The MINUTEMAN

Official Newsletter of the Minuteman Repeater Association

Volume 23, Number 2 - Nov/Dec 1993

The President's Corner

Andy Morrison, N1BHI

I have to apologize about the fact that we can't tell you what the meeting program for November will be for certain. We are working on getting one of the engineering gurus from Cell One to come and give a presentation on how the cell systems work....keep your ears peeled on the repeaters for announcements of the program.

For some reason, our field day score was not recorded in QST....we are checking with the League to find out why. For your information, our score of about 2500 put us in the middle of the 2A category....a respectable showing.

It's time for us to begin planning our annual Flea Market; we are shooting for a date in March. That date should be firmed up in the next week or so, and will be announced in the next newsletter. Keep March in mind, we always need people to help put the event on, and remember that flea helpers get free food and drink ....not to mention early access to whatever is on the tables at the start of the day.

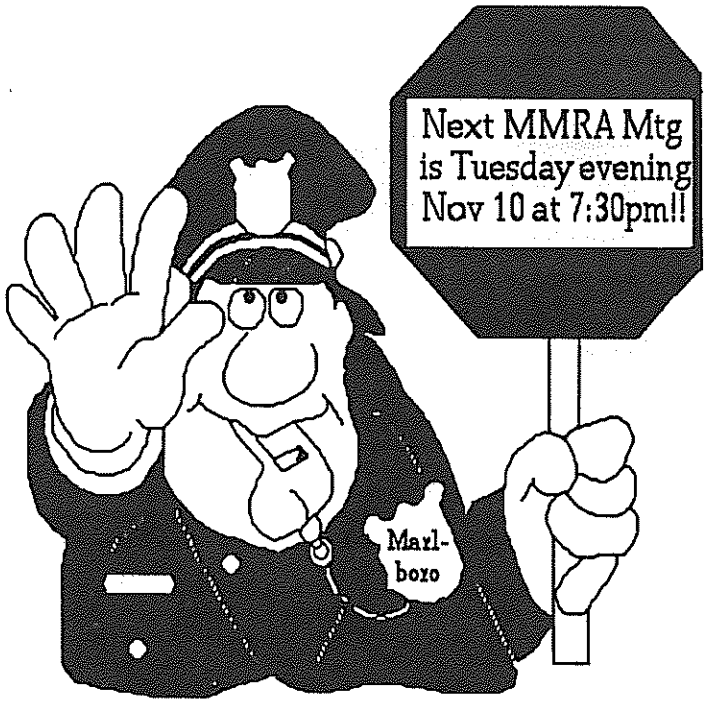
The membership gave its approval to expand our repeater network at the last meeting. We are adding a UHF repeater up at Stoneham. It was an existing machine, we have purchased it and it is now on the air. It will be linked in with the net soon....look for more details in the Repeater Update. Look for it on 446.725, negative split. Clark Conti, N1NVK, is the Trustee.

By the way....the spirit of volunteerism is not dead! One day Chris Conti and a few others were talking about building a COS delay circuit for Stoneham because of lots of little hits that kept the machine pumping. We were luck to have Herb Marcus, KB1TE, listening. He jumped right in and built a 555 timer based delay circuit...it's working up at 715 right now. Herb was at the time in the process of joining the MMRA. Well, Herb, welcome aboard and thanks....I hope your example triggers more guys to step forward and help out.

By the way, for those who have not yet renewed memberships - remember that autopatch codes change December First. If you want to maintain your access to the patches, be sure you renew! Stoneham area people take note: 146.715 now has a reliable autopatch!

See you all at the next meeting; it's on Tuesday, November 16. Remember to keep listening for the program announcement.

Items of Interest



The Repeater Report

Chris Conti, N1NVL - Technical Director, MMRA

We have a new repeater in the MMRA system! N1NVK/R, 446.725 is in operation at Stoneham. There are still a few problems to work out, so we'll be leaving the repeater in an unlinked status for a few weeks. Once

the kinks are out, we'll tie it in with 449.925. This system will give us handheld coverage into Boston on UHF.

The repeater has an SCOM 5K controller, WACOM duplexors and Hamtronics exciter and receiver. It will integrate well with our network.

The SCOM 7K controller is installed and functioning at Stoneham. Both Chris and Clark Conti, N1NVL and N1NVK, worked hard on this....they re-racked and modularized the systems for ease of maintenance and improved overall performance of the repeater.

146.715 now has a reliable autopatch. Its codes are the same as those for Marlboro and Weston, and all three of the repeaters now have both the old codes and the new codes installed. The old codes will disapear at midnight Novemeber 31, leaving only the new codes active. This applies to just the 7K equipped repeaters - Marlboro 440 and 2 meters, Weston and Stoneham.

(the Repeater Report continues on Page 5)

Bob Levine, KD1GG

It is with regret that I must resign as the Newsletter editor for the MMRA after the next issue. My wife KA1WRW should be giving birth to our second child in January and I will be stretched just a bit too much at that point. I enjoyed doing the Minuteman and might possibly like the job back at some point, but probably not for a while. I would like to continue to contribute, so if you would like to consider the job, you can count on some articles from me.

The job of Newsletter Editor requires about 3-4 hours of time per newsletter (for creating it) and another 2 for mailing it. It is helpful to read a lot for ideas for articles. I subscribe to the W5YI Report, the ARRL Letter, Newsline, and receive other information via Internet from the Ham Newsgroups. I found the experience quite rewarding and I have made friends with other Ham newsletter editors. I receive newsletters from 6 or 7 other clubs besides the 4 I belong to, so there are usually a lot of sources for information.

Of course, a computer is almost necessary to do this job. A useful computer like a Macintosh with DTP software is helpful, although I do this with standard Microsoft Word. My computer is a Macintosh Powerbook 170, so I can supply the new Editor with my previous editions to use as a starting point.

One of my goals was to attract a bit of advertising for the Minuteman as several others insisted that no one would pay to advertise in the newsletter. Well, clearly were wrong, although more advertising is possible. A second volunteer to coordinate an advertising campaign would be fruitful I bet.

It seemed like Ham radio was flourishing and the number of amateurs was increasing. However, with the realization that many of the Hams in the callbook were SK and that so many licenses had expired, the estimate of 600,000 Hams was just revised to 500,000. We lost 100,000 overnight. That's -16%, even with the new codeless entry license, we find our ranks declining.

What can the MMRA do to attract new Hams? How about more membership participation? That will certainly grow the organization by demonstrating to wannabe Hams how much fun it is and what useful community services that Hams can provide. How about some Emergency Preparedness work? Currently we are only providing repeaters for other smaller clubs with more limited resources to use during disasters.

These are jsut some things the MMRA needs to think about, besides the job of just maintaining the repeaters. In order to help Ham Radio flourish, the notion of the MMRA JUST being a repeater owner should be abandoned. We have a great deal more to offer than that.

NEW $FINE$ SCHEDULE

Reprinted in its entirety from NEWSLINE Issue #845

The FCC has released its updated schedule of fines that it can charge you for violating its rules. When you hear the new numbers you are defiantly going to think twice before willfully breaking any Part 97 regulation.

We will start from the bottom of the monetary forfeiture list and work our way up to the big money. On the low end of its fine schedule, the FCC has added a new category called assorted minor violations. Breaking any of these carry a $625 price tag. Failure to identify your station is now a $1,250 offense and using unauthorized equipment can cost you five thousand green-backs.

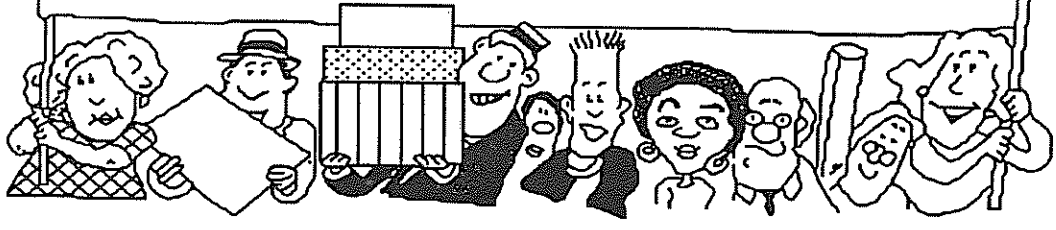
But that's nothing in comparison to the next three. Running excessive power, failing to respond to an FCC communication or operating on an unauthorized frequency now carries a ten thousand dollar price tag. Transmitting material or words that are deemed to be legally indecent will cost $12,500, being the source of malicious interference to another ham is now a $17,500 monetary forfeiture and failing to permit the FCC to inspect your station now has a hefty $18,500 price tag.

And if you really want to help reduce the national debt, just get caught sending out a false SOS. Misusing a distress or safety frequency or issuing a false distress communication is now the kind of an activity that brings with it a twenty thousand dollar fine for each transmission. That's right. Twenty thousand dollars per violation.

And we should also remind you that these dollar amounts are what the FCC calls base fines. The recommended amount for a first offense. And while the commission does reserve the right to make downward adjustments if a violator cooperates and shows good faith, it can also raise the amount by up to 90 percent. This, if it can prove that the violation was intentional or that it caused substantial harm. Or, in simpler terms, you could be dinged as much as 33,250 dollars for something as simple as jamming an emergency call on a local repeater.

This is only part of a very long list of violations for which the commission can issue monetary forfeitures. Most are aimed at commercial users of the radio spectrum, but the FCC notes that any can apply to personal radio users as well.

The MMRA VE Team will be holding exam sessions at the Marlboro Public Library on Sat Nov 13 and Sat Dec 11 at 9:00. If you want to sign up for an exam, please contact Bob (KD1GG) at (508) 485-7006.



Ham Radio on the Internet

Are you looking for more sources of Ham Radio information, technical discussions? Do you have specific questions about your rig (or your potential rig) regarding mods, operation, problems etc...? A great source of information is available on the Internet and the "conferences" are called newsgroups. The list below shows some of the Ham Radio and Radio related newsgroups that you can subscribe to if you have Internet access. If you don't have Internet access, there are several commercial landline BBS's that you can get Internet access through. How many people participate in these newsgroups? Would you believe 240,000 people? Here is a breakdown of the readership of some of the Ham Radio and radio related newsgroups:

This is the full set of data from the USENET readership report for Jun 93.
Explanations of the figures are in a companion posting.

	+-- Estimated total number of people who read the group, worldwide.							
	| +-- Actual number of readers in sampled population							
	| | +-- Propagation: how many sites receive this group at all							
	| | | +-- Recent traffic (messages per month)							
	| | | | +-- Recent traffic (kilobytes per month)							
	| | | | | +-- Crossposting percentage							
	| | | | | | +-- Cost ratio: $US/month/rdr							
	| | | | | | | +-- Share: % of newsrders							
	V	V	V	V	V	V	V	V	
1	**240000**	4272	91%	1	13.6	100%	0.00	10.1%	news.announce.newusers
299	46000	798	77%	1835	4149.8	6%	0.11	1.9%	rec.radio.amateur.misc
311	45000	784	78%	488	1133.5	8%	0.03	1.8%	rec.radio.shortwave
484	36000	637	75%	294	339.0	8%	0.01	1.5%	rec.radio.swap
608	32000	558	76%	312	548.1	5%	0.02	1.3%	rec.radio.amateur.packet
807	26000	462	60%	791	1337.6	6%	0.05	1.1%	alt.radio.scanner
913	23000	409	75%	322	879.3	1%	0.05	1.0%	rec.radio.amateur.policy
953	23000	397	76%	16	46.8	20%	0.00	0.9%	rec.radio.noncomm
957	23000	395	62%	181	1099.5	1%	0.05	0.9%	rec.radio.info
1000	21000	376	74%	86	204.5	11%	0.01	0.9%	rec.radio.cb
1142	19000	331	65%	173	505.4	5%	0.03	0.8%	rec.radio.broadcasting
1275	17000	290	51%	143	267.0	2%	0.01	0.7%	alt.radio.pirate
1845	8100	141	36%	10	23.7	40%	0.00	0.3%	rec.ham-radio
1854	7900	139	34%	6	13.5	50%	0.00	0.3%	rec.ham-radio.swap
2184	3000	52	16%	63	125.9	54%	0.01	0.1%	aus.radio

MMRA Email Mailing List?

If you have an email account, send me mail addressed to "levine@mc.com" and I will keep track of an MMRA Mailing List. This can be an effective way of distributing material and submitting ARTICLES to the Minuteman. Other clubs in the area including Boston and Bellerica maintain email mailing lists also. If there is enough interest, I can forward things like the ARRL Letter, Newsline and maybe even the actual Minuteman can be sent to many this way, saving the club money and providing you with a more efficient way of storing the issues.

Upcoming VE Sessions

The following list is an abbreviated version of the Oct KY1N List showing VE Sessions scheduled in Massachusetts and Southern New Hampshire. For a more complete list, you can send a SASE to KC1OX at 6 Anne Dr., Hampstead NH 03841.

November

	13	Braintree	MA	Philip	K1UPY	617-329-6446	
	13	Falmouth	MA	Geoffrey	KA1IOR	508-548-0969	
P	13	Marlboro MMRA	MA	Bob	KD1GG	508-485-7006	
	13	Manchester	NH	Tom	AC1J	603-472-5150	
	14	Gloucester	MA	Rick	WZ1B	508-283-2278	
P	14	Fort Devens	MA	Tom	WA1RHP	508-425-6672	<---be sure to call to confirm
	14	Keene	NH	Doug	KD1GJ	603-352-5832	
	17	Cambridge MIT	MA	Nick	KA1MQX	617-253-3776	
	20	Melrose	MA	Scott	WB1F	617-322-7654	
P	21	Fort Devens	MA	Tom	WA1RHP	508-425-6672P	
	28	Fort Devens	MA	Tom	WA1RHP	508-425-6672	

*Tom Sefranek, WA1RHP is currently recovering from a serious illness. Please sessions he is sponsoring. Also please wish this most dedicated VE a quick recovery

DECEMBER

P	1	Acton\Boxboro	MA	David	K1MBO	508-263-3712
	4	Marshfield	MA	Karl	NS1N	617-545-5653
P	5	Fort Devens N/T	MA	Tom	WA1RHP	508-425-6672
	6	Cambridge Lotus	MA	Bob	N1KDA	617-593-1955
	8	Billerica	MA	Bruce	W1LUS	508-851-2886
	10	Holyoke CC	MA	Charles	WI1N	413-323-4533
P	11	Marlboro MMRA	MA	Bob	KD1GG	508-485-7006
	11	Braintree	MA	Philip	K1UPY	617-329-6446
	11	Brewster	MA	Henry	KZ1V	508-255-2818
	11	Falmouth	MA	Geoffrey	KA1IOR	508-548-0969
P	12	Fort Devens N/T	MA	Tom	WA1RHP	508-425-6672
	12	Gloucester	MA	Rick	WZ1B	508-283-2278
P	13	Shirley	MA	Tom	WA1RHP	508-425-6672
	18	Melrose	MA	Scott	WB1F	617-322-7654
P	19	Fort Devens N/T	MA	Tom	WA1RHP	508-425-6672
	19	Athol	MA	John	WF1L	508-249-5905
	22	Cambridge MIT	MA	Nick	KA1MQX	617-253-3776
P	26	Fort Devens N/T	MA	Tom	WA1RHP	508-425-6672

"P = PREREGISTRATION MANDATORY = P"
"please check with the contact person"
"SOME DATES ARE TENTATIVE"

(The Repeater Report, continued)

The 449.925 Marlboro machine has been re-racked and an "N1HBR SCOM Interface" installed. Walter Ching designed and built the interface box, which makes maintenance and adjustment of the system much easier. We should have him write an article about it....

The solid state amp we put in at Weston is still working well. We are getting almost 150 watts out of it.

We have problems at Hopkinton, 223.94; it appears that power output is way down. We plan a work crew over there in the next few days from this writing.

Minuteman Repeater Association, Inc.
P. O. Box 2282
Lexington, MA 02173

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 Lic:_____

Home Address: _____
_____
Home Phone#: _____
Work Address: _____
Work Phone#: _____ Email Address: _____

Member of: ARRL?_____Other Clubs?_____

Equipment Available for Your Use:

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

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

❒ Antennas ❒ Flea Market ❒ Public Service ❒ Equipment Transportation
❒ Receiver ❒ Legal Aid ❒ Education: ❒ Technical Documentation
❒ Xmitter ❒ Refreshment ❒ CW ❒ Theory ❒ Schematic Drawing
❒ Logic ❒ Newsletter ❒ Medical Aid ❒ Tech Committee-Rptr:_____
❒ Telephone ❒ Special Projects ❒ Meeting Set-up ❒ Control Op.-Rptr:_____
❒ Publicity ❒ Assoc. Officer ❒ Bldg Construction ❒ Bd of Directors
❒ Equipment Construction ❒ Field Day ❒ Emergency Comm.
❒ VE Team(Gen/Adv/Extra) ❒ Other-Specify:_____

Please return this form with your Dues to:

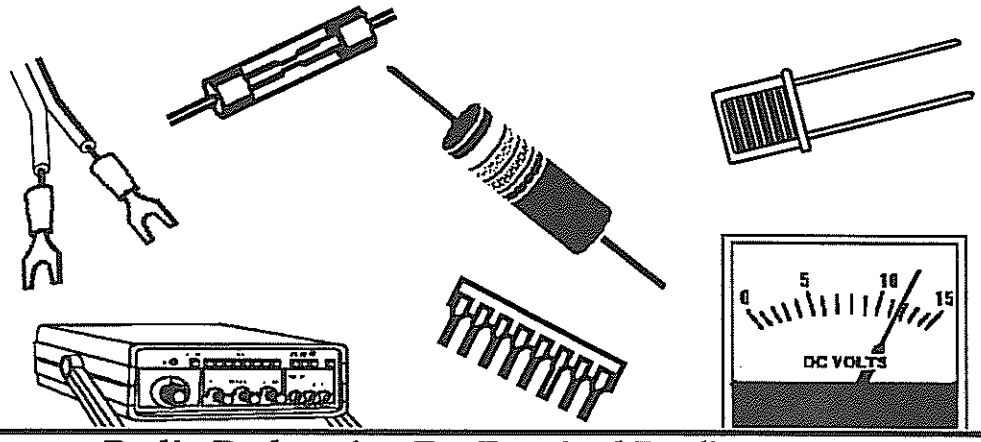
MMRA
PO Box 2282
Lexington, MA 02173

MMRA
Repeater Information

Weston	146.82	KA1AL/R	PTL	P
Marlboro	146.61	N1BHI/R	FTL	P
Marlboro	449.925	N1HBR/R	FTL	P
Stoneham	146.715	N1DKZ/R	PTL	P
Quincy	146.67	KA1HKP/R	PTL	P
Quincy	224.40	KA1CLX/R	FTL	
Weston	224.70	N1HBR/R	FTL	
Hopkinton	223.94	N1BHI/R	FTL	

FTL=Full Time Linked PTL=Part Time Linked P=Autopatch

Things to Build



Radio Packratting For Fun And Profit

by Brad Thompson N1JIJ

Part 2

Now that we've covered the safety hazards, we'll look at some salvage strategies in Part Two of this series.

Part One of this series discussed basic tools and safety precautions for would-be radio packrats. In Part Two, we'll examine what's available for salvage.

Salvage Strategies

Some hams prefer to strip equipment down to the component level and sort the parts into multidrawer parts cabinets or glass jars. If you maintain an orderly filing system, you can lay hands on any part in a matter of minutes. On the flip side, jars are free (if you ignore the cost of food), but parts cabinets cost money. Unsoldering and sorting parts is a theraputic exercise second only to woodcarving, but all three activities can consume your time.

Given plentiful storage space, you can store circuit boards or other equipment in undisassembled form. Make a list of components onboard (a good application for a PC software database or personal information manager) and assign matching labels or numbers to the lists and hardware. Then, when you need a 2N3053 transistor for a QRP transmitter, you search the lists, locate the part and remove it from the hardware. This approach saves time but consumes considerable storage space.

To keep your salvaged electronic parts in usable condition, select the dryest possible storage space. Avoid damp basements or unheated garages-- condensed moisture affects parts in several ways. First, soldering flux residues or other contaminants combine with moisture to corrode components' leads and render them unsolderable. Transformers whose windings consist of many turns of fine-gauge wire (for example, high-voltage windings of oscilloscope power transformers) develop open circuits when corrosion penetrates microscopic flaws in the wire's insulation.

Second, moisture infiltration can change the values of carbon-composition resistors and poorly-encapsulated ceramic capacitors. Some insulating materials (notably paper-phenolic laminates that smell like horse manure when overheated) also degrade and suffer decreased voltage-withstanding capabilities.

Under high humidity, metallic crystalline "whiskers" can grow from zinc-plated components, causing short circuits within potentiometers. White, powdery mildew and exotic molds can grow on some insulating materials and leave conductive residues.

Garden-variety brown cardboard boxes contain residual sulfur, which tarnishes silver-plated electronic components such as coaxial connectors and the pins of older-vintage integrated circuits. Some brands of black, conductive foam plastic commonly used for storing static-sensitive parts can also tarnish or corrode IC pins.

Classified:
I have a Cushcraft AP-8 10-80 meter vertical antenna in good shape, $80 firm. Also have a A147-11 (11 ele 2m Yagi), make me an offer, will ship. Call Mike at (508)481-8099

What To Disassemble

Major appliances (washers, dryers and other white goods) don't contain much of interest to the amateur beyond lengths of relatively heavy-gauge hookup wire, nichrome resistance wire useful for dummy loads and foam-plastic cutters, and an occasional odd relay or solenoid.

Also, most appliances are bulky to handle and contain residues of whatever messy substances they handled during their service lives. Leave refrigerators and freezers to professionals who can recover the fluorocarbon refrigerants-- a punctured coolant line can inflict an instant frostbite.

Minor appliances contain some neat stuff. For example, a microwave oven typically includes a timer, a 2KV-3KV transformer, and a high-voltage capacitor. BEFORE you even think of dismantling an oven, review the high-voltage safety tips given in the Radio Amateur's Handbook. Make sure all filter capacitors are discharged and safe. You can reuse an oven transformer by stripping away its defective high-voltage secondary and filament winding and adding your own windings-- these transformers typically feature a turns ratio of one turn per volt.

Brown goods-- consumer electronics-- presents a mixed picture. Pre-1950 tube-based radios and TVs are of interest mostly to hams who like to build "antique" transmitters and receivers. Before you slice'n'dice, though, make sure you're not about to carve up a priceless radio collectable for a handful of parts.

Between the demise of the vacuum tube in the late 1960s and the onset of surface-mount technology in the early 1980s, we entered a golden (well, brown) age of salvage. Most imported electronics consisted of easy-to-unsolder single-sided phenolic PC boards held together with small-size metric hardware, an item unavailable in hardware stores and well worth saving if you own a personal computer.

What to save? Besides hardware, remove capacitors, inductors and transformers, connectors, loudspeakers, controls, indicator lamps and LEDs, telescoping antennas, transistors, and power diodes. Table 1 provides a rough-and-ready guide to the Japanese semiconductor numbering system. A frequency of approximately 5 MHz divides audio-frequency (AF) and radio-frequency (RF) applications.

Don't bother extracting garden-variety 1/4-watt resistors, small-signal diodes and hookup wire whose plastic insulation turns to mush when soldered. Check salvaged electrolytic capacitors for bulging cans and traces of dried electrolytic fluid on end seals.

Modern consumer electronics consists largely of surface-mounted components. While you can use a hot-air gun to salvage these en masse, the results may not be worth the effort. First, most parts aren't clearly marked and aren't easily handled due to their small size. Second, there's less thermal mass to resist heat damage, and reliability of salvaged SMT parts is thus questionable.

Boards loaded with logic ICs of all persuasions frequently crop up at ham flea markets. If you have sufficient storage space, leave these boards intact until you need, say, a 74LS244 and then unsolder one or two pieces. Straighten crimped-over leads before unsoldering, freeing each lead as you go. Save the power and ground pins for last, especially when unsoldering chips from multilayer PC boards. Use a soldering gun to supply sufficient heat to unsolder the pins from power and ground layers.

Salvage crystals and crystal oscillators before other components, and don't bother unsoldering each IC's individual bypass capacitors unless you're desperate. Clip and save gold-plated connector fingers, if present, for eventual resale to a gold-recovery house.

Don't overlook other hams' discarded homebrew projects as sources of salvage. A little effort can recover hard-to-find and expensive variable capacitors, inductors and other components already preselected for amateur-band operation.

Finally, don't keep your collection to yourself-- share the good stuff with other hams and beginners who haven't yet discovered the joy of radio packratting.

Table 1-- Japanese Semiconductor Numbers

Prefix	Function
1Sxxx	Diodes of all types
2SAxxx	Bipolar PNP RF transistor
2SBxxx	Bipolar PNP Audio transistor
2SCxxx	Bipolar NPN RF transistor
2SDxxx	Bipolar NPN Audio transistor
2SKxxx	Single-gate Field-effect transistor
3SKxxx	Dual-gate Field-effect transistor
2SGxxx	Silicon-controlled rectifier

Thanks to Brad, N1JIJ for this excellent contribution. - MMRA

NOTICE
TO ALL VISITORS

WHAT YOU ARE ABOUT TO WITNESS IS AN AMATEUR RADIO STATION LICENSED AS _____ BY THE FEDERAL COMMUNICATIONS COMMISSION IN WASHINGTON, DC. BEFORE YOU ASK THE QUESTIONS, HERE ARE THE ANSWERS:

1) The total cost of this equipment cannot be discussed here as it creates marital conflicts.

2) No, we cannot send a message to your brother in Hong Kong. We suggest you call Western Union.

3) This is strictly a hobby; we do not have the facilities or the time to fool around with TV sets, radios or hi-fi. We suggest that you see a serviceman.

4) Yes, the antenna in the backyard is essential to the operation of the equipment.

5) The farthest station we have contacted has been in the Ubangiland.

6) The cards on the wall are called QSL cards. They are confirmation of contacts made with other stations.

7) It is technically impossible for this station's equipment to interfere with television reception, telephones or stereo systems. Any interference problems of that nature are caused by design flaws in the home-entertainment devices themselves.

8) An Amateur Radio station may only be operated by a highly qualified, technically skilled electronics expert. It takes dedication, training and intelligence to reach the level of competence that justifies one to be license by the United States Federal Government. Therefore, it is not considered inappropriate to show proper awe, respect and general obsequiousness when I discuss my hobby or operate the controls.

<u>FURTHERMORE...</u>

IF YOU ARE GRANTED THE EXTREME HONOR OF BEING INVITED TO SPEAK INTO THE MICROPHONE, PLEASE OBSERVE THE FOLLOWING RULES:

1) Speak in a low and soothing tone.
2) Do not disagree with me in any manner.
3) Say no bad words and tell no off-color jokes.
4) It is customary for guests to make complimentary remarks about this station and its licensed operator when talking to other hams on the air.

DO NOT TOUCH ANYTHING, TURN ANY KNOBS, SIT ON EQUIPMENT, ETC. I HAVE LOST SEVERAL VISITORS BY ELECTROCUTION IN THE PAST FEW WEEKS.

Thank you for your cooperation

This article was found in the info-server available from the ARRL
-Ed

Deadline for Article Submission for the next Minuteman is December 28

The Minuteman

Newsletter of the Minuteman Repeater Association - Nov/Dec 93
Volume 23 Number 2

MMRA Repeaters:				
Weston	146.82	KA1AL/R	PTL	P
Marlboro	146.61	N1BHI/R	FTL	P
Marlboro	449.925	N1HBR/R	FTL	P
Stoneham	146.715	N1DKZ/R	PTL	P
Quincy	146.67	KA1HKP/R	PTL	P
Quincy	224.40	KA1CLX/R	FTL	
Weston	224.70	N1HBR/R	FTL	
Hopkinton	223.94	N1BHI/R	FTL	

FTL=Full Time Linked PTL=Part Time Linked P=Autopatch

MMRA Officers:				
President:	Andy Morrison, N1BHI	508-481-3878		
Vice President:	Walter Ching, N1HBR	508-481-0994		
Secretary:	Frank Morrison, KB1FZ	508-443-6047		
Treasurer:	Ian MacLennon, AF1R	617-449-1227		
Clerk:	Al Williams, KA6BUV	508-369-0717		
Directors:	Tom Qualtieri, WB1GMA	617-329-9151	Al Kunian, KA1AL	872-2912 (office)
	Chris Conti, N1NVL	508-	Mike Ryan, KD1OA	(unlisted)
Newsletter Editor:	Bob Levine, KD1GG	508-485-7006		

Important MMRA Club Information:

Membership Meetings: 3rd Tue of Sept, Nov, Jan, Mar, May at Campion Center, Weston at 7:30pm
Meeting Dates for 1993-94 Season: September 21, November 16, January 18, March 15, & May 17.

Board Meetings: 3rd Tue 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 VE Sessions: Saturday Sept 11, Saturday October 9, Saturday November 13, Saturday December 11 (all 9am at the Marlboro Public Library)
Contact Bob KD1GG (508) 485-7006 for information and reservations

MMRA Voice Mailbox (508) 489-2282.

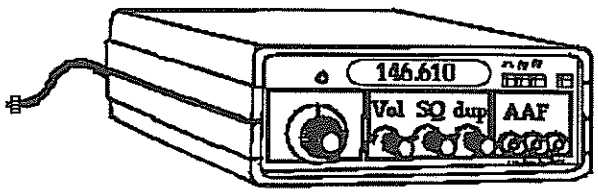
Newsletter Information	September issue	November issue	January Issue	March Issue	May issue
Mailing Date	done!	done!	January 11	March 8	May 10
Submission Deadline	done!	done!	December 28	February 22	April 26

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:



First Class Mail