VCARC / Radio Club Newsletter

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This newsletter
uses only 100%
recycled electrons.

A Duplexer Tale
By Paul N7EKY

On Wednesday, April 27, Paul (N7EKY), Roger (KD9EPX) and Fred (KD9CCE) removed the repeater duplexer and delivered it to Jeffrey's (KD9FYU) lab in Eagle River. Jeffrey has a well-equipped lab, Kitz Technologies, where he designs, tests and manufacturers electronic equipment including very low loss amplifiers for television reception. Jeffrey connected the duplexer, a Sinclair Q2220E, to his HP 8753A analyzer and checked it to see if it was within specifications for our frequency of 145.150 TX and 144.550 RX. According to Sinclair, the Q2220E should provide a maximum of 1.5 dB of insertion loss whereas our duplexer was showing over 5 dB of loss at frequency. Also we should see a minimum of 70 dB of isolation between frequencies but instead the duplexer showed only 35 dB of isolation.

Obviously this concerned all of us which led to a contact with Sinclair technical support to confirm the setup and equipment in use by Jeffrey and Roger. Once confirmed, Jeffrey and Roger proceeded to tune the duplexer to obtain the best possible figures as close as possible to those provided by the manufacturer. Both Jeffrey and Roger believed that the cans were tuned as well as possible without sending them back to the factory for work.

The duplexer and repeater were returned to the hospital ambulance garage the next morning for installation. When powered up the repeater appeared to work well on transmit but receive was almost unusable unless input was very close to the repeater. The duplexer was returned to Jeffrey's lab where he tuned the unit using a different method, this time with even better results.

Fred (KD9CCE), Roger (KD8EPX), Jeffrey (KD9FYU) and Scott (WA9STI) were present when Paul returned the duplexer for installation. This time the repeater appeared to work flawlessly on transmit and receive with excellent signal reports from around Vilas and Oneida counties.

After a few days of outstanding service, the repeater again started shutting transmit off on a regular basis so Paul and Roger returned to Ministry to clean the jumper cable and duplexer connectors. At some point it became obvious that the cables were in need of replacing. Perhaps the first hint was when one of the connectors just fell off the cable?

The duplexer was again returned to Jeffrey where he again checked it to make sure that it was tuned properly. Paul ordered three replacement cables and simultaneously received word that the new DR1X repeater, approved by the club, had shipped.

On Monday, May 9, Paul (N7EKY), Tony (KC9SZW), Andy (N9NBC), Fred (KD9CCE), and Roger (KD9EPX) mustered at the Ministry ambulance garage to assemble all the parts of the new repeater including the new rack enclosure donated by Mike (W9BHL), the duplexer, new DR1X repeater and new cables. The repeater was on the air before noon.

Repeater Update — May 11
by Paul N7EKY

Current repeater and duplexer installation at Eagle River Memorial Hospital.

On Monday, May 9, members Roger (KD9EPX), Andy (N9NBC), Fred (KD9CCE), Jeffrey (KD9FYU), Paul (N7EKY), installed the club's new Yaesu DR1X Fusion Repeater in the Ministry ambulance garage. The repeater was installed in the rack enclosure donated by Mike (W9BHL) along with the retuned duplexer and new cables. Thanks again, Mike!

This repeater is completely legal without a controller as it provides a method to remotely turn off and on transmit. Club officers are provided with the codes that were programmed to control this function.

Although the repeater is rated at 50 watts out, it is set to 20 watts, which is the stated full duty cycle rating. It is envisioned that the club will need a VHF amplifier to bring the power up to 80-100 watts. Paul has an amplifier which, if it is still in working order, can be used to test the output on high power.

Many thanks to all who were part of this project and especially Jeffrey who deserves special recognition for opening up his Kitz Technologies shop for this project. He has pledged a donation of a low noise VHF amplifier for the repeater. Thanks Jeffrey!

Regarding the old repeater, the Motorola MSF-5000, the plan is to get someone to look at it to see why it was acting so strangely. One can say that the club should have conducted a more prolonged, step by step approach to troubleshooting the problem, but we need to understand that our access to the ambulance garage is sensitive. We need to cause as little inconvenience as possible for the Ministry staff or we risk ruining our welcome.

Jeffrey (KD9FYU) and Roger (KD9EPX) testing the duplexer.

The HP 8753A analyzer at Kitz Technologies.

Raspberry Pi and Ham Radio SIG
by Paul N7EKY

The Pi Special Interest Group (SIG) met immediately after the ham breakfast on April 23 in the Business Incubator classroom. Paul (N7EKY) presented an introduction to the Raspberry Pi including a short overview of the different boards currently available with special attention on the Pi 3 B, which is the fastest board yet.

The Raspberry Pi 3 B is based on the Quad Core Broadcom BCM2837 64 bit ARMv8 processor running at 1.2GHz. This new board also includes Wi-Fi and Bluetooth built in and 1Gb of RAM. Everything else is identical in that it has the same form factor and can be powered by the same 5V 2 Amp power brick. The new board can be powered by a 2.5 Amps brick if one wants to have more flexibility with USB peripherals.

Paul showed those in attendance how to find the new Pi and how to download and install NOOBS, or New Out Of the Box Software, which gives the user a selection of a number of different operating systems, including "Jessie," the current Debian release.

Finally, the commands needed to update the Pi and operating system were covered. Paul plans to cover the installation and use of fldigi on the Pi at the next meeting. He hopes to enlist Bob (KC9RF) to assist in the presentation. Bob has conducted a presentation to the club on PSK31 and has written articles about this mode for the club newsletter.

If all goes well, the Pi will be running fldigi for a PSK31 demonstration at the next Pi SIG.
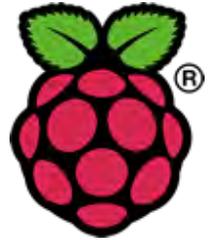
Bob Reynolds Donates his entire Shack to VCARC
by Paul N7EKY

On April 21 club members Paul (N7EKY) and Andy (N9NBC) visited Mr. Bob Reynolds (WB9RZA) in Woodruff to accept his generous gift of his entire amateur radio shack and antenna farm. Bob told Paul and Andy that he was not going to continue with ham radio and wanted to donate his equipment where it could do some good. When asked why he thought of the Vilas County Amateur Radio Club, Bob stated that he liked what he had been reading in news articles in the Lakeland Times. Paul and Andy picked up Bob's Kenwood TS-450S, ICOM IC-2100, Astron RS-20A and other associated equipment, all in excellent condition.

On Wednesday, April 27, Paul and Andy returned with Roger (KD9EPX) and Ray (KD9CBL) to take down Bob's tower and antennas and move them to the club storage room at the Manufacturing Incubator in Eagle River. Bob's "antenna farm" included a Rohn 25G 20 foot tower, a GAP Titan DX HF Vertical Antenna, and what appeared to be a Ringo Ranger VHF Vertical. Very nice antennas indeed and not very old.

Bob said that the club can use the equipment for any purpose they desire but indicated that he hoped that some new ham who did not have sufficient resources to purchase his own equipment may be helped in some way by his donation. Thanks for your generosity Bob!

Bob Reynolds (WB9RZA)

SSTV

by Tom KC9UDA

Except when the repeater was down, the Ministry SSTV net had started to become very popular with increasing participation each week. We start the net at 7:30 pm and we try to keep it going until 8:30 pm or until everyone has sent three pictures. On April 12 and 19 we had to close the net early due to the degrading band conditions.

There are many ways to send and receive images. For example some just use a smart phone with an application and use the phone's speaker and microphone next to their transceiver. Others use an external sound card like a SignaLink USB connected between their computer and transceiver to make a "direct" connection.

All amateurs are welcome on the net, but some just monitor and enjoy the pictures others send. Although the MP73 format had become a favorite, there are others that may be a little more efficient in that they take less time to send an image while the resolution is entirely satisfactory. On April 19 Ray (KB9CB) and I tried Robot 72 and we liked it. The photos were sharper and appeared to have less snow on them. Dave (KC9ZJO) and Chuck (KC9KAK) agree that Robot 72 appeared to do a better job.

If you want to know more about SSTV please come and join in and ask questions. There is always help on and off the net. We answer question during the net and help you get set up and to be part of the net. We do need to remember to keep the images family friendly.

EchoLink for KD9DXK-R

by Paul N7EKY

Paul (N7EKY) is working on setting up EchoLink for the Vilas County Amateur Radio Club, Inc. repeater in Eagle River, KD9DXK/R. So far he has registered the club's call with EchoLink and has installed the software on one of his older PCs running Windows XP. The goal is to have EchoLink working on a Raspberry Pi, which can be easily squirreled away in someone's home in Eagle River.

Paul purchased an interface built and sold specifically for the purpose and has connected it to a Baefeng HT. Although he lives too far to make a decent connection to the repeater with this configuration, he intends to move the "test" to the manufacturing incubator classroom to make sure it works properly.

The plan is to try to get it working before summer and allow members to test it, then ask the membership whether they want EchoLink or not. We have many members who go away for the winter months or who may live too far to access the repeater. This may be a great way for them to stay in the loop.

Robert Heuer assumes Treasurer Position
by Paul N7EKY

In early May, Dave (KC9ZJO) resigned as club treasurer. Dave was the first treasurer for the club and has done a fine job. We can all thank him for his enthusiastic support of the club, its members, and programs. Although Dave is no longer treasurer, he will still be around and we hope attend as many meetings and events his schedule allows. Thanks for your good work, Dave!

Robert (RayBob) Heuer (KD9DDE) will assume the duties of treasurer. Thanks RayBob for taking on the responsibilities of treasurer!

Vintage Radio Night
by Paul N7EKY

Karen Schluter was present May 11 when the club hosted its first Vintage Radio night. Mrs. Schluter was able to see her father's U.S. Navy Radio Receiver R-366 working like it was right out of the factory. Roger (KD9EPX) put many hours into the project, from cleaning contacts to removing the remnants of cigarette smoke from the case. Although the antenna could have been better and somewhat limited the demonstration, it was good enough to experience the quality in engineering and manufacturing that is represented in the old radio.

The R-366 Receiver covers 500Khz-30Mhz, AM, SSB, CW, with 5 step crystal filter, 2 RF amplifier stages.

SOTA — Tech Talk
by Paul N7EKY

Scott (WA9STI) presented SOTA at the May 11 Tech Talk session. Summits on the Air (SOTA) is an organized part of amateur radio with rules that those who wish to participate must follow in order to have their radio contacts credited. Scott showed some of the places he has activated and spent a fair part of the presentation showing the equipment he commonly takes with him. He stressed safety and careful planning to fellow hams. It was very clear to all that Scott is the go-to for information on how to get started with SOTA.

Please see the full article on pages 10-11.

Scott WA9STI talked the group through SOTA

Phelps Twin Tri – Triathlon Set for August 27
by Paul N7EKY

Lorin (KD9CXC) and Paul (N7EKY) have been meeting with Phelps Chamber Race Coordinator Celeste Hendrickson and other volunteers in an attempt to make sure that members of the VCARC, Inc. provide the best possible communications support for the Phelps Twin Tri–Triathlon scheduled for August 27. The course has been set and Celeste has requested our communications support at five locations, including the race start, where she will be located.

VCARC net control is slated for the chamber office, which will be quiet, allowing for net control operators to record bib numbers called in from our stations. This may not be necessary if there are a small number of entrants. We will be provided with a list of entries and their bib numbers and, as they cross our checkpoints, they can be called into net control. Celeste indicated that this is only the second year for this event but she hopes for up to 50 entries.

Since our repeater has been down, Lorin and Paul have not been able to check communications from the different checkpoints, but we have a few options. Our first option would be to use the Ministry repeater, but, if for some reason that does not work out, we can probably cover the area adequately on simplex or even use the Phelps town repeater which Tony (KD9SZW) arranged for us to use if needed.

It appears that Celeste and the other volunteers have worked very hard to make this event successful. This great opportunity for our club to shine and those who are interested but haven't yet signed up should contact Paul.

New Shirts for VCARC Members
by Paul N7EKY

Following the April ham breakfast Dr. Paul (WW9J) passed out the first of the 33 shirts members ordered with the Vilas County Amateur Radio Club, Inc. emblem. Approximately half the shirts were distributed and Dr. Paul and the remainder were at the club meeting on May 11. Dr. Paul and Martha Weeks said that they had ordered some extra shirts, so if you didn't get your shirt order in and still want one, be sure to see Dr. Paul--they may have one in your size.

Good attendance and a couple of new faces at the May ham breakfast.

Our Supporters for 2016
by Paul N7EKY

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

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
715-547-6212

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

Mrs. Karen Schluter
Minocqua, WI

Mr. Craig Farrell
State Farm Insurance
9429 County Road J
P.O. Box 1150
Minocqua, WI 54548-9318

Local Nets
by Paul N7EKY

Net	Day / Time	Frequency/ + - /PLL	Type
Northwoods ARES	Sunday 19:00	146.940 – 114.8 147.120 – 114.8 Linked Echolink W9RRA-R or Node 45287	ARES /Traffic
Merrill	Sunday 19:30	146.640 – 114.8 EchoLink Node 364965	Traffic
Iron Range	Sunday 20:00	145.170 – 107.2	Traffic
Blackjack	Sunday 20:00	146.760 - Echolink K8ATX-R	ARES / Traffic
Rib Mountain	Sunday 21:00	146.820 – 114.8	Traffic
Tomahawk	Monday 19:00	145.430 – 114.8	Swap Net
VCARC	Monday 19:30	145.150 – 114.8	Traffic
Iron Range	Monday 20:00	145.170 -	SSTV*
VCARC	Tuesday 19:30	145.150 – 114.8	SSTV
Three Lakes	Wed 19:00	147.195 + 114.8	Traffic

Wisconsin ARES/RACES VHF Net Last Thursday of the Month 19:00
145.130 PL 114.8 Sayner Repeater – WECOMM System

*Winter months only

Short Takes

— Next Technician Class—

The next preparation class for the Technician amateur radio license is scheduled for June 18-19, 2016 at the Vilas County Economic Development Manufacturing Incubator classroom, 555 Enterprise Way, Eagle River. The classes are scheduled on Saturday 8 am to 4 pm, and Sunday 8 am to 2 pm. At the end of the class Volunteer Examiners will offer the examination for Technician Class license. This class is designed to teach what is necessary to pass the examination. If you know of someone interested in becoming a ham please have them contact Paul at (715) 891-0157 or pclay@nnex.net.

— Volunteer Examiner News —

On Saturday, May 7, club member Thomas Ceglarek (KD9FIN) passed his examination to upgrade to Extra Class at the Vilas County Economic Development Classroom in Eagle River. Volunteer Examiners present were Andy (N9NBC), Mike (KC9ZJF) and Paul (N7EKY).
Congratulations Thomas!

— SATERN to deploy to National Guard Exercises—

Ms. Terri Leece has announced that she is asking for those who are members of the Salvation Army Team Emergency Radio Network (SATERN) to deploy during two major exercises in June and July this summer. She said that most members had submitted everything necessary to be issued an ID badge, which would be sent out soon. She said that those who have attended SATERN training can check their status by logging into disaster.salvationarmyusa.org. If everything has been completed, you will be ready. She has background forms that she expects to send out soon. If you are interested in the Salvation Army SATERN organization then you can ask Paul (N7EKY) who will direct you to the proper contact within the Salvation Army.

— 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.

— For Sale by Members —

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. Call Bob KC9RF 608-481-0297 or email sail_ski@yahoo.com $2,175.00 firm.

Yaesu FT8800R VHF/UHF Dual Band 50W/35W – 2 Meter & 70cm. Includes External Speaker, NMO Trunk Mount with COAX - $275.00 Firm. Contact Ka9sro@gmail.com

Club Membership

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

Joshua Tree NPOA / SOTA
by Scott WA9STI

The third week of April, Scott WA9STI, his XYL Karla KB6LAS, and their cattledog Daisy traveled to Joshua Tree National Park located in the Mojave desert approximately 150 miles east of Los Angeles. They were looking for some solitude, great views, and clear skies to see the moons of Jupiter. And of course to operate ham radio. Joshua Tree has the National Parks On The Air (NPOTA) designator of NP32. There are also numerous Summits On The Air (SOTA) peaks in the park so Scott planned on doing a combination NPOTA and SOTA activation. The first day was a three-mile round trip hike with a 1000' elevation gain to Ryan Mountain at 5457' (SOTA reference: W6/CD-016). From the top, he could see his tent at the campsite 1000' lower and 1.2 miles away (as per APRS). He used an Elecraft KX3 at 10 watts with a LiFo battery to an end-fed dipole tied to a collapsible mast.

Operating 30 meter CW and 20 and 40 meter SSB and CW, he worked 34 stations on both coasts and the Midwest. He also kept in touch with Karla who was mobile on the desert floor on 146.52 MHz simplex. The next two mornings, Scott continued the NPOTA activation from his campsite with a Yaesu FT-897 at 20 watts to a Buddipole on 20 meters SSB making another 25 contacts.

During his Northwoods stay this summer, Scott activated a combination NPOTA and SOTA on the Ice Age National Scenic Trail (TR05) at Lookout Mountain (W9/WI-003), south of Rhinelander, and the North Country National Scenic Trail (TR04) at the Bergland Lookout (W8M/UP-007), north of Lake Gogebic. By hiking trails to the summits, he was able to give credit to chasers for both events. Scott used an FT-817 running QRP from 2.5 to 5 watts on 20, 30, and 40 meters to an end-fed dipole and made 16 contacts on TR05 and 20 contacts on TR04.

Scott attended the recent Superior Hamfest and fortunately was able to find an HF solid state amplifier to boost up the power with his FT-817. Afterward he traveled to the Apostle Islands National Lakeshore (LK01) for two days of NPOTA. On May 7, he operated 20 meter SSB from his vehicle with a mobile vertical and made 54 contacts. On May 8, he set up at a picnic table with an end-fed dipole in the trees for 20 meters and worked 40 stations on SSB and CW. His most interesting QSO was with Paul K3PG who was at the Assateague Island National Seashore (SS01) in Maryland for a park-to-park contact. Scott and Paul then shared the frequency and called "CQ NPOTA" together for almost an hour giving stations the opportunity to work both locations. Scott also made a park-to-park contact with the Dry Tortugas National Park (NP17).

More photos next page

Ryan campground

Joshua Tree photos

Ryan Mountain Trail

The SOTA flag on Ryan Mountain Trail


Scott on NP32

Karla KB6LAS, Scott WA9STI, and Daisy (no call sign).

PSK31 Corner—Part 2
by Bob KC9RF

Having worked ZL1PZ on 20 meters recently it still amazes me on what 25 watts of power can accomplish. Did you get a chance to download PSK31 software for one of the programs I mentioned in the March newsletter? If so, you're almost ready for your first QSO. The interface diagrams shown below are typical for getting on the air.
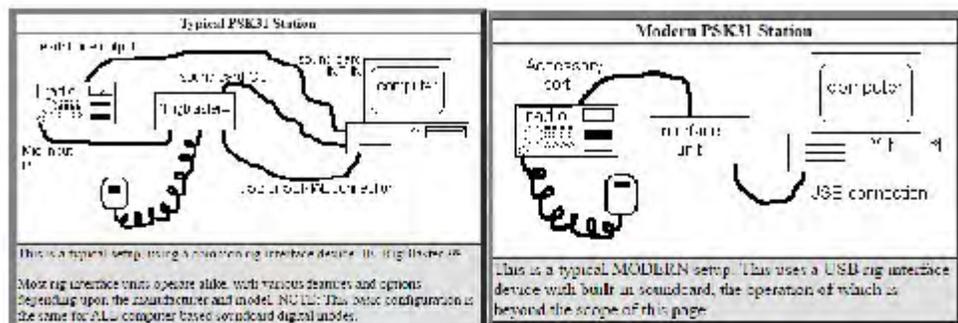
DIGI" Digital Sound Card Interface PSK RTTY SSTV NBEMS JT-65 HF VHF UH5 can be purchased from ebay for 15.95 + 2.50 for shipping if you would like to start with an inexpensive interface. Or if you like to solder the same kit, UN-assembled for 9.95
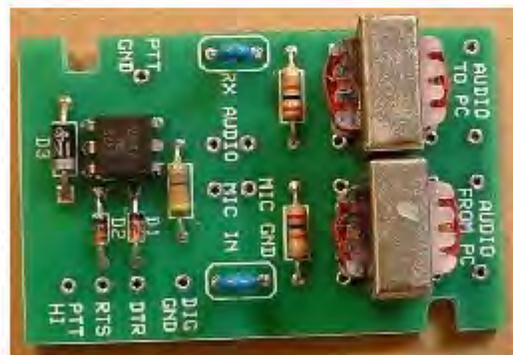

Setting up for transmit
*   Set your transceiver to a popular PSK31 frequency and lock your dial on 20 Meters 14,070 MHZ or 40 Meters 7,070 MHZ
*   Use USB (upper side band only, all PSK frequencies)
*   Turn off all filters, compression, DSP functions as your computer sound card takes care of these functions.
*   PSK software does all the work to compute incoming and outgoing signals
*   When transmitting the computer generates an audio tone using your sound card. The audio tone is fed to your microphone or data input port. Your rig produces an RF carrier equal to the tuned frequency plus the audio tone.

PSK31 Corner—Part 2 continued

Transmitting

- Using a dummy load set Mic gain radio input and or sound card output for no more than 25 watts.
- Check your ALC level it should be zero, do not over modulate your signal as that will cause spurious signals through out the band.

Example of over modulated signal. This is a snap shot of a signal that I was copying that has at least 13 spurs (vertical lines). The red line indicates the signal being tuned.
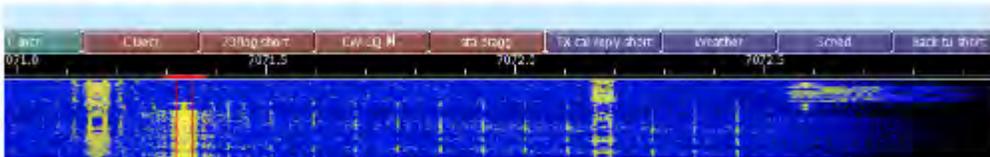
A proper signal should look like this. Figure referenced from article
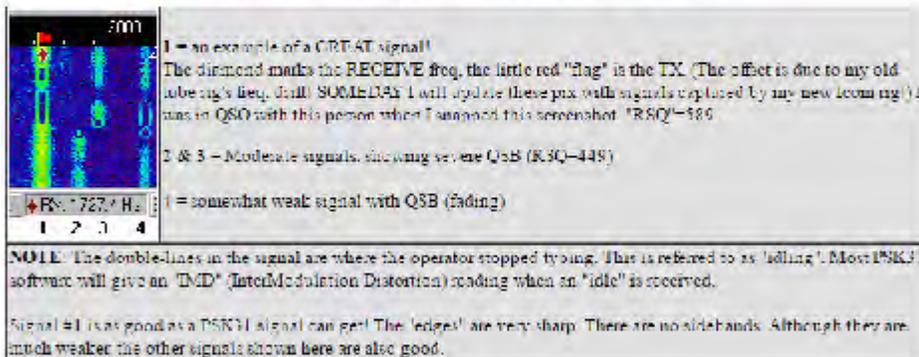
One of the questions on the extra class test asked "what is a good method for measuring the inter-modulation distortion of your own PSK signal". Answer- "Transmit into a dummy load, receive the signal on a second receiver, and feed the audio into a sound card running an appropriate PSK program". This is good advice or simply have a fellow ham monitor your signal.

I hope to see you on the waterfall.

Until next time, article #3, typical PSK conversation and etiquette

Credits: N1NKM Interface figures in gray and PSK31 proper signal figure.