NVARC
Nashoba Valley
Amateur Radio Club

SIGNAL

SPECIAL SERVICE CLUB

de N1NC

December 2006 Volume 15 Number 12

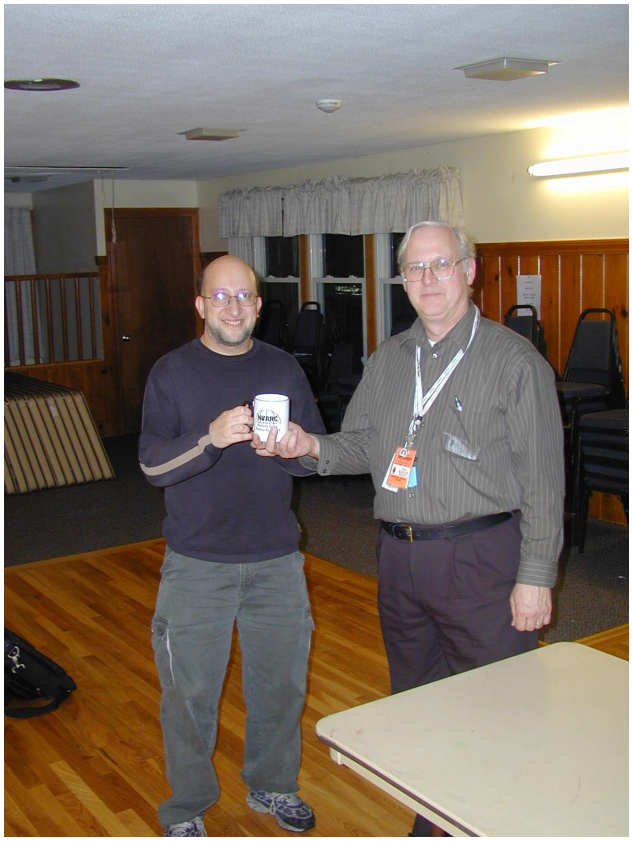
This Month's Meeting

The program for December meeting is Homebrew. Bring along your homebrew projects and show us what you have been doing. This is show and tell so we do not expect prepared presentations.

We will be updating member information in the club yearbook. Please check your information with Ralph.

Last Month's Meeting

Last month we had several speakers and visitors. Rob Macedo KD1CY (below) the Eastern Mass SEC and Skywarn Coordinator gave presentations on Amateur Radio Emergency Service (ARES) and SKYWARN the spotter network for the National Weather Service (NWS). Rob encouraged people to take the NWS training as both informative in general and necessary to give the proper information to NWS in severe weather. Rob also had two videos one on the flooding in Eastern Mass this year and one on what is like operating the radio station at NWS during a severe weather event.



Rob commutes all the way from New Bedford so we really appreciated the effort it took to speak to us.

Bill Shute from Groton Emergency Management spoke briefly encouraging participation in Radio Amateur Civil Emergency Service (RACES). His primary interest is of course in Groton but also for other area towns. He was looking for help in future planning for things like organizing mass immunizations a scenario many area towns are grappling with.

Attendees at the November meeting: Bob AB1CV, Dale AB1GA, Gary K1YTS, Larry KB1ESR, Ben KB1FJ, Hank KB1JLA, Rob KD1CY, Stan KD1LE, Ralph KD1SM, John KK1X, Don N1HVA, Dave N1MNX, Les N1SV, Peter N1ZRG, Joel W1JMM, Peter W1LLB, Bob W1XP, Rod WA1TAC, Earl WR1Y, and Bill Shute (Groton EMA Director).

600 Meters

Yes! 600 Meters not 60 meters. Many are aware of the 60 Meter shared channels in the 5 MHz range but are you aware of the 600 Meter band in the 500 kHz range? On Sept 13 2006 the FCC granted an experimental license to 23 radio amateurs giving them permission to operate CW only in the Medium Frequency band between 505 and 510 kHz. There stations are operating under a blanket experimental license with the call WD2XSH/xx. The /xx is the individual suffix of the individual stations. Technically these are not amateur stations operating under part 97 rules, but "experimental stations" operating under part 5 of the FCC regulations. There stations under ARRL sponsorship applied for and were granted the experimental license with the under lying purpose of obtaining an amateur band in the 500 kHz. Region. The blanket license is issued to the ARRL.

First a little background. For about 100 years the region around 500 kHz. was a maritime communications band. The use was mainly ship to shore and ship to ship calling and working frequencies. 500 kHz was the distress calling freq. All of this operation was on CW. This use has been replaced by other services using VHF, HF and satellite frequencies. So some hams and ex maritime operators have proposed this as a possible location of a new amateur band.

Why make this a new ham band?

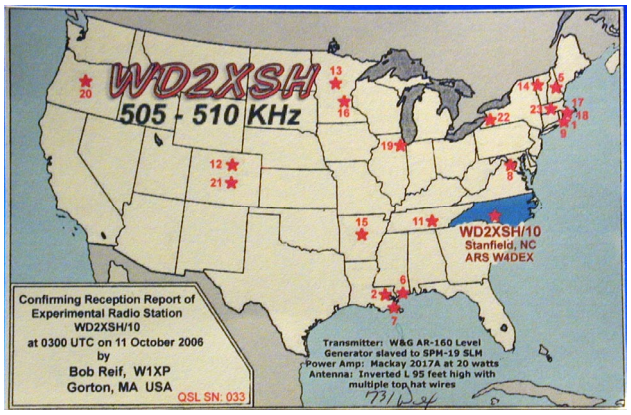
After all it is nothing like most of the HF ham bands. It is just below the current AM broadcast band. This very difference some would call good enough reason to justify assignment as a new ham band. It does have some unique radio propagation characteristics. Although it has a nighttime sky wave that, under the best conditions can provide worldwide communications, it is primarily a ground wave band. Don't confuse this with line of sight as VHF signals. This means that suitably equipped stations can communicate for distances out to a hundred miles or more independent of the ionosphere. Unlike NVIS communications the signal hugs the surface and travels along the ground air interface to stations over the horizon. Hills don't matter. The main threat to communications in this region is noise. Both atmospheric and manmade noise levels can be very high. Because the wave is so large the only effective antennas are loaded verticals or possibly large transmitting loops and the ground wave signal must be vertically polarized or the earth shorts out the wave.

It has been said "nature abhors a vacuum" and this applies to unused frequencies as well. There are other possible users for this frequency band. Some proposed uses are related to what the frequency region has done for so long. That is providing communications over water paths to ships and aircraft. Aircraft navigation beacons have used the region for NDB (non directional beacons) a use that might go away but there are still plenty of these in the region. LORAN, a pulse type long-range navigation system has used the region singe after WWII. There is talk of phasing it out but it is still going strong primarily because there are so many users. The government also uses the region for strategic communications. So we have competition for the spectrum. But the FCC must be inclined to go along with the idea of an amateur band if they are willing to grant the experimental license with that as a stated purpose. There are other amateur groups in this country and world wide with the same goal. And there is even a group that proposes that a band of frequencies around the 500 kHz calling frequency be set aside and not used as a memorial.

The WD2XSH license was the idea of Fritz Raab W1FB and the ARRL. But it wasn't the first. An earlier group had been given authority and it was later withdrawn because of complaints from the US Coast Guard. I don't know all the details of this but several of the members of that group are also members of the XSH group. There is also other activity in the Medium and Low frequency bands. There is an IARU amateur band at roughly 136 to 137 kHz. This band has never been activated by the FCC because of protest from the US power industry that uses the region for power control signaling. There are several stations in the US operating in the band with part 5 experimental licenses. Part of the purpose is to demonstrate that interference is not a threat to the power system. In addition there is a part 15 license free band from 160 to 190 kHz. This band has a limit of one watt DC input power and an antenna no larger than 15 meters. But dedicated experimenters have spanned the country in this band. In addition there was a 73 kHz assignment in the UK but this band is now closed as the UK has been given the 136 kHz assignment. Our Canadian amateurs have not been authorized the use of the 136 kHz either, but there are stations operating with experimental licenses there also. The experimental licenses have a term of typically two years. The WD2XSH license

expires in two years. There is a plan to try and expand the number of users in a year. They are also trying to get permission to use PSK31. This was on the original application but was not granted for an unknown reason. There is also some talk about getting permission to communicate with amateur stations via cross band but no word on this to my knowledge. That would really increase the interest in the band but don't hold your breath on that one.

So what is really going on at 600 Meters?



Of the 23 stations licensed there are about 8 currently on the air. These are located from Oregon to MA. Several stations in the gulf coast area are rebuilding due to hurricane damage. Others are claiming to be getting ready and will be on soon. Of the 8 currently active I have been able to copy 6 so far. I've copied VT, NH, MA, NC, TN and IL. There are stations in CO and OR I have not been able to hear yet. See the picture of the SWL card I received from a NC station acknowledging my report of his signals via an E-mail. He puts in a very good signal when he is on. He has been heard in Europe and the OR station has been heard in Hawaii and New Zealand. So this is an example of what can be worked with a well-equipped station.

Most of the stations are using home built equipment for transmitting. Some are using military or marine equipment. I know at least one station that is using a converted audio amplifier for a transmitter amplifier. There is a station that is using a converted Heathkit DX 100. How many remember this early 1960s kit HF transmitter. Some stations are using transverters like the VHF transverters used with HF radios except the output is at 500 kHz. The use of GPS referenced numerical controlled oscillators is favored because it provides very good long term frequency stability that allows very slow CW rates to be used with sound card DSP receiving techniques.

For antennas every station is using a top loaded vertical. Some in the 30 to 50 foot region and at least one over 160 feet high. In any case the efficiency is low for even the best antenna. But the license allows 20 watts of ERP. (Effective radiated power). This allows the operator to allow for the inefficiency of the antenna by running more power out of the power amplifier. The electric bill may be larger but in ways this allows the person with the small inefficient antenna to even the playing field.

Most receivers in the modern HF transceiver will work at 500 kHz. Plus there are many older radios that will cover the region. There are stations in the SWL group that are using the latest and greatest and some using pre WWII navy radios. Use what ever you can for a receiving antenna. 160 and 80 meter dipoles are a start. If it doesn't seem to work normally just connect the feed line together and plug it into the center pin of the receiver antenna jack. Loops and active antennas are also a good receiving antenna. Especially if they can be located in a location free of local noise from the houses and other local sources. So far I've had best luck with an active antenna in a peanut butter jar pulled up in a pine tree. The real problem to receiving in this region is the noise. Both natural and man-made.

If you are interested in listening in on the activity give it a try. There is a web page at www.500kc.com that has much more background information and there is a link to a reflector that is good for up to the minute information on who is on and where. If I can be of any help let me know and I'll try and get you started in listening in on the 600 Meter band. Hopefully the operation will be successful and we will have a new band to explore before to long. But they can use support in the form of listening reports. So if you listen and hear someone let them know. 73 Bob W1XP

Board Meeting

Last months board meeting covered getting the sorting boxes assembled, wrap up of the sorting meeting, and getting meeting programs lined up for the near and long term. We welcome member thoughts and subjects of interest.

This months board meeting topics.

Discussed the completion of the sorting box project. The boxes have their last coat of paint and are ready for use.

We had a query by our W1 QSL Bureau contact if we would do a presentation for clubs that might be interested in sorting cards for the Bureau.

Treasurers report.

New ARRL Hello video

Card Sort Pigeonhole Boxes

Before building the first pigeonhole box we used at the QSL Card Sort meeting we considered possible designs by looking at what other clubs used. What we found was that they either sorted as we did or to an individual A-Z matrix laid out on a table for each p erson. After deciding some sort of a pigeonhole box was a better solution we looked at various materials to build it out of particularly if it would make it light or free. Likewise after using the one box at the October meeting we gave it some more thought but good old wood won out. Since everyone thought sorting into the box was a significant improvement we started out to build three or four more. A request for materials was put out on the club email list. Bob W1XP, Leo L1LK, and Larry KB1ESR donated various pieces of plywood in the thicknesses we needed. The materials were cut into the proper dimensions based on their intended use. This was determined by thickness. When this was done it was determined we had enough pieces to build five boxes but only in two of the three parts. Bob donated money to purchase a sheet of plywood to satisfy the proper number of parts.

With all the parts cut dado slots were cut in all the pieces so they would be strong when glued together. On Saturday November 11th after breakfast we met for an assembly party at FoxFinders Industries. Peter N1ZRG, Larry KB1ESR, Ralph KD1SM, Bob W1XP and Stan KD1LE made up the team. In less than two hours we turned the pile of wood into the framework for five sorting boxes.

First the boxes were assembled with glue and clamped together. Then they were drilled and screwed together.

When all was said and done we had the framework for five additional boxes completed.

The next day after the glue set and with all the slots already in place the vertical separators were cut and glued in place. Then the boxes received their first coat of paint.

Two more coats of paint and they were complete. Lynda N1PBL made stick on NVARC logo labels and letter labels to mark the individual compartments.

There has been a query from our W1 QSL Bureau contact wondering if we would take our QSL sorting show on the road to show clubs interested in sorting for the Bureau. After some discussion a few members have agreed in principle to providing a brief presentation on the Incoming Bureau coupled with a relatively small QSL card sort for area clubs that might be interested in helping out the Bureau on a regular basis.

Treasurers Report

Income for October was $45 from member dues and $1.30 from bank interest. The only expense was $15.60 for newsletter postage leaving a net income of $30.70 for the month.

Current balances:

General fund	$3898.02
Community fund	$2136.83

Welcome to new member Callie Cornell K1ZAK of Old Ashby Road in Ashburnham. Callie came to our October meeting and helped us sort QSL cards. She joined us for the November road cleanup as well.

Callie and her husband moved to our area a few years ago from Duxbury where she had been a member of the Genesis Amateur Radio Society and the editor of their newsletter Wavelength for several years.

Callie lists her interests as public service and nets.

As of 13 November we have 60 members who are current with their dues and 3 renewals outstanding. Please check the member roster that is circulated at the monthly meeting if you do not remember your renewal date. Your membership date also appears on your newsletter mailing label.

If your ARRL membership renewal is coming up, leave your renewal with me at a Club meeting and the Club will pay the postage. As a Special Service Club, the ARRL lets us retain a small portion of the dues that we forward to them.

Ralph KD1SM

NVARC Puts Scouts On The Air

The Leominster Cub Scouts are working on their Communicator badge. The choice of requirements to earn the badge is very broad including nearly all aspects of how we communicate to/with each other, and the world. I was asked to give a 15 minute talk on Ham Radio, and bring some gear that a group of 10 and 11 year old boys might identify with.

On Tuesday night Nov 28 I packed a few HT's, GPS, FRS radio's, a Rescue dog equipment jacket and one candle lantern and headed for Leominster MA. With a list of questions on how early man communicated, that should fill 15 min and then some. I had a lapse in memory regarding the energy level of this age group. This evolved into a spirited Q&A session that lasted 30 minutes and a trip to the truck for a prearranged QSO with Stan KD1LE. We ended up talking to Bob W1XP who stepped up nicely to field some very serious questions. The query as to your age Bob, had more to do with are all Hams older people? You sound very young! The group nailed the lantern message very quickly by reciting the Midnight Ride of Paul Revere, Nice work Guys!!

The group of Webelo's are as follows Matt Johnson, Adam Rossi,Vincent Bonetti,Andrew Gaugham,Nick Benham,A.J. Ortiz,Ty Dawson and Max Zaleski.

The Den Leader is Jeff Johnson whom I thank for the invitation to talk about communications from a Amateur Radio perspective. A special Thank You to Donna Johnson for her warm hospitality.

73's To The Pack 3 North Leominster Den #1 Webelo I. The pleasure was Mine! KB1ESR Larry.

NVARC Field Day Results

The December issue of QST contains the results for 2006 Field Day. There were 2169 entries and 32,506 participants. NVARC did well again.

The weather was particularly difficult this year with rain leading up to and forecast during the weekend. Nevertheless we were fortunate to get set up with only light rain and operated Saturday without rain. Unfortunately the road into the site deteriorated over the course of the weekend from the car traffic getting muddy and rutted. Severe thunderstorms were forecast for Sunday afternoon and when they appeared in the west and with the road already in bad shape the decision was made to pull the plug mid morning. By 10 o'clock everything was shutdown and by 2 PM we had cleared the site.

We placed 74th of the 455 2A entries overall. In New England there were 26 entries and we placed well at 7th. In Eastern Mass we placed 3rd of the 7 entries shown below.

K1RK	8726	Falmouth ARA
W1ON	8434	MBARC/BARS
N1NC	5202	NVARC
W1HP	4090	Philips ARC
KD1D	2478	PART
N1MV	872	Mystic Valley ARG
N1NBQ	402	Nantucket ARA

Since the W1ON entry is two clubs I'd divide their score in two putting NVARC in second place in East Mass – ed.

Swap Shop

For Sale

ICOM IC-701, Amateur HF Transceiver, all solid state, matching power supply, IC –SM2 microphone, and manual. 100 Watts output. Bands: 1.8, 3.5, 7, 14/15, 21, 28. Modes USB, LSB, CW, CW-N, RITTY. Contact owner for additional info.

Asking $250.00

Don Gallant, N1HVA

978 486-8145 dpgallant@verizon.net

If you have items for trade or sale that may be of interest to members contact the newsletter editor for listings.

NVARC Club Net

The club net meets on the 442.900 repeater. Recent participants include Dave N1MNX, Bob W1XP, Bob AB1CV, Joel W1JMM, Larry KB1ESR, Skip K1NKR, Gary K1YTS, Ralph KD1SM, Stan KD1LE, Les N1SV, Richard KB1MBR, Ken K1JKR, Den KD2S and Peter KB1LZH.

Recent discussions were meeting programs, local emergency management activities, and construction of the QSL sorting boxes.

The net is a good place to bring information for the club and questions or discussions. The net meets at 8:00 PM Monday evenings on the 442.900 N1MNX repeater.

Adopt-A-Highway

There was a great turnout for the November road cleanup. Thanks to the following member for their help (L-R) Stan KD1LE, Callie K1ZAK, John KK1X, Erik W1ZBT, Leo K1LK, Nancy KB1KEF, Gary K1YTS, Bob W1XP, Peter KB1LZH, Russ WR1Y, John KK1X, and Ralph KD1SM behind the camera.

We picked up 11 bags of litter on our last cleanup of 2006. Thanks also to everyone who helped out over the entire year.

The next road cleanup is April 2007.

Contest, DXpeditions and Special Events

The information for a DXpedition can be quite detailed and may include bands, dates, number of stations, and times of day they plan to work certain continents so I can not list it all here. But if a country or prefix is of interest you can get more information at www.425dxn.org.

Contests

2007
January
1 Straight Key Night
6-7 ARRL RTTY Round-Up
20-21 ARRL January VHF Sweepstakes
CQWW 160 CW last full weekend

February
CQWW RTTY WPX 2nd full weekend
17-18 ARRL International DX Contest CW
CQWW 160 SSB last full weekend

March
3-4 ARRL International DX Contest Phone

May
CQWW WPX CW last full weekend

June
9-11 ARRL June VHF QSO Party
23-24 ARRL Field Day

July
CQWW VHF 3rd full weekend

September
CQWW RTTY DX 4th full weekend

DXpeditions

Call	Location	Until
TF/IW5DCE	Iceland	December
YI9KT	Iraq	January 07
OX3PG	Greenland	June 07
TU2/F5LDY	Ivory Coast	31 August 07
T68G	Afghanistan	March 2007
9V1CW	Singapore	2008

See www.425dxn.org for more listings

Advertisements

Tell them you saw it in the Signal. Advertisers should contact the NVARC Treasurer for information.

ARRL Letter

ARRL 500 kHz EXPERIMENT KICKING INTO HIGH GEAR

The group of Amateur Radio operators researching the radio spectrum in the vicinity of 500 kHz already have recorded a few successes. The 500 KC Experimental Group for Amateur Radio <http://www.500kc.com/> is operating under Part 5 experimental license WD2XSH, which the FCC Office of Engineering and Technology granted September 13 to the ARRL. Project manager Fritz Raab, W1FR, says WD2XSH participants have been heard across both the Atlantic and the Pacific as well as all around the US.

"Things took off much faster than I had ever imagined," Raab told ARRL early this month. "Eleven station are on the air now." Others in the 21-station group included on the Experimental license continue efforts to cobble together the transmitting and antenna systems necessary to put out a signal on what group members call "the 600 meter band."

Raab says the 600-meter signal of well-known low-frequency enthusiast "Dex" McIntyre, W4DEX, in North Carolina -- operating as WD2XSH/10 -- was copied October 10 in Germany using very slow-speed CW (QRSS). Other stations have since duplicated that feat. Rudy Severns, N6LF, operating as WD2XSH/20 from Oregon, not only is heard regularly throughout the western half of the US but has been copied in Hawaii and, possibly, in New Zealand, Raab says, noting that the New Zealand reception was "not sufficiently clear" to make a claim.

While not a part of the experimental group, Ralph Wallio, W0RPK, has assumed the role of official record keeper and has noted more than two dozen one-way reception reports of more than 1000 miles. The list included "by ear" CW reception from Colorado to Massachusetts, nearly 1800 miles. The best distance as of earlier this week: 4515 miles from Conard Murray, WS4S, operating as WD2XSH/11 in Tennessee to Germany using QRSS (reception using computer software).

Operating as WD2XSH/14 from Vermont, Raab says he's managed three QSOs with his "meager 42-foot vertical" -- New Hampshire, Massachusetts and North Carolina -- plus reception in Ohio. He envisions at least a secondary 600-meter Amateur Radio allocation from 495 to 510 kHz that would support Amateur Radio emergency communication via groundwave.

The two-year WD2XSH authorization permits experimentation and research between 505 and 510 kHz using narrowband modes at power levels of up to 20 W effective radiated power (ERP). The Midwest stations are limited to 505 to 508 kHz for the time being, Raab notes. The first QSO took place September 21 between the stations in Tennessee and North Carolina — a distance of some 300 miles.

To get on the air, WD2XSH participants have repurposed some older gear and even some text equipment. Paul Signorelli, W0RW, operating as WD2XSH/21 from Colorado, has modified a vintage Heath DX-100 transmitter for LF CW operation. "I match the DX-100 output to a 5-turn link of #10 wire," he reported in a detailed description of how he was able to get the old rig to transmit just below the AM broadcast band. Getting "down there" points up the need to increase physical component size by several orders of magnitude.

"The link is on a 13-inch diameter cardboard hoop," Signorelli continues. "It slips up and down over the antenna loading coil and is adjusted for lowest SWR." That antenna loading coil itself is a foot in diameter, wound with #10 solid, insulated wire. A 30-gallon trash can provides the weatherproofing for the coil. The DX-100 generates 100 W of RF on 500 kHz. Signorelli advises against using conventional-sized coax. "This transmitter will smoke your coax if you have high SWR," he said. He's using hardline instead.

While Raab notes that while the current license cannot accommodate more participants, he plans to re-evaluate the situation in a year. "At that time, we may request a revision to the license that makes substitu-

tions for stations that have not gotten on the air and possibly add some new stations," he says on the group's Web site. "Substitutes and additions will be selected based upon their potential to contribute to the experiment." He cautions, "This is an experimental license, not just ham radio on a new frequency!"

The experimental group does invite reception reports <http://w5jgv.com/500kcreportform.htm> of transmissions made by group members. You do not have to be a member of the experimental team to send a reception report.

Nashoba Valley Amateur Radio Club

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http://www.n1nc.org/

President: Stan Pozerski KD1LE
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PIO: Dave Peabody N1MNX
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Property Master: John Griswold KK1X
N1NC Trustee: Bruce Blain K1BG

Meetings are held on the 3rd Thursday of the month
7:30 p.m. - Pepperell Community Ctr.
Talk-in 146.490 simplex
442.900 + 100Hz Repeater
147.345 + 100 Hz Repeater
53.890 – 100Hz Repeater
This newsletter is published monthly. Submissions, corrections and inquiries should be directed to the newsletter editor. Articles and graphics in most IBM-PC formats are OK.

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