



SIGNAL



de N1NC

October 2010 Volume 19 Number 10

This Month's Meeting

This month's meeting is Thursday October 21st at 7:30 at the Pepperell Community Center.

The meeting program is the annual QSL Card sort. Pizza will be served after the sort.

Road Cleanup Sunday October 24th at 9:00

The December homebrew and January short subjects meetings are local content. We need your participation to make them a success.

From The President

We started the CW net after the last meeting but as far as I know there have been no checkins. Should we continue the net?

Those who ventured down to the Steam and Wireless Museum had a good time. If you can think of other field trip type activities we could take let us know.

Stan KD1LE

Last Month's Meeting

The September meeting was held September 16 at the Pepperell Community Center. Skip K1NKR did a brief presentation on notable towers both commercial and amateur.

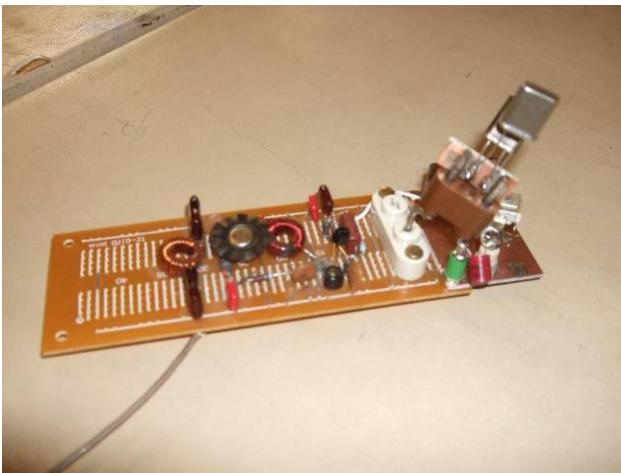
Bruce K1BG provided the main presentation on the aspects of contesting. The presentation goal was to encourage more members to get on the air and operate in "contests" which include everything from Field Day to the international contests. Bruce explained the exchanges that were used in various contests and goals one might set for a particular contest. One of Bruce's goals was to see more people operate at Field Day.



Bruce K1BG giving his presentation on Contesting.



Roland NR1G passed out Field Day pins to participants who were in attendance at the September meeting. L-R back Jim N8VIM, Gary K1YTS, Dave N1MNX, Peter N1ZRG, Bruce K1BG, John KK1X, Leo K1LK. Front L-R Skip K1NKR, Bob W1XP, Roland NR1G, Stan KD1LE.



Bob W1XP announced the second annual Lantern Battery Challenge. Entry applications were taken at the meeting. Bob also showed the prototype of an 80 meter transmitter he is developing as a possible kit or group project that people might want to build to use in the event.

NVARC Lantern Battery Challenge

We have a record number, eleven, signed up for the Lantern Battery Challenge this year. So it should be an interesting and fun event. All those that have signed up be sure to pick up your battery at the October meeting. If you are unable to be at the meeting make arrangement to pick up your battery from Stan as soon as possible after the meeting. This year the battery pack only contains nine cells and has an open circuit voltage of 14.6 volts. It also has screw terminals in place of the Anderson Power Pole connector. With only 9 cells the starting voltage is lower and the energy is 9/10th of what it was last year, but with the starting voltage lower it is probably within the voltage range of most rigs. But be sure to check your radio specifications before you connect your radio to the battery. And double check before you turn on the radio that the battery polarity is correct.

Thinking toward the future of this event, I have been working on a small crystal controlled transmitter that may become the Lantern Battery Challenge Special. It is a two transistor, one watt, single band rig and a Variable Crystal Oscillator (VXO) circuit that allows the crystal to be moved a few kHz around the nominal crystal frequency. So far I have three bands, 80, 40, and 20 meters operating. Several people are building their own version and I will be making several "Beta" versions available on loan to anyone in the Lantern Battery Challenge in November. Contact me if you are interested in either building your own or borrowing one of the Beta versions. The thinking is

that the final version may be made up as a kit for use in next years Lantern Battery Challenge. I have also given some thought to a companion receiver kit. Suggestions welcome.

I would like to thank Rick of Moison Ace Hardware store for supporting the Lantern Battery Challenge for the second year with a discount on the batteries.

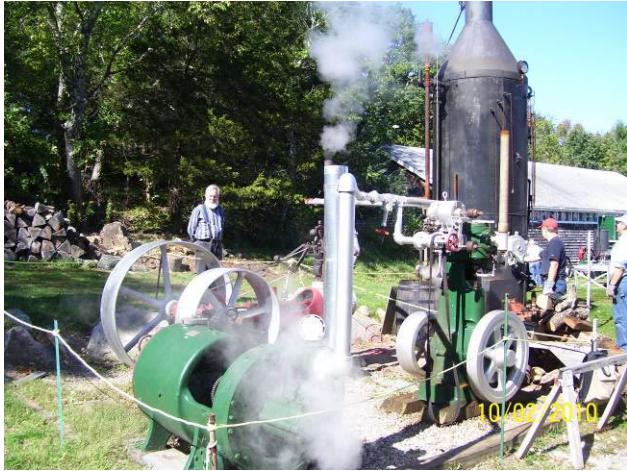
Remember if you are not in the Lantern Battery Challenge you can still work the club members that are, so if you hear us on the air give us a call and a contact. 73 Bob W1XP

New England Steam and Wireless Museum Field Trip

The field trip to the New England Wireless and Steam Museum took place Saturday October 2. We gathered after Saturday breakfast and carpooled. The reason we chose this date is they have live steam operations twice a year and this was one of those days. Carpools were Stan KD1LE, Bob W1XP, Jim N8VIM, and Stan KD1LE. At the museum we met John KK1X.



An old cord wood saw above.



Bob W1XP looking over a steam turbine and generator (foreground left) and a steam engine (right) powered from the wood fired boiler (right rear).



There were many engines housed inside. The above engine had a flywheel about 12 feet in diameter and had a piston bore about 36 inches. It was operating most of the time we were there.



There were tables full of miniature steam engines.



Some of the tables were piped with steam from a large boiler. All these steam engines were running with steam.



The receiver in the center is the RME 45. The HF converter is on the left of that and the Johnson Viking Ranger (Xmtr, VFO or Crystal controlled) AM 65 Watts, 75 w CW 160, 80, 40 20, 15,11 (yes 11 meters) and 10 Meters) to the left of that. The Johnson Viking Valiant to the right. Same as the Ranger except 250 or 270 watts with three 6146 tubes in parallel in the final. This room had old amateur radio equipment.

There were several buildings with radio equipment. There were several complete spark gap stations including the complete Point Judith (PJ) station.

For more information about the museum see <http://www.newsm.org/>

NVARC Net

The NVARC net meets on 442.900 N1MNX repeater Mondays at 8:00 PM. The net is for sharing information and asking questions. Recent topics meeting subject, field trip plans..

Recent checkins Jim N8VIM, Stan KD1LE, Gary K1YTS, Skip K1NKR, Dick W1LTN, Bob W1XP and Roland NR1G.

PSLIST

No events currently listed.

See www.n1nc.org/Events for the latest information

Board Meeting

Roland has passed out most of the Field Day pins. If you haven't received yours you should contact Roland NR1G.

Bob submitted LBC payments and battery receipt. Several people need to pay at the club meeting and fill out entry forms. Batteries will be passed out at the October meeting.

Meeting programs were discussed. Skip is working to schedule programs. We are always looking for a short subject or show-and-tell to add to each meeting. October is the traditional QSL Card Sort. November meeting will be on the N1MNX repeater system and John KK1X will talk about D-STAR. December will be Homebrew Night.

The board authorized \$85 for the refreshments at the card sort.

In attendance were Stan KD1LE, Ralph KD1SM, Skip K1NKR.

Dane Krampitz offered equipment to the club - Stan will send letter saying we do not have tax exempt status.

The Boston Amateur Radio Club has been sending us their newsletter for some time. They are trying to reduce postage so asked us to take it electronically. Ralph created a new forwarding address for the e-distribution list of BARC's newsletter The SPARC.

The next road Clean up will be Sunday October 24th at 9:15.

Adopt A Highway

The September road clean up took place Saturday September 18th.

The following members helped make the clean up a success.

Bob W1XP, and Ralph KD1SM. We picked up 5 bags of trash

The next road clean up will be Sunday October 24th at 9:00 AM.

Treasurers Report

Income for September was \$85 in membership renewals, \$5.69 in bank interest, \$2 from ARRL renewals, and \$135 from Lantern Battery Challenge entry fees. Expenses were \$17.60 for newsletter postage, \$100 for Field Day, \$124.05 for Lantern Battery Challenge batteries, and \$250 for the liability insurance premium leaving a net expense of \$225.96 for the month.

Current balances:

General fund	\$3,819.64
Community fund	\$4,336.41

As of 7 October we have 38 members who are current with their dues and 36 renewals outstanding. Please check your renewal status on the roster circulated at the monthly meeting or ask Ralph.

If your ARRL membership is ready for renewal, you can let Ralph mail it in for you and the Club will get a commission. If you're interested in joining the ARRL and do so through Ralph the Club will get a bigger commission. ARRL membership checks should be made payable to NVARC so that our commission can be deducted before we forward your membership to Newington.

Ralph KD1SM

\$85 budget for pizza and soda for October meeting

ARRL Letter

Public Service: Amateur Radio Operators Provide Communications Support During Chilean Mine Rescue

As the last of the 33 miners who were trapped 2300 feet deep inside the San José Mine -- located about

27 miles from the Chilean town of Copiapó in the Atacama Desert -- rose to the surface at 0055 UTC on October 14, the world cheered in unison. The miners, who were underground for 69 days -- the longest time ever for miners to be trapped and survive -- all emerged relatively healthy. Amateurs with the Radio Club Copiapó, CE1CPI, provided communication support between the authorities and emergency equipment operators inside the San Jose Mine complex, as well as with family of the trapped miners in the complex and authorities in Copiapó.

DXCC News: Four New Entities Placed on DXCC List

With the dissolution of the Netherlands Antilles on October 10, two now-deleted DXCC entities are now four new DXCC entities, effective October 10, 2010. The island pair of Bonaire and Curaçao (PJ2 and PJ4, the Leeward Islands) and the three-island group of Sint Maarten, Saba and St Eustatius (PJ5, PJ6 and PJ7, the Windward Islands) have been deleted from the DXCC list of active entities and replaced with four new entities. Not since the aftermath of World War II -- with so many new European entities -- and the break-up of the French colonies in Africa in the early 1960s -- have so many new DXCC entities come into existence all at once.

On October 10, the US Department of State recognized the dissolution of the Netherlands Antilles, placing the new entities on its Dependencies and Areas of Special Sovereignty List, saying that "Curaçao and Sint Maarten (the Dutch two-fifths of the island of Saint Martin) became autonomous territories of the Kingdom of the Netherlands. Bonaire, Saba, and St Eustatius now fall under the direct administration of the Netherlands."

According to the DXCC rules, entities may be added or removed from the DXCC List as a result of political or geographic change. These new entities qualified to be listed on the DXCC List under Section 2, Rule 1(b) of the DXCC rules: "The entity contains a permanent population, is administered by a local government and is located at least 800 km from its parent. To satisfy the 'permanent population' and 'administered by a local government' criteria of this sub-section, an Entity must be listed on either (a) the US Department of State's list of 'Dependencies and Areas of Special Sovereignty' as having a local 'Administrative Center,' or (b) the United Nations list of 'Non-Self-Governing Territories.'"

With so many DXCC entities all coming into being at the same time, many amateurs made their way to Curaçao (PJ2T, PJ2/OH1VR, PJ2/PB2T, PJ2A and PJ2MI), Sint Maarten (PJ7E, PJ7MF), Bonaire

(PJ4B, PJ4D, PJ4I, PJ4LS and PJ4W), Saba (PJ6A) and St Eustatius (PJ5/AA4NC, PJ5/AH6HY and PJ5/K1XM) to put these new ones on the air. Beginning at 0400 UTC on October 10, the airwaves were filled with those looking to snag these new entities; just days after the entities became "live," stations on the islands had made more than 15,000 QSOs on SSB and CW.

Per the ARRL DXCC Desk, no confirmations for these new entities will be accepted until after January 1, 2011; other administrative changes will be announced as they are finalized. Look for more information on the ARRL Web site, in upcoming editions of The ARRL Letter and in the December 2010 issue of QST.

International Spotlight: ARRL Marks 27th Year of Hosting USTTI Amateur Radio Administration Course

The USTTI ARAC course, led by ARRL Chief Technology Officer Brennan Price, N4QX (left), brought six international students made their way to ARRL HQ for the four-day course. Executive Officer and Meeting Planner Lisa Kustosik, KA1UFZ (far right), coordinated the ARRL's participation with USTTI. [S. Khrystyne Keane, K1SFA, Photo]

Students from the Philippines, Ethiopia, Ghana, Brazil and Nigeria attended the United States Telecommunications Training Institute (USTTI) Amateur Radio Administration Course at ARRL Headquarters September 27-October 1. ARRL Chief Technology Officer Brennan Price, N4QX, coordinated the session and led the course. ARRL Assistant to the Chief Executive Officer and Meeting Planner Lisa Kustosik, KA1UFZ, coordinated ARRL's participation with

ARRL VEC Links Up with South Pole to Administer Technician Exams

Six men and two women took and passed their Technician exam at the Amundsen-Scott South Pole Station in via video link with the ARRL VEC In Newington.

While much of the United States was enjoying a beautiful autumn day on October 8, those who winter over at the Amundsen-Scott South Pole Station were experiencing a typical day for their clime, a day in the -70s (yes, you read that right -- 70 below 0 degrees Fahrenheit). But though the day was indeed frigid, six men and two women at Amundsen-Scott didn't feel the cold as they were too excited (and maybe just a touch nervous), knowing they were going to be

part of the first Amateur Radio license exam session ever held at the South Pole. Read more here.
Fifth Annual ARRL On-Line Auction Begins Next Week

The Fifth Annual ARRL On-Line Auction will be open for preview beginning at 10:15 AM (EDT) on Friday, October 15, and will open for bidding at 10 AM (EDT) on Wednesday, October 20. According to Business Services Manager and Auction Coordinator Deb Jahnke, K1DAJ, there is a large assortment of ARRL Product Review items, donated new and vintage equipment, rare books, one-of-a-kind items and more. "If readers are interested in some great bargains and some great fun, you really need to check this out," she said. Jahnke also encouraged visitors to visit the site to preregister and scope out those "must-have" items. She expressed gratitude to the ARRL Business Partners and individual donors who have contributed items to this event. The 2010 ARRL On-Line Auction runs through 11:59 PM (EDT) October 25, 2010.

On the Air: ARRL's Logbook of The World: 300 Million QSOs -- And Counting!

Congratulations to Victor Morozov, RD3PQ, for submitting QSO number 300 million to the ARRL Logbook of The World (LoTW)! His QSO with Ivan Gombos, SV2/OM3CGN, on October 5, 2010 did the trick. To date, Morozov has submitted nearly 6300 contacts to LoTW and will receive free DXCC and Worked All States awards for his well-placed log.

"We're very pleased with the high level of use and acceptance of LoTW from operators around the world," said ARRL Membership and Volunteer Programs Manager Dave Patton, NN1N. "January 2011 marks the 10 year anniversary of the ARRL's announcement of the LoTW system. While it has taken longer than anyone expected to return to building-out the system, progress is being made. ARRL's programmers are working hard to improve usability and to add support for the VUCC award, and we have received valuable assistance from volunteers in the development of the system and software." Read more here.

Amateur Radio in the Classroom: ARRL Teachers Institute Expands to Include Space, Electronics in the Classroom

This summer, the ARRL offered two advanced ARRL Teachers Institutes on Wireless Technology (TI-2) sessions. One session focused on how to integrate space into the classroom, while the other concentrated on basic and more advanced electronics con-

cepts and ham radio operations. "As we gain experience as to what content is need to help teachers to better integrate basic electronics, the science of radio, microcontrollers and robotics into their curriculum, the TI program continues to be refined and expanded," said ARRL Education and Technology Program Coordinator Mark Spencer, WA8SME. "The TI-2 program is an offshoot of that effort and provides a 'graduate level' opportunity for graduates of the regular Teachers Institute sessions." Read more here.
Amateur Radio in the Classroom: ARRL Executive Committee Approves Grant Funding for Seven Schools

In May 2010, the ARRL Executive Committee reviewed grant applications for the ARRL's Education & Technology Program, awarding nearly \$6400 to seven schools. More than 475 schools across the country have received support from the ETP in the form of grants for equipment, curriculum and resources, as well as teacher in-service training through the Teachers Institute on Wireless Technology. The Executive Committee reviews applications for equipment and resource grants twice each year, in December and May. Read more here.

ARRL in Action: What Have We Been Up to Lately?

Compiled by ARRL News Editor S. Khristyne Keane, K1SFA

This feature is a concise monthly update of some of the things ARRL is doing on behalf of its members. This installment -- which covers the month of September -- includes seeking protection of amateur frequencies with the FCC, representing the ARRL at the local, regional and national level, training Field Organization leaders, administering ARRL awards programs and more. Read more here.

Amateur Radio in Space: Sumbandila OSCAR 67 Satellite Active Over the Americas

The FM repeater aboard the South African Sumbandila OSCAR 67 (SO-67) satellite will be activated over North and South America until Sunday, October 10. According to the announcement from AMSAT-NA Vice President of Operations Drew Glasbrenner, KO4MA, the repeater will be available for 15 minutes beginning at the following times (UTC):

- * October 7: 11:55, 14:51 and 17:57
- * October 8: 13:04, 16:06, and 19:10
- * October 9: 11:18, 14:14 and 17:20
- * October 10: 10:58, 13:56 and 17:02

The SO-67 repeater receives at 145.875 MHz FM (233.6 CTCSS) and re-transmits at 435.345 MHz

FM. Local pass predictions are available from AMSAT-NA's online calculator. -- Activity periods calculated by Ed Clayo, N8BBQ

Amateur Radio Technology: Software-Defined Radio Dominates the 2010 ARRL/TAPR Digital Communications Conference

The ARRL/TAPR Digital Communications Conference (DCC) was held September 24-26 near Portland, Oregon. The ARRL/TAPR DCC is an international forum for radio amateurs to meet, publish their work and present new ideas and techniques. Presenters and attendees had the opportunity to exchange ideas and learn about recent hardware and software advances, theories, experimental results, and practical applications. Click here to read Ward Silver's, N0AX, take on the event.

Amateur Radio in Space: ARISSat-1 in Satellite Final Preparation

SuitSat-1 was launched into space from the ISS in February 2006. [NASA Photo]

Having successfully completed vibration testing this week, the ARISSat-1/RadioSkaf V satellite will soon be on its way to Russia for final preparation and launch to the International Space Station. In Russia, the Kursk experiment will be added and the satellite will undergo additional testing. A new Russian Orlan suit battery will be shipped to the ISS separately to be installed into the satellite. ARISSat-1 is scheduled to be sent to the ISS aboard Russian Progress vehicle 41P in January 2011 and deployed during EVA (extra-vehicular activity, commonly called a space-walk) R-28 in February 2011.

ARDF Update: Three Medals for Team USA at the 2010 ARDF World Championships

Team USA members and officials are relaxing and sightseeing on the way to the Model Event on September 14. Back row: Dick Arnett, WB4SUV; Harley Leach, KI7XF; Karla Leach, KC7BLA; George Neal, KF6YKN; Alla Mezhevaya; Vadim Afonkin, KB1RLI; Jerry Boyd, WB8WFK; Bob Cooley, KF6VSE; Dennis Schwendtner, WB6OBB, and Jay Hennigan, WB6RDV. Front row: Ruth Bromer, WB4QZG; Lori Huberman; Marvin Johnston, KE6HT, and Kuon Hunt, KB7WRG. Competitors not pictured: Dale Hunt, WB6BYU; Jen Harker, W5JEN, and Ken Harker, WB5R. [Marvin Johnston, KE6HTS, Photo]

By ARRL ARDF Coordinator Joe Moell, K0OV

ARDF Team USA has just returned from Croatia, the site of this year's World Championships of Amateur Radio Direction Finding (ARDF). Three team members have new medals for their collections, the most medals ever earned in the World Championships by the USA. ARDF -- also called foxhunting and radio-orienteering -- requires map-and-compass proficiency, stamina and speed, as well as skill using direction-finding gear. It is done entirely on foot. Each day, the competitors set forth into a 1700 acre woods containing five "fox" transmitters in unknown locations. The foxes for each band are all on the same frequency and each one comes on the air for 60 seconds at a time in rotating sequence. Only men and women in the prime age category are required to look for all five; those in the other age/gender categories search for fewer, in accordance with International Amateur Radio Union rules.

International Spotlight: Indian State to Use Amateur Radio to Assist in Local Elections

Members of Idukki Ham Radio Emergency Communication Society will provide help during elections in remote tribal grama panchayat of Edamalakudy in Kerala's Idukki district.

In one of the remotest parts of India, there are virtually no communication sources -- no cell phone towers, no landlines, no Internet access. But in democracies, elections are the key, even in the most isolated parts of the world. The Indian state of Kerala -- located on the western side of India's southern coast near the tip of the subcontinent -- will be holding its local elections -- called panchayat -- in October. The tribal hamlet of Idamalakkudi is located in Idukki, one of Kerala's 14 districts. It is to this village where upwards of 1400 people will gather to cast their votes for their local leadership for the Idamalakkudi tribal Grama Panchayat. And as isolated as the village is, members of the Emergency Communication Society and Idukki Ham Radio Club will be on hand to assist. Read more here.

On the Air: Japanese and Canadian Amateurs Claim First 2200 Meter JA-VE QSO

Kunikazu Togashi, JA7NI, in Daisen, Akita, Japan, and Scott Tilley, VE7TIL, of Vancouver, British Columbia, completed a transpacific QSO on 2200 meters (137 kHz) on September 28. Tilley called this a first between Canada and Japan. The distance between CN89dk (VE7TIL) and QM09fl (JA7NI) is 7162 km. While not the DX record for 2200 meters, Tilley told the ARRL that the QSO comes in second to the distance achieved in 2004 by operators at the Wellington Amateur Radio Club Quartz Hill User Group,

ZM2E, in New Zealand and Vladimir Burakov, UA0LE, in Vladivostok, Russia.

On the Air: United States Supports Secondary Amateur Radio Allocation at 461-469 and 471-478 kHz

The Federal Communications Commission and the National Telecommunications and Information Administration -- the spectrum regulators for United States private sector and government users, respectively -- have agreed to support a secondary MF allocation to the Amateur Radio Service at 461-469 kHz and 471-478 kHz at the 2012 World Radiocommunication Conference (WRC-12), to be held in Geneva, Switzerland from January 23-February 17. FCC and NTIA officials formally presented the proposal at a meeting of the Second Permanent Consultative Committee of the Inter-American Telecommunication Commission, held August 30-September 3 in Fortaleza, Brazil. Read more here.

PBS Show Features History Mystery with an Amateur Radio Twist

Chuck Roedel, WA2MXR, of Beverly Hills, Florida, contacted the PBS show History Detectives to discover more about this 4 inch square of material that could be a part of the US space race against Soviet Russia. [Screenshot from History Detectives]

In the PBS show History Detectives, a group of researchers helps people to seek answers to various historical questions they have, usually centering around a family heirloom, an old house or other historic object or structure. So when Chuck Roedel, WA2MXR, of Beverly Hills, Florida, had what he thought may be an artifact from the turning point in the US space race against Soviet Russia, he called on the detectives to help him sort it all out. The show featured Roedel and his history mystery back in June, and his segment was just made available to the public on the History Detectives Web site.

Amateur Radio in the Classroom: QST Article Sparks New University Program

Court Sullivan, KF5HYE, James Boshart and Jake Rhodes, KF5HYD, complete the calibration process on three radio-telescope units in preparation for an interferometry research project in which the three units will be interconnected to simulate a much larger dish.

It all started with the June 2009 issue of QST. Larry Barr, K5WLF -- Planetarium Manager at Tarleton State University in Stephenville, Texas -- was read-

ing QST when he came across an article about exploring the basics of radio astronomy through a homebrew, easy-to-construct radio telescope. The article -- written by ARRL Education and Technology Program Coordinator Mark Spencer, WA8SME -- showed how to turn an everyday satellite TV dish antenna into an instrument that can be used to not only broaden horizons and expand the understanding of our universe, but to marry the magic of Amateur Radio and astronomy.

Barr quickly got to thinking. He showed the article to his supervisor, Dr Shaukat Goderya, the Director of the Astronomy Education and Research Program at TSU. Barr and Goderya began brainstorming on how they could do something like that in the department. And thus began the latest research program in radio astronomy for the Tarleton Observatory.

On the Air: USA to Host 2014 World Radiosport Team Championship

In 1986, Ted Turner -- in reaction to the political troubles surrounding the Olympic Games of the 1980s -- created an international sports competition that he called the Goodwill Games. The first Games were held in Moscow with more than 3000 athletes from 79 countries competing. Four years later, the Games moved to Seattle, Washington and it was at those Games that the first-ever World Radiosport Team Championship (WRTC) took place.

Besides athletics, the Goodwill Games focused on areas of cultural exchange, arts and other unique subjects, one of these being Amateur Radio -- and WRTC was born. Radio amateurs from around the world gathered in Seattle for an Olympic-style event, joining in competition and camaraderie. In 1996, WRTC moved to San Francisco, then Slovenia in 2000, Finland in 2002, Brazil in 2006 and Russia in 2010. Now 18 years later, WRTC returns to the USA.

2010 Flea Markets/Conventions

October
10 Connecticut State Convention Wallingford CT
17 MIT

November
6 Interstate Repeater Society Londonderry NH
13 FARAFest Bourne MA

Advertisements

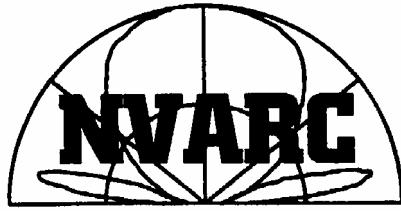
Your advertisement could be here.

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

Upcoming Operating Events

October
16 JARTS WW RTTY Contest
Iowa QSO Party
New York QSO Party
Worked All Germany Contest
17 Illinois QSO Party
23 Stew Perry Topband Challenge
W/VE Islands QSO Party
30 CQ Worldwide DX Contest SSB

For further info on these and other contests refer to;
<http://www.hornucopia.com/contests/index.html>.



Nashoba Valley Amateur Radio Club

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Vice President: Bruce Blain K1BG
Secretary: John Griswold KK1X
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Board Members:
Skip Youngberg K1NKR 2008-2011
Joel Magid W1JMM 2009-2012
Bob Reif: W1XP 2010-2013

Editor: Stan Pozerski KD1LE
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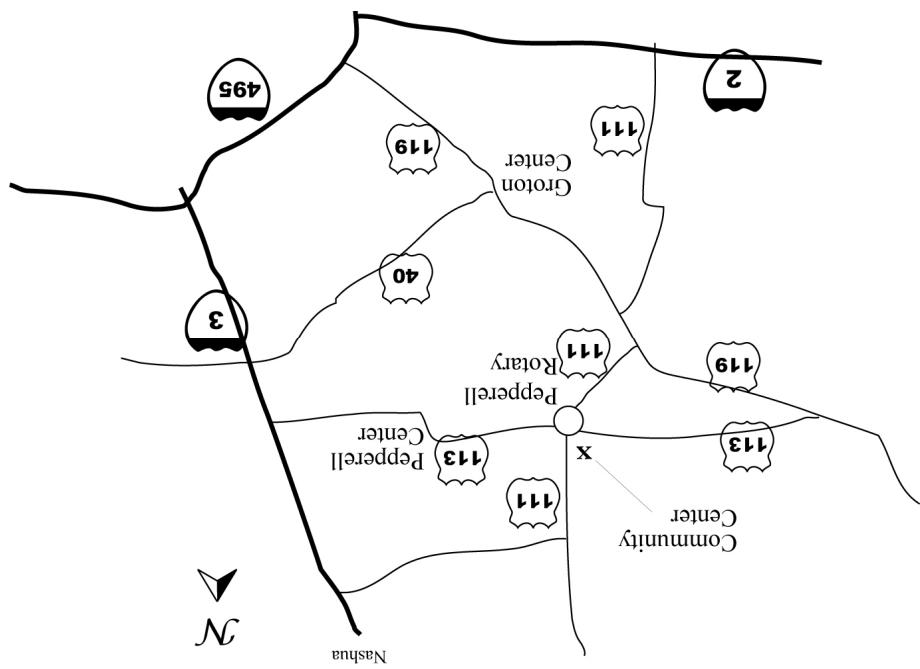
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N1NC Trustee: Bruce Blain K1BG

Annual membership dues are \$15; \$20 for a family
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 battery power
147.345 + 100 Hz Repeater
53.890 – 100Hz Repeater battery power

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