NVARC
Nashoba Valley
Amateur Radio Club

SIGNAL

SPECIAL SERVICE CLUB

de N1NC

March 2007 Volume 16 Number 3

This Month's Meeting

This month's meeting program will be the Art of QSLing by Les N1SV. Les has extensive knowledge of the QSL process having over 325 countries confirmed.

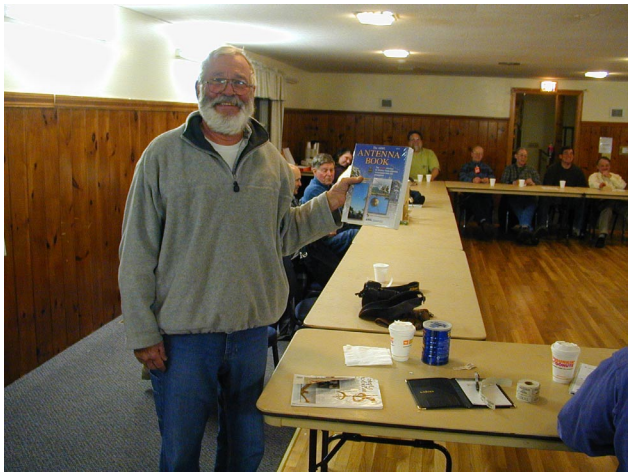
The May meeting will be held at the Pepperell Library due to the annual Library Book Sale which takes place at the Community Center.

We have updated the member information, club activity, and article index sections in the club yearbook. We will print the updated pages for distribution at club meetings.

Last Month's Meeting

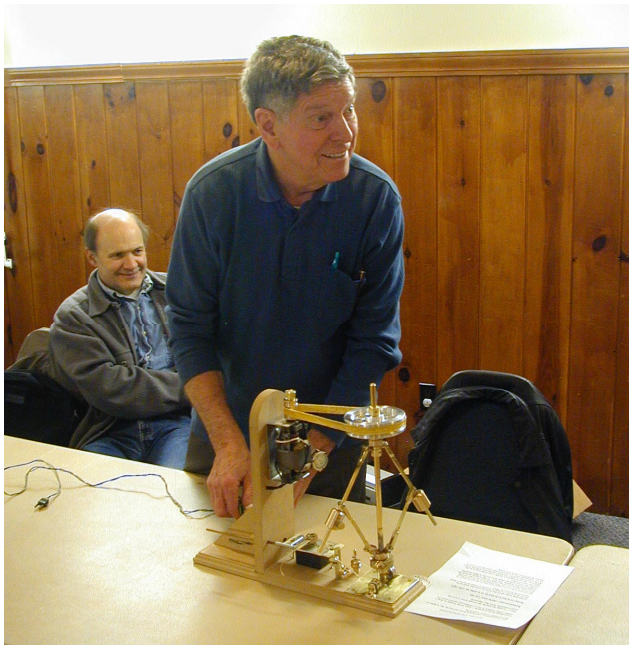
Last months program was changed at the last minute since John WA1PBJ was called away on business. We will schedule his talk on the Cell Phone System at a later date.

Instead Larry KB1ESR did a presentation on his recent visit to Australia and Tasmania.



Larry also won an ARRL Antenna book in the raffle.

After Larry's presentation Bob W1XP did a brief presentation on a remote antenna switching system he built for his flag antenna system. The switch is controlled over the coax feeding the antenna.



Earl WR1Y built an updated version of a centrifugal engine speed controller. In this version the governor adjusts a light dimmer to control the electric motor at a constant speed.

Attendees at the January meeting: Jeanine N1QIT, Dale AB1GA, Bruce K1BG, Ken K1JKR, Larry KB1ESR, Gary K1YTS, Hank KB1JLA, Peter KB1LZH, Stan KD1LE, Ralph KD1SM, Den KD2S, John KK1X, Don N1HVA, Les N1SV, Peter N1ZRG, Joel W1JMM, Jim W1TRC, Bob W1XP, Erik W1ZBT, Rod WA1TAC, Stephen WA4LDL, Earl WR1Y, Tom KB1OKM and guest Peter N1PQ.

Board Meeting

This month's board meeting topics.

March meeting presentation and future meeting presentations.

For our support of the QSL Bureau NVARC will get free incoming Bureau service for the club callsign.

Received the Mass Highway Adopt A Highway agreement for the upcoming year.

We should start thinking about Field Day June 23rd-24th.

W1XP reported outgoing QSL Cards sent.

Treasurer's report.

Bob suggested the Signal article indexes be put up on the Web site. Ralph will take care of this.

In attendance Bob W1XP, Ralph KD1SM, Les N1SV, John KK1X, and Stan KD1LE.

Support the Local Repeaters

Last year March 09, 2006 I asked for help defraying the expenses of running the repeaters. A few users helped. Thanks to all who donated to help with the N1MNX Repeaters last year. It is time to ask for your support again. Financial donations help to pay the electric bill which ranges from $28-$32 dollars a month or about $336-$384 a year. All donations are appreciated.

Thank You
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http://www.n1mnx.com
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HR 101

An Introduction to HF Radio

With the recent changes to the FCC regulations more amateurs are upgrading to licenses with High Frequency (HF) privileges. I am also sure more people will be getting amateur radio licenses. The upgrading amateur or the new amateur will likely be new to HF operating and so I thought it might be appropriate to write a few articles covering some or the characteristics of HF radio and some general operating hints and suggestions. So over the next few months HR 102 will try and cover some of the topics that make HF operation unique. Although intended for the new comer to HF operation, maybe the old times may pick up a point or two. If anybody has any questions that might stimulate this exchange please pass them on via E mail or any other means. So let's get started.

HF Amateur Radio Assignments

Knowing the amateur frequency assignments is part of the exam so I expect the person that has just upgraded or gotten his or her General class or higher license is aware that there are ten assignments in the HF part of the spectrum. Actually one, 160 meters, is technically not in the High Frequency range. The high frequency range is from 3 MHz. to 30 MHz. The 160 meter assignment (1.8 to 2.0 MHz.) is in the

Medium Frequency range. But it is included in most discussions although it has unique characteristics which I will discuss in the future. But these ten assignments cover a frequency range of over 16 to one. For this reason alone they have different operating characteristics. Understanding the differences and similarities between the bands will take you a long way toward maximizing your enjoyment and successful operation on HF.

One way to partition the bands is to divide them into two groups. The simplest way may be to just refer to them as Low Bands and High Bands. That probably seems straight forward enough. But then it is radio so maybe it isn't so straightforward. The generally accepted division is to call the bands 20 meters and higher (20, 17, 15, 12, and 10 meters) the High Bands and those below 20 meters (160, 80, 60, 40, and 30 meters) the Low Bands. The reference as to high and low is the frequency. IE 14 MHz (20 M) is higher the 7 MHz (40 M) so 20 meters is a higher band than the 40 meter band. Like I said, it is Radio it doesn't have to make sense. So 10 meters (28 MHz.) is higher than 12 meters (24.89 MHz.) now that should be clear enough. So 30 meters, 40 meters, 60 meters, 80 meters, and 160 meters are Low Bands. Right! Wait a minute. "Don't they call 160 meters Top Band?" you ask. Well you are right. 160 meters is called "Top Band". The Top Band name goes back to the wavelength and not the frequency as I just explained for the other high frequency bands. This inconsistent use of Frequency and Wavelength to refer to our assignments is one of the things that has been with amateur radio for years. I guess it is maybe that the 160 meter enthusiast would not like to refer to the band as the "Bottom Band". So anyway the tradition of the Top Band name has been around for a long time. It also has the name of the "Gentleman's Band". This is a reference to the fact that over the years the band has earned a reputation for high standards of operating behavior. One reason for this may be due to 160 meters is usually not a beginners band. Now right off I am not against beginners. We all started at some time. The top band operator typically has moved to 160 looking for a challenge after being active on other bands. So they tend to be more experienced. You have to learn to be a good operator. It doesn't come naturally. More on Top Band and on operating etiquette in future articles

Another way to divide the bands is by the time of day that they are most useful. This division can follow the previous division between high and low. High frequency bands tend to be daylight bands and the low frequency bands tend to be nighttime bands. Now all bands may be useful for some type of communication on a twenty four a day basis but when it comes to working stations at international ranges the bands pretty well follow the day or night description I gave above. Twenty, thirty and seventeen meters are to some degree more in the middle and can show good DX potential any hours of the day. This is especially true in the years of high sun spot activity.

So this month we have discussed the ten high frequency assignments are how the amateur community refers to them . Next month I'll go into why the daytime and nighttime bands behave so differently and how you can use it to advantage to plan what you would like to do with your new HF privileges.

Some of the things I plan to cover in future articles are HF Antennas For The New HF Operator; Operating Skills and Etiquette; and other topics. So till then 73 Bob

Treasurers Report

Income for February was $25 from member dues, $6 from ARRL membership renewals, $43 from the December meeting book raffle, and $66.35 from bank interest. Expenses were $15.60 for newsletter postage and $49.49 for the outgoing QSL bureau leaving a net income of $75.26 for the month.

Current balances:

General fund	$4,122.16
Community fund	$2,136.83

Welcome to new member Tom Farnsworth K1NNJ, of Shirley. Tom came to our January meeting and joined the Club at the February meeting. In the interim he reestablished his licence and regained his previous callsign.

As of 8 March we have 53 members who are current with their dues and 10 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 due, 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

PSLIST

April
16 Hopkinton MA Boston Marathon
Steve W3EVE 508.922.9688 w3eve@arrl.net
plse register via http://www.amateur-radio.net/marc

May
19-20 Portsmouth NH NH Lung Clean Air
Dave KA1VJU ka1vju@cnharc.org

20 Parker Road Race on Devens
Stan KD1LE.

Jun
16-17 Mt WashngtnNH Mt Washington Road Race
Cliff N1RCQ n1rcq@amsat.org or Dave KA1VJU
ka1vju@cnharc.org

Jul
7 Mt WashngtnNH Newton's Revenge cycle race
Cliff N1RCQ n1rcq@amsat.org or Dave KA1VJU
ka1vju@cnharc.org

Aug
18 Mt WashngtnNH Mt. Wash. Bicycle Hill Climb
Cliff N1RCQ n1rcq@amsat.org or Dave KA1VJU
ka1vju@cnharc.org

19 Mt WashngtnNH Mt. Washington Century Ride
Cliff N1RCQ n1rcq@amsat.org or Dave KA1VJU
ka1vju@cnharc.org

Sep
29 Bristol NH NH Marathon
Cliff N1RCQ n1rcq@amsat.org or Dave KA1VJU
ka1vju@cnharc.org

Emergency Communications Resources

Independent Group
http://www.commacademy.org/

Homeland Security
http://www.dhs.gov/index.shtm

FEMA/NIMS
http://www.training.fema.gov/emiWeb/IS/
Course List
http://www.training.fema.gov/EMIWeb/IS/crslist.asp
Suggested list IS-100,200 and NIMS-700,800

One of the components of an emergency plan is the Emergency Communications Plan. This should be important to us. The ARES communication plan is available from the Eastern Mass ARES site.

http://ares.ema.arrl.org/

Under EMA Frequency Plan in the left frame area.

The RACES plan is available at

http://ares.ema.arrl.org/local/racesplan7-1-03.pdf

The local RACES frequency of interest is the PART machine at 146.955- pl 74.4.

Our local communications plan, call it the NVARC Communications Plan, is less complicated but everyone should be aware of it. They are listed in the information box at the end of every newsletter.

Simplex frequency is	146.490
Repeaters	53.890 – 100Hz
	147.345 + 100Hz
	442.900 + 100 Hz

The 53.890 and 442.900 repeaters are battery powered so in case of power failure they will still operate. In the case of such a failure use the repeaters only when necessary to conserve power. Currently they are capable of two days moderate use. We are planning to increase that to three days of higher duty cycle usage with the addition of two more batteries at the site. Each repeater will be put on a separate set of batteries so that exhausting one set of batteries will not bring down both repeaters. The two meter repeater is not currently set up for battery operation since it consumes the most power.

NVARC Club Net

The club net meets on the 442.900 repeater. Subjects discussed recently; new licensing requirements, repeater work and upgrades, East Mass Section Manager meeting at Boxboro. 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.

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.

Flea Markets

March
18 CVRC Hamfest Henniker NH
30-31 Maine State Convention Lewiston ME
31 Londonderry NH IRS
April
1 Spring Flea Market Framingham MA
15 MIT
21 Greater Portland Hamfest S. Portland ME
July
14 Pen-Bay ARC Union ME
September
16 Western CT Hamfest Newtown CT

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

March
17 BARTG Spring RTTY Contest
DARC HF-SSTV Contest
24 CQWW WPX Contest SSB
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
OX3PG	Greenland	June 07
TU2/F5LDY	Ivory Coast	31 August 07
T68G	Afghanistan	March 2007
5U5U	Niger	March 1,2
ST2R	Sudan	April 2007
J20SA	Djibouti	From 1 April
V73NS	Kwajalein	From 1 May
OX3PG	Greenland	Jun 2007
9V1CW	Singapore	2008
8Q7IM	Maldives	Nov 2007

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

APPLICATION AVALANCHE UNDER WAY AS NEW CODELESS TESTING REGIME RAMPS UP

The avalanche of Amateur Radio license and license upgrade applications prompted by the FCC's elimination of Morse code as a licensing requirement is well under way with no end in sight. ARRL VEC Manager Maria Somma, AB1FM, reports that paperwork from upward of 450 Amateur Radio exam sessions, most held since the new rules went into effect February 23, arrived this week, more than her department sees in a month under "normal" circumstances. The ARRL VEC has had to add personnel and schedule extended hours to keep up with the workload.

"We've been seeing some of the largest brand-new Technician sessions ever," Somma said. "These examination sessions are huge, and a ton of new Technician license applications has been coming in -- sometimes 60 or 70 at a clip." Somma says license upgrade traffic also has been brisk, and, with some 650 examination sessions already on the calendar for March and more arriving daily, it doesn't look like the pace will slacken anytime soon.

New Amateur Radio rules are driving the demand for new licenses and upgrades. Effective February 23, the FCC no longer requires Amateur Radio applicants to pass a Morse code test to earn operating privileges below 30 MHz. As of the same date, Technician licensees who never passed a Morse

code test gained new CW privileges on 80, 40 and 15 meters and new CW, RTTY, data and SSB privileges on 10 meters. Since the Technician ticket has not required a Morse code test since 1991, most current Technician license holders will face a learning curve to take advantage of their new CW privileges. As of February 25, there were approximately 324,200 Technician licensees in the US -- more than any other license class.

Technicians may begin using their new privileges without having to apply for them. No other license class acquired new privileges as a result of the new rules that went into effect February 23, however. All license upgraders must first apply at an examination session, pay any application fee and either successfully pass the appropriate written test or present valid exam element credit.

ARRL VEC personnel must go through "every single piece of paper" that arrives from an examination session, Somma explained. Before keying application data directly to the FCC's licensee database, the staff must make sure that session paperwork is in order, each application is filled out correctly and signed and any element credit is attached. If an applicant took an exam element, ARRL VEC must ensure that the test questions came from the correct question pool and that the applicant indeed passed. She said it typically takes up to 90 seconds for staff members to key in an application for a new licensee, but only about 30 seconds in the case of a license upgrade.

Among the growing stack of incoming paperwork February 28 was a package from a session held in the Bahamas for 56 US citizens -- more than likely retirees and members of the cruising and sailing communities in the Caribbean. Somma said it included applications for 12 new Technician licensees. The rest were upgrades.

Normally with a staff complement of six, ARRL VEC now has as many as eight full-timers plus three part-timers to handle the rush. Somma says her team by and large has been able to review each application and transmit license and upgrade application data to the FCC within three or four days of receipt. She also had words of praise for the Volunteer Examiner (VE) teams.

"I want to thank the VEs," Somma said. "Most of the paperwork is neat and orderly, and this makes it easy for us to just key it to the FCC." She did caution VEs to make sure they include any proof of prior element credit -- usually a Certificate of Successful Completion of Examination or CSCE -- when submitting applications.

Some VE teams have been sharing observations and photos from their examination sessions. "We're enjoying those," Somma said. "Keep 'em coming."

ARRL MARKS TRANSITION TO NEW AMATEUR SERVICE RULES

A new Amateur Radio Service regime now is in place. The requirement to demonstrate Morse code proficiency to gain HF privileges officially disappeared from the FCC's Part 97 rules February 23 at one minute past midnight Eastern Time. At the same time, some 200,000 Technician licensees without Morse code exam credit acquired HF privileges equivalent to those available to Novice licensees. The League is marking the occasion with a W1AW special event aimed at welcoming newcomers to the HF bands. The "W1AW HF Open House" has included exam sessions under both old and new rules. ARRL Chief Operating Officer Harold Kramer, WJ1B, points to the still-growing number of ARRL Volunteer Examiner Coordinator (ARRL VEC) test sessions now on the schedule across the US as evidence that the rule changes will provide a shot in the arm to Amateur Radio.

"ARRL VEC has been extremely busy scheduling new exam sessions," Kramer said. "We normally coordinate about 5500 sessions per year, but we've already scheduled close to 5000 sessions and it's only the end of February."

ARRL VEC Manager Maria Somma, AB1FM, reports some 175 ARRL VEC test sessions are on the schedule through the February 23-25 period, "and these are just the ones that have registered with us," she added. Two dozen applicants showed up at League Headquarters, either to sit for an exam or apply for license upgrades.

"I was surprised at the number of people who wanted to take the test at 12:01 AM," Somma remarked. All but two test applicants took their exams under the new rules. "After people took their exams, some went over to W1AW to use their new privileges," she added.

First out of the gate at the League's 12:01 AM test session was Joshua Rozovsky, N3YAR, of Bloomfield, Connecticut. He upgraded from Tech to Amateur Extra.

Despite snowy New England weather, a few applicants traveled some distance to take their exams. "A nice young couple that drove in from Rhode Island joined ARRL while here," said ARRL Membership Manager Katie Breen, W1KRB. "They thought this

was a once-in-a-lifetime opportunity to take their upgrades here at HQ."

Breen, who upgraded to General at the February 23 exam session, has been tracking W1AW Open House events in near-real time on an ARRL Web site blog <http://www.arrl.org/blog/W1AW%20HF%20Open%20House>. She's also posted some videos to YouTube.com.

Somma says her department now is bracing for an anticipated application avalanche as paperwork from initial sessions shows up. She and Kramer predict test demand will surge even further in the days and weeks ahead. Not only has the number of test sessions increased dramatically, Kramer pointed out, the number of applicants at each session is up as well. To keep up with demand, ARRL VEC has hired additional help. Staffers from other HQ departments also have been lending a hand.

March QST includes an eight-page "tearout" section "Now, New Opportunities for Every Ham!" between pages 48 and 49. <http://www.arrl.org/HFWelcome/Welcome.pdf>. It focuses on various topics of interest to those gaining new HF privileges through upgrading or owing to the new rules as well as to veteran licensees. Among other things, it covers mentoring -- or Elmering -- newcomers, "The Top 10 Reasons to Try Morse Code," earning ham radio operating awards by using Logbook of the World (LoTW) and a "Welcome to the fascinating world of high frequency (HF) radio!" by ARRL CEO David Sumner, K1ZZ.

"The FCC's decision to eliminate the Morse code examination as a licensing requirement opens the door to HF for all amateur licensees," Sumner points out in his remarks. Sumner also addresses the topic in his "It Seems to Us" editorial in March QST (page 9).

"As these new HF operators join us on our favorite bands, we old timers need to set a good example and to be patient, welcoming and positive," he writes. "Let's all remember how little we knew when we got started, and honor those who helped us along the way by doing the same for others."

The March QST special section includes a new ARRL band chart <http://www.arrl.org/FandES/field/regulations/bands.html>. (See "Revised ARRL Band Chart available" below.)

The new rules seem to be driving greater enthusiasm for ham radio in general. There's been an uptick in ARRL publication sales, particularly in licensing manuals and licensing guides, and enrollment in the online ARRL Ham Radio License Course (EC-010) <http://www.arrl.org/cce/Tech.html> is at an all-time high. Additionally, Kramer notes, DXCC applications are up by 350 from last year, while LoTW has exceeded 121 million QSO records.

"W1AW HF Open House" operation continues through the February 24-25 weekend, with primary activity from 10 AM until 5 PM Eastern Time (1500 until 2200 UTC) or later, depending on interest, propagation and participation. ARRL Publications Manager Steve Ford, WB8IMY, will compete in the North American RTTY QSO Party from W1AW.

Primary operation will be on both SSB and CW. W1AW will concentrate activity on the Technician and General class HF subbands, using its normal frequencies on most bands.

On SSB: 1.855, 3.990, 7.290, 14.290, 18.160, 21.390 and 28.480 MHz.

On CW: 1.8175, 3.5815, 7.0475, 14.0475, 18.0975, 21.0675 and 28.0675 MHz.

On RTTY: 3597.5, 7.095, 14.095, 21.095 and 28.095 MHz.

NOR'EASTER PROMPTS AMATEUR RADIO ACTIVITY IN OHIO, NORTHEAST

Amateur Radio Emergency Service (ARES) and SKYWARN volunteers activated February 13 and 14 as a fierce winter storm generated potentially dangerous weather conditions from the Great Lakes into New England. In Ohio, ARES teams in five counties took on a variety of weather-related duties February 13. Ohio Section Emergency Coordinator Frank Piper, KI8GW, says District Emergency Coordinators in his Section were ready to deploy volunteers in the event of shelter openings or at the request of served agencies.

Piper says that Seneca County ARES members activated a net from the county's emergency operations center to gather reports of local weather conditions, road conditions and stranded motorists. The Ohio Single Sideband Net, which convenes three times a day on 75 meters (3927.5 kHz), and VHF/UHF repeaters kept northern Ohio radio amateurs in contact with each other.

In western Ohio, ARES teams in Darke, Green and Shelby counties assisted local emergency management agencies and hospitals by helping to transport essential personnel. "Many of these operations

started early Tuesday morning when the storm hit and operated at each hospital shift change," Piper explained.

In Montgomery County, the local emergency management agency requested ARES activation early Tuesday, and a net was begun on the 145.11 MHz repeater.

SKYWARN was active across portions of the US Northeast for the winter weather event. The storm dumped up to three feet of snow in portions of northeastern New York, New Hampshire, Vermont, northwestern Massachusetts and Maine, with whiteout and blizzard conditions reported because of high winds throughout much of the region. Sleet and freezing rain fell across much of interior Southern New England and there was heavy rainfall in Rhode Island, southeastern Massachusetts and along coastal areas.

"Amateur Radio operators supported SKYWARN and the National Weather Service Forecast Offices in Taunton, Massachusetts -- WX1BOX -- and Gray, Maine -- WX1GYX -- with reports of snowfall, wind damage and flooding," said Rob Macedo, KD1CY, the ARES/SKYWARN coordinator for NWS-Taunton. Macedo says the heaviest snow fell across northern Massachusetts and southern New Hampshire, which received anywhere from 8 to 15 inches.

"Luckily, little infrastructure damage occurred, though urban flooding near the evening commute was a problem on major roads in eastern, southeastern and coastal Massachusetts and Rhode Island," Macedo said. "Winds gusted to between 45 and 55 MPH, and as temperatures dropped rapidly, untreated roads iced up quickly."

Macedo says SKYWARN volunteers used several repeaters and linked repeater systems across New England, and the New England Reflector System <http://www.new-eng.com/> was active. He reports the VoIP system served to relay SKYWARN reports from across New England and as a pathway for NWS-Taunton to communicate with NWS-Gray, both directly and through NWS-Gray liaison Ken Grimmard, N1DOT.

"We continue to build a strong SKYWARN program for the NWS-Gray office," Macedo said. "These reports that we get from spotters are extremely helpful."

SKYWARN currently has EchoLink and VHF/UHF capability at WX1GYX, noted Tom Berman, N1KTA, a forecaster at the NWS Gray office. Since NWS-Gray has no HF capability as yet, it requested NWS-Taunton to go to the Seagull Net on 3940 kHz to gather snowfall and weather condition reports, since the net covers much of Maine and New Hampshire. The reports were then delivered to NWS-Gray via EchoLink.

ARRL INVITES COMMENTS ON NEW HF DIGITAL PROTOCOL

The ARRL is seeking comments from amateurs concerning development of an open-source (non-proprietary) data communications protocol suitable for use by radio amateurs over high-frequency (HF) fading paths. This is not a Request for Proposals (RFP). An RFP may or not be forthcoming depending on evaluation of the information received.

Specifically, the League is asking for comments and information on the following issues:

* Access Method: Is Orthogonal Frequency-Division Multiplexing (OFDM) the best candidate technology, or should other competitive technologies be considered?

* Data Rate and Bandwidth: What data rates/throughputs are achievable at various bandwidths up to 3 kHz bandwidth?

* Adaptivity: What adaptive features should be considered, such as automatic adjustment of transmitter power, modulation waveform and coding, in order to maximize throughput and efficiency in two-way contacts?

* Robustness: What is achievable for reliable operation at power levels typical in the Amateur Radio Service and low signal/noise and interference ratios?

* Error control: What are the appropriate applications of error control suitable for HF channels? For example, how should Repeat reQuest (ARQ) and Forward Error Control (FEC) be applied to two-way contacts and one-to-many (roundtable and bulletin) transmissions?

* Activity Detection: What is an effective method of determining whether a frequency is busy prior to transmission?

* Operating System: What operating systems (such as Windows or Linux) are appropriate for Amateur Radio use with this protocol?

* Hardware: What practical and affordable hardware platforms are suitable for amateur stations? Consider the use of personal computers with or without

sound cards. Provide any information about the need for an additional "box" if needed.

Please provide the following with your response: (1) name of respondent, (2) respondent's contact information, (3) related experience, and (4) type of respondent: (individual, partnership, corporation or group). Do not include proprietary information as part of your response.

Post, fax or e-mail your response by 1900 UTC, May 15, 2007, to ARRL Chief Technology Officer Paul Rinaldo, W4RI <w4ri@arrl.org>, 3545 Chain Bridge Rd -- Suite 209, Fairfax, VA 22030; Fax: 703-934-2079.

NVARC

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Amateur Radio Club

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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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