NVARC
Nashoba Valley
Amateur Radio Club

SIGNAL

SPECIAL SERVICE CLUB

de N1NC

January 2004 Volume 13 Number 1

This Month's Meeting

This months meeting program will be Sound Card Digital Modes by John KB1HDO.

The meeting will be held at regular time and place. That's 7:30 at the Pepperell Community Center.

Field Trip To Marconi Museum

On December 13th members of NVARC trekked to the Marconi Museum in Bedford NH. The museum is normally open only during the week but arrangements can be made for groups on the weekend. Eight members made the trip and that seemed like a good size so that everyone fit in the rooms at one time for the guided tour.

Members making the trip were (L-R) Ralph KD1SM, John KB1HDO, Ray Minichiello W1BC museum curator, Dave N1MNX, Stan KD1LE, Gary K1YTS, Peter N1ZRG, Bob W1XP and behind the camera Peg (KB1HDO XYL).

Ray describes early spark gap equipment (above) manufactured by the Marconi Company.

Examples of early equipment such as the home made spark gap rig bottom center.

Above is an early “portable” rig (note the handle) for easy use at road races and other events?

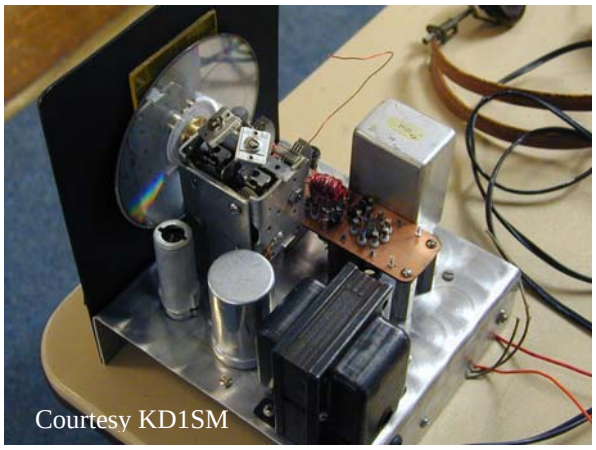
Then there were the mobile rigs so you could have a QSO while commuting.

The museum is located in a Town owned building in Bedford NH. Part of the lease arrangement requires improvements to the building and exterior painting. There was some discussion about a work party to help on some aspect of that work in the spring.

Last Month’s Meeting

Last months meeting program was HomeBrew Night. Many people dusted off a project and brought them in for us to see.

Skip K1NKR discusses microwave receiver he built from a kit.



Receiver built by Earl WR1Y. Note the vernier dial plate made with a CD.

See Earl’s article later in the newsletter relating to encouraging more home construction.

January Board Meeting

The board meeting took place January 8th at the KD1LE QTH. In attendance were Ralph KD1SM, Stan KD1LE, Bob W1XP, John KB1HDO, Peter N1ZRG , and Les N1SV.

We discussed the meeting program for January and equipment needed for the presentation.

There was some brainstorming on future programs an it was decided to contact Phil K9HI the East Mass Section Manager and Steve W3EVE

the DEC for possible presentations. Beyond known presenters like Phil who is naturally associated with the ARRL we needed to identify subjects of interest even if there was no known presenter. We have created many of our own presentations and just need to know what would be of interest to the members.

We discussed possible construction projects that would be of sufficient interest and value to members so that a group "build" would work. This is related to the article that Earl submitted for this months newsletter.

Initial planning for Field Day 2004 needs to be started particularly the choice of location and who will coordinate the event.

We discussed the lack of use of the club owned "loaner" equipment. The discussion covered possible donation options, whether any current newly licensed member might have a need, long term loan to a school, or sale of the equipment.

BPL Meeting at FARA

On December 15th the Framingham Amateur Radio Association (FARA) sponsored a presentation by Ed Hare W1RFI. Ed is the ARRL Lab Manager and is an authority on radio frequency interference (RFI). The presentation was specifically on Broadband over Power Line (BPL). The video clips from the various BPL test areas showing the interference on the HF bands was shown as was the results of modeling power lines as antennas and VOACAP which predicts usable communications paths. The video (which was shown at the NVARC September @@) meeting was disconcerting but was over shadowed in Ed's presentation by the VOACAP analysis. This, using 20 meters as an example, showed normal communications on the band being world wide as we expect today. Running it again with a 10 dB increase in the noise floor 20 meter communications were limited to an area within the continental US. Calculated again with BPL signal levels at the Part 15 limit the projected range of communication on 20 meters was reduced to a few hundred miles.

NVARC members who trekked to a presentation were Les N1SV, Peter N1ZRG, Ralph KD1SM, Bob W1XP, and Stan KD1LE.

Above left is Bob W1RH the FARA club president and right is Ed Hare W1RFI from the ARRL.

After everyone introduced themselves and their club affiliation the FARA President commented there were more NVARC than FARA members (which were actually the largest group present.) It must be those loud badges that Earl WR1Y picked when the club was founded that get us noticed.

From the President

NVARC 2003 in review.

We had a good year activity wise in 2003. Our regular meetings had presentations covering a wide variety of subjects such as; Homebrew, QSL Card Sort, presentations on the 8N1OGA and CY0MM DXpeditions, Field Day (segments on past Field Days, Current Field Day Plans, and Logging Software), How the Internet moves data, Weak Signal Software, Everything You Ever Wanted to Know About Antennas, We had a night of short subjects such as MARS, HF Mobiling, and Buying and Selling on Ebay.

We started a club email list, got the club website up to date and added the past several years club newsletters.

We organized the Club property with the appointment of a Property Master. and Librarian.

In August 10 members trekked to Searsburg Vermont to the wind farm run by Green Mountain Power. Walt W1ZPB who lives in western Mass gave the tour.

Members participated in Scouting activities introducing the scouts to aspects such as HF communications and Fox Hunting.

Several members had articles published or used on web sites at Electric Radio, QST, and the ARRL web page.

For Field Day, in June, we had a good showing with 21 participants and placed very respectably.

Customized club logo cups were produced as a gift for presenters at club meetings.

We participated in Grotonfest for the first time in many years with various demonstrations and information on Amateur Radio. We followed this with a Technician level license class.

Group presence at the BPL talk at FARA demonstrated that we (NVARC) are active and participate in area activities. The FARA President noticed it as he mentioned during the introductions that he thought we had the largest representation.

We wrapped up the year with the trip to the Marconi Museum in Bedford NH in December.

Club members supported the Parker Classic Road Race, Groton Road Race, Townsend Canoe Race, Athol River Rat Race, Boston Marathon, Walk for Hunger, Ride for Hunger, Jimmy Fund Marathon, Pepperell 4th of July Parade, Head of the Charles Regatta, Groton Pepperell Lions Club Rail Trial Walk, Longsjo Classic Bike Race, Nashua 150th Anniversary Parade, and Pepperell Fall Classic Soccer Tournament.

The power standardization program continued for the second year with totals to date of 850 connectors and 55 distribution box kits distributed. I'd be surprised if any other club can top that.

We participated in our seventh year of the Massachusetts Adopt-A-Highway program, which we joined in 1997.

Club members added the two meter repeater to the N1MNX suite of machines which now include 6 meters, 2 meters, 222 MHz, 440 MHz, and a packet node.

As newsletter editor I want to thank Bob W1XP for his series of monthly articles that have traced the beginning of radio during this 100th year anniversary of the first trans Atlantic QSO.

It was a very good year. Stan KD1LE
President NVARC

Homebrew Help

At the December club meeting, specifically for home brew, about five out of twenty five or so members exhibited their projects. The projects exhibited were interesting and held the attention of the members, but were presented by the same club members that produce items for each home brew night. Why aren't there any new members stepping forward? Do they feel their efforts are not worthy of display? What can be done to encourage more participation in this club event?

We all have some facets of ham radio that interest us and others that do not. Slow Scan TV doesn't interest me but many find it a favorite niche of the hobby. I enjoy the fabrication feature as evidenced by my home brew projects. Is the lack of participation by many members a reflection of timidity, disinterest, schedule, or probably a combination of them?

How can the club encourage hands-on projects? I have been approached by members of the club with comments like "I wish I could do something like that". Is there interest in a new group devoted to building "things"? A lot of details would have to be worked out, but the talent available in the club to mentor such a group is outstanding. Could we agree on a simple project to kick it off? I'm not talking kit, here; I'm talking gather parts and put it together-----solder cooling under the fingernail sort of thing. I have a bending brake and can fold chassis as needed and a full set of Greenlee punches for filter capacitor holes and even "hollow state" stuff. Perhaps members could suggest an acceptable and simple project with some universal appeal.

Some simple projects that come to mind are a tube or solid state regenerative receiver such as Bob W1XP demonstrated, a solid state grid dip oscillator, QRP transmitter, VFO, impedance bridge, plumber's delight beam, simple superhet, VSWR bridge, crystal receiver, direct conversion receiver, a simple regulated 12 volt lab supply, and so forth. Members of the club probably have enough inventories to supply parts, but if needed the "Rat Shack" or the parts store in Littleton sell simple parts. The list of desirable projects could be endless.

The purpose of home brew is to give members a chance to show off a little. With encouragement maybe more of us will.

Russ WR1Y

Field Day 2004

Les Peters, N1SV

Its not too early to start thinking about making plans for the 2004 Field Day. While it may be five months away, before you know it we will be upon us. This years Field Day will be June 26th & 27th (always the fourth weekend in June).

As one of last year's coordinators, I thought it would be a good idea to get the ball rolling and provoke some discussion from our members. What did you like about last year, what didn't you like about last year? And what would you like to see different for 2004! In the past several years the NVARC FD entry has taken on various forms; from solar power and QRP rigs to standard 100w HF transceivers powered from generators, from simple dipole antennas to more complex beams mounted on towers and ladders. No matter what form Field Day takes it's always been a lot of fun. Setting up temporary stations in the field and then communicating with other stations into the wee hours of the evening!

There has already been a suggestion to look at alternative sites from the one in the Apple Orchard on Heald Street. As you drive around the area take a look at what you think would make a good FD site. Remember it has to be pretty open and accessible with vehicles. Other desirable attributes include but are not limited to elevation, useful wire antenna supports, and a location that has good visibility to passers by.

As to what seems to work and what doesn't, I can only comment on last year. As far as antennas, I think the Tribanders worked well especially the one mounted to the extension ladder. As far as the wire antennas, in general they worked pretty well though finding an adequate support high enough can sometimes be a challenge in the Apple Orchard. With the declining sunspot cycle I would not put a lot of emphasis on 10 and 15m. Last year 15m opened during the last hour of the contest and 10m never opened all weekend. While the use of generators last year worked well so did battery power the year before, so it really comes down to whether the group wishes to operate QRP or not. A lot of lessons where learned last year regarding computers and networking. Thanks to Stan this year we have three PCs, which will be, dedicated systems for FD or other club activities. Also I learned that only those operating positions where duplicate QSOs on the same band are possible need be networked together (IE main HF stations), logs from all other operating positions can be merged post contest with no problem.

There are a lot of things that can be done to increase are score if desired. The easiest is to try and get as many bonus points as possible. Last year we missed a considerable amount of bonus points that were not that difficult to get. Second the use of QRP and solar power would increase the power multiplier from 1 to 5 thereby making each contact worth five times as much though it would be more difficult to make contacts with 5w as compared to 100w. It's really a trade off and comes down to what the goals of the club are. So what ideas do you have?

Ham Radio History 101

Beginning Amateur Radio History

By Bob Reif W1XP

For this months look at the history of Amateur Radio, I would like to discuss something that we all take for granted. As licensed amateurs we all have a call sign issued by the FCC, our licensing authority. The form that the call sign takes seems straight forward enough. Likewise the way we call other stations and how they recognize this call and return a call to us is logical enough. But it wasn't always this way as I will try to explain. The title this month comes straight from a 1923 QST article that discussed the same topic.

The International Intermediate

In 1923 the typical amateur call in the U.S. was a number, figure 1 through figure 9, followed by two or possibly three letters. This arrangement had been used for years and had been copied by most foreign governments that were licensing amateur radio operators at the time. In other cases it was adopted by unlicensed operators where the local government didn't seem to care. Now this system worked well. The calls were short and there was little confusion. But as the range of coverage expanded and since radio sig-

nals have little respect for geographical borders. It was clear that some method was needed to identify the country of origin of an amateur signal. This was first recognized between the U. S. and Canada. So an operating procedure was worked out that allowed the identification of the country of origin of an amateur call. The procedure of two stations using the "Intermediate, or Interval Sign" of "de" has long been the standard. Thus two U.S. stations would separate the calls with a "de" just like is still common today. But to identify calls of Canadian origin, it had been standard practice to use either "aa" or "fm" as the intermediate between U.S. and Canada in the following way, (U. S. call) fm (Canadian call) or (Canadian call) aa (U. S. call). And further to avoid incorrectly identifying Canadian stations, they used the intermediate of "v" between themselves. That is, (Canadian call) v (Canadian call). So the system worked fine. By paying attention to the intermediate you could identify the country of origin of either station. In addition it was not uncommon to hear a Canadian station add "can" in front of his call when signing. Just to be sure.

When this arrangement was worked out between the U. S. and Canadian amateurs the possibility of signals of a more global nature had not be considered possible. But by 1923 it was obvious that international contacts were likely and signals had been heard both ways across both the Atlantic and Pacific. So consideration was given to how the above procedure might be changed to accommodate more that just the U. S. and Canadian calls. The call went out for suggestions, comments, and proposals and after a long period of comments and discussion pro and con the new operating procedure was announced to go into effect on Dec. 15, 1923. This was the "International Intermediate". Now the plan was to use a two letter intermediate to identify the country of origin of both calls. A single letter abbreviation was assigned to each country. It was certainly recognized that there were more than 26 countries in the world. (The count then was over 200.) But the number of countries that actually had active amateurs was well below 26. So the following list of countries and abbreviation was adopted. There are 14 on the list. There was an attempt to keep the list phonetic if it couldn't use the first letter of the country name.

A	Australia
C	Canada
F	France
G	Great Britain
I	Italy
M	Mexico
N	Netherlands
O	South Africa
P	Portugal
Q	Cuba
R	Argentine
S	Spain
U	United States
Z	New Zealand

So with the above list you could identify 1XP ug 8VR as U. S. station 1XP being called by an amateur in Great Britain with the call of 8VR. Simple! Two stations within the same country would use only one initial. For example, 1XP u 1AW would be how two U. S. stations would use the technique. The single initial was all that was considered necessary. The limit of only 26 possible countries was not considered a practical problem as it was hoped the next world conference on radio would be held soon and solve the problem. The last international radio telegraphic convention had been held in 1912 and the next one had been scheduled in 1917, but W.W.I got in the way. The next conference was held in Washington DC during 1927. We will talk about that in a later article, but for now the limit of possible countries was not considered a real problem.

Now for the "Oh by the way". The plan had been presented to the governments of most of the countries that were actively licensing radio amateurs with little comment or even approval with one important exception, Great Britain. The British government had raised an objection to the changing of the intermediate "de" and stated that the only acceptable solution was to prefix the initial of the country to the calls, thus changing the calls in the example above to U1XP de G8VR. Interesting, but this is one of the things that the plan had been trying to avoid. So as it stood in Dec. 1923 a U. S. station would call a Great Britain station 8VR gu 1XP, but the British station would have to reply U1XP de G8VR. Well I think we can see where this is all heading. Till next month, 73 Bob U1XP, ERRR..... I mean W1XP.

Advertisements

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

FROM THE ARRL LETTER AND BULLETINS

ORGANIZATIONS' COMMENTS AUGMENT ALARM OVER BPL

Two organizations have filed comments with the FCC that augment previously expressed worries about potential interference from and to Broadband over Power Line (BPL) systems. Picking up on the "grave concerns" the Federal Emergency Management Agency (FEMA) <http://www.fema.gov> expressed over BPL December 4, the nonprofit Disaster Preparedness and Emergency Response Association (DERA) <http://www.disasters.org> called on the FCC to require impartial BPL field testing as well as additional public comment and full and open public hearings.

"DERA concludes that serious interference to and disruption of critical emergency communications systems in several licensed services throughout North America would almost certainly result from BPL implementation as currently proposed," DERA said. Endorsing the earlier FEMA remarks, DERA said proposed BPL systems don't just pose a risk of interference, they've already been shown to "actually cause harmful interference to licensed radio services."

Meanwhile, the Amateur Radio Research and Development Corporation (AMRAD) has filed additional test data with the FCC to support preliminary findings suggesting that BPL systems are susceptible to interference from even modest Amateur Radio HF signals. AMRAD said its newest data demonstrated that amateur operation in the test neighborhood would cause many homes to lose their Internet service.

"At least an area out to a radius of 0.51 miles from the transmitting station could have their Internet connection interrupted," AMRAD said. "Closer-in homes would almost certainly have their Internet service interrupted."

For its RF susceptibility experiment, AMRAD used the Potomac Electric Power Company system test site. It features a mid-1960s vintage home with unshielded interior electrical wiring and overhead power lines.

AMRAD found that at a distance of just over one-half mile, data transfer ceased in the face of a 100-W signal on 3980 kHz from a mobile transmitter. Adjacent to the test property, AMRAD said data transfer ceased in all but one instance at a transmitter power of just 4 W in the BPL operating band of from 4 to 21 MHz.

The ARRL hopes to complete an independent BPL engineering study early this year. It will explore how BPL might affect HF and low-VHF amateur operation as well as how Amateur Radio operation could affect BPL systems.

In related news, BPL equipment manufacturer Amperion Inc recently announced an "industry first" by successfully testing its high-speed "Connect" system on 69 kV transmission lines. Typical BPL systems have employed medium and low-voltage lines to deliver broadband and Internet access. Amperion said its tests, performed in conjunction with American Electric Power, demonstrated multi-megabit data transmission to a distance of nearly one mile without the need for a repeater. There's more information on Amperion's Web site <http://www.amperion.com/press.asp?pid=89>.

Additional information about BPL and Amateur Radio is on the ARRL Web site <http://www.arrl.org/tis/info/HTML/plc/>. To support the League's efforts in this area, visit the ARRL's secure BPL Web site <https://www.arrl.org/forms/development/donations/bpl/>.

CENTRAL CALIFORNIA HAMS RESPOND TO EARTHQUAKE

Amateur Radio operators aided the American Red Cross after a magnitude 6.5 earthquake struck California's Central Coast region Monday, December 22. Amateurs in San Luis Obispo County provided radio links between shelters and the Red Cross San Luis Obispo Chapter office.

Santa Barbara Section Manager Robert Griffin, K6YR, said the San Luis Obispo County Office of Emergency Services requested the assistance of the Amateur Radio Emergency Service (ARES)/Radio Amateur Civil Emergency Service (RACES) teams. Griffin said San Luis Obispo ARES/RACES operators helped staff the county emergency operations center and backed-up communication for the Red Cross after cell phone service proved unreliable.

"About 24 operators were involved," Griffin said. "By 10 PM Monday night, the primary American Red Cross communication resources were again reliable, and the ARES net secured." Griffin says a few operators continued communications support at the EOC.

Griffin said the American Red Cross quickly established three shelters for quake victims--one in hard-hit Paso Robles, another in Morro Bay and a third in the southern part of the county. Hams staffed shelters to maintain contact with the Red Cross chapter office. Two people died in Paso Robles, some 25 miles from the epicenter.

Force 12 President Tom Schiller, N6BT, reports the antenna manufacturer--located in Paso Robles--suffered "minimal damage" from the December 22 quake.

"Most of it was confined to the front office, with ceiling tiles falling down, books and computers being tossed around," Schiller said in an update on the company's Web site. "Those who had a view out the front glass doors watched the cars and trucks in the street leave the ground as the shock waves rolled through." He said the quake took out electric power, telephone and cell service within less than a minute, although the power returned and telephones became sporadically operative within a few hours.

Schiller reports his own house--about a mile away--was "trashed," although his towers and the plumbing and electrical systems survived. Standing outside while checking the house, Schiller said he noticed that there was no wildlife at all. "No birds, no deer, no dogs barking. Not even a breeze," he said. "Thankfully, we made it through."

HAM RADIO IN SPACE REACHES ANOTHER MILESTONE

Ham radio in space has reached another milestone with the successful installation and checkout of the first Amateur Radio on the International Space Station (ARISS) Phase 2 equipment. The ISS now sports a new Kenwood TM-D700E dualband transceiver in the Zvezda Service Module--the crew's living quarters. ISS Expedition 8 Commander Mike Foale, KB5UAC, set up the new transceiver at NA1SS earlier this month. Only official approval is needed to begin operations. Activation of the new gear will mean a power boost for the NA1SS downlink signal, which could prove especially helpful in school group contacts. The additional equipment--which soon will include a slow-scan television (SSTV) system--also opens up new operational possibilities.

"Clearly, we've got multiop, multi-station capability," ARISS International Chairman Frank Bauer, KA3HDO, told ARRL. The ARISS Japan Team donated the Kenwood radio and made certain hardware and firmware modifications--including limiting its power output to a maximum of 25 W--to prepare it for flight, he said. Bauer and the ARISS US Team recently returned from Russia following successful ground testing of Phase 1 and Phase 2 equipment using a set of flight-identical ARISS antennas as well as testing of a slow-scan TV (SSTV) system.

The Phase 2 gear will use the four antennas installed on the Service Module during space walks in 2002 specifically to support Amateur Radio operations. Addition of the new antennas, which will cover from HF to microwave frequencies, opened the door to deploying the two separate ham stations aboard the orbiting outpost. Waiting in the wings is a Yaesu FT-100 HF/VHF/UHF transceiver that could go into space in January along with the new SSTV gear.

Bauer says the second ham station with the Kenwood transceiver is near the Service Module's dinner table and the window. "This prime location will allow the crew to more conveniently use the ISS ham radio system," he said. "They'll be able to look out the window while operating from the Service Module" Complementing the Kenwood TM-D700E will be an Ericsson 70-cm handheld.

"Our intention is to operate SSTV on 70 cm with the Ericsson equipment," Bauer said, while the crew will use the Kenwood transceiver for ARISS school group contacts as well as for casual QSOs on 2 meters. The Kenwood radio also incorporates a TNC and can support the RS0ISS packet system, not yet back in operation.

The Phase 1 "initial station" Ericsson 2-meter handheld, which has served as the only NA1SS gear for more than three years, will remain in place in the ISS Zarya Functional Cargo Block (FGB).

Details of the ARISS Phase 2 gear is available on AMSAT's ARISS Web page <http://www.amsat.org/amsat/ariss/Papers/Phase%202%20AGM03Final.pdf>.

NVARC Loaner Equipment

Kenwood TS-451 transceiver, Cushcraft R-7 antenna, Astron RS-35M power supply, Practice Oscillators MFJ557 Keyer

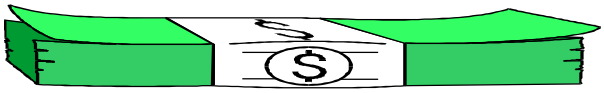
$January Treasurers Report$

Income for December was $65 in membership dues, $40.18 from bank savings interest, $2 from patch sales, and $16 from mug sales.

Expenses were $14.80 for newsletter postage, leaving a net income of $108.38 for the month.

Current balances:

General fund	$4604.47
Community fund	$1842.55



We have 55 current members.

Unsure of your membership anniversary date? It is on your newsletter address label if you get the newsletter mailed to you. It is also on the member roster that I circulate at the monthly meetings. While putting a check mark next to your name to note that you were there, please glance at the last column where your renewal date is shown.

73,
Ralph KD1SM

NVARC

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Meetings are held on the 3rd Thursday of the month - 7:30 p.m. - Pepperell Community Ctr.
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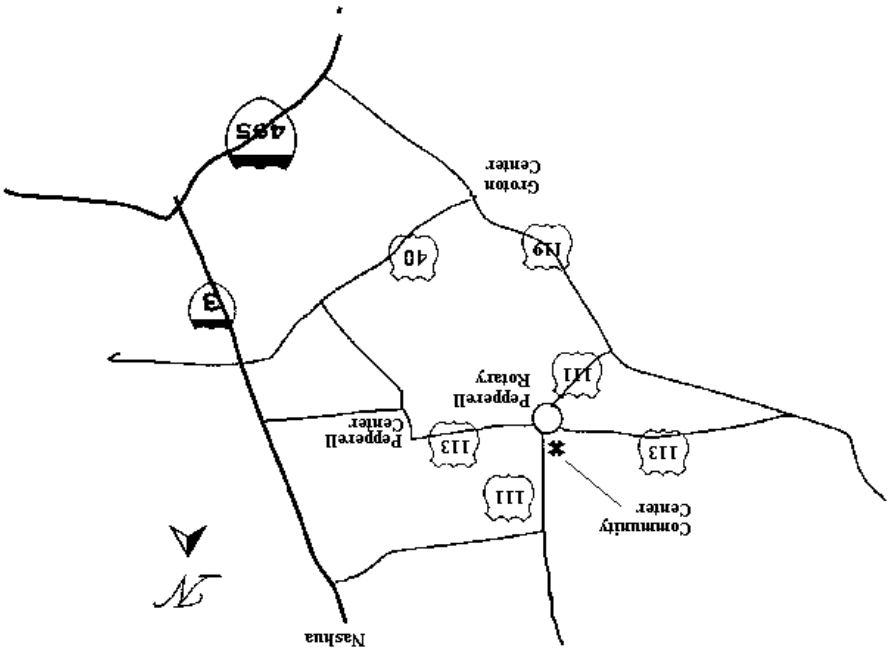

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