



The Minuteman

Volume 31, Issue 1

September 2001

Board Meeting Minutes by Eddie Mulhern, N1NOM

The MMRA board of directors met at 7:30 PM on August 15th at Stratus Technologies in Maynard. Attending were K1KWP, W1BRI, N1XXI, N1BE, WZ0C, N1NOM, N1KUG, N1VJE, and N1QPR.

Treasurer Bill, N1QPR, reported that expenses are exceeding income; but this is not as bad as some recent years. To sustain the club we need more members, or further cutting of expenses. (See budget summary, below.)

Technical Officer Bryan, W1BRI, presented a "Wish List" of items for the next year. This included several low cost changes to the system. Major items included:

- Linking to a Newton repeater to extend our coverage to Cape Cod. K1KWP to contact other system owner.
- Moving 449.575 from N1QPR's house to a better site. W1BRI to check possibilities in Shrewsbury.
- Moving one 6 meter receiver to Stoneham. W1BRI is preparing this equipment for the move.
- Install already owned tower and antenna at Marlboro Country Club. Unanimously approved.
- Lightning protection for all feedlines. (Too much cost to do all at once.)

- Pictures of all repeater sites on MMRA web site. W1BRI and WZ0C will do this as time permits.

The board is working to ensure that we comply with the by-law changes voted at the May meeting. WZ0C was appointed the new trustee of 146.82. The board is looking for a volunteer to be trustee of the 145.03 digipeater.

N1BE was appointed as designated responder for email sent to mmra@mmra.org.

Rental of meeting space at Weston approved except for November when we expect to have a field trip off site.

Additional cost cutting to include no more donuts at meetings and having a 50/50 raffle instead of purchasing a prize.

MMRA Mobile-a Thon picnic approved. WZ0C to find site. (See details elsewhere in this newsletter.)

Meeting speakers are needed for Jan, Mar, and May. Volunteers or suggestions from the members are solicited.

The date of Oct 17th was set for the next board meeting. All members are encouraged to attend. The meeting was adjourned at 10 PM.

Budget Summary by Bill Northup, N1QPR

Expenses:	Budget	Actual	Difference
Administration	2800.00	2062.79	737.21
W1BRI	53.810	0.00	196.95 (196.95)
N1BHI	146.61	100.00	215.91 (115.91)
W1BRI	146.67	200.00	167.59 32.41
N1NVL	146.715	100.00	55.00 45.00
KA1AL	146.82	200.00	218.35 (18.35)
N1BHI	223.94	0.00	0.00 0.00
N1KUG	224.40	0.00	0.00 0.00
N1HBR	224.70	0.00	0.00 0.00
N1NVK	446.725	0.00	0.00 0.00
N1NVL	449.575	0.00	0.00 0.00
N1HBR	449.925	750.00	751.47 (1.47)
KA1OUI	145.03	0.00	0.00 0.00
N1QPR-2	144.39	0.00	0.00 0.00
R&D/Contingency	0.00	4.60	(4.60)
Test Equipment	0.00	0.00	0.00
Field Day	0.00	0.00	0.00
Total	4150.00	3672.66	477.34

Income:	Budget	Actual	Difference
Dues	4250.00	4079.00	(171.00)
Misc.	0.00	125.00	125.00
Meeting Raffles	0.00	75.00	75.00
Total	4250.00	4279.00	29.00

Administration:	Budget	Actual	Balance
Newsletter	1125.00	1304.39	(179.39)
Meetings	750.00	0.00	750.00
Pres. Acct.	0.00	0.00	0.00
Sec. Acct.	0.00	35.52	(35.52)
Treas. Acct.	10.00	48.06	(38.06)
Cookout	0.00	0.00	0.00
Insurance	915.00	520.00	395.00
P.O. Box Fee	0.00	39.00	(39.00)
Voicemail/Pager	0.00	0.00	0.00
Misc	0.00	115.82	(115.82)
Total	2800.00	2062.79	737.21

Inside this issue:

MMRA Information	2
President's Corner	3
MMRA Updates	4
Repeater Report	6
Fox Hunting	7
Mobile-a-Thon Picnic!	12
Public Service	13
Next Meeting	14

About the Minuteman Repeater Association

The Minuteman Repeater Association (MMRA) is dedicated to Amateur Radio and public service. The MMRA has built a large system of repeaters in Eastern Massachusetts.

The MMRA meets on the 3rd Wednesday of September, November, January, March, and May. Meetings start at 7:30 PM in the Campion Center in Weston MA. Meetings are open to all interested parties. Talk-in is available on the Weston 2-meter repeater (146.82).

The Minuteman newsletter is mailed one week before each meeting. Members are encouraged to submit articles. Articles may be sent to the editor via email to n1be@arrl.net. The deadline for articles is the last Friday of the month preceding the meeting.

Each Tuesday evening at 8PM the MMRA links all the repeaters for an open net. The topic is "Technical Information and Other Stuff". Feel free to join us.

Membership in the MMRA is open to all radio amateurs. Annual dues are \$25 per individual or \$35 per family. The membership year starts on Sept 1st. Dues for new members are prorated for the remainder of the year. See our web-site for details.

Email to the club leadership should be sent to mmra@mmra.org. The MMRA web site is: <http://www.mmra.org/~mmra>

An email distribution list for club members has been established on:
<http://www.yahogroups.com/>
— the name of the group is "MMRA".

Repeater and Frequency Information

Location	MHz	PL	Call	Note
Marlboro	53.810	71.9/173.8	W1BRI	PTL
Marlboro	146.610	146.2	N1BHI	FTL
Quincy	146.670	146.2	W1BRI	PTL
Stoneham	146.715	146.2	N1NVL	PTL
Weston	146.820	146.2	WZ0C	PTL
Hopkinton	223.940	103.5	N1BHI	FTL
Quincy	224.400	103.5	N1KUG	FTL
Weston	224.700	none	N1HBR	FTL
Stoneham	446.725	88.5	N1NVK	NA
Acton	449.575	88.5	N1QPR	NA
Marlboro	449.925	88.5	N1HBR	Network Hub

Marlboro	144.390	none	N1QPR-2	APRS Digipeater
Marlboro	145.030	none	KA1OUI-3	Net/ROM Digipeater
?	145.630	146.2	W1BRI	Fox Box

Notes: FTL = Full Time Linked to the Hub.
PTL = Part Time Linked (on demand).
NA = linking is Not Available.

PL: There are two 6 meter receivers with different PL's. PL is required on 2 meters to prevent interference. The code **750** will temporarily disable the PL requirement.

Using the Autopatch: Only the hub has a telephone line.
(1) Link to the hub if necessary.
(2) Then bring up the patch.

Control codes are sent to members upon receipt of dues.

MMRA Leaders

President	Kevin Paetzold	K1KWP
Vice President	Bob Evans	N1BE
Secretary	Michael Ford	WZ0C
Treasurer	Bill Northup	N1QPR
Clerk	Eddie Mulhern	N1NOM
Director	Al Kunian	KA1AL
Director	Brian Cerqua	W1BRI

Director	Wayne Foley	N1XXI
Director	Shelley Northup	N1VJE
Emergency Coordinator	Kevin Paetzold	K1KWP
Technical Director	Bryan Cerqua	W1BRI
Newsletter Editor	Bob Evans	N1BE
VEC Liaison	Bill Wade	K1IJ
Webmaster	Michael Ford	WZ0C

President's Corner by Kevin Paetzold, K1KWP

Due to an unexpected chain of events has occurred I find myself in the position of President of the MMRA. Since there are many members that I have never met I thought it would be appropriate to say some things about myself. I also am unable to resist the opportunity to say some things about the MMRA. I decided that the easiest and most effective way to do that would be to conduct a frank question and answer interview with myself.

Q: Who are you and why are you here?

A: I have been a member of the MMRA since 1998. I joined shortly after I was licensed. I took my tests at one of the exam sessions that are really the work of K1IJ but which the MMRA takes credit for. In 1999 the board appointed me to fill the VP vacancy left behind when N1NVK was elevated to President because of the resignation of the previous president. In 2000 I was part of the nomination slate and was elected to VP. In the 2001 elections I became president.

Q: Why did you join the MMRA?

A: Why does anyone join the MMRA? In my case I was attracted to the MMRA because of its network of repeaters covering most of Eastern MA and because I knew some other people who were in the MMRA (including my Elmer). It seemed to me that the MMRA network could be an invaluable resource in time of emergency because of its ability to cover most of Eastern MA. I wanted to do my part to make sure that I was supporting the network of repeaters. My reasons for volunteering to be an officer are the same.

Q: Are you the guy responsible for getting the autopatch lines shut off on most of the repeaters?

A: Not really. Officially the decision to turn off autopatch lines was made by the board several times over several years. What happened last year was the execution of that decision. This is something that I pushed hard as VP. The phone lines were a very significant cost to the club and they were getting little use. Having multiple autopatch lines was a luxury that the MMRA could no longer afford without raising dues or membership. Dues from at least twelve member-

ships are required per phone line (probably more taking into account that the newsletter costs about \$6 per member per year).

I hope that all members are aware that the autopatch line on 449.925 was retained and that autopatch is still available on the other repeaters via linking to 449.925 and issuing the autopatch codes for 449.925. By the way, information from the treasurer indicates that so far in 2001 a total of nine autopatches have been made.

I have heard complaints on the repeaters about the autopatch. I am sorry for any inconveniences this has caused the members however I believe the alternative would have been the MMRA running out of money. Actually I expect that the most inconvenience is to the technical committee as more trips to the repeater sites are now required for activities that previously could be done over the phone.

Q: What else is costing the MMRA a lot of money? Where else are my dues going?

A: The MMRA has landlords and some of them get paid rent. The MMRA has utility bills at some sites (electricity and phone). The MMRA has liability insurance (thanks to the treasurer our insurance costs are down significantly this year). Currently the big costs are for the Campion center meeting room and for the newsletters. Thanks to W1BRI we have been able to keep the repeaters running for relatively little cost, usually just needing some discrete electronic components (like transistors).

Q: Since the meeting space is a significant cost do you have any comments on meeting attendance?

A: Well I am glad that you asked. I believe that in 2000 and the first half of 2001 we had first class presentations given at our general membership meetings. These ran the gamut from the multimedia presentation that K1XM/KQ1F gave us on their DX and photography trips (which should have been on WGBH), the repeater presentation given by W1BRI, the tower presentation given by WA1NLR and the presentation (and show and tell items) that KZ1G gave on

the earliest days of the personal/micro computer (before IBM). We also had presentations from ARES (N1VUX), SKYWARN (KD1CY), and the new section manager K9HI.

These people put a lot of work into these presentations. Nonetheless member attendance at these meetings was surprisingly poor. It seems that less than 20% of the members attend these meetings. I have begun to question whether the members are really interested in having this kind of general membership meeting. This is an issue that the MMRA is probably going to need to address. Perhaps we should abandon the current general membership meetings for more social meetings as some other clubs have. Comments on this are very welcome.

Q: What do you think of the financial state of the MMRA?

A: I believe that with a lot of work in the last year we have turned a corner and hopefully will not be running deficit budgets any longer. This is primarily due to the cost cutting measures that were taken in 2000-2001. At the August 15 board meeting we reviewed the finances from the 2000-2001 membership year and the budget projections for the 2001-2002 membership year. My overall summary is that the MMRA is treading water in calm seas. Assuming that almost all members renew we should more or less break-even and not use up money from our meager reserves. Nonetheless it would not take very much to propel the MMRA into financial crisis. A direct lightning strike on one of our repeater sites or a costly equipment failure would cause a crisis.

Q: What are your plans as president? What do you think is important? What directions would you like to see the MMRA take?

The financial health of the organization, the technical health of the system, and the week-to-week operation of the MMRA (paying our bills, keeping our landlords happy, publishing the newsletters, etc.) are all equally important. Only after ensuring that the organization and the existing system seem safe for another

(Continued on page 4)

MMRA Updates

Dues are due. Our fiscal year starts in September. If you haven't gotten the newsletter in a long time, we are sending this copy to encourage you to rejoin. Check the address label for your status.

Please fill out the **application form** on the next page and send it with your dues. Be sure to include your email address, if any.

Electronic newsletters are available. Instead of receiving a paper newsletter we would email the newsletter to you as a PDF file. Benefits of this are:

- Receive newsletter earlier.
- Get content that does not fit on paper version.
- Pictures are in color.
- Save the MMRA a few dollars.

Bylaw changes were voted at the May 2001 general membership meeting. The new bylaws were slightly modified from the proposed wording that was published in the last newsletter. The updated bylaws are available on the MMRA web site,

<http://www.mmra.org/~mmra/>

President's Corner (cont.)

(Continued from p. 3)

year and that we are on a safe course for future years can we look at making system improvements and/or expansions. There are several low cost projects on the MMRA agenda for the upcoming year. These include the 146.610/53.81 tower project and potentially finding a home for the 449.575 repeater. In the long run I would like to see the MMRA expand its coverage to the Southeast (including Cape Cod) and to the West (including the Worcester area and beyond).

Q: If a member cares about the MMRA and about their favorite MMRA repeater(s) what can they do to help?

A: The most immediate action to take is to renew your membership and help us increase our membership. I do monitor most of the repeaters on a rotating basis and I do detect some regular users of the system who are not members. I often hear non-members in regular QSOs with members. Although I am not asking people to be obnoxious or pushy it would be appropriate for members to remind regular non-member users that we need their support. If you are in regular communication with non-member users of the system please ask them to support the MMRA. If every member recruited another we would be in fine shape. How much do you spend on equipment every year? How many radios can you buy for \$25? With your MMRA dues you are buying eleven repeaters and two digipeaters.

Q: Every organization is willing to take my money. How else can members get involved and support the

MMRA?

A: As in many organizations like the MMRA a few people do a lot of the work. It may seem that there is an "inner" group that may appear hard to break into. I think it would be better to define any such "inner" group as the "active volunteer" group instead. You can be part of the "active volunteer" group as well. All it takes is to be an active volunteer. Please come to the general membership meetings. Please come to the board meetings. Please check into the Tuesday night net. Help us make the decisions that keep the system and the association running. If you make yourself available the opportunities will present themselves.

Q: Talk is cheap. What do you say to those members who have offered to help but only hear about the various work parties and repeater site visits after the fact?

A: I would be sad if anyone really feels that way. The reality is that very few people do much of the work of the MMRA. Those people (like almost all of us these days) are very busy. We are very lucky that they can give us whatever time they do. When a small group of people is continually doing most of the work there is a natural tendency to only coordinate with each other. In addition have you ever noticed how hard it is to coordinate something (even picking a restaurant) with three or four people instead of just two? If you make the effort to make yourself available and at least initially can be somewhat accommodating the opportunities will arise. Please come to the meetings. It will not be long before

we try to get you to volunteer your time and skills.

Q: What else can members do to support the MMRA?

A: Are you willing to climb towers? Are you willing to prepare and present a talk at a meeting? Can you write articles for the newsletter? Are you willing to help prepare the newsletters for mailing? Are you willing to help with the physical labor needed for the 146.610/53.81 antenna tower project? Can you provide transportation to members who are unable to get to the Campion center without help? Do you have technical skills that we can put to use? Are you willing to be one of the rotating net controls for the Tuesday night net?

Q: Is there anything else that you would like to say?

A: Please feel free to respond to me with any feedback or comments about the organization and the system when you hear my call on your favorite repeater. If you have comments and want to get in touch I routinely monitor the 146.610, 449.925, and 53.81 repeaters almost every workday (plus or minus 30 minutes) between 8AM-9AM and 5:30PM to 6:30PM. I also almost always check into the 8PM Tuesday night net. You can send me email at mmra@mmra.org or K1KWP@arrl.net.

I am looking forward to the upcoming year. The board of directors has planned multiple system improvements for this year and we are also scheduling a social/technical event on Sunday September 30 (see details elsewhere in this newsletter). With your support this could become the beginning of a new reinvigorated MMRA.

Minuteman Repeater Association, Inc.
P.O. Box 669
Stow MA 01775-0669

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

—Application for Membership—

☐ New or ☐ Renewal

☐ Individual Membership (Dues: \$25 per year) or ☐ Family Membership (Dues: \$35 per year)
or ☐ 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 bylaws., and understand that acceptance of this application entitles me to all rights and privileges of membership as provided under the bylaws.

☐ Check box for Electronic Newsletter: Receive more content earlier. Must supply email address.

Name: _____ Callsign: _____ Class of License: _____

Address: _____ Home Phone: _____

Town, State, Zip: _____ Work Phone: _____

Email Address: _____

Occupation: _____ Employer: _____

Member of the ARRL? _____ Other Clubs? _____

Bands and Modes you operate. Please check all that apply:

	Fixed	Mobile	Portable	FM	DTMF	CW	RTTY	PSK31	APRS	Packet	SSB
HF											
VHF											
UHF											
Satellite											

I can and am willing to assist/serve the Association and/or help maintain the Repeaters in the following ways:

- | | | |
|---|---|--|
| <input type="checkbox"/> Antennas | <input type="checkbox"/> Meeting Setup | <input type="checkbox"/> Speaking at a meeting |
| <input type="checkbox"/> Association Officer | <input type="checkbox"/> Net Control | <input type="checkbox"/> Special Projects |
| <input type="checkbox"/> Board of Directors | <input type="checkbox"/> Newsletter | <input type="checkbox"/> Technical Library |
| <input type="checkbox"/> Education | <input type="checkbox"/> Public Service | <input type="checkbox"/> Web Site |
| <input type="checkbox"/> Emergency Communications | <input type="checkbox"/> Publicity | Other—Please specify: |
| <input type="checkbox"/> Equipment Construction | <input type="checkbox"/> Radio Shelters | _____ |
| <input type="checkbox"/> Equipment Transportation | <input type="checkbox"/> Refreshments | _____ |
| <input type="checkbox"/> Grant Writing | <input type="checkbox"/> Repeater Control Operator | _____ |
| <input type="checkbox"/> Legal Aid | <input type="checkbox"/> Repeater Technical Committee | _____ |
| <input type="checkbox"/> Medical Aid | <input type="checkbox"/> Social Events | _____ |

Other family members:

Name: _____ Callsign: _____ Class of License: _____

Name: _____ Callsign: _____ Class of License: _____

Name: _____ Callsign: _____ Class of License: _____

Name: _____ Callsign: _____ Class of License: _____

Repeater Report by Bryan Cerqua, W1BRI

449.925: The problem with the transmitter dropping out due to high temperature was in the Quintron multiplier board. The multiplier board consists of two small helical cavities that mount side by side which bandpass filter the UHF input to the 10 watt pre-driver board. The aperture between the two helical filters would change due to expansion of the metal shields that surround the helical coils. When this happens the input to the 10 watt board would drop below what AGC loop could compensate for.

The fix involved removing the multiplier board and completely rebuilding it. Some of the coax feeds to this multiplier board were in rough shape so I decided to repair them as well. To keep the shields from moving around with temperature I used a small U-Bolt with a flat plate that fit perfectly around both shields. I just happen to have a brand new U-Bolt setup in my toolbox. Previously tie wraps were used to hold the shields in place but didn't do a good enough job.

The mechanical design of this multiplier board is very poor, the shields are held to the circuit board with through screw mounts. The top of the helical coil connects to a trimmer capacitor that mounts to the top of the shield. Any change in the shield position due to temperature causes the helical coil to expand, changing the tuning characteristics. The screws were tightened up and lock washers added to keep things fixed in place.

To check the final setup a hair dryer was used while monitoring the transmitter output power. The multiplier board was heated up much hotter than the most severe environment and the transmitter remained stable. This summer had some very hot days and the 449.925 repeater has not had any problems since this fix.

I would like to thank Kevin, K1KWP for keeping me company on that extremely hot day. Kevin brought me a cold soda that hit the spot. The Slygo site is like a small oven on a hot day, the temperature can reach 130 to 140 degrees. I would have died up

there if I didn't take my fan. We really need some ventilation up there. There is a broken fan in the roof of the shelter that needs to be fixed!

Interference from 444.900 repeater:

This problem was due to a repeater located on a high hill in West Millbury, MA. It's output is on 444.900 only 25Khz away from the 444.925 input. At first I thought it was a coordination issue but after visiting the Slygo 449.925 repeater with the service monitor I found out differently.

I connected the service monitor output directly to the 444.925 receiver. The service monitor frequency was set to 444.900 with a PL of 88.5. This was done to see just how robust the 444.925 receiver is with an off frequency signal. Even with a huge signal (almost 0dBm) the repeater would not key up. This told me that the problem must be with the other repeater and not our receiver.

I then connected up the service monitor receiver input to the 449.925 antenna and used my radio to key up the 444.900 repeater. Using the spectrum analyzer to view the 444.900 transmitter signal I measured about a -70dBm level and it looked on frequency but the width of the spectrum couldn't be determined since the signal was not strong enough into the service monitor.

I had already met with the owner of the 444.900 MASTR II repeater. I called him and asked to come to his repeater site with the MMRA service monitor to further check things out.

The next very hot Wednesday night I went to West Milbury, met the owner, and we progressed into the attic where the repeater was located. Can you say HOT? It was unbearable! I was ready to pass out just carrying the service monitor up the stairs. It had to be over 150 degrees up there, and I could hardly breathe.

I quickly set up the service monitor on the floor. The 444.900 repeater was keyed while watching it on the spectrum analyzer. NOT to my surprise, the darn thing was as wide as a barn door. The transmitter was totally unstable. I was prepared to due a complete re-alignment but not in that extremely hot environment.

I asked if it would be OK to remove the repeater and take it to my place to work on it. No problem, so we extracted the repeater from the attic and placed it in the back of my jeep and went home. Right away the repeater was on the bench and fired up.

It was so bad that it made a squealing type of noise. Using a plastic tool to apply force to the components, I discovered an intermittent on the pre-driver board. Re-soldering the area around the pre-driver transistor was all it took to fix this problem. I also did a complete exciter alignment and checked out the receiver, all was fine. Checking the crystal oscillator modules I found them to be off frequency slightly. I had to remove a capacitor on one of the ICOMs to get it dead on frequency.

In the past the 444.900 repeater would kerchunk itself like crazy. Since the transmitter was so unstable, there was no way this repeater could hear with all that transmitter noise.

I emailed the owner and told him what I did and planned to re-install the repeater on the next cool night. About two weeks went by before the next cool night came along. The repeater sat in my shop until then.

When the repeater was re-installed, the attic was a cool 100 degrees. In no time the repeater was back on the air, and the transmitter looked real clean on the spectrum analyzer when hooked up to the duplexer and the antenna. The transmitter deviation checked out fine.

Thirty minutes later we were in his driveway. I checked the MMRA system while his system was on the air and no signs of interference were noticed; problem solved! After chatting about GPS and fox hunting stuff for a while I drove home keying his repeater all the way. I was even able to hit his repeater from my QTH in Milford with my HT on 2 watts.

Moral of the story: As in most cases, I was initially on the wrong track thinking this problem was purely a frequency separation coordination problem. After some investigative work I later found

(Continued on page 7)

Fox Hunting News by Michael Ford, WZ0C

The MMRA holds foxhunts every Saturday morning beginning at 10 AM on the 146.61- repeater. While the days are still long enough, foxhunts are also being held every Thursday evening at 6 PM on the 146.82- repeater. The fox transmits for 30 seconds every 5 minutes on the input of the repeater, and then coordination usually takes place on the repeater between the fox transmissions. All are welcome to join, and the

group usually visits a local restaurant for brunch on Saturday or dinner on Thursday after the last hunter has arrived at the fox's location.

The following are accounts of a few of the hunts from this summer. Larry, W1DYJ, provided the associated maps.

July 14: Eddie, N1NOM, hid just off of Rt. 27 near the intersection of Rt. 20 in Wayland. He was parked down a

grassy road and was very hard to spot. Mike, WZ0C, caught him out of the corner of his eye on his second drive by and was first to find Eddie. Clark, N1NVK, also spotted Eddie and wasn't far behind. [See maps.]

Initial bearings: W1DYJ: 240 deg
W1JDO: 330 deg K1KMN: 30 deg
Fox Location: 42,21.928N 71,21.847W

(Continued on page 12)

Repeater Report (cont.)

(Continued from page 6)

out it was nothing more than an unstable transmitter that was simple to fix. This was a good example of cooperation between individuals to solve the problem.

146.610: The repeater was keying up with what appeared to be a very weak signal even in PL mode. At first I thought it was a spur from the transmitter getting into the receiver since the transmitter contains a PL of 146.2 on it. This problem continued for quite some time. The repeater would stay keyed for long times with no audio and an occasional courtesy beep.

At the site with the service monitor scope I looked at the COR and PL detect logic levels. I noticed that the PL detect signal would toggle and sometimes remain high with no signal into the receiver. The COR signal remained LOW with no signal and went HIGH with a received input signal was greater than the squelch threshold. The problem was that the PL decoder would false due to noise input causing the repeater to key up when in PL only mode.

Another problem with PL only mode is when users are weak into the repeater the PL line would remain high but the audio would chop out since the audio path is gated based on COR and not PL in MASTR II receivers.

The PL and COR lines don't change state at the same signal strength level. The PL would transition first then the COR level since the squelch control is

set just slightly past the threshold. Even with the squelch set exactly at the threshold the PL decoder is somewhat more sensitive, it even toggles with noise sometimes.

To fix this problem a small patch to the SCOM 7K controller code was done to set the repeater access mode to PL AND COR. This creates a clean input condition for determining when the signal is below a usable level. Of course in non-PL mode the COR is the only signal controlling the transmitter.

The 146.610 repeater is the only repeater that uses the PL AND COR mode. The repeater seems to be working just fine since this change. I think the other repeaters should be updated to be the same.

53.81 71.9 Receiver: After spending some time at the Slygo site it first appeared that something had gone wrong with the receiver. Even a strong signal with a 71.9 PL would not key it up. Moving the PL board around, it would sometimes key up. This led me to believe that it was some kind of intermittent with the PL board. I took the receiver home and found out that the PL board was not decoding 71.9. Strangely it would decode all other tones but not 71.9.

I called up Com Spec and asked if they could send me a new chip for the tone board. Com Spec doesn't make this board or IC any more. I ordered a new tone board from them and decided to use the broken decoder board for the Weston 220 repeater. Plugging in the new tone

board fixed the 53.81 receiver.

FOX BOX: I met up with Dick, K1KMN to get the fox box since the output power is very weak. At home I hooked up my power meter directly to the transmitter output and sure enough no output.

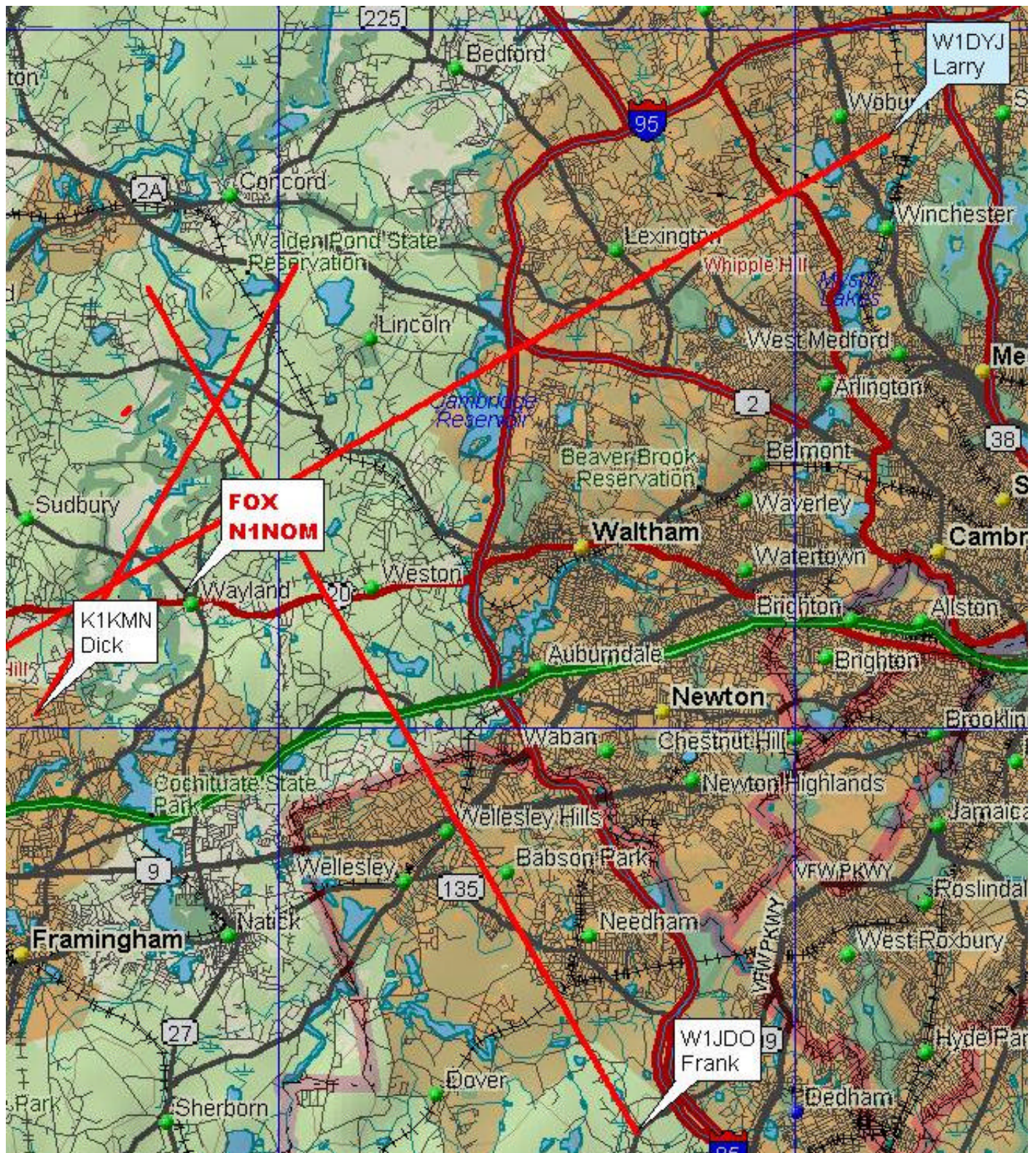
The output transistor must be blown. The transmitter is a circuit board from an old Motorola HT. The components are so closely packed that it is difficult to fix without damaging it for good. I would like to rebuild the fox box with a better transmitter and control logic to make the whole thing much more reliable. If anyone out there has an old ICOM 2AT that would like to spare it please contact the MMRA. As an alternative maybe a Hamtronics board would work.

The space in the Fox Box is very limited and I'm not sure a whole HT like the 2AT would fit. Maybe without its case...the 2AT would be nice since we would not have to get a transmit crystal.

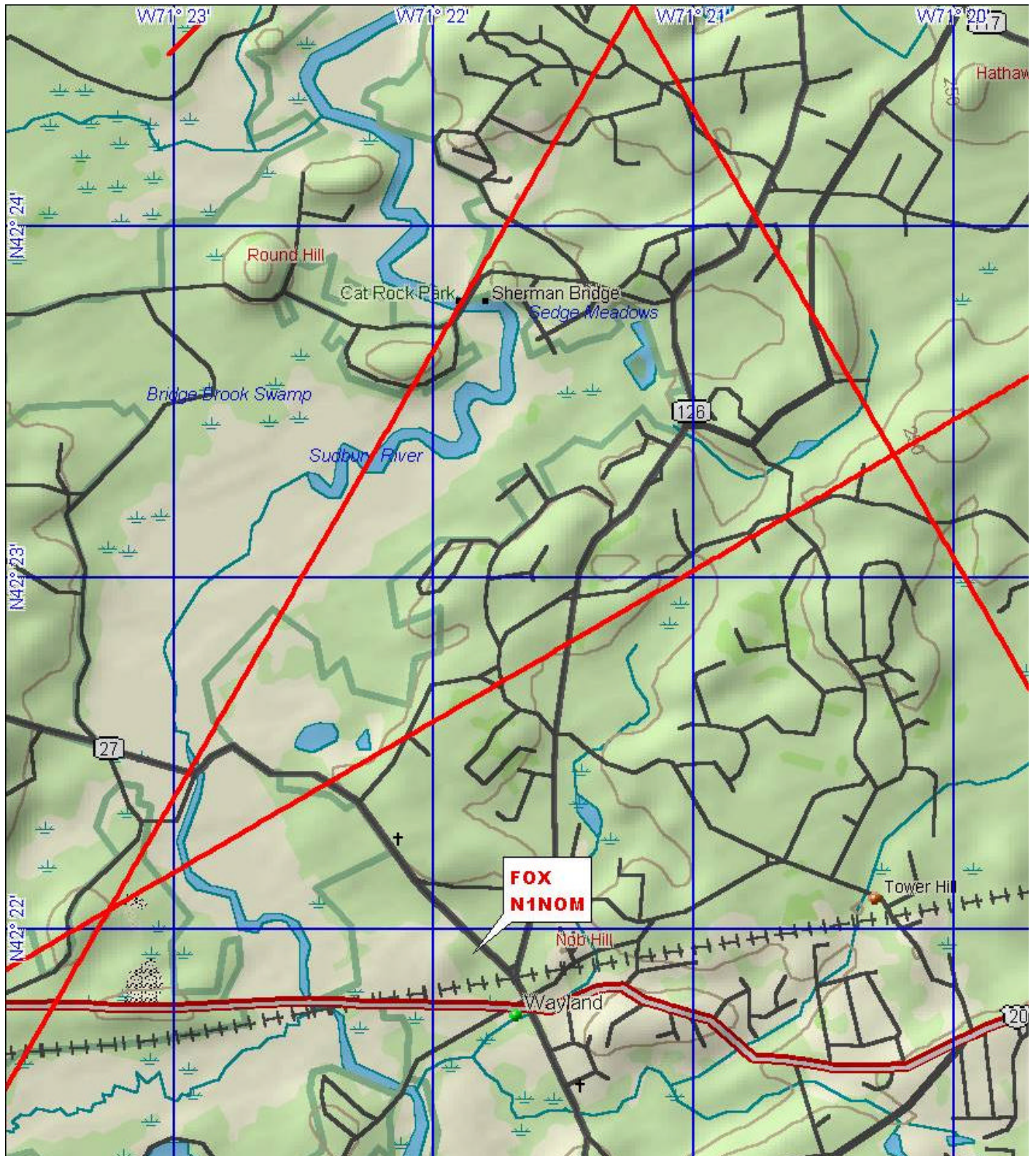
53.81 Tower Project Update: Kevin, K1KWP and I met up with the powers to be at the Marlboro Country Club. They gave us the go ahead to put up the Rohn 25 tower that was donated to the MMRA many years back. They even offered to help us clean up the area around the shelter. This project will allow us to remove the temporary crank up mast and replace it with a tower that should last for years to come.

When we install the tower lots of helping hands will be needed.

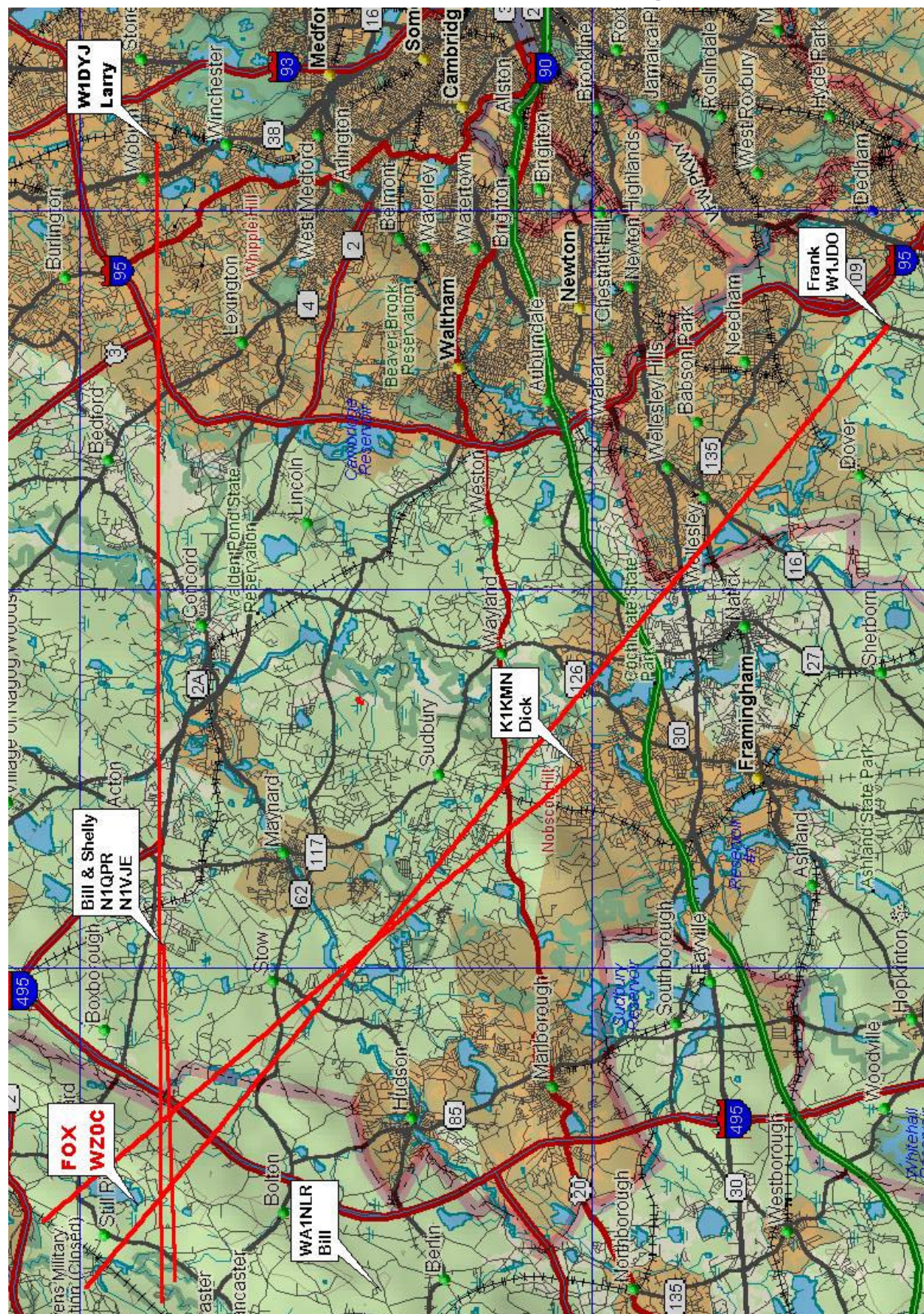
July 14 — Initial Bearings



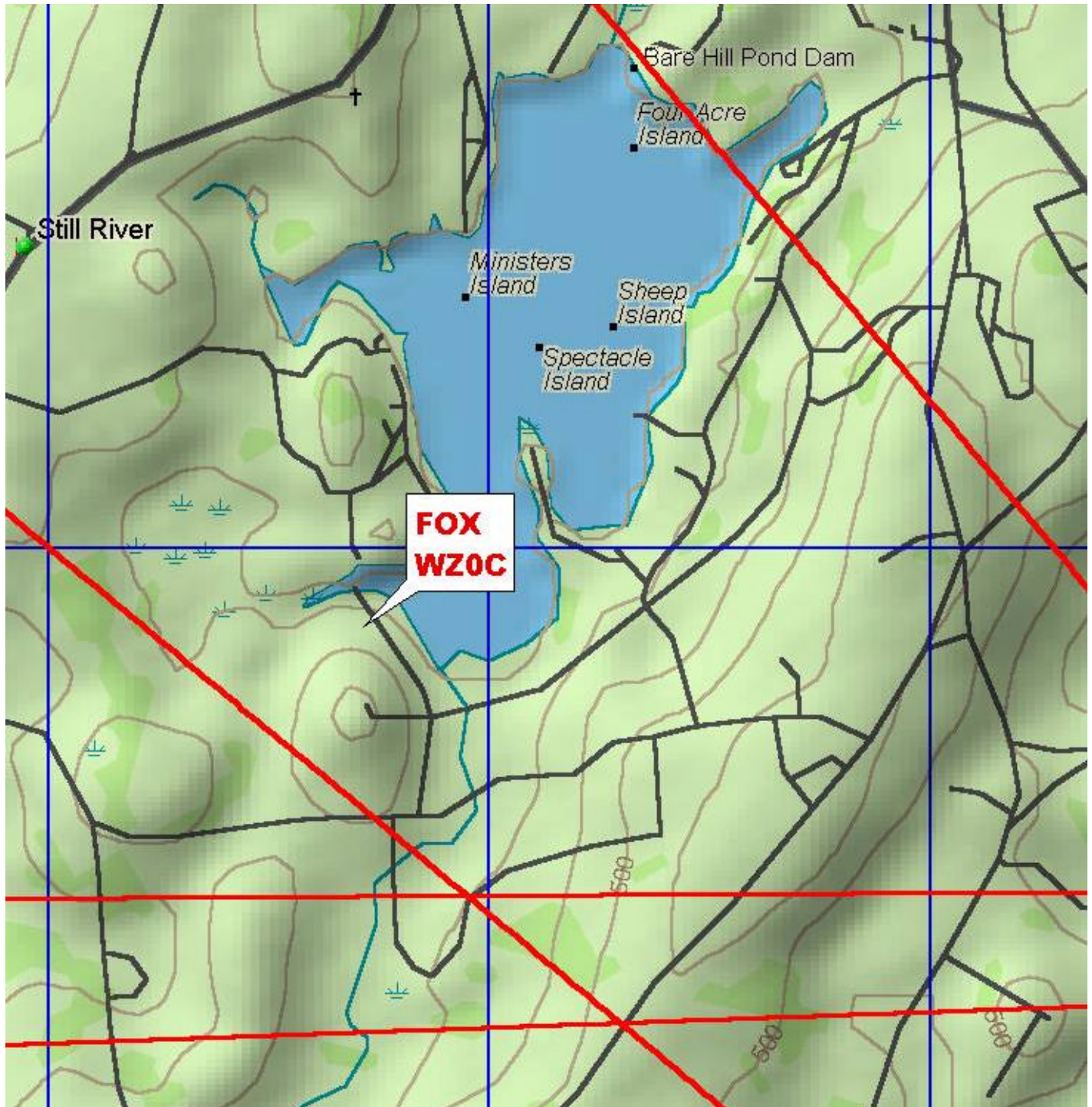
July 14, Details of Fox Location



June 2 — Initial Bearings



June 2, Details of Fox Location



Sunday, Sept 30 — MMRA Mobile-a-Thon

The MMRA is sponsoring a social picnic on Sunday Sept 30th from 11AM until 4PM at the James Ryan Picnic Area (The Cove), in Newton. At the park, there are restroom facilities, and there is playground equipment that children can play on. We'll have a grill and several picnic tables available to us where we can cook and eat lunch.

Invite your Ham friends! We have lots of fun activities planned:

- Fox hunting demo.
- Service Monitor and Antenna Analyzers available to check your equipment and antennas.
- Mobile, Public Service, and GO Kit show and tell — Share ideas on installations and equipment.
- See mobile APRS/GPS trackers.
- Learn more about the MMRA linked repeater network.



- Food and soft drinks will be available for purchase.
- MMRA renewals will be processed. — Get the control codes immediately.
- **Talk-in on 146.82** repeater.

Directions (See map on next page...The park entrance is located just above and to the left of the W in "W Pine St" in the upper central area.):

From Rte 128, take exit 24, Rt. 30 East (Commonwealth Ave.) into Newton. After 0.7 miles, turn left at the light onto Melrose St.

From the East, take Commonwealth Ave. through Newton. About 0.8 miles after crossing Washington St., and 0.1 miles

after crossing Lexington Ave., take a right onto Melrose St.

Once on Melrose St. in Newton, continue north 0.3 miles until reaching the stop sign at the intersection with West Pine St. Turn left onto West Pine St. and continue one block to the end, which is the entrance to the park. A parking lot will be on the right just before the entrance. We'll be just inside the park gate and to the left, at picnic site #4.

Alcohol is not allowed in the park.

Simulated Emergency Test — Saturday, Nov 3

Save November 3rd for participation in this statewide emergency preparedness exercise. Last year we had an earthquake

scenario, with a search and rescue drill. Check the ARES web-site for more details: <http://www.emaares.com/#SET>

Fox Hunting (cont.)

(Continued from page 7)

June 7: Kevin, K1KWP, hid at the Great Meadows National Wildlife Reserve in Sudbury, but on a piece of state land not part of the reserve. His clue about not being on federal land held the hunters at bay briefly, but not for long. First in was Mike, WZ0C, followed by Eddie, N1NOM, and Dave, KT1X.

Initial bearing: W1DYJ: 249 deg
Fox Location: 42,24.254N 71,22.442W

June 2: Mike, WZ0C, hid at the end of Bowers Rd. in Harvard, near the south entrance to Bare Hill Pond. This was a fairly rainy day, but despite the moisture and Mike being hidden in a large "bowl", Kevin, K1KWP, made good time getting up to Harvard from the Worcester area and was first in using a 2-meter quad mounted on the door of his SUV. He was a bit wet on arrival

from having his window open during the bad weather. Next in

was Bill, N1QPR, and Shelley, N1VJE. The terrain was playing tricks with their Doppler setup, but they still found the way. After them came Eddie, N1NOM. By this time, the dirt driveway Mike was parked in was so wet that it was muddy, and Eddie's car got stuck. After some teamwork and getting Eddie's car unstuck, all enjoyed brunch. [See maps.]

Initial bearings: W1DYJ: 270 deg
K1KMN: 320 deg N1VJE: 268 deg
W1JDO: 310 deg
Fox Location: 42,28.870N 71,36.288W

May 31: Bob, N1BE, hid just off of Old County Rd. in Waltham, west of the Cambridge Reservoir, and down the hill from the office parks on Winter St. His signal could be heard for a very long way, and hunters mistakenly localized too soon. They eventually got closer but ran into problems because Old County Rd. is in two parts, with dead ends on

either side of a small park. Eddie, N1NOM, found Bob after about an hour, and Mike, WZ0C, came in at about the two hour mark. The fox and the rest of the hunters called the hunt to a close, and all enjoyed dinner.

Initial bearing: W1DYJ: 243 deg
Fox Location: 42,24.419N 71,17.039W

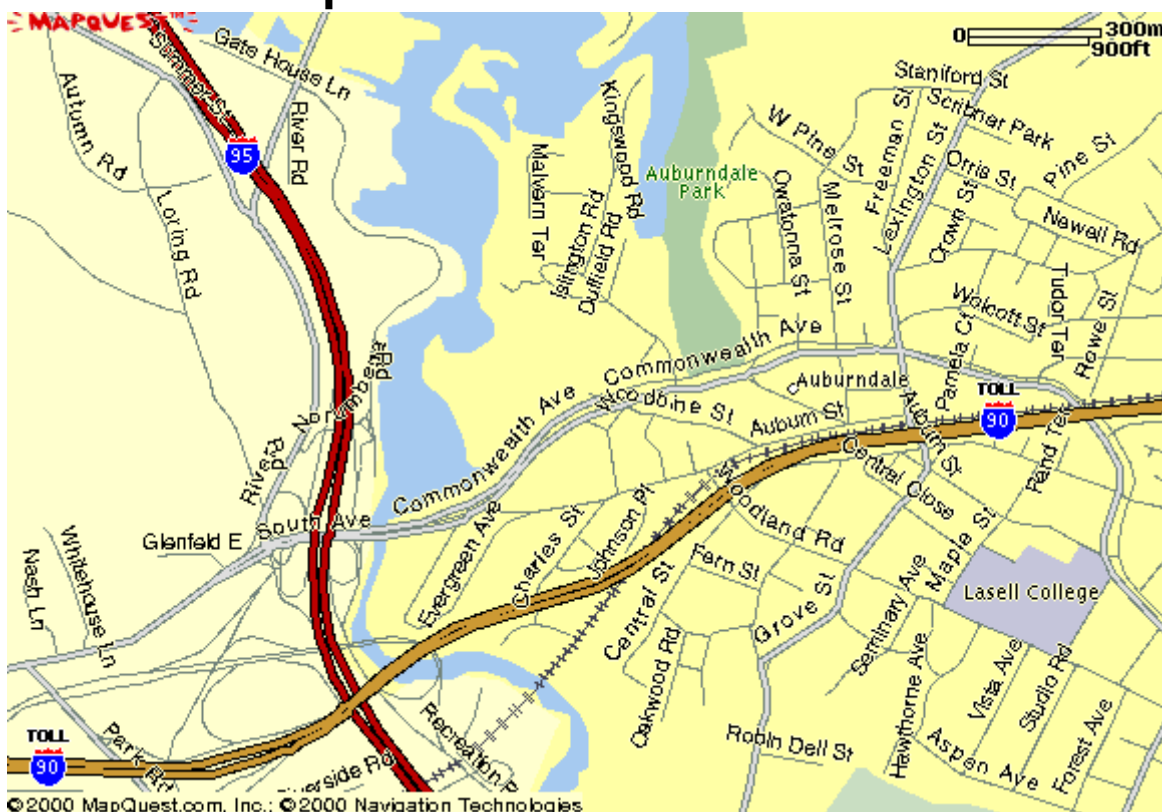
May 26: Mike, WZ0C, hid in Grafton on a hill overlooking Rt. 140. Although the bearings hunters got in and around Marlboro conflicted. Once the home stations got them moving west, they quickly narrowed down and found Mike. First in was Bob, N1BE, and then Eddie, N1NOM, Ralph, KD1SM, Clark, N1NVK, and last, but not least, Kevin, K1KWP.

Initial bearings: W1DYJ: 240 deg
WA1NLR: 195 deg W1JDO: 265 deg
Fox Location: 42,14.161N 71,42.567W

May 24: Clark, N1NVK, hid in an office park in West Concord. With a little luck, the hunters narrowed in very quickly on Clark. Mike, WZ0C, was

(Continued on page 13)

Map to MMRA Mobile-a-Thon



Fox Hunting (cont.)

(Continued from page 12)

first in. Then came Eddie, N1NOM, and Dave, KT1X.

Initial bearings: W1DYJ: 263 deg, K1KMN: 5 deg

Fox Location: 42,27.482N 71,23.364W

The MMRA also has an automatic "**Fox Box**" that is hidden on most weekends. The Fox Box is a green ammunition box (with the ammunition replaced by a transmitter, a battery, and some control circuitry) with a 1/4-wave antenna mounted on it. The box transmits for 30 seconds every two and a half minutes on 145.63 MHz with a PL tone of 146.2. Once you find the box, sign in on the pad of paper located in the end of the box.

Announcements of the Fox Box being hidden and clues about its whereabouts are sent to the MMRA mailing list on yahoo groups. If you would like to receive the announcements but don't wish to join the list on yahoo groups.com, send email to wz0c@arrl.net to be added to his fox-only list.

Fox box report:

Earlier in the summer, Dave, KT1X, and Dick, K1KMN were hiding the box. As of late, the fox box is out of commission due to a broken transmitter. Bryan, W1BRI, is working on repairing the transmitter. When he's done, the box should be as good as new.

Jimmy Fund Walk

by Bruce Pigott, KC1US

Your talents are needed to support the Red Cross during the Jimmy Fund Marathon walk on Sunday, September 30th. We will be staffing aid stations along the 26 mile route, providing help to the thousands of walkers participating in this fund raising event. Some positions will open early on the western part of the course, with others starting later in the day. This is an effort of many clubs throughout Massachusetts to provide communications and organizational skills for this event. You will need an HT with either 2m or 70cm capability, a quarter wave or longer antenna, and extra batteries. Being the last Sunday in September, we have scheduled a fine day to be outside. This is a warm up for a new communication plan for the Boston Marathon in April so your help is extra important.

The Crocker Public Service Group is helping with sign up. You can sign up at <http://cpsg.amateur-radio.net>, send an email to w3eve@arrl.net, or by calling 781-275-3740.

While you are at the Crocker Public Service Group web page, check into the other public service opportunities that need support on October 13th and the 19th, 20th, and 21st.

Next Meeting — Wednesday Sept. 19, 2001

APRS — Automatic Packet Reporting System

At the September 19th MMRA meeting, we will discuss APRS. APRS combines position information, maps, and efficient use of packet radio channels. Although most local APRS activity is on 2 meters, HF frequencies and the Internet are also involved.

APRS is well suited for communications required by public service events like parades, marathons, etc. where critical resources, like a mobile aide station, must be tracked in real time. One can even use APRS to see where N1QPR's vehicle is currently located.

MMRA runs an APRS digipeater on 144.39 MHz at one of the repeater sites.

Come to the meeting to learn about APRS from several club members who have experience operating this interesting mode.

Calendar of Ham Radio Events

Sept 19: **MMRA meeting:** APRS.

Sept 22: MEMA Public Safety Fair, Westover. <http://www.state.ma.us/mema/training/events.htm>

Sept 30: **MMRA Mobile-a-thon**, Newton

Oct 5-6: Hosstraders Flea
<http://www.qsl.net/k1rqg/>

Oct 17: **MMRA Board meeting**

Oct 26: **MMRA Newsletter Deadline**

Nov 3: State-wide SET
<http://www.emaares.com/#SET>

Nov 21: **MMRA meeting**

(Flea market info from W1GSL list. <http://mit.edu/w1gsl/Public/ne-fleas>)



MMRA VE Sessions

3rd Saturday of each Month

9 AM at the Marlboro Public Library

Contact: Bill Wade, K1IJ

781-891-9079 Evenings 6 to 10 PM,

Weekends 8 AM to 10 PM.

Accredited by the ARRL VEC

THE MINUTEMAN REPEATER ASSOCIATION

MMRA
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Stow, MA. 01775-0669

Email: mmra@mmra.org



WE'RE ON THE WEB!
WWW.MMRA.ORG/~MMRA
