NVARC
Nashoba Valley
Amateur Radio Club

SIGNAL

January 1996 Volume 5 Number 1

From The President's Desk

Last weekend Ralph and I attended the N.E. Cabinet Meeting. This took place in Andover Saturday. This meeting precedes the ARRL Board of Directors meeting and Bill Burden WB1BRE (Division Director) and Warren Rothberg WB1HBB (Division Vice Director) use this meeting to discuss issues and gain input to this meeting. There were various League level representatives and club presidents from Massachusetts, Rhode Island, New Hampshire, Maine and Vermont

There were some interesting discussions. One of particular interest was future licensing requirements as pertaining to the HF bands. It is sure that there will be a proposal to remove the code requirement at the next World Radio Conference. Since that was already proposed in the last session. The next meeting is in 1999 and the following in 2004. They seem far off, but plans are made well in advance for what is presented or proposed in these forums. There is also the issue of alignment of license classes to what is currently available in other countries. That generally means fewer, maybe three or less classes. Many issues that will affect us will be discussed or negotiated there. The ARRL represents the interest of its members in these matters. If your not a member you don't have any input there. And there's probably no way to influence the World Radio Conference without a significant organization behind you. If you are a member and have an opinion you should make it known. Bill and Warren would like the input. Unfortunately most people just lay back and complain in the typical whining American Syndrome when they find out what happened they look for someone else to blame.

Stan

From Packet

While out surfing the packets this morning I came across this item which tied in to our next meeting.

Msg #7050 From: NX1L Date: 4-Jan 2329Z
Subj: ZF1RC Struck by Lightning

The house of Roger Corbin took a direct lightning strike on December 23. Although it was fortunate that nobody was hurt, the lightning wiped out all electrical equipment in the shack and most in other rooms. ZF1RC is consequently QRT for a while. Roger also regrets that his response to requests for his QSL cards will be very slow until he can get sorted out.

Nao Akiyama, NX1L/ZF2VV

While statistically the odds are in our favor against this type of thing happening, it does happen. Stan

This Month and Beyond

This month (Jan.) the speaker will be Jim Morris K1UGM the king of packet mountain in Wakefield. Jim's site is the hub of NTS packet traffic in and out of Eastern Massachusetts. Jim will speak on lightning. He has had

some first hand experience with it, since his site has been hit several times.

I spoke with Don Haney KA1T at the Cabinet meeting. He is keeping us in mind for a QSL sorting meeting. He spoke at the MARA club meeting this month but didn't have cards to sort. In preparation for this when ever it happens, some shoe boxes with cardboard dividers lettered A-Z would be helpful. The dividers should be large enough that when you put postcard/QSL cards between them you can still read the dividers. Stan

Equipment Grounds

THE MAIN REASON FOR EQUIPMENT GROUNDS IS SAFETY

Let's assume for a moment that our household current has no common ground. Let's also assume that there has been a breakdown in the insulation between the primary of the pole transformer and the secondary that provides our power. The voltage to ground at the primary is about 2400V, 8000V in Groton. Ordinarily this is reduced to 230 Volt with a grounded center tap. Let's see what happens when that ground is lost. Under conditions of no transformer short, the service becomes unbalanced and we probably lose some appliances due to over voltage. With the shorted pole transformer, however, the situation is much more lethal. Our household voltage is still 230 Volts, but is riding 2400/8000 Volts off ground. The frame or case of a normal appliance becomes a deadly source of high voltage.

The power company is very finicky about good grounds. One side of the pole transformer primary is grounded, usually by a substantial wire running down the pole to a driven, well grounded, conductor. Your household service is grounded where it enters the house, either by attachment to a metallic water or gas service, or a driven conducting rod. If your electrical service is underground, the problem is easily solved. The metal conduit that carries the service also provides a good ground. A good ground by power company standards is no more than 3 Ohms for water or gas piping, and no more than 25 Ohms for a driven rod. The driven rod is referred to by the power company as an artificial ground. As we shall see later MFJ uses the same term differently.

So if the power company provides these grounds why do we have to duplicate them. Again, the reason is personnel safety. Suppose that the line filter in your transceiver develops a short circuit to its case. Depending upon which side of the line is affected and the service voltage, the case may now be 130 or 240 Volts off ground. If your equipment is grounded, the circuit breaker or fuse disables the service. With no ground, everything connected to the chassis of our equipment is now "HOT". The coax going to the antenna, maybe our key and mike, anything connected to station ground is "HOT". Certainly a formula for disaster. There is good news, however. If your equipment is at all modern, it is supplied with a three wire service. You know, that round prong on the plug that we keep breaking off so that we can use one of the old sockets. With this prong in place, any short to the chassis will pull the breaker. Without this connection the bad things mentioned above can happen. Even the use of that funny adapter from two wire to three wire service doesn't do any good unless the ground wire provided with the adapter is connected.

If we provide a good ground for all of our equipment we do one of two things. We either provide a ground in case of a system short, or we duplicate the ground provided by good wiring. It's a win-win situation. Bottom Line-- Provide as good a ground as we can with the shortest possible distance. It might keep someone from being hurt or worse.

How about the RF ground? At the VHF frequencies it virtually impossible to get a short enough ground. Does it make a difference? Probably not much. A case can be made for trying to get as good an RF ground as possible at the lower HF frequencies. Again, modern design seals in RF energy by using coax exclusively. Circuits can be purchased that allow ground lead inductive reactance to be tuned out. The claim is made for reduced TVI/RFI, RF feedback, and RF hot spots. A better first approach is to make sure all our RF connections are good. Check coax braid connections, connector tightness, and chassis screws and connectors. If a persistent problem exists, perhaps a device of this type might help. MFJ sells such a unit for about $80. A calculation of lead inductance and capacitance required to resonate this reactance at the problem frequency is within the capabilities of most Hams. Don't just add a capacitor in series without providing an alternate power path. Parallel the capacitor with an RF choke of high enough reactance so that it has no affect on the resonant circuit but preserves the power ground. A bunch of turns on a ferrite

toroid should be fine. At the frequencies where an RF ground is of concern the wavelength is sufficiently long that most ground leads are electrically short. RF grounds are provided by radials, counterpoises, and ground planes for most vertical antennas. A good ground provides some protection against lightning, but unplugging the equipment and disconnecting the antenna provides much more.

In summary, a good ground is essential to protect against electrical shocks. There may be some benefit to providing a tuned RF ground, but it should be a last resort after such things as cable, connectors, and chassis fasteners have been excluded.

WR1Y, Russ

Preparing for a Ham Shack

I came across a collection of mail submissions that were responding to a request for ideas on what to include when building a Ham Shack. The original concept was for a new house, so some of the ideas consider the relative ease and cost savings over doing it later and may not apply to an existing structure. This is a distillation of the suggestions. Of course I've added a few of my own.

Because of the difficulty of running coax cables after the fact, there were suggestions to putting cables in place before you close up the walls. While you could run wire to all the possible places you think you will ever need it, you will find the next place you need it was not one of the ones you thought of. You also have the problem of anticipating the correct type of cable. Will it be for HF, VHF, UHF, or for running a computer network? Will it be for speakers, intercoms, or power.? And if you were to get all the correct combinations that still doesn't address the need for eventual replacement of old cables. The real solution to this problem is to run reasonably large diameter conduit to give yourself access to the places you might need to reach. Those include, but are not limited to, the attic, the basement, and the backyard. If roof mounted antennas are likely, conduit through the roof with a 180 degree elbow top will give you access. If a tower is already in the plans running plastic conduit underground to the tower base will make for a neat installation. Here you may want separate runs for low level signal lines and high power output or power lines. Part of my solution is a run of three inch PVC pipe from the shack through the outside wall. The PVC terminates in an outside wall-mounted plastic outdoor electrical box. The box has an arrangement of nine SO-239 type feed through connectors mounted in it. This gives me a sealed entry and in the summer I disconnect the antenna's here for lightning protection. In long conduit runs you should leave non-rotting pull ropes for pulling new wires. Don't forget to pull a new rope in when pulling a new cable with the existing rope.

Telephone access in every room of a house is common today and the Ham Shack is no exception. I use the phone from there all the time. So running the appropriate lines to the central phone access is a must.

If underground utilities are available they can help reduce the possibility of RFI.

Since computers are now very common in the Ham Shack there are some items to think of here. With the sharing of files and resources that operating systems like Windows for Workgroups and Windows 95 offer, networking of home computers is a reasonable option. I have several networked machines for sharing files, CDROM drives, and things like printers. For this you will also need to run cables. Thin wire using coax is the easiest option at this time.

Grounding is very important and the distance to the grounding point for RF grounds should be minimized. For shacks that are in the basement, driving the ground rods in the shack location before the floor is poured can save a lot of work.

Power to the shack is another consideration. You probably cannot have too many outlets in that area. The list of items requiring it reads like this; power supplies, battery chargers for handhelds, battery charger for emergency power batteries, computer, monitor, printer, lamps, clocks, HF rig, self powered speaker amplifier, and antenna rotators. Now that is the list in my small shack so you can see that one duplex wall outlet is not going to do. Also, if it is new wiring you might as well have a 220 volt outlet put in. It is much cheaper when everything else is being done. Then if you add that kilowatt linear amplifier you will be all set. Under this topic there was still a bit of interest in a main shut off for emergencies. It is not the concern it once was when every rig ran high voltages. But if your shack is also your electronic workshop and you work on that type of equipment its not a bad idea. The only thing is that the switch isn't much good unless you have someone else around who knows where it is and when to use it. Another thing that a main power cutoff would allow is the option of powering the entire shack from an emergency power generator. There are

some safety concerns to be addressed in that arrangement but I will not discuss that here.

Then there is the physical layout of the shack. Is it a one person shack or a contest station? In my case I was designing for one person operation. There have been times when I regretted that. I can't get two people in to do anything. The second person would have to stand behind me. On the plus side, and the situation that counts everyday is how it works for me. With a compact design with a "U" shaped counter I can easily reach everything all the time. Now that I brought up the counter, there are a couple of considerations to be discussed. The height is important and should match a comfortable chair you plan to use. I prefer a roll around chair that puts my feet on the ground. Another counter issue is depth. You want to sit in front of your HF rig and write or set up a code key? Well in my case the rig is 14 inches deep. You need another 12 or 14 inches in front to do anything useful. And don't forget the back. You can't bend the cables at right angles (you can use right angle adapters) but to accommodate the cables running there (and for ventilation) I have between six and twelve inches of free space behind the rig. So we are talking a total depth of somewhere between 32 and 40 inches. It's not your regular kitchen counter which runs around 24 inches. My actual counter depth is 32 inches and in the corners I get set the deep equipment. Consider your computer monitor and keyboard. That is a combined depth of about 25 inches in my case and I don't have a large monitor. If you want to be able to push the keyboard back and fill out QSL's or write a newsletter article you need the 30 to 40 inches here also. Also consider cable access to all areas. You can improve this by having some large holes cut along the back of the table/counter. I used a two or three inch diameter hole saw in a few spots and rounded the edges.

Stan KD1LE

Meeting notes from December 21st

The theme of the December meeting was "Homebrew" and we had presentations from a number of people on the things they have built. The people who presented a project were;

K1BG Bruce, showed a PC serial port board that he converted from PS-232 to a TTL output to match that of most rigs. This eliminates the purchase or building of an interface box to put between the radio and computer. All for the price of an old serial card and a few bucks.

W1XP Bob, showed a QRP transmitter built to operate on the frequency of a TV color burst crystal. It was etched on a copper clad board with a Dremel tool.

KD1SM Ralph, showed a digital signal processor kit that he had built. He also built a voice ID for the Fitchburg MARA repeater which sounded a lot like N1QIT Jeanine.

WR1Y Russ, talked about a project he has in the works to document the basic characteristics of earlier generations of Ham equipment. Such a list would help people shopping by identifying just what a "BM397?" really is. He is currently researching the old magazines to put together the list.

KD1LE Stan, talked about two antenna projects. An 800 ft beverage antenna for the low bands and a ten meter six element inverted Vee wire Yagi.

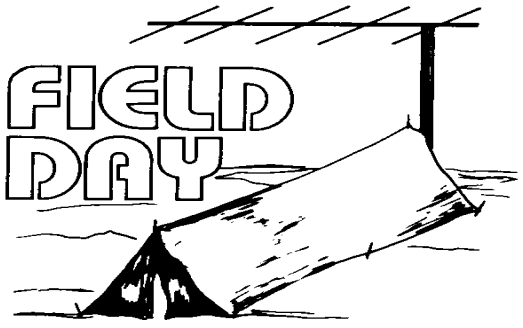
We then broke for refreshments which were brought by a number of the members. This was followed by a video of the new Icom radios and a video of the new Kenwood TS-870S which in one of the new breed with DSP in the IF. After which more refreshments and discussions followed.

Licenses/Upgrades

Congratulations to the following students and members for the licenses and upgrades listed.

John Ritchie	Tech +
Ingrid Hersh	Novice
Luigi Calisto	Novice Written
George Johnston	Novice Written
Herm Raymond N1TVC	General
Bob Purcell N1WEH	Tech

Field Day



We still need some people to head up the H.F. phone station and a satellite station.

Remember, this is for planning purposes. It doesn't mean that's all you can do. This is the list right now.

HF CW STATION
Bruce K1BG, Bob N1UPQ, Stan KD1LE

POWER
Craig N1ABY, Ben KB1FJ

NOVICE STATION
John KA1ZTU, Wolfgang WA1VOU

SITE PERMISSIONS/PUBLICITY / SIGNS
Earl WR1Y, Dave N1MNX

HF PHONE
open

SATELLITE
open
If there is no interest in the last two stations I will drop them from the list. Stan

DX

From ARRL Headquarters
Newington CT December 28, 1995
To all radio amateurs
SB DX ARL ARLD066
ARLD066 DX news

This week's bulletin was made possible with info provided by Tedd, KB8NW, the OPDX Bulletin, QRZ DX, Dick, K7BTW, Laci, W1PL, The DXNS, Derek, KC4ELO, the Yankee Clipper Contest Club PacketCluster network and Contest Corral from QST. Thanks to all.

KUWAIT, 9K2. Derek, KC4ELO, reports that Tom, 9K2ZC, and his wife Donna, 9K2YY, will be leaving Kuwait sometime in March of 1996. They both can be found between 14195 and 14220 KHz usually around 1500 to 1600z during this time of year. QSL Manager KC4ELO states he will start doing bureau cards when they are out of Kuwait. He plans to keep their logs open until the end of 1996. QSL to KC4ELO, Raymond H. McClure, 674 Crestlyn Drive, North Augusta, SC 29841.

WESTERN MALAYSIA, 9M2. Tex, 9M2TO, is currently active from Penang Island, IOTA AS-015 located in the Penang State Group. He will be looking for stateside stations on 17, 30, 40 and 80 meters with no times given. QSL to Tex Izumo, Bukit Dumbar Apt. 9-4, 97 Jalan Thomas 11700, Gelugor, Penang, Malaysia or via the bureau to his home call, JA0DMV, through JARL.

BANGLADESH, S21. Andy, S21YE, will be active for one more year on all bands, SSB only. S21B is also active for CW QSO's. Check 14226 KHz around 0030z. QSL via G0EHX.

MADAGASCAR, 5R. Gerard, F2JD, will be returning to France before heading to 5R-land. He plans to stay in 5R-land for at least 6 months, beginning in January. He will try to be active on all bands.

MONACO, 3A. Luc, I1YRL, will be operating from here as 3A/I1YRL during January, February and March. He will also be active from Geneva as 4U1ITU during this time period. QSL via I1YRL.

SOUTH ORKNEY ISLANDS, LU. LU6Z has been very active on 40 meter CW from 0200 to 0500z. QSL via LU6EF.

COMOROS, D6. The DXNS reports that Michel, FR5HG, is on an assignment here and is waiting for a D68 callsign.

SANTA CATALINA ISLAND, HK0. Wolfgang, DF4UW, plans to be active from this small island near Providencia, NA-049, from January 9 to 24. The call will be HK0/DF4UW. QSL via his home call.

INDIA, VU. Bernhard, DL2GAC, will be active as VU2BMS during the month of January. Activity will be mainly on 80 and 40 meters operating SSB and Pactor. QSL via CBA.
QSL NOTE. 4X6FU is not the QSL manager for 4L1FL. Send QSLs for this one to 4X6UF.

SPECIAL EVENT STATION. Hungary will celebrate its 1100th birthday with special event operations from 0001z January 1 until 2400z December 31. Look for participants with HA1 to HA0 or HG1 to HG0 prefixes.

NVARC Slow Speed Net

The net meets Tuesday and Thursday at 8:00 P.M. on 28.123 MHz. Except the third Thursday of the month. that being the club meeting night.

2300 MHz

December 19, 1995
To all radio amateurs
ARLB111 New 2300 MHz uses

An October report by the National Telecommunications and Information Administration (NTIA), entitled Land Mobile Spectrum Planning Options, suggests a new use for the band 2300-2310 MHz, now allocated to the Amateur Service on a secondary basis. The report states that the band has potential for new, non-Federal radiolocation, fixed and mobile communication technologies. The report also notes that constraints are necessary for the protection of NASA's Deep Space Network and Planetary Radar operations in an adjacent band. A table in the report describes a possible future use of the band as Wide Area Land Mobile.

The 2300-2310 MHz band is expected to be the subject of an FCC allocation proceeding as a follow-on to ET Docket No. 94-32, which dealt with 2390-2400 and 2402-2417 MHz.

$The Treasurer's Report $

Income for December was $15.00 from dues. Total expenses were $38.20 for newsletter postage and the annual PO Box fee.

Current fund balances are
General Fund: $359.67
Education Fund: $207.34
73 de Ralph KD1SM

Board Meeting Notes

Due to the weather and other commitments there was no formal board meeting in January. If there is any business that needs to be done before February we should be able to handle it at the regular meeting.

NVARC QSL BUREAU

I have accumulated about a half a pound of cards between some donations at the last meeting and my own. Due to other commitments I never sent them out last month. So if anyone has some cards to send out bring them to this months meeting and they will go out shortly after.

Bring your cards and a QST label to the meeting or to breakfast and the club will take care of the shipping and bureau fee.

Stan

From the Video Library

The Video Library has seven titles to loan.

- **The Last Voice From Kuwait**
- The all China DF Competition
- **Your League at Work**
- **Signal to Noise Story**
- **Gonzaga Prep HS Radio Club Satellite Communications**
- **The New World of Amateur Radio**

You can get them anytime you can catch me at home, and I will bring the available tapes to each meeting. Stan

Resource List

Construction Earl Russell	448-5822
DX Bruce Blain	772-4138
NTS, MARS Stan Pozerski	433-5090
RACES Ben Akins	433-9227
TCP/IP Ralph Swick	582-7351

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PIO: Earl Russell WR1Y

Meetings are held on the 3rd Thursday of the month - 7:30 p.m. - Pepperell Community Center
Talk-in 146.490 simplex

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.
Packet address: PEPMBX (145.09 MHz)