The Minuteman

Volume 24 Issue 5 May 1995

The President's Corner

We come to the end of another season....summer is coming up, and will bring things like field day and a lot of work on our systems. We hope to finish off the linking scheme this summer, along with a bunch of more minor improvements and fixes. If you have any ideas, get in touch with the tech crew.

As always in May, we have elections of officers at the last meeting of the season. The slate of officers has been presented by the Nominating Committee Chairman, Bryan Cerqua, KA1YQB. That slate is shown on page 2 of this newsletter.

You will notice that this year, Walter Ching, N1HBR, does not appear on the slate. He has decided that work and school will require more of his time and that for now he cannot continue as Vice-President. This is a great loss to the Association...Walter has been unflagging in his support of our goals and activities. However, we will still benefit from his considerable abilities in the area of repeater trusteeship and technical committee activities.

Replacing Walter is another guy who has a lot of ability....Most of you know Clark Conti, N1NVK. He's the handsome half of the Conti brothers....or is he the ugly one.....you'll have to judge that one based on the continuing commentary between Clark and Chris on the subject. If you have had any contact with Clark, you will know that he is dedicated to the hobby, has worked on behalf of the MMRA as Clerk, Program Chairman and on the Tech Committee, and is a real smart guy (I hate to have to admit this....) He's going to make a good VP.

Coming in to take Clark's position as Clerk is Ed Mulhern, N1NOM. Ed is the guy who is last in during a fox hunt only once in a great while. He has done a lot of work for the MMRA....during flea markets, at Boxboro, whenever there's a need for more hands or just moral support (read chops-busting), he's been there. Ed never gets "Testy" — but he loves it when everyone else does.

Taking the Board of Directors position being vacated by Mike, KD1OA, will be Bob Feltmate, WA1ZJE. Bob is the one who has enabled us to have all the power we could ever need at field day, and who has put in a lot of effort working on MMRA infrastructure — read about his work down at Quincy in the

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Electromagnetic Interactions with Materials

By Dave Croll, KT1X

Part 5

In the previous four installments of this series, we have looked at a variety of examples where the principles of interactions of electromagnetic fields with materials produce phenomena of interest to hams. These have ranged from phenomena related to radio wave propagation to the use of magnetic fields and RF in medical imaging in MRI technologies. In several instances, we have also discussed the principles governing the absorption of RF by biological materials. It is the intent of this part to focus on these phenomena and principles, especially with regard to the potential of RF to cause biohazards.

As has been discussed, the ways in which biological materials can absorb energy from electromagnetic fields are by three types of effects. The first of these is the effect of dielectric heating. Here, energy is dissipated due to the effects of oscillating electric fields on dielectric materials. These effects are at the molecular level and are therefore highly dependent on the nature of the material, and on the frequency of the applied RF.

Biological tissues are complex, but are essentially a gelatinous mixture of large biological molecules, which are organized into the microscopic structures of cells. Also present is a water rich solution containing dissolved ionic substances. Hence, much of the make up of biological tissues is ionic. It is precisely this ionic,

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In Memoriam

W1MLS

MMRA #0989, R. Curtis Read, father of KB1HO, Ruff Read

MAY MEMBERSHIP MEETING

WEDNESDAY, MAY 17, 1995 - 1930 HRS

CAMPION CENTER, WESTON MA

PROGRAM:

Steve Cohn - N1NQR

Channel 7 Engineer

TV MAGIC

Association Elections

Raffle

The Nominating Committee consisting of Bryan Cerqua, KA1YQB, and Walter Ching, N1HBR, submitted the following slate of officers for the year 1995 - 1996.

Election Slate - May, 1995

President:	**Andy Morrison, N1BHI** Incumbent
Vice-President:	**Clark Conti, N1NVK** First Term
Secretary:	**Frank Morrison, KB1FZ** Incumbent
Treasurer:	**Ian MacLennon, AF1R** Incumbent
Clerk:	**Ed Mulhern, N1NOM** First Term
Board Member:	**Chris Conti - N1NVL** Incumbent
Board Member:	**Bob Feltmate, WA1ZJE** First Term

MMRA VE Sessions

Second Saturday of Each Month
Marlboro Public Library, 9AM
Contact: Bill Wade, K1IJZ
617-891-9079 Evenings 6 to 10 PM,
Weekends 8 AM to 10 PM.
Accredited - ARRL VE Program

Electromagnetic Interactions wit Materials Part 4

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or electrolyte nature, which gives rise to the dielectric heating, as the electric field produces ionic currents in the material.

In addition to causing thermal damage, since biological tissues are very heat sensitive, dielectric heating can also cause problems with MRI techniques, such as those discussed in Part 4. The heating produced by dielectric effects is a major source of noise, which hampers the acquisition of high resolution images by MRI. Thus, it is of great importance for the designers of MRI equipment to minimize the effects of dielectric heating for both the limiting of potential thermal health hazards and for the acquisition of high quality images. Therefore, modern MRI equipment is optimized to reduce exposure to RF to the minimum needed to achieve high quality images.

In discussing microwave absorption, we ran into the high absorption of specific microwave frequencies by water. Since water is a major component of biological materials, these absorb certain microwave frequencies and produce a heating effect which is quite distinct from and occurs in addition to the dielectric heating effect. Obviously, those working with microwaves should observe extra safety precautions because of this effect. It is quite pronounced, and can cause damage to many types of susceptible tissues. The eye, for instance, is a good example since it has no temperature regulation and consists of a great deal of water. A good description of the safety issues of microwave experimentation is given in the ARRL publication contained in the bibliography.

In terms of the effects of the magnetic component of electromagnetic radiation, the effects are much smaller under most conditions. Since the permeability of most materials is very low, the magnetic components pass through objects with little or no effect. If the magnetic field is strong, such as in an MRI imager, the field can produce eddy currents which give rise to heating effects. This however is very unique, since most magnetic fields to which a typical person, even a person working with RF, would be exposed are very low.

In dealing with the biohazards questions about RF, the average ham should become familiar with the basics of RF exposure and its thermal effects. A far more controversial aspect of the problem is the so called athermal effect(s). More will be mentioned about these athermal effects, but it is instructive to look first at the well established thermal effects outlined above.

For the thermal effects, the most important concept in setting safety standards is the power density, which is measured in watts per square meter. The governmental and industry standards which are used to make law and which, even when they do not carry the force of law become defacto standards, are constantly evolving. They commonly take the approach of limiting absorption of RF to

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A LOT HAS HAPPENED IN 60 YEARS

By Chris Conti N1NVL

The MMRA is coming up to its 25 Year anniversary, but an all important anniversary is coming up in May 1995. Many MMRA members over the years have done much to forward the cause of amateur radio. In my few short years (2 1/2) as a Ham and a member of the MMRA it's been my privilege to have worked with some outstanding people: those who started when it was an all-tube world and have stayed with it through the invention of Radar, the transistor, IC's, LED and LCD displays, computerized rigs, autotuners, and of course my favorite the FM repeater (and FM itself for that matter).

Now, one individual in particular will be the first to humbly tell you "I don't do as much as some of you guys" but he's always there..... always! In countless times of emergency — ranging from natural disasters to car accidents and stranded motorists looking for a tow truck — the one thing you can count on in the MMRA system is he I have dubbed (and rightly so) our "Master Control Station" — Frank W1JDO. Frank, KB1FZ, states "We'd have a hard time getting along without him" Many times when I have been working on a repeater Frank has monitored the repeater input from high atop his hilltop perch. Often those who needed the repeater while it was down found Frank there to relay messages or make phone calls.

Anyone who has been on the repeater when trouble comes up knows what I mean. It's not just the big things — it could simply be a wife calling to let her husband know she's O.K. and on the way home. All anyone has to do is ask for a Control-OP and there he is. Frank is very proud of his Control-OP Team and makes a personal effort to "keep communications going".

Believe me, he lets me know when I've dropped the ball! Frank is always active in helping new hams as they appear on how to use repeater functions or providing information about MMRA activities and meetings. Clark, N1NVK, stated "He was the one who got me to join the club. He simply came up to me at Boxboro-92 and said I HAD to sign up!"

If you've been to a meeting you know Frank & Dottie, N1BHA, are always there getting the raffle together along with ensuring we get an antenna each time as a prize.

Recently Frank has entered the past-time of Fox Hunting — he "Puts a line through the Fox" on every FoxHunt. Frank is busy swinging his beam around to get a bearing on the Fox from his hill so the Hunters have a place to start from and a line to cross with theirs. His lines part fox hair with deadly accuracy. Bryan, KA1YQB, says "When I was hiding as the Fox I said to my Co-pilot Jeff N1QOM, "This guy is gonna say 15 degrees...and sure enough, he did!"

By the time you get this Newsletter, Frank W1JDO will be celebrating 60 Years in Amateur Radio, so next time you hear him give him a hearty Congrats and all that..... 73 Frank & Congrats on 60 Years from all of us in the MMRA tech crew.

Editor's Note: We all echo Chris' congratulations. Frank has been one of the most unflagging supporters of the MMRA. If we had a couple of hundred like him, we could replace the ARRL. **Thanks for everything, Frank!**

What's an MMRA Fox Box?

by Bryan Cerqua, KA1YQB

Well for starters it's a small green ammo box (11" X 7" X 5") that contains a two watt transmitter with a programmable voice ID. Currently the fox transmits on 145.630 MHz every five minutes for thirty seconds. The object of the game is to use various DFing techniques to locate the fox in the shortest amount of time without being arrested by the local police.

For the first hunt I locked the fox box to a wooden fence post behind the Stop and Shop on Sudbury Rd. in Concord. I placed it on the air around noon time on Saturday April 22, and within the hour the hunters were hot on the trail. I must admit that I enjoyed listening to Ed, N1NOM, spend most of the day and night narrowing down the area for the rest of the team. Also without surprise Frank's, W1JDO, beam heading was right on target. Most of the hunters located the fox within the week that it was on the air. Sunday April 29 I retrieved the box to make some minor modifications and to charge the battery for the next hunt. Stay tuned to the MMRA repeater network for more news about the next hunt.

The transmitter was part of an old Motorola HT that was out of service. I ordered a crystal to place the transmit frequency in the experimental part of the two meter band. The voice ID was taken from a key chain gadget that I got at Staples. At first the audio quality was very poor but with some experimentation with different microphones I was able to make the audio acceptable. The audio from the voice IDer was feed to the TX audio and adjusted for proper deviation. The timing logic consists of a dual 556 CMOS timer IC and a 14 bit CMOS counter. The first timer acts as a low frequency oscillator that drives the input of the 14 bit counter. A switch selects one of two bits providing a five or ten minute wait time. The second timer is used to control the thirty second transmit time. The complete fox box only draws 4mA in standby mode and 500mA while transmitting. With a 17 amp-hour lead acid battery it should last longer than most hunters.

I had fun building this project and hope it provides the MMRA with many hours of testy fulfillment.

Editor's Addendum: Bryan made those mods and put the Foxbox out again....Ed, N1NOM, Clark, N1NVK, and I went after it Friday night. Bryan had hidden it well; it took us the better part of 3 hours to get within a few feet of it. During that time we were chased out of an area we traversed in pursuit of the fox....Marlboro police accosted us. When Clark explained that we were hams "playing a game..." the officer got on his radio and called Mike, KD1OA. "Do you know these guys?" Mike could have really busted our chops by saying "Never heard of 'em...." but he was merciful and told his inquiring brother that we were okay. We left that area....we were finished there anyway. Shortly after that, we were standing in a wooded area, within feet of the box. As it was nearly midnight, we opted to continue during the day Saturday. While Ed and I were on the way to Taunton to help with an antenna installation, Clark found the box right where we were standing the night before. **Bryan will be looking for others to hide the box...so if you think you could fool the hunters, get in touch with Bryan or any one of the board members or officers.**

Electromagnetic Interactions.....

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below some value of rate of energy uptake per amount of body weight.

For instance, the American National Standards Institute (ANSI) calls for an energy uptake of no more than 0.4 watt per kilogram of body weight. Additionally, the standard calls for limiting the spatial peak value to not exceed 8 watts per kilogram over any 0.1 gram of tissue over a time period of 0.1 hour. Interestingly, handheld transceivers are excluded from these standards between 300 kHz and 100 GHz, if they have an input power of less than 7 watts.

In 1985 the FCC decided to accept the 1982 ANSI standards for the interim, and in 1987 decided to exclude amateurs from any environmental standards concerning impact of amateur generated RF. This has been questioned by some, and the Environmental Protection Agency (EPA) has been developing guidelines which might be extended to all governmental agencies and could become a defacto standard for the general public. Clearly, hams may hear more about this over the next decade.

In terms of the average ham limiting exposure to RF fields, numerous guidelines have been published by the ARRL and others. Also, it is useful for a ham to have a rudimentary knowledge of how to estimate the power density from a given transmitter and antenna. In the case of the far-field condition, where the distances between and observing point and the various parts of the antenna do not differ greatly in dimensions in terms of wavelength, the task is not difficult.

Essentially, one assumes that the RF energy is distributed over the surface of the sphere, called the radiation sphere, which models the spread of isotropic radiation from the source into space. The actual power density is determined by multiplying the power by the antenna gain, and then dividing by the area of the sphere of a radius equal to the distance from the observing point to the antenna.

In the near field case, close in to the antenna, the modeling problem is fraught with difficulty even for those with a great deal of sophistication. The average ham could probably do worse than to assume a dangerous situation close in to antennas where more than a few watts of power are being radiated.

In the case of the athermal effects of electromagnetic fields, there is much controversy, and so reliable guidelines and knowledge do not yet exist. In fact, some scientists even dismiss the existence of athermal phenomena as being to small in magnitude, if they exist at all, to be of consequence.

At present, the following can be said about these effects. First, there are many epidemiological studies correlating the exposure to electromagnetic fields to development of cancer or other pathologies. Much of this work has been criticized by other epidemiologists, and therefore clear agreement about the conclusions of these studies has not been reached. This of course does not rule out such correlations between electromagnetic exposure and health problems, but the evidence is being debated

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President's Corner.....

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repeater report. He is one of the few who have taken our invitation to members to attend Board meetings seriously....he's just about always there. So the nominating committee figured he should be a member.

The Flea Market this year was an organizational success but produced less turnout than we had hoped for. We had lots of vendors, but the number of buyers through the door was disappointing. Fortunately, none of the vendors was really unhappy with the day, so we didn't get a black eye from them. They actually told us that we had one of the best organized flea sales around.

I want to be sure to thank all those who made this flea an easy job...they are listed elsewhere in this issue. We had 19 people show up to help! That's the kind of participation that makes it worthwhile for the organizers. I especially want to thank Walter, N1HBR, whose help in the planning and execution of the plans was invaluable. Everything went really well, and that made the lack of turnout even more of a disapointment. But we still put a few bucks in the coffers to support our repeater systems, so it was not a waste of effort.

Also we owe thanks to the tech crew....they've been spending a lot of time recently, and plans are afoot to do a lot this summer. I'm not going to name them here...they are featured in the repeater report, so you will know who I mean.

Hope to see you at the meeting....it should be interesting — Steve Cohn's talk on TV Magic should be both fun and informative.

Announcing the MMRA Fox Hunt Ride-Along Program

Are you one of those that lurks in the shadows listening to the MMRA Fox Hunt each week and thought... Gee if I only knew more about that, it sounds like they are having fun. Well now you can experience all the thrill and glamour of being a fox hunter without having to go out there and wonder what to do next.

During a Tuesday night net simply request a ride-along and one of our seasoned hunters will arrange to meet up with you on either on Saturday morning or Tuesday evening at 6PM. You can ride along to see what's involved before you go out the in the cold cruel world by yourself. Also if you know which of the repeaters the hunt is on you can generally find a hunter about 9AM-10AM. We won't promise anything but it doesn't hurt to ask !

In addition, since we now have an automated FoxBox, there is often some DFing activity going on everyday. One or more hunters chase the FoxBox in the evenings after work, so you might be able to link up with one of them. If you listen around, you will hear those who are hunters talking about their experiences; jump in and indicate your interest. You can probably link up with someone and go after the FoxBox.

No matter how you get into it, there is one thing we will guarantee — **you'll have a lot of fun!**

The Repeater report

By Chris Conti N1NVL

PL, CTCSS, Tone Squelch, Tone Code — whatever you want to call it — it's on several of the MMRA machines. Note: this will NOT restrict repeater input at this time; input to the repeater is still carrier squelch. But if your rig puts out a tone in the decode mode, it won't hurt. So, if you have a tone decode on your rig, it's nice to be able to filter out intermod as you go past Bear Hill in Waltham, or on the SouthEast Expressway, or in Needham. I'm sure you know of a few more places like those... Well, if you do have this feature you can set it up with the code as listed on the back of the newsletter. The latest installations of output PL are noted in the repeater report, so read on!

The following is a list of stuff that happened from January newsletter 'till now — OK so I blew it last month and missed the deadline....Sorry!

Feature Story - Quincy, MA 146.67 & 224.40 Site work

Who is crazy enough to be out here in the freezing cold at the start of a snow storm driving ground rods into the frozen earth ??? Why of course your dedicated MMRA tech crew!!!

It all began just a few days before when I began gathering up materials and stuff to continue the work being done on the site... Ground Rods were ordered. We got wire and Mike, KA1HKP, attached lugs. Then on Saturday Feb. 4, just before the snowstorm in the freezing cold, Bob WA1ZJE and Chris N1NVL went up to the site to re-install 224.40, repair the electrical service, and drive new ground rods. You see, at the Quincy site you can measure 60V between electrical service ground and the watertank! You can also measure 2-3V between the tank and the shield part of the 7/8" hard-line. A TDR (cable tester) test showed significant noise on the hard-line (static and all). We put a grounding kit on the hard-line to quiet it down. Bob, WA1ZJE, welded a bunch of ground points to the watertank that we wired to the ground rod. Bob made quick work of using an abandoned conduit going outside the structure into the ground as a feedthru for our grounding system. This will protect it from vandals (a Big problem at this site).

Then an 8 foot 5/8" ground rod was driven in and a trench dug to conceal it and the wire to the conduit, a tough job considering the ground was frozen and outside temp about 10 degrees. The wire was then attached to the rod using a process known as caldweld. Gunpowder charge is used to ignite a glob of metal stuff and melt it to create a nifty connection that is permanent. When this thing is done it looks like a solid, welded copper piece.

Another great feat was the repair of the electrical service coming into the building. The conduit had rotted away at ground level, so Bob WA1ZJE came up with a custom made steel shell to put around the rotted piece, dug down a bit and re-connected both sides with a new external casing all made out of steel from the back of his nifty portable welding shop. By the way, if you have stuff to fix on your tower or brackets to make for it Bob has all sorts of nifty toys to make it happen, and he can do it on-site. Just call him at (508) 822-7370. OK...it was a free plug — my way of saying Thanks, Bob!

224.400 N1KUG/R Quincy MA

The 224.40 repeater was refurbished during the week(s) of Jan 23-Feb. 3. It was apparent that noise problems would continue to plague the machine, so we decided to go to Tone Squelch (CTCSS or PL). A tone of 103.5 is now required to key the machine up. This will significantly reduce the network kerchunking that the machine does. We did some rewiring to set-up for the interface that will allow the 146.67 machine to be linked. The machine is back in place but will not be linked until the rest of the linking interface is built and installed.

146.670 KA1HKP/R Quincy MA

Some more level changes along with the grounding improvements have made this a nice sounding machine with NOOOO Crunchies! Thanks to Mike KA1HKP for all his hard work. As of this writing the link is not wired in - but you never know.

146.820 KA1AL/R Weston MA

On March 15, just before the membership meeting we installed a PL Tone output on the transmitter. The Tone is 146.2, same as Stoneham and the Boston 145.23 machine. Minor changes were made in January that may not seem like much from the user side of things but I decided to make some temporary connections a little more permanent so they wouldn't fall apart. Like what you say? Like an audio pad (made of resistors floating in mid-air attached to the TX with alligator jumpers) was installed in the interface box permanently. It also became a part of the standard MMRA interface for two repeaters sharing the same link radio.

146.715 N1NVL/R Stoneham MA

Every once and a while the machine goes stone deaf for no apparent reason... as soon as I figure why I'll see what I can do to fix it. Naturally the 3 times I've been there, It works perfectly the whole time.

446.725 N1NVK/R Stoneham, MA

No work done, however, we have discussed work pending over several cups of coffee.

145.030 KA1OUI-3 (MMRA-3) Packet Digipeater

I was working at the site with Walter N1HBR and noticed the digipeater didn't seem to be doing anything. Normally it's always clicking away up there, so I tried a power off/on reset and after calling on 146.61 got N1SZH to answer and try connecting to the digi. All's well (so I thought). Then on Feb. 25 while doing more stuff up on the hill (and yes, consuming several large cups of coffee) Jed, KA1OUI, came up the hill and we discovered the power amp was keying into the transmit mode but not switching into receive mode, so the unit never heard anything. Jed removed the amp and now the Digipeater runs at 30W barefoot, and Jed hopes to have the amp back soon.

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Electromagnetic Interactions.....

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by those in the epidemiological community.

Second, there is a growing body of evidence showing that electrical and magnetic fields do have an effect on biological materials and organisms in a laboratory setting. However, the relationship of these to biohazards is not clear cut. Many of the effects are difficult to reproduce, they are highly specific in terms of frequency and field strength. In a way, their existence is not surprising, since biophysicists and physiologists have known that cells, tissues and organisms are capable of generating and reacting to a variety of electromagnetic phenomena.

What is controversial, is that it is unclear as to the magnitudes of environmental field induced effects, given our current knowledge. Most environmentally produced electrical and magnetic fields are much weaker than the earth's fields or those produced by biological systems themselves. Therefore, it is not clear what type of significant effects could be produced by weak environmental fields under most cases of concern to the general public.

What should the average ham do? First, pay attention to the known effects, the thermal effects. Minimize your exposure to them by limiting power usage and proximity to the antenna. Work o eliminate stray RF in your shack. Observe precautions when working with moderate to high power, and especially when working with UHF and microwave equipment.

This is the last installment of this series. I hope you have learned something from it. I am currently furthering my knowledge in this area and would be interested in speaking to other hams no matter what level of knowledge and experience. I am also developing a database of articles from the amateur and professional technical literature concerning biological effects of RF. I will be happy to share this with others, when it is reasonably complete.

73
Dave, KT1X

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Overbeck, W., "Electromagnetic Fields and Your Health" in QST LXXVIII, (4) p. 56 ff. April 1994.

Thanks to those who helped at the Flea Market....their names are to the right. Special kudos go to K3BUZ for his outstanding job on concessions, and to W1JDO for talk-in. If we missed anyone, our apologies.

KA1KD Al	KA1GFN Ken	N1NOM Eddie	KA1OUI Jed
N1BHA Dottie	KD1GG Bob	N1NVJ Debbie	N1QPR Bill
N1BHI Andy	WB1GMA Tom	N1NVK Clark	KA1YQB
K3BUZ Barrie	N1HBR Walter	N1NVL Chris	Bryan
KB1FZ Frank	W1JDO Frank	N1OBC Brian	WA1ZJE Bob

Give the MMRA World Wide Web Home Page a try..... let us know what you think..... any ideas are welcome. We are looking into things like an MMRA list server. We now have our own domain name - mmra.org. The Web Page keeps getting better.....

WWW Address:

http://www.mmra.org/~mmra/mmrainfo.html

Repeater Report.....

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449.575 N1NVL/R Taunton, MA

Bob WA1ZJE once again put his talents to work; he went down to the Taunton tower and removed the link antenna from its perch just under the repeater antenna, where the link was getting overloaded. He then brought it home to fabricate a nice side arm style bracket with a big enough u-bolt to fit the 2" legs on the lower 60' of the tower, On April 1 he went back and put it up, and re-aligned it. - still a little weak 'till 449.925 runs full power.

449.925 N1HBR/R Marlborough MA

The MMRA Tech crew once again braved the cold after the fox hunt and post-hunt luncheon and went up to the site for the replacement of the transmitter. Bill, N1QPR, did most of the mounting and connecting, Ed, N1NOM, provided a heater and was the official keyer-upper of the repeater. Bryan, KA1YQB, brought up another heater and lent a hand, and Chris, N1NVL, played with the test equipment, drank coffee, and once in a while did something productive like set levels. We added an output CTCSS tone (88.5 same as most 440 machines in Mass.) Wellllll, this was going to be a victory report of how the new transmitter improved operation. But even though the audio and output improved, we seem to have a problem with the cold weather...

March 23, 1995 at 5:28pm an all points bulletin for the tech crew comes from Walter, N1HBR. The message flashed across my pager "PLS CALL WALTER, URGENT. SLYGO IS OFF THE AIR". "Slygo" refers to the 449.925 repeater. After a brief phone call Walter, N1HBR, Clark, N1NVK & Chris, N1NVL, were on the way to the site with tons of test equipment, miles of cable, boxes of parts, and yes....lots of COFFEE! As we arrived and prepared to unload all the stuff Clark N1NVK got a brilliant idea..."Let's look to see if it's just a blown fuse or a loose connection" — another milestone in troubleshooting. Upon opening up, a quick examination of the unit found a melted connector on the 12V power supply. In the original manufacturers design was a connector with 2 wires with +12V and 2 wires for Ground. One of the 2 +12V connector pins was obviously not making connection which explains why it was not melted, but given that the other one was trying to carry the load it melted the nylon shell and caused a blob to interfere with the connection. Chris and Clark finished their coffee and went home. Walter got new connectors and wires, rebuilt it, and we were back on the air by 10:15pm.

The crew has been at Slygo twice since then; the transmitter was fixed by anchoring the cans holding two resonators, as suggested by the Quintron engineers that Bryan has been talking to, and the duplexors reworked. As of now, Slygo is playing well.

223.940 N1BHI/R Hopkinton, MA

Bryan, KA1YQB, now has possession of this monster and rebuilding it. It's gonna be a lot smaller, but we'll still need some help. We can only get access to the site during work days, so if you can spare some time mid-day please get in touch with any of the tech crew members or Andy, N1BHI.

ARRL Section Manager Letter
From Phil Temples, K9HI

EMA Public Service Workshop

Many of you have read the announcement about the Public Relations Workshop, planned by EMA Public Information Coordinator Ed Hennessy, N1PBA [1], slated for May 10, 1995 from 7:30 pm until 9:30 pm at the Massachusetts Emergency Management Agency bunker on Route 9 in Framingham. Ed has lined up a PR professional, Donna Nelson, International Disaster Coordinator for the World Society for Protection of Animals in Boston. Ms Nelson worked in public relations for the Red Cross, and brings years of experience to the workshop. If you or your radio club has ever thought about "getting the word out" but hasn't known exactly how to do it, this workshop is a "must."

Acton Classroom Morse Demo

ASM for Training and Education, Larry Ober, KC1VS, reports a successful classroom demonstration for youngsters in an Acton school:

"This morning 4/27 I participated in Communications Day at the Merriam School (K-6) in Acton. The students attended workshops demonstrating various modes of communication. Activities included (in part) Music, Mime, Braille, Drumming, ASL, Communicating through Art and Morse Code. I worked with three groups of about 14 students each for a twenty five minute periods. A brief history of telegraphy was given followed by a code demonstration. Each student was invited to try a straight/practice oscillator and a paddle/keyer. They were encouraged to try sending brief messages. Code charts supplied by theWm. M. Nye Co., Inc were duplicated and distributed."

Thanks for your efforts, Larry! (Not bad for a guy who prefers voice over code...)

Deadline on Maia Petition Looms

ARRL wishes to remind everyone that the petition for FCC rule making by Fred Maia, W5YI, that would eliminate all one-way transmission below 30 MHz, has been assigned RM-8626 and the deadline for comments on it is May 4, 1995.

The petition would end code practice and information bulletins on the amateur bands below 30 MHz, including those from W1AW. If you oppose this petition, send a letter to: The Secretary, FCC, Washington DC 20054. Put the file number, RM-8626, prominently at the top of your letter. Send six copies, all in one envelope. A copy of your comments should also be sent to Mr. Maia's lawyer: Raymond A. Kowalski, Keller and Heckman, 1001 G Street NW, Washington DC 20001. [2]

Again, THE DEADLINE FOR COMMENTS ON THE PETITION IS MAY 4, 1995. More information was available in the April 3, 1995 issue of The ARRL Letter and in other ham publications.

Personally, I feel that it would be a real shame if such a petition passes for lack of comment by the amateur community. Previous petitions for past rule making--even on important issues--oftentime receive surprisingly few comments. Do you care

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ARRL Section Letter....

(Continued from page 7)

enough about W1AW services to take thirty minutes to write and make a substantial impact?

Crocker Public Service Group

Bob DeMattia, AK1J, and others have started the Crocker Public Service Group, a non-commercial association formed to provide amateur radio support for public service events. CPSG was formed to honor the memory of silent key and past Section Manager Dave Crocker, W1TMO, of Needham. Dave was a very active and dedicated amateur who devoted much time and energy to public service and other worthwhile causes.

Participants in this year's Walk for Hunger will become automatic members of CPSG. An individual can become a full member by paying a nominal fee of $1 per year and by participating in one CPSG event in the past year (where a CPSG event is an event sanctioned by the club officers) [3].

For further information on this new association, contact Bob DeMattia at 617 698-4908.

ARRL-Sponsored Flea Markets

I'm pleased to announce a substantial increase in the number of EMA clubs who have, or are in the process of applying for ARRL sponsorship of their flea markets and hamfests.

In the past four to six weeks, letters from Headquarters have been sent to the Wareham ARC, the Framingham ARA, and the Wellesley ARS.

ARRL sponsorship affords several perks: approved events are entitled to receive free mailing labels for hamfest promotional mailings, special rates for QST advertising, a free-of-charge listing in the "Hamfest Calendar" column, and, if prior arrangments are made, a quantity of League publications/supplies may be consigned for sale at a League booth.

With such sponsorship, the League expects that you will provide space for, and staff a booth to distribute League-provided handout materials and to solicit ARRL memberships.[4]

Center Stage: OES

Want to have some serious fun? Try something different? Make new friends? All while giving something back to Amateur Radio and supporting _your_ League? EMA ARRL wants you!

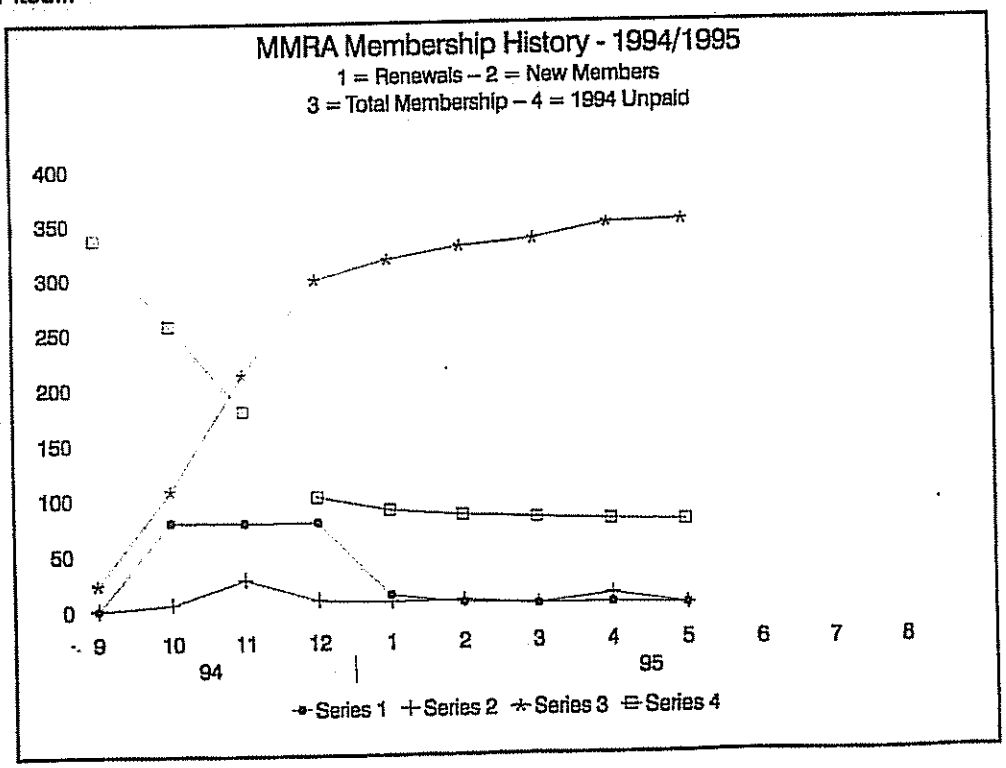
This SM Letter highlights the Official Emergency Station (OES) field appointment.

OES appointees are involved in emergency preparedness and operating. Requirements include regular participation in the local Amateur Radio Emergency Service (ARES) drills and tests, emergency nets and, of course, real emergency situations. OES appointees much be able to operate on emergency (battery, for example) power and have at least one-band mobile capability (such as 2-meters). [5]

That's all for this issue. I'm off to the Dayton Hamvention tomorrow. On Wednesday, May 3, Shawn O'Donnell, K3HI, EMA State Government Liaison and I will talk at the Billerica Amateur Radio Society meeting. 73 de Phil, K9HI.

LAST MINUTE REPEATER REPORT UPDATE - Taunton is off the air for a while....the crew was working on replacing the antenna. The super stationmaster was too big and heavy, so N1BHI, and N1NOM, brought an 8 bay DB Products down to the site after the fox hunt. KA1YQB and WA1ZJE were ready to go up the tower, but the wind had picked up making climbing and handling antennas unsafe. N1NVL and KT1X were ready to handle ropes, but we decided to wait for a calm day sometime in the next month. WA1ZJE will be improving the mounting hardware in the meantime, and N1NVL will be doing some more work on the repeater itself.

If you have not renewed yet, remember that we are halfway thruogh our membership year. We need your continued support: so renew soon. As the chart to the right shows, we've done pretty well this year so far. Help make this one of the best membership years we've had recently...we want to top 400 members again! We are the best and the biggest!



Minuteman Repeater Association, Inc.
P. O. Box 2282
Lexington, MA 02173
Voice Mailbox: (508) 489-2282

Non-Profit Communications Organization Serving the Public in Time of Emergency.

-Application for Membership-

☐ *New* or ☐ *Renewal*
☐ *Individual Membership (Dues $25 per year)* ☐ *Family Membership (Dues: $35 per year)*
☐ *Novice Membership (1st year dues: $10)*

I hereby apply for Membership in the MINUTEMAN REPEATER ASSOCIATION, INC. I agree to abide by the rules and regulations of the Association as stated in the by-laws, and understand that acceptance of this application entitles me to all rights and privileges of membership as provided under the by-laws.

Signature: _____ Date:_____

Name: _____ Callsign:_____ Class of License:_____

Home Address: _____
_____

E-Mail Address: _____
Occupation: _____ Employer: _____
Work Phone#: _____ Home Phone: _____

Member of: ARRL?_____Other Clubs?_____

Equipment Available for Your Use:

Type	No.	Mobile	Port.	Fixed	DTMF	FM	SSB	Packet	CW	Patch	Rtty
HF	_____	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
VHF	_____	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
UHF	_____	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

I can and am willing to assist/serve the Association and/or help maintain the Repeaters in the following ways (check all appropriate boxes)

☐ Antennas
☐ Flea Market
☐ Receiver
☐ Publicity
☐ Transmitters
☐ Newsletter
☐ Logic
☐ Public Service
☐ Telephone
☐ Legal Aid
☐ Education:
☐ Technical Documentation
☐ Shelters
☐ Medical Aid
☐ Equipment Construction
☐ Meeting Set-up
☐ Equipment Transportation
☐ Social Events
☐ Technical Documentation
☐ Refreshment
☐ Schematic Drawing
☐ Technical Library
☐ Teach Code
☐ Teach Theory
☐ Repeater Tech Committee
☐ Special Projects
☐ Repeater Control Operator
☐ Association Officer
☐ Board of Directors
☐ Field Day
☐ Emergency Communications
☐ CW Operation
Other-Specify:_____

Send this form with your
Dues to: MMRA, PO Box 2282, Lexington, MA 02173

MMRA Information - Repeaters, Officers and Board Members

MMRA Repeaters:

Marlboro	146.61	N1BHI/R	FTL	P	PL - 88.5 out, none in
Marlboro	449.925	N1HBR/R	FTL	P	
Quincy	146.67	KA1HKP/R	PTL	P	PL - 103.5 in, none out
Quincy	224.40	N1KUG/R	FTL	L	PL - 146.2 out, none in
Weston	146.82	KA1AL/R	PTL	P	
Weston	224.70	N1HBR/R	FTL	L	
Hopkinton	223.94	N1BHI/R	FTL	L	PL - 146.2 out, none in.
Stoneham	146.715	N1NVL/R	PTL	P	PL - 88.5 in, none out
Stoneham	446.725	N1NVK/R	PTL	L	PL - 88.5 in, none out
Taunton	449.575	N1NVL/R	FTL	L	

[FTL = Full Time Linked PTL = Part Time Linked]
[L = Patch available via link] P = Local Autopatch]

MMRA Officers:

President:	Andy Morrison, N1BHI
Vice President:	Walter Ching, N1HBR
Secretary:	Frank Morrison, KB1FZ
Treasurer:	Ian MacLennon, AF1R
Clerk:	Clark Conti, N1NVK
Directors:	Tom Qualtieri, WB1GMA
	Al Kunian, KA1AL
	Chris Conti, N1NVL
	Mike Ryan, KD1OA
Newsletter Editor:	Andy Morrison, N1BHI
Associate Editor:	Walter Ching, N1HBR

To Contact Officers or Board Members Call MMRA Voice Mail Line:

508 - 489 - 2282
Toll Free from 508 and 617 Areas

MMRA E-Mail
mmra@mmra.org

Important MMRA Club Information:

Membership Meetings: 3rd Wed of Sept, Nov, Jan, Mar, May at Campion Center, Weston at 7:30 PM
Meeting Dates for 1994-95 Season: September 21, November 16, January 18, March 15, & May 17.

Board Meetings: 3rd Wed of Oct, Dec, Feb, Apr. Meetings are open and members are welcome.
If a visiting member wants to be on the agenda, please contact Andy Morrison beforehand.

MMRA Voice Mailbox (508) 489-2282. -- This is a local call from any 508 exchange phone, and is a free call from both 617 and 508 areas.

Newsletter Information	September issue	November issue	January Issue	March Issue	May issue
Mailing Date	Sept 14, 1994!	Nov 9, 1994	Jan 11, 1994	Mar 8, 1994	May 10, 1994
Submission Deadline	Sept 10, 1994	Oct 26, 1994	Dec 28, 1994	Feb 22, 1994	Apr 26, 1994

The MMRA is dedicated to Amateur Radio and the public service. The MMRA is a registered non-profit Massachusetts corporation. Membership is open to all amateurs. Annual dues are $25.00 individual, $35.00 family.

Mail Return Address:

MMRA
P.O. Box 2282
Lexington, MA 02173

TO: