Weather	-10	I-Gate, Internet Station, Echolink, Winlink, etc.
-3	Generic additional Station Digipeater, Mobile, Weather	-11	Balloons, aircraft, spacecraft
-4	Generic additional Station Digipeater, Mobile, Weather	-12	1 way tracker (no messaging)
-5	Dstar, iPhones, Androids, Blackberry's, etc.	-13	Meteorological
-6	Operation station for satellite communications, Camping, 6 Meters, etc.	-14	Truckers, Tracking mobile
-7	HT's or other Human Portable	-15	Digipeater, mobile, Meteorological

Table 1

Obviously from the table, the SSID could make it easier to determine the purpose of the station. For example, the call sign N7EKY-9 would usually indicate that the station is a mobile station. But, there is another indicator that will help: the APRS Station Symbol. These symbols are passed along each time your station sends a beacon. For example, N7EKY-9 is sending the symbol of a pickup truck, which fairly demonstrates exactly what the station is installed in. These symbols are usually selectable in the setup screens or the code can be inserted where appropriate in the APRS configuration.

Next, since an important part of the APRS beacon may be a position report, your station would normally be sending your position obtained from a connected GPS, or, in the case of a fixed position station, the latitude and longitude will need to be manually set in the configuration. Again, how this is done will depend on the tools in use but may vary from editing a configuration file to inserting the appropriate information in a setup screen or by selecting GPS as an option.

Probably one of the least understood of the configuration options is the path. Remember from our previous discussion, that APRS is a one to many, connectionless protocol. APRS stations, digipeaters

Automatic Packet Reporting System - Part III — *continued*

and iGates transmit and receive on the same frequency. If there are many stations in the area, the frequency can be congested. In addition, digipeaters can re-transmit, or repeat packets, depending on the configured path of the originating stations. If too wide a path is set by the originating station, the frequency can be further congested. The original APRS path configuration standard settings proved very inefficient and caused unnecessary congestion, so in 2004 an effort was made to revise the standard. This led to the "New Paradigm" initiative and recommended replacing "RELAY", "WIDE", and "TRACE" with "WIDEn-N" with a recommended value of "N" no greater than 2 except in low density locations. The recommendations are in table two.

APRS Recommendations under the New n-N Paradigm
RELAY, WIDE, TRACE TRACEn-N and SS are obsolete
Use WIDE2-2 for fixed stations. Use WIDE2-3 in areas far from City or in Mountains
WIDE1-1,WIDE2-1 for Mobiles WIDE1-1,WIDE2-2 in areas far from City or Mountains
WIDE1-1,SSn-N for selected non-routine State or Section nets
DIGI1,DIGI2,DIGI3 for Point to Point Communications

Table 2

Most, if not all, new APRS Radios will default to WIDE1-1,WIDE2-1. The first number in a N-N type path is the total number of digi hops desired. The second one is the number of potential hops remaining as the packet is transmitted from a given digipeater. Depending on where you are in rural America, you may want to change the path to WIDE1-1,WIDE2-2 to take advantage of three hops in areas with low APRS activity.

Finally, in the United States, our VHF Radios should be set to 144.390 MHz for APRS. In the case of dual band APRS Radios, make sure that the frequency is set on the band designated for digital/APRS. If you mix channels or frequencies you could be transmitting on a frequency not intended for APRS.

If you are new to APRS and want to learn more, then you might consider attending the Raspberry Pi Special Interest Group meetings which address APRS, or ask a club member who uses this mode. For more information contact Paul (N7EKY) at pclay@nnex.net.

Club Shirts

Dr. Paul (WW9J) had arranged to make a special purchase of club shirts with the Vilas County Amateur Radio Club, Inc. logo. He and Paul (N7EKY) modeled the shirt at the last meeting and put out a call to see who is interested in owning a shirt. Paul has received orders for 32 shirts and passed this to Dr. Paul who hopes to have the shirts ready by the next ham breakfast on April 23. These are attractive, very good quality shirts for a fair price.

Dr. Paul (WW9J) models a club shirt with the club logo.

Tornado and Severe Weather Awareness Drill — *continued*

Surrounding counties are operating on the same guidelines. When available, a liaison from 94 should also be established with Lincoln County on the Tomahawk 145.430 and Price County on the Park Falls 147.000 repeaters. For Weather Spotters DURING A DRILL, go ahead and check in with as many nets as you can. DURING AN ACTUAL EVENT, check in with your local net and stay there. If you can safely monitor other frequencies also, that's fine, but your primary responsibilities are to be alert to the conditions around you and accurate information going to and coming from the local net.

Unless requested to, do not repeat second or third hand information.

During actual events, the Merrill 146.640 repeater gets linked using a special IRLP connection directly to WX9GRB, the National Weather Service office in Green Bay. This is not a regular net accepting check in. It is a liaison station from the 94 System utilizing county names as tactical callsigns. Normal regulations to identify still apply. If you ARE the designated liaison station for a particular county, we are counting on you to pay attention and be ready to respond when asked with a brief, to the point, and accurate report. If you must step away from the radio even briefly, arrange for someone to cover for you. If you are NOT the designated liaison station, make your reports if appropriate to your local net.

Don't wait for actual emergencies to prepare for them. If you don't know, aren't sure, or want to learn more, please get involved in ARES. Meetings are the first Thursday at Newbold Fire Station One, 4588 Hwy 47 north of Rhinelander. Our weekly nets are Sundays at 7pm on the 94 System. We are part of the Oneida and Vilas County Emergency Management Communication Plans. All this information and more is available at www.northwoodsares94.com and on Facebook at W9RRA Rhinelander Repeater Association. Or you can contact me at KB9CBL@yahoo.com or call 715-892-0175.

So how did we do this year? A net was activated on the '94 System with KC9UDA as Net Control. An auxiliary station was set up at the VCARC classroom testing out the new antenna and feedline. From there, KB9CBL, N7EKY, and N9HSQ were able to serve as the liaison stations to the Three Lakes and Eagle River Ministry repeaters, and also report to WX9GRB via the Merrill IRLP link. We must continue to practice and improve where we can.

Question: What would happen if …. ?
Answer: See you at the next meeting to learn how.

Ray Mark, KB9CBL
Northwoods ARES/RACES EC
Oneida and Vilas Counties

Members Attend Storm Spotter Class
by Paul N7EKY

VCARC members had the opportunity to refresh their Storm Spotter skills on Thursday evening, April 7, at the Oneida County Law Enforcement building in Rhinelander. Amateur radio operators from all across the Northwoods were present at the dedicated ham-only event hosted by the Emergency Communication Director for Oneida County, Ken Kortenhof (KC9HBX), and the National Weather Service (NWS). Many commented on how professional the presentation was and the facility was top notch as well. Many thanks to Ken and the NWS for a great presentation.