The Minuteman

Volume 26 Issue 2 November 1996

President's Corner

At the bottom of this page, is a photograph of some people who took time to get involved....to come out and work on getting the 6 meter repeater on the air. We need more of this kind of involvement. These people had a lot of fun doing the work, and accomplished something of great value to the MMRA. Of course...not pictured, because he took all the photos, is the MMRA Minuteman Staff Photographer and Clerk, Ed (N1NOM)...his contribution deserves special mention.

So far this year, renewals have been coming in at a good rate. As of the last count I heard, we are up to over 220. Let's keep the renewals coming! All the work done represents time spent on behalf of all the members by a few who are lucky enough to have the time. Show them your support...renew your membership and help keep the infrastructure of the MMRA the best in the area.

As of this writing we are one link away from achieving a goal that we set several years ago: making all our repeaters linkable. All the major systems can be linked now; only a problem with the Quincy 220 link remains, but this will be solved soon.

The idea of linking originated with George Downs, W1CT, now a silent key. He first suggested to the group that we should try to achieve this...and everyone thought he had a good idea. It was set as an MMRA goal. Both I and my predecessors who followed George have been working toward this, supported by a lot of dedicated guys who worked their buns off to make it happen.

While our network might not be the biggest around, it is one of the most sophisticated. Unlike other networks that cover huge areas, ours is designed for saturation coverage of eastern Massachusetts, so that it can effectively support any emergency or public service need.

This is all the more reason you should continue to support the MMRA...we represent a significant asset to the community.

Below: Left to Right - Roger (N1NUS), Bill (N1QPR), John, (N1OWA) and (presumably) one of his children, Bryan (KA1YQB), Jeffrey (N1QOM), Bryan's brother, Dave and his triplets, David (KT1X) N1NOM Photo

Repeater Report - By Chris Conti, N1NVL

First and most important I want to thank all those involved in the surge of activity that has occurred in system maintenance and improvement. There has been a tremendous effort in the last 2 months. Please remember as you read this, all the work was done in the last 2 months, by volunteer effort!

Summary of Activity

2 Repeaters were built from the ground up
1 Repeater was completely rebuilt
1 Repeater was modified for PL
4 Link radios were modified for PL
2 Links were repaired
1 Power supply was repaired
4 antennas were installed
1 antenna was replaced and new line run
2 antennas were modified to work on 6 Meters
47 cups of Coffee were consumed
The entire MMRA system got software upgrades

Read on for all the details on our whirlwind of activity.

ALL MACHINES - Software and other Stuff you don't always hear, or see

Walter, N1HBR, has put together a software package for the repeaters that is just slick as can be. The software is structured so that there is a section containing macro code common to all the machines, and individual sections that contain instructions unique to each repeater. Instead of having one file with all the command

NOVEMBER MEMBERSHIP MEETING

WEDNESDAY, NOV 20, 1996 - 1930 HRS
CAMPION CENTER, WESTON MA
PROGRAM:

APRS - Bill Northup, N1QPR
HT Clinic
Raffle
Other Stuff

Repeater News....Continued

(Continued from page 1)

macros for each computer, we have one command file. Walter has developed a "compiler" that reads this file, and generates all the commands specific to a repeater into a file that we can upload via telephone to the controller. Walter also wrote the program that makes this possible, using a Hayes compatible modem to play touchtones up the telephone line to the controller.

In the past, when we needed to make a change that would affect all machines, we had to review the macro instructions to be sure we would not create any conflicts and make the change in 4 different programs. Now, with the combining that Walter has done, conflicts cannot happen, and we need only change one file. For you software buffs...Walter's compiler supports an input directive that tells it what repeater the final file is for, and it generates the file with commands specific to that repeater. So now, autopatch code changes can be made in just **one** place, the compile done 4 times (taking a few seconds for each run) and the 4 files uploaded to their respective 7K controllers.

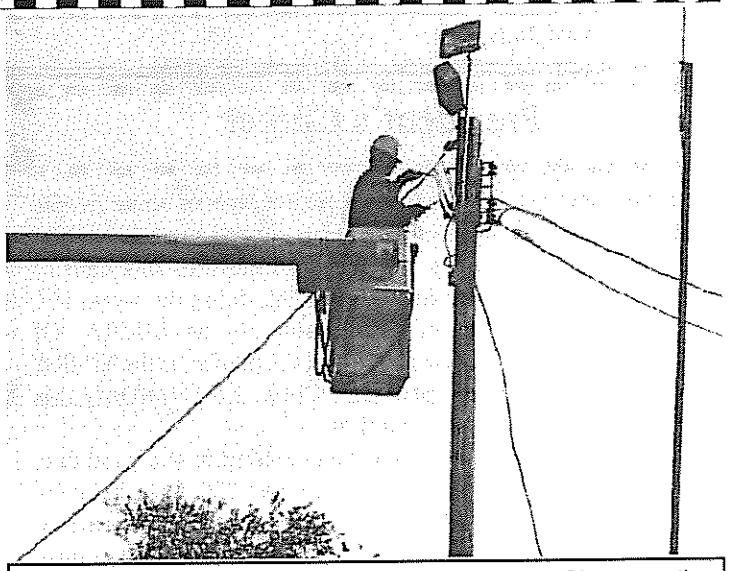
This is one of those changes Andy, N1BHI, referred to in the last issue....the amount of effort required to maintain the 7K controller programs is now significantly less....with 5 such controllers this will save us a lot of time...and time is critical when there are only a few guys doing the work.

The effect of all this on the end user will be improved performance and reliability because a significant new tool has been built that makes it a lot easier to do repeater controller software maintenance.

449.925 N1HBR/R Marlborough, MA

The machine had been plagued by noise and far-off repeaters opening the squelch. We implemented a CTCSS (or PL Tone) of 88.5Hz. This requires the tone to be present on the input signal to Access the repeater. Most rigs in use on 440 today have this capability. The Link system was refurbished on the entire network to include PL Encode/Decode on the 449.925 frequency. This eliminates the possibility that a link radio can hear local noise and key the transmitter of its repeater. The only minor drawback is a slightly increased key-up delay as link receivers take a small amount of time to sense the presence of PL before keying their repeaters.

Walter N1HBR and I went up to the site one afternoon "Just for a look to plan this out." I opened my big mouth and said, "Well Bryan KA1YQB already mounted the board and brought out the connections to a terminal strip, let's go for it" Walter decided it would be better be cautions and to to include PL logic lines in the wiring harness, along with a connector so the unit could be by-passed if things didn't work out. I feel Walter may have in fact caused a problem by being too practical rather than just jumping in head-long like a fool (My favorite tactic). This task required 15 minutes to look at diagram, (WITHOUT Reading instructions), 30 minutes deciding whether or not we really wanted to do it, 30 minutes for Walter to fetch parts and rig up a wiring harness, 5 minutes to decide which doughnut to get with coffee, and, of course, 30 minutes to drink the coffee and talk while we should have been working. Then when the changes wouldn't work the way we wanted, we spent an hour or two playing with the option jumpers on the board and beating our heads against the wall. We discussed it with Clark, N1NVK; Ed, N1NOM, showed up with more coffee; Clark showed and Bryan, KA1YQB, consulted on the air. I Finally resorted to reading the instructions again, *(Editor's note: obviously a typical field engineer, forgetting my favorite acronym RTFMF)* and finally we found an input lead that we dismissed as "Not used for this purpose" and grounded it. (This is when Bryan said "hey I remember having that problem before!). It was 9:30 at night, so we figured that at least some of us could get some sleep.....But Walter then stayed up all night to finish his software changes and implement them so the CTCSS could be bypassed for the Nets - because until all the links had PL installed, they would be useless! During the night Walter N1HBR wrote the changes and debugged them.



Above: There had been power problems up at Slygo, so the power company came to fix the service...and the guys were drooling at the possibility that they could euchre the guy in the cherry picker to do a little antenna work...but he declined. N1NOM Photo

At some point during this period (I don't remember when) the 440 repeater 12Volt main supply blew up and we used the 223.940 supply, using a smaller supply to keep '94 alive. Bryan fixed up the blown up whatever in the 35Amp Supply.

146.610 N1BHI/R Marlborough, MA

(Continued on page 3)

MMRA VE Sessions

2nd 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

Repeater News...Continued

(Continued from page 2)

The day after the marathon session up on Slygo Hill, we went up to the '61 site. The link radio was removed, along with the old interface. The link radio is now fully controlled by SCOM 7K logic. This was another full team effort and Walter still had not gotten any sleep. The hum you now sometimes hear on 449.925 from 61, is being worked on.

One half of the dual amplifier went bad, bringing the total output down to 65W. In this Module there is a Push-Push amplifier at the final stage; one driver transistor went bad causing the balancing resistor to burn up, then the other driver went. Andy, N1BHI, and Bryan agreed that because balance between the two amps was so critical, that greater reliability would probably be had with one amp, using the other as a backup/spare. Increasing the duty cycle of the one amp could be taken care of with additional cooling. So, later, while working on 6 Meters, Bryan re-wired 61 to run on a single amp at 90W out. The first station to hear it reported good signal into Fall River.

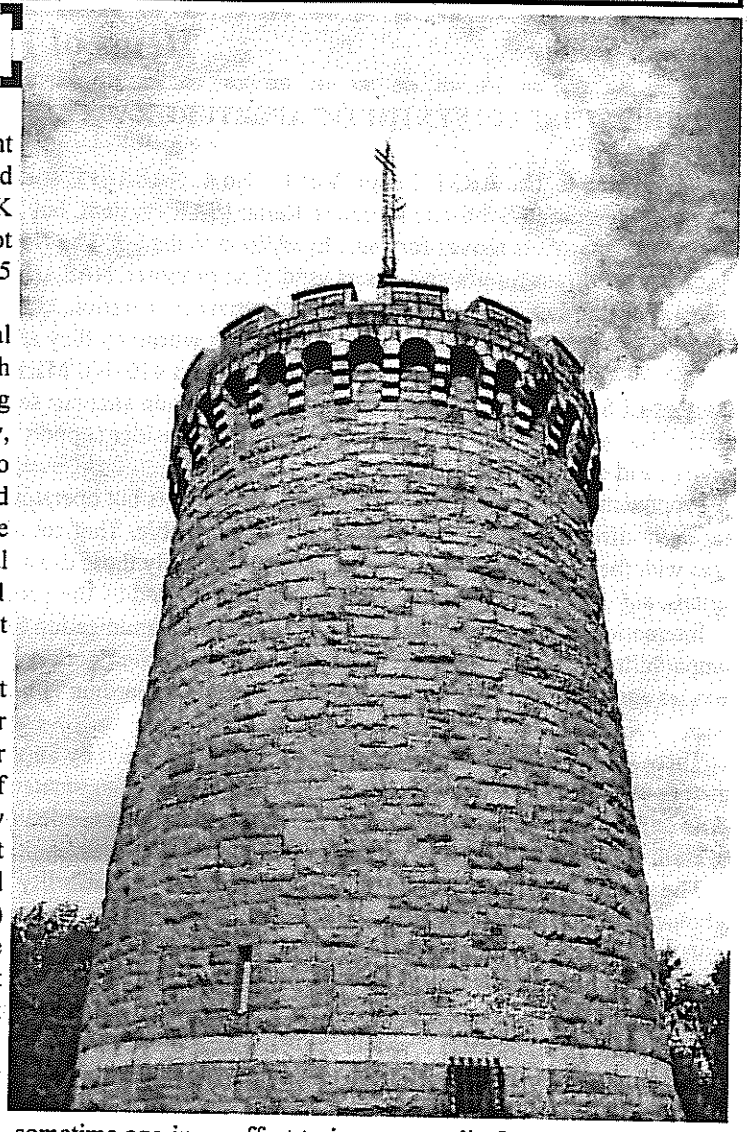
The 146.61 Link began acting funny on Oct 23; it seemed that whenever the 53.81 6 Meter repeater keyed up, the link receiver for 61 would stop sending PL-Decode signals to the 61 controller and 61 would stop listening to 449.925 (Strange Eh?). Lets see if I can explain this... If someone was talking on the network on any repeater other than 61, you would hear them on 61 per normal, but when the 53.81 keyed up, the link dropped and you were left all alone on 61. Bryan (Who is considering setting up a cot at the site) went up on Oct 24 and found that RF was coupling onto the CTCSS Decoder board recently installed on the link and that moving the link would cut down on the interference. He also took a piece of RG-214 Coax and made it into a power lead for the radio. That not only cut down on 6 Meters bothering the link but also on the Hum that we mentioned earlier.

223.940 N1BHI/R Marlborough, MA

Status Normal except for being on a backup supply while sacrificing it's big supply for 449.925 - Walter N1HBR Loaned the club one of his supplies for the interim, Thanks Walter. - Bryan took the other supply home and fixed it up, it's now back in place.

146.670 - KA1HKP/R Quincy, MA

Mike KA1HKP has done some serious rework of the Quincy Machine. The power amplifier that has been plagued with problems for a long time went into its final death throes and burnt out it's circuit boards. Andy, N1BHI, allocated the old '61 amp to Quincy, because the new GE Master II repeater in Marlboro has amplifier backup. We wanted to make the GE Station we used in Stoneham for the 146.715 replacement the 67 machine but the room available for such a device is too tight, and the other GE only puts out a Max of 50W. Since 61's old stuff is retiring, the parts can be used for 67. So as it stands the power amp for 67 is now replaced with hopefully some good service left in it, it had been rebuilt not too long ago. If it doesn't look like it will do the job, we will make a purchase of a nice heavy duty commercial grade amplifier. Mike also tells us in his notes "The annoying hiss that used to be on the output is gone. That was a mistake I made



sometime ago in an effort to improve audio frequency response." Well, this is still amateur radio, so trying new things and experimenting is part of the hobby. I also noted this from a report I had gotten from Mike, "I did general tune up and frequency adjustments to the Transmitter and Receiver boards. I had to rebuild the receiver front end, because I really could not stand the design anymore. They went to the trouble of using a dual gate GasFet on the input, but never optimized the thing to get all they could out of the FET". I'm hoping to get some more info on this; it will be interesting to see how the design was changed. I'm sure this will increase the overall sensitivity of the machine.

In the continuing effort to make this a better system to listen to, Mike has installed the CTCSS Encoder on the machine. This means that those with Tone Decode capability can set thier rigs up to Encode/Decode 146.2 Hz. This will help those of you who wander about the City or pass through high RF environments - you can now hear Quincy without listening to spurious interference. This feature will also allow you to hear Quincy and block out the Connecticut Repeaters, a feature hill dwelling hams can appreciate. If you have an Encoder/Decoder give it a try on all the MMRA machines - all 2 Meter machines now sport the

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Items of Interest

ANOTHER THREAT? SYNTHETIC APERTURE RADAR SYSTEMS — ARRL Letter November 8

As reported in The ARRL Letter, Vol 15, No 6, NASA/JPL and other space agencies are eyeing the 70-cm Amateur Radio band for a satellite-carried Synthetic Aperture Radar (SAR) system, but ARRL is working to ensure that amateur interests are taken into account as the process moves forward. In addition to the US, The Netherlands and Japan want to use the 430-440 MHz band for SARs to scan tropical rain forests and desert sand. The proposed NASA/JPL radar will reportedly result in a very high-power flux density at the Earth's surface and could interfere with amateur operation, although SAR transmissions would be brief, not continuous. In other words, SARs will interfere with terrestrial systems whenever they are in view and the equipment is turned on.

WRC-97 likely will be asked to allocate the band 430-440 MHz to the earth-exploration satellite (EES) service and upgrade the status of EES in the bands above 1 GHz, which include amateur secondary allocations at 1240-1300 MHz; 10-10.025 GHz; 24.05-24.25 GHz; and 78-79 GHz. Current proposals to consider support for SARs at WRC-97 have studied compatibility between space services and other services.

Proponents would also like to scan temperate forests but operators of surveillance radars (such as military systems) have objected that even infrequent interference would be unacceptable. That could rule out SAR operations over North America and Europe, the areas with the greatest number of amateurs and probably those most active in the 70-cm band. Even for those amateurs in the tropical regions, any interference would be infrequent and limited by the need to avoid interference to terrestrial radar.

International Telecommunications Union Radiocommunication Sector Joint Working Party 7-8R (JWP 7-8R) was formed to study compatibility between SARs and terrestrial radar. (Another working party, 7C, has been tasked to study compatibility between space services and other services, so there is some overlap.) Wording in a JWP 7-8R draft that addresses sharing with the amateur services states:

There would be periods where some impact on reception by amateur receivers would be likely. However, due to the nature of the amateur service and the long duration between times that an amateur receiver is exposed to transmissions by a SAR, it appears that SARs and the amateur service can coexist. Further study is needed to determine the duration and frequency of interference between the earth exploration-satellite service and the amateur services.

The document later points out, however, that "compatibility has not been established between spaceborne SARs and the radiolocation service and the amateur services in this band," and that sharing and/or compatibility may require geographical or time limits on the EES service, publication of operational data, and technical measures that include antenna designs to minimize sidelobe coupling between the EES service and terrestrial services.

The document draft also states: "To enable frequency sharing and/or compatibility, operational and technical measures have to be taken to minimize potential interference from active spaceborne sensors to terrestrial services. Additional studies are necessary to determine the feasibility of operation by geographical separation."

The bottom line on the 430-440 MHz band is that JWP 7-8R studies have not shown compatibility with any terrestrial service, but there could be circumstances where tropical areas could be scanned for short periods with the permission of affected governments. Interaction between active spaceborne sensors and the amateur services at frequencies higher than 1 GHz have not been studied. The next step in this process is the Conference Preparatory Meeting (CPM-97) next May.

"THE PHANTOM" PULLS JAIL TIME IN INTERFERENCE CASE — ARRL Letter, November 8

Interfering with police radios has resulted in a four-month jail term for Bobby Lee Aguero, KE6VNU--a Sacramento, California, area ham who now lists a Mead, Washington, address. Aguero, who is said to have identified himself as "The Phantom" while interfering with police calls, was convicted of jamming and interfering with Roseville, California, police communications.

He was ordered to serve 120 days in jail and pay more than $1400 in fines. In April, Roseville Police said they caught Aguero, 18, "essentially red-handed" while interfering with police calls there. Similar charges were pending against Aguero as a result of another incident in June in Seaside, Oregon on June 2 (see The ARRL Letter Electronic Update, June 7, 1996).

As a result of a plea bargain, Aguero pleaded guilty to three misdemeanor counts: Interfering with communications, delaying a police officer, and destroying evidence. A witness at the sentencing said Aguero--who showed no remorse--was additionally ordered to stay away from radio equipment. His sentence was reduced by the 52 days he'd already served, and Aguero is reported to have left the courtroom in tears. He'll be on probation after he's released from jail.

Local hams present at the sentencing had presented the judge with background information regarding the defendant's behavior within the Amateur Radio community. Several hams said they were gratified that Aguero got a stiff sentence and expressed hopes that the case would set an example in efforts to crack down in other cases of malicious interference. Aguero began his 68 continuous days of jail time on November 1.

MMRA Information - Repeaters, Officers and Board Members

MMRA Repeaters:

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

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

MMRA Officers:

President:	Andy Morrison, N1BHI	To Contact Officers
Vice President:	Clark Conti, N1NVK	or Board Members
Secretary:	David Croll, KT1X	
	Lynne Ausman, KA1NLD	Call MMRA Voice
Treasurer:	Ian MacLennon, AF1R	Mail Line:
Clerk:	Ed Mulhern, N1NOM	
Directors:	Tom Qualtieri, WB1GMA	508 - 489 - 2282
	Al Kunian, KA1AL	Toll Free from
	Chris Conti, N1NVL	508 and 617 Areas
	Bob Feltmate, WA1ZJE	
Newsletter Editor:	Andy Morrison, N1BHI	MMRA E-Mail
		mmra@mmra.org

Minuteman Articles — Solicitation

If you have ever built anything, fixed something, or have an experience that you want to share, then you should submit an article to the MMRA Minuteman. Contact Andy Morrison, N1BHI, if you want to talk about it. We can scan artwork and schematics to make an article more interesting and useful. Give it a try!

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 1996-97 Season: September 18, November 20, January 15, March 19, & May 21.
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 11, 1996	Nov 13, 1996	Jan 8, 1997	Mar 12, 1997	May 14, 1997
Submission Deadline	Sept 1, 1996	Oct 26, 1996	Dec 28, 1996	Feb 22, 1997	Apr 26, 1997

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.

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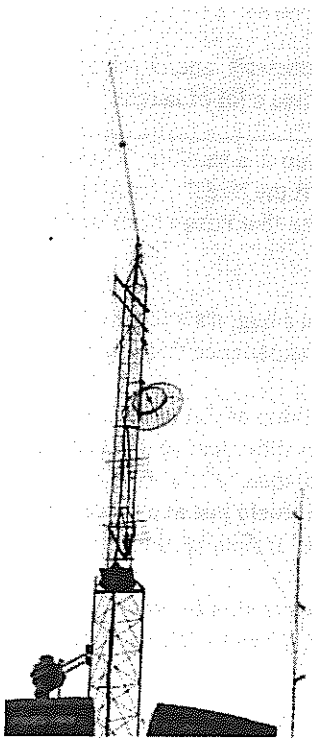

Repeater News...

146.2Hz tone output.

More stuff on Quincy - The fearless MMRA tech crew went on another adventure to Quincy to replace the leaning, broken antenna on top of the water tank. Bob WA1ZJE, Bryan KA1YQB, Ed N1NOM and I went out to the site and looked over the situation, then up we went for some top side work. Bob and Bryan started out with some preliminary work and found that the wind was getting way out of hand for a tower climb, so we found an old pipe mount to attach to on the rim of the tank for now. This is not the ultimate "Top of the Tower" position, but performs better than the old antenna that was leaning over at a 30 degree angle, spitting signal up at the airplanes and down at the grass. We had also noted an obvious intermittent open circuit problem with that antenna, causing people to drop in and out constantly. Mike had obtained some donated 3/8" Heliax hardline, so we decided to run a new line and attach it to the new antenna at the side mount for now, and later go back on a better day and replace the antenna on it's top mount. We may even keep it on the 3/8" cable as opposed to the 7/8" cable as that may have outlived it's usefulness. Further testing will be required for that; one of the problems in running tests is that the WUMB college radio station on the tank puts lots of RF on the line. The actual installation of the antenna was quite a chore. Ed stayed on the ground, both as a safety backup and to keep people away from the equipment below. The remaining 3 went up and it took all 3 grunting and groaning to push the antenna up straight and get the bolts in against the force of heavy wind. At the top of the tank we found several baseballs, tennis balls, and golf balls, most of which Bryan and Bob took turns seeing how far they could throw. One got past the baseball field and some were thrown at Ed who was taking pictures on the ground. As the crew continued work, Ed got lots of food and sent

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Left: Note the antenna leaning- that's ours, replaced by the one in the temporary location, lower right. When we get reasonable weather, it will be moved.
N1NOM Photo

Items of Interest...Continued

New terms to add to the high-tech lexicon

Dilberted: To be exploited and oppressed by your boss. Derived from the experiences of Dilbert, the geek-in-hell comic strip character. "I've been dilberted again. The old man revised the specs for the fourth time this week."

Link Rot: The process by which links on a web page became obsolete as the sites they're connected to change location or die.

Object Value: In industrial design, a measure of consumers' immediate desire for an object, even before they know or understand what it does. "Gassee may be nuts, but at least the BeBox has great object value."

Chip Jewelry: A euphemism for old computers destined to be scrapped or turned into decorative ornaments. "I paid three grand for that Mac SE, and now it's nothing but chip jewelry."

Crapplet: A badly written or profoundly useless Java applet. "I just wasted 30 minutes downloading this stinkin' crapplet!"

Plug-and-Play: A new hire who doesn't need any training. "The new guy, John, is great. He's totally plug-and-play."

World Wide Wait: The real meaning of WWW.

CGI Joe: A hard-core CGI script programmer with all the social skills and charisma of a plastic action figure.

Dorito Syndrome: Feelings of emptiness and dissatisfaction triggered by addictive substances that lack nutritional content. "I just spent six hours surfing the Web, and now I've got a bad case of Dorito Syndrome."

Under Mouse Arrest: Getting busted for violating an on-line service's rule of conduct. "Sorry I couldn't get back to you. AOL put me under mouse arrest."

Glazing: Corporate-speak for sleeping with your eyes open. A popular pastime at conferences and early-morning meetings. "Didn't he notice that half the room was glazing by the second session?"

404: Someone who's clueless. From the World Wide Web message "404, URL Not Found" meaning that the document you've tried to access can't be located. "Don't bother asking him...he's 404, man."

Dead Tree Edition: The paper version of a publication available in both paper and electronic forms, as in: "The dead tree edition of the San Francisco Chronicle..."

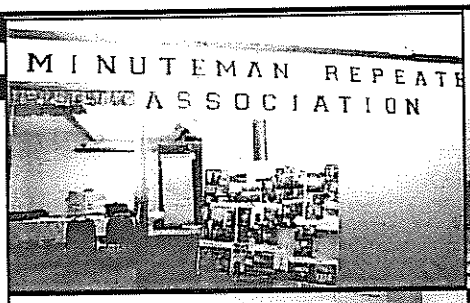
Egosurfing: Scanning the net, databases, print media, or research papers looking for the mention of your name.

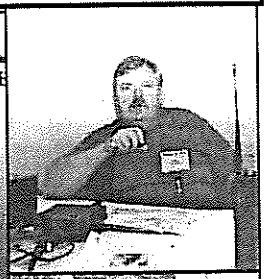
Graybar Land: The place you go while you're staring at a computer that's processing something very slowly (while you watch the gray bar creep across the screen). "I was in graybar land for what seemed like hours, thanks to that CAD rendering."

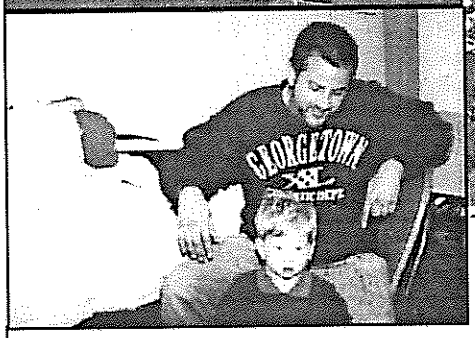
Juice A Brick: To recharge the big, heavy NiCad batteries used in portable video cameras. "You better start juicing those bricks, we've got a long shoot tomorrow."

Open-Collar Workers: People who work at home or telecommute.

Shopper-Lifting: When a store's electronic scanner (usually inadvertently) prices an item higher than the price on the store's shelf or in an advertisement.







MMRA AT Boxboro....

Once again...the MMRA had a presence at the Boxboro Hamvention....traditionally, we do talk-in, and the convention organizers give us a nice hospitality sweet. This year we had a good crew, and lot's of members came by. The lower left photo shows Scott Bullock, KA1CLX, who was the originator of our repeater linking scheme, built the first good 440 repeater in our inventory, and made countless other improvements to our system.

Also shown, lower right, is Andy, N1BHI, the President of the MMRA...here he was doing HT checks for conventioneers.

Just above Andy is Ed, N1NOM, who in this photo looks miffed that someone else has usurped his function of Minuteman Staff Photographer.

Our room was just off the garden area in the center of the hotel; we had Walter's (N1HBR) banner up, and a lot of Ed's photos, along with some taken by Bryan, KA1YQB, on a poster board.

We took quite a few membership renewals, and check a lot of HT's...it was a good weekend, and we had a lot of laughs.

Squirt The Bird: To transmit a signal up to a satellite. "Crew and talent are ready...what time do we squirt the bird?"

Cobweb Site: A World Wide Web Site that hasn't been updated for a long time. A dead web page.

It's a Feature: From the adage "It's not a bug, it's a feature." Used sarcastically to describe an unpleasant experience that you wish to gloss over.

Keyboard Plaque: The disgusting buildup of dirt and crud found on computer keyboards. "Are there any other terminals I can use? This one has a bad case of keyboard plaque."

Batmobiling: Putting up an emotional shield just as a relationship enters that intimate, vulnerable stage. Refers to the retractable armor covering the Batmobile.

Once again, we owe this scholarly dissertation on modern neologisms to Walter Ching, N1HBR. Thanks, Walter....I think.

Repeater Report.....(Continued from page 5)

it up along with tools and parts on the tag line. We checked the new antenna for VSWR and found it to have a perfect match — no reflected power. The repeater was turned back on and our first report of good signal came from Fall River. Mike has commented to me that the repeater has a much better sensitivity with new line and antenna. The calculated line loss is 2.6dB for 3/8" hardline and 1.1dB for 7/8" hardline assuming a 200 Foot run. This means a total difference of 1.5dB more loss; given that figure we come out to a difference in sensitivity of about 0.05 microvolts and a power loss of 5 or 10 Watts. That small a difference is made up by the better antenna. It is probable that the 7/8" line is so old it may have had an even greater loss. The New Antenna is a Decibel Products Model DB-224. It's a pipe with 4 open folded dipoles in phase to get 6dB of gain. This antenna was the second of 2 the club purchased last year at a discount. These are brand new factory fresh commercial grade antennas with a life expectancy of 20 years. We put the same antenna at 146.82/Weston earlier this spring if you recall. Our total cost for both antennas was around $900.00; this is just another example your dues hard at work and the reason we need renewals every year. Andy and I hope next year to budget replacements for Stoneham and Marlboro, using the same antenna.

224.400 - N1KUG/R Quincy, MA

The Link Radio has been dead for a bit of time now; Bryan fixed it and we expect to have it back in place shortly. It was also Modified for CTCSS to accommodate the 449.925 machine.

146.715 - N1NVL/R Stoneham, MA

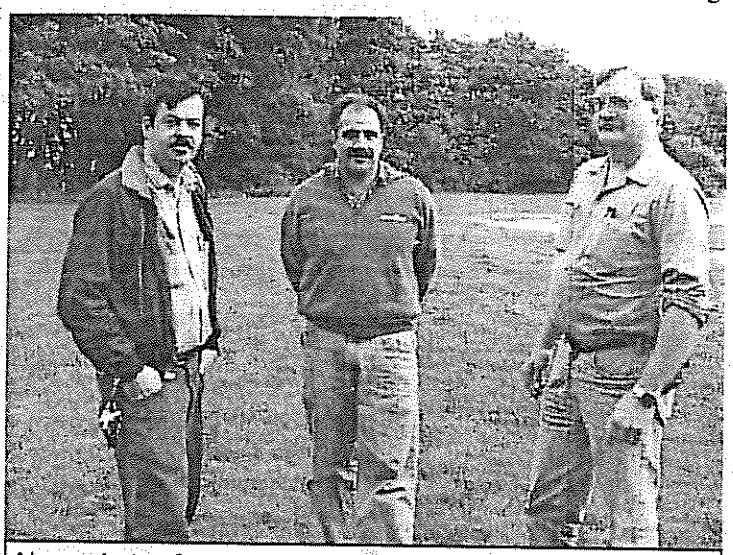
Bryan once again used his talents and his garage to build yet another MMRA machine. This was the second VHF GE Master II that Andy, N1BHI, got as donations to the MMRA. Bryan made the necessary modifications and ordered crystals for 146.715/146.115. After tuning and some wiring, he built his own version of the 10V regulator that was missing an did a complete alignment.

Clark, N1NVK, Marty, N1QIR, and Bryan installed the new machine and it promptly went deaf and would not listen to anyone. So Clark and I went up the next day to see what had happened and pulled the unit out. This where the standard of using the same connector on the TX and RX of every machine came in handy. In less than 5 minutes the old repeater was reassembled and on the air, the new one went back to Bryan for testing / troubleshooting. Later on Ed, N1NOM, Bryan, and I did the second replacement, a quick change back and Stoneham was playing like a champ. It's running at a modest 40Watts now, which is twice the original power. The trick is to balance that with it's ability to receive so that it does not talk further than it can hear, annoying the users. This machine really hears a lot better now and I'm happy with all we have been able to accomplish with it. If you haven't tried Stoneham Lately, give it a shot. Marty N1QIR said that before the change, when he got near work in Andover, 50W on his mobile was required to hit '715. Now he leaves his rig set on 5W and gets in fine. That is an approximate 10 Db improvement!

The Link radio also required modification as a CTCSS Encoder/Decoder had to be added due to the adding of Tone code to the 449.925 Repeater.

146.82 Weston, KA1AL/R

Bryan KA1YQB put CTCSS (PL) on the Link radio being used for 224.700 and 146.820.



Above: Lots of mention of Chris, N1NVL, Bryan, KA1YQB, and Bob, WA1ZJE, is made in this article...well, here they are left to right. Ed got them to take a few minutes to pose for this picture. N1NOM Photo

53.810 - KA1YQB/R Marlborough, MA - It's Alive !!!!!

Our story begins with many months of preparation and construction work by Bryan, KA1YQB. 53.81 was built from the donated GE Low Band Base station that Andy got along with a Master II UHF Mobile donated by George, WA1QGU, who's not even a member, but still supports the cause. Bryan stated "If it wasn't for him (George) I wouldn't have gotten this far" Several months of building were interspersed with many Flea-Market adventures to get parts and antennas. Rochester was the big source for the antennas. Lou, N1QIG, donated a nice Celwave 6Meter antenna which ended up on the transmitter - thanks Lou! Once all

(Continued on page 8)

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.....

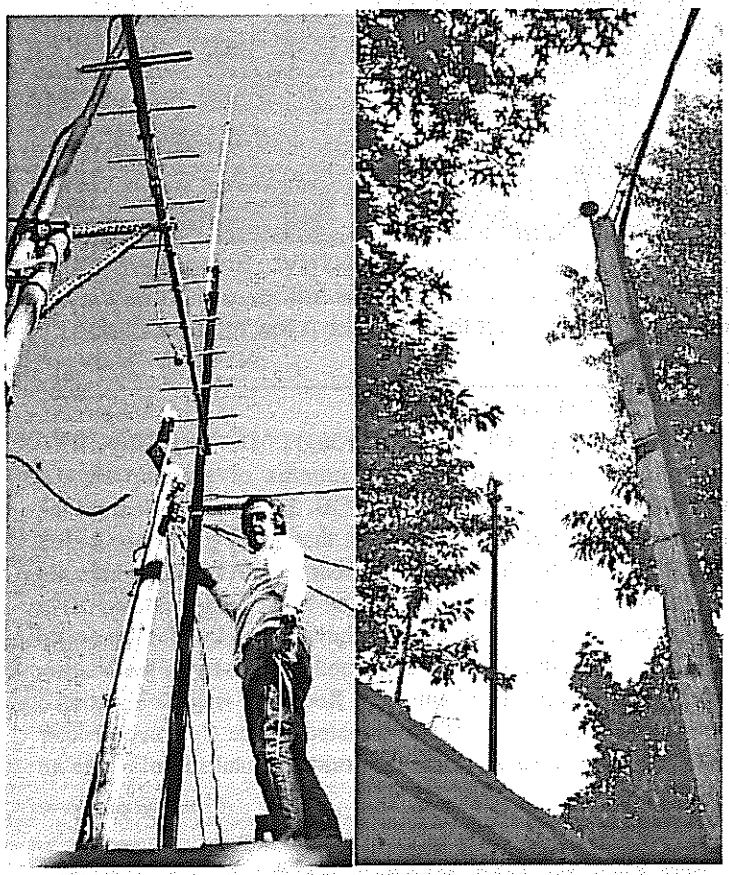
WWW Address:

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

Repeater Report -(Continued from page 7)

the pieces were ready and the hardware assembled, it was time for antenna tuning and pruning. Bob, WA1ZJE, started out with the first modifications. Then Clark, N1NVK, Bryan, and I did some pruning of antennas. After some fooling around with a couple, Bryan later went through a backbreaking process of cutting down that involved as many as 25 trips up and down stairs to bring the trimmed antenna to where it could be temporarily erected and tested. He finished that job at 1:30 AM.

Saturday October 12, Bob, WA1ZJE, Jeffrey N1QOM, and Bryan assembled to mount the transmit antenna at '61 - this required the talents and engineering of Bob and his fancy all



Above, Left: Bill, N1QPR, stands on top of the Slygo shelter next to the new 6 meter and link antennas.
Above, Right: The transmit antennas at the 146.61 repeater site. Left is the 6 meter antenna, on the wooden post is the link antenna. N1NOM Photo

purpose fabrication talents to custom design mounts and a mast that are so thick, you could probably hoist a medium sized car up on it. I got a look at the brackets Wednesday night. I climbed up to the pole; I tried shaking it and I don't think that will be coming down any time soon. Thanks Bob! At the end of the Day Ed N1NOM, Bill N1QPR and Shelly N1VJE showed up and helped hoist up the Super-Mast. After this Bryan mounted up a Yagi for the TX to RX link for the split site system. Lines were run, thanks to Ed, N1NOM, who not only helped run the line but got it in the first place. Sunday October 13, the 400 pound GE tube amp style base station was loaded into the "Amazing Blue Nimrod Mobile" also known as Ed's Suburban (this has proved to be a great asset in the movement of big stuff for the club). Many thanks go to Ed N1NOM, John N1OWA, Roger N1NUS, Jeffrey N1QOM, who all gathered at Bryan's House to load up. They were later joined at the site by Dave KT1X, and Bryan's Brother David along with his 3 year old triplets. They all horsed the monster into it's new home.

Much of the Crew went over to Slygo Hill for the remote receiver installation, which consists of a GE Master II Mobile with the 6Meter RX and a UHF TX in a sort of Cross band configuration (This is the Mobile that George WA1QGU had donated). This was mounted up to the wall and antennas cable installed. Bill, N1QPR, and Bryan mounted a Yagi and the 6 Meter RX antenna up. Monday, the whole RX side was redone again to clean up receiver performance. Later on Tuesday the Link TX Failed, and Bryan was off again to pull down the unit. He fixed it overnight (Rumor has it the Bryan doesn't actually sleep).

On Wednesday I received email via my pager for help in setting audio levels. Bryan and I meet at Slygo Hill for a tune up party. First we checked the RX again and balance audio in and audio out. Then we went over to the '61 site and re-aligned the transmitter. Audio was balanced for a perfect 3Khz in - 3Khz out deviation; and Ed, N1NOM, helped from his house by keying the system on demand.

Again, thanks to the many hands involved in getting this project off the ground. If you are up on 6 Meters, the Output is 53.81, the input is 52.81 and it has a tone code (CTCSS or PL) of 71.9. Give it a try.... Please Note that we are still working out minor bugs and optimizing things. Because Bryan's Girlfriend cant remember his name, we expected Bryan to take a break from Ham Radio and the MMRA (For at least an Hour or two).

Bryan Finished his 1 day break from Ham Radio and decided to work on the audio response of the 6 Meter Machine. He had changed around the Audio somehow (Frequency response) and then placed the 6 Meter receiver back in service. I'll use the report Bryan sent to me to fill in the details : "I found that the audio deviation was very low on the 53.81 Transmitter. I adjusted it while using the IFR to monitor the deviation when N1NOM was on 52.81. I also went back over to Slygo to touch up the receive audio a little, had turned it up to high the other day. The audio on the 6 meter repeater is much better now but the signal strength for the UHF signal at the transmit site is weak yielding that weak linky sound. This will be improved once the new UHF corner reflector antenna is in place at Slygo."

Well that's all I can think of for now... I look forward to when we can sit back and just watch the snow fall. - 73 to all N1NVL.

Editor's note: *Chris has obviously forgotten that the best time to work on amateur radio stuff is when it's cold, windy and there is snow in the air...the systems work best after that kind of work party.*

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

A 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
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☐ Medical Aid
☐ Equipment Construction
☐ Meeting Set-up
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☐ Refreshment
☐ Schematic Drawing
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☐ Special Projects
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☐ Association Officer
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☐ CW Operation
Other-Specify:_____

Send this form with your Dues to:

MMRA, P.O. Box 2282, Lexington, MA 02173

The Minuteman

Volume 26 Issue 1 September 1996

Dear Member.....It's Still Time To Renew Memberships!

You will see in this issue that a lot has happened in the last 2 months. Your continued support is vital to the organization, so renew now....a lot of improvements to our system have been made and are continuing — New antennas, better, commercial grade repeaters, a new 6 meter system — all these things take time and money. Your support, both through your dues and participation make all this possible. If you have not renewed...this is the last issue of the newsletter you will receive, and autopatch codes changed early this month!

To Renew, just cut this last page out...on the back is the standard renewal or new membership form. If any of your information has changed, fill in the appropriate blanks; if not, the mailing label identifies you -so send the form with your dues to the return address just below — Thanks!

Return Address:
MMRA
P.O. Box 2282
Lexington, MA 02173

It's still time to Renew your membership — See Above!