The Minuteman Repeater Association

A non-profit organization providing communications infrastructure and volunteers for community and emergency events.

The Minuteman

Volume 50, Number 2 November 2020

Wednesday, 18 November, 2020 ~ Membership Meeting ~ 7:30—9:30 pm

Mobile Antennas for Amateur Radio Operation

Jeremy Breef-Pilz, KB1REQ

Location: ***ZOOM — Members: login to the MMRA Webpage for the link***
Non-members: send an email to contact@mmra.org

This presentation will be a wide ranging discussion of mobile antennas used at VHF and UHF frequencies underpinned by some basic antenna theory to motivate an overview of the practical differences in products on the market and installation techniques. Examples will include both products that are aimed at the Amateur Radio market as well as exposure to some from the commercial LMR market. The goal is for attendees to come away with a better understanding of mobile antennas making them a more skilled operator and informed consumer.

Jeremy lives in the suburbs south of Boston and has been a ham since 2008. Hobby interests include repeater installation, VHF/UHF digital modes as well as HF contesting. A graduate of Northeastern University, Jeremy currently works as a systems engineer for Motorola Solutions.

Notice:

Memberships expired on August 31st. If you have not renewed, please go to our web: www.mmra.org, log in and click the RENEW MEMBERSHIP link.

This is the LAST Newsletter you will receive if you do not renew.

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About the Minuteman Repeater Association

MMRA Control Operators Responsibilities

https://www.mmra.org/MMRACOPolicy-March2019.pdf

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

The MMRA meets each month from September to June. Meeting times, locations, and talk-in frequency vary and are announced in this newsletter and on weekly nets. Meetings are open to all interested parties. Guest speakers and programs of general interest occur in September, November, January, March, and May. The intervening meetings are also open to all members and are for general business.

The Minuteman newsletter is emailed one week before each general interest meeting. Members are encouraged to submit articles: send to the editor at newsletter@mmra.org. The deadline for articles is the last Friday of the month preceding the meeting.

Each Tuesday evening at 8PM the MMRA links most of the repeaters for an open net. The topic is "Technical Information and Other Stuff". Join us!

Membership in the MMRA is open to all radio amateurs. Annual dues are $25 per individual or $35 per family. See our website for details.

Contact information is listed on the top of the last page of this newsletter.

MMRA QRM Policy

MMRA members and all other operators are strongly encouraged to report repeater activity that does not abide by Part 97 rules or accepted amateur radio practice to the board of directors at contact@mmra.org or via other means.

The most effective way (and probably the only effective way) to deal with an individual causing QRM is to NOT engage that individual on the air. Please include the time and date of any incident.

Repeater and Frequency Information

Band	XMTR Location	Freq	PL	Call	Linking To: Hub 1	Hub 2
10m	Marlboro East	29.680	131.8	W1MRA	PTL	PTL
	Linked to 146.79: 9am-3pm every day					
6m	Marlboro East	53.810	71.9	W1BRI	PTL	PTL
	Remote receive Marlboro West: PL=100					
2m	Brookline	145.160	na	K1MRA	D-Star (REF050C)	
	Belmont	145.430	146.2	KC1CLA	PTL	FTL: DARI
	Mendon	146.610		K1KWP	FTL	PTL
	Quincy	146.670		W1BRI	PTL	PTL
	Nth Reading	146.715		KC1US	PTL	PTL
	Weston	146.790		N1BE	PTL	PTL
	Boston	146.820		K1BOS	FTL	PTL
	Remote receive in Brookline Boston: PL = 127.3					
	Marlborough	147.270	146.2	W1MRA	PTL	PTL
1¼m	Marlborough	223.940	103.5	W1MRA	PTL	PTL
	Quincy	224.400		N1KUG	PTL	PTL
	Weston	224.700		N1NOM	PTL	PTL
	Burlington	224.880		KC1US	PTL	PTL
70cm	Lowell	442.250	88.5	W1MRA	FTL	PTL: 446.775
	Weston *	442.700		N1DCH	Network Hub 2 (PTL to Hub 1)	
	Nth Reading *System Fusion*	446.775	88.5 Linked 71.9 Local	W1DYJ	FTL [88.5]	PTL [88.5]
	Marlborough	448.225	na	W1MRA	D-Star (REF050C)	
	Hopkinton *System Fusion*	449.575	88.5 Linked 71.9 Local	W1BRI	FTL [88.5]	PTL [88.5]
	Marlborough *	449.925	88.5	W1MRA	Network Hub 1	
33cm	Boston *	927.0625	D244	K1RJZ	PTL	PTL
	Marlborough * PL out = 131.8	927.700		W1MRA	PTL	PTL
Marlborough		144.390	none	W1MRA	APRS Digipeater	
???		145.630	146.2	W1MRA	Fox Box	
*Internet	HUB1– 449.925: IRLP node 4133 / Echolink node 4133 Connected to Echolink NEWENG2 conference (9127) for TIAOS net.					
	HUB2 – 442.700: IRLP node 4136 / Echolink node 4136 Connected to 220 Reflector 9124 on Tuesdays					
	927.0625: IRLP 4977		Normally linked to the NE900 Reflector, 9125. Linked to MMRA via "NEWENG2" node 9127 for the TIAOS net. Normally linked together.			
	927.700: IRLP 4978					

Notes: FTL = Full Time Linked (or default state) PTL = Part Time Linked (on schedule or demand)

President's Corner ~ David Hornbaker, N1DCH

I would encourage everyone to take advantage of our repeater network. You can find out more information about how and when the repeaters are linked on the website (https://www.mmra.org/repeaters/repeater_linking.html). Did you know that members can link repeaters on an as needed basis? Members can find linking information on the website, if you have issues or questions, send email to contact@mmra.org.

The Tuesday Night Technical Information and Other Stuff Net has been enjoying record attendance (averaging 22 participants a week) this year. In recent weeks, we have discussed antennas, encouraging repeater usage, amateur television, and various radios. I invite everyone to join us on Tuesday night. Tell your friends, you do not have to be a member, just a licensed ham.

Join us Wednesday, November 18th for Jeremy Breef-Pilz, KB1REQ presentation on "Mobile Antennas for Amateur Operation". This will be a hosted-on Zoom. The conference information is available to members on https://www.mmra.org. If you have any issues getting the information, please email contact@mmra.org. The meeting is open to all, so invite a fellow ham (non-members can email contact@mmra.org for the access information).

MMRA will continue to have virtual meetings due to the ongoing COVID-19 pandemic.

Due to COVID-19, we do not have access to some repeater sites. Repairs that cannot be done remotely, have been put on hold. Currently, this is preventing replacing a drifting crystal on 224.880 in Burlington and repairing the Belmont link radio.

Memberships which expire in 2020 are considered expired as of August 31st. There is a grace period until December 31, 2020. Please renew before the end of the grace period. You can check your expiration date on the web site (https://www.mmra.org). **Please remember that renewal is a manual process. Please allow a week for processing online renewals and 2 weeks for renewals sent to the P.O. Box.** If you have any issues or questions email contact@mmra.org.

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Treasurer Report November 2020 ~ Kevin Paetzold, K1KWP

The MMRA receives a significant amount of donations each year. Most of this is in direct dollar contributions. Some donations are of equipment which the club either uses or sells. On behalf of the club I would like to thank people below who donated since my list in the previous newsletter. Hopefully I did not leave anyone off (and if I did I am sorry):

KD1TE AE1EI KG1H K2VUD KD1LV KC1CKZ KD1CY KC1CZX

Detailed financial information is usually presented at almost every business meeting. These meetings generally occur in the months which do not have general membership meetings. They are announced on the www.mmra.org website. All members are invited and encouraged to attend these meetings. Of course much more than the finances are discussed at these meetings including repeater status, repeater decisions, planning, etc.

Mendon Repeater Updated ~ Bob DeMattia, K1IW

The Mendon repeater is now running on the 7330 controller which was authorized last fall, and was ready last winter. After the planned March installation was delayed due to COVID, Bryan and I completed the installation on September 18th.

Now, all MMRA repeaters are controllable and updateable via Internet.

Photo at right, Top to bottom:

- Cradlepoint internet device (4 bars in Mendon!)
- Link radio,
- 7330 controller, Raspberry Pi, Master II
- Duplexers to the right.

Many thanks to Bryan, W1BRI for helping me out!

Northeast HamXposition

MMRA Donates Banquet Prize to HamXposition
David Hornbaker, N1DCH

On September 26th, the MMRA Board of Directors, by a vote of 10 yes and 2 abstaining, agreed to sponsor the prize: a mobile FM setup including a Kenwood TM-V71A Transceiver, Astron Power Supply, and dual band mobile antenna . The MMRA will provide $350 and John, WA1MDD (our VP) personally donated $150 to purchase the prize.

Bob, K1IW, and Larry, W1DYJ abstained as they are FEMARA members, HamXpositions's sponsoring organization.

Amateur Radio: The Early Days ~ Don Lacroix AA1FE

The history of amateur radio has its beginnings in the very foundations of radio or wireless technology itself. When radio technology started to appear there was often no distinction between professional and amateur.

As radio or wireless as it was called was often thought of as only an interesting phenomenon for which there was little use, many professional scientists and engineers did not exploit it as they might (although some did) and this left open wide the field for amateur experimenters. Ham radio has been in existence for over a hundred years. In fact ever since radio technology itself has been in existence, amateur experimenters have wanted to use and investigate radio technology.

The history of amateur radio is a fascinating story of individuals and groups of radio hams experimenting and sometimes succeeding against all the odds. Although in many instances professionals lead the way, there are a few notable exceptions where radio amateurs discovered new aspects of radio technology and in others they opened up the way as professional thinking was quite different. All of these aspects make the history of amateur radio a fascinating story and one which shows how radio hams paved the way for radio technology in many areas.

The history of amateur radio can be split into a number of different stages, each of which tells the story of a different aspect of ham radio history. The history of amateur radio has its roots in the first experiments that were undertaken. We remember famous names like James Clerk Maxwell, whose equations defined electromagnetic waves in terms of mathematics, and Heinrich Hertz who is credited with being the first person to recognize light and also the lower frequency signals in the radio spectrum were all the same electromagnetic waves as defined by Maxwell. However it was people like Marconi who pushed these early ideas forward.

Although Marconi did not invent radio as many believe, he actually saw the benefits of it and as an amateur experimenter he pushed forwards the boundaries of what could be done turning his amateur experiments into professional endeavors. So, while Marconi did not actually technically invent the radio, he was able to build upon the work of many scientists before him.

Early ham radio transmitters were very crude as were the receivers. The earliest transmitters consisted of spark transmitters and these continued to be used for many years. It was only in the 1920s with the cost of valves / tubes coming down that spark transmitters stopped being used. In the early days, distances of just a few miles could be achieved, but eventually the distances rose. Also the receivers were very simple by today's standards - even crystal sets were deemed to be state of the art.

[Sources: Wikipedia and “public domain” reputable sites]

16 September 2020 Membership Meeting

The September 16th membership meeting was held via ZOOM. Present were:

- K1KWP—Kevin (Treasurer)
- W1SEX — Paul (Speaker)
- W1DYJ — Larry
- N1DCH — Dave (President)
- KC1LQT — Ed
- K1IW — Bob (Technical Officer)
- N1BE — Bob (Director)
- WA1NVC — Roger (Director)
- KC1LPZ — Stephen
- WA1MDD — John (VP)
- N1DDK— James (Director)
- KC1FCD — Ed
- N1JIW — Joe
- W1BNC — Mike

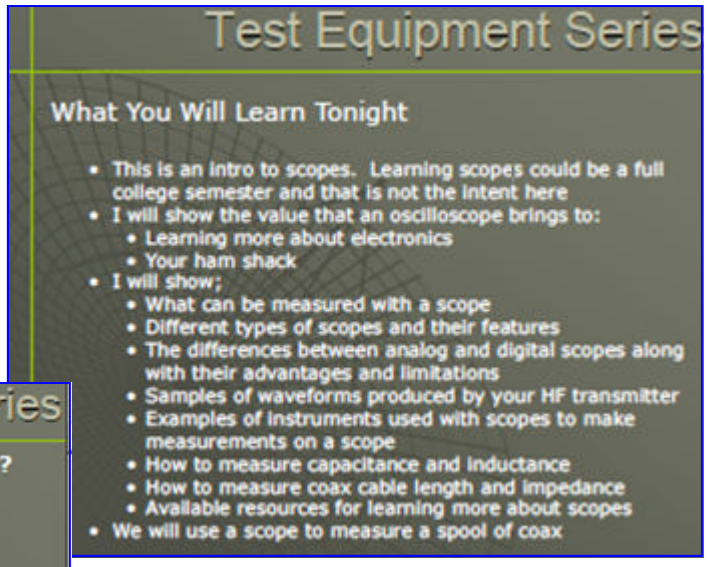
The first order of business was to discuss and vote on a replacement repeater for Weston Hub2, 442.700.

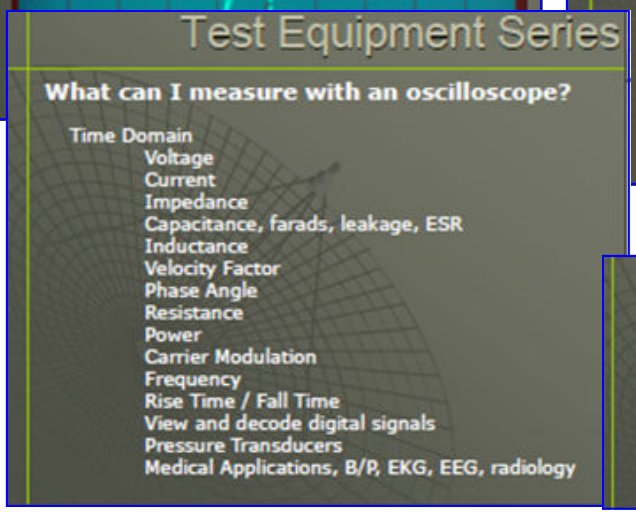
- The receiver is 40 years old, the transmitter is 30 years old
- The recommendation of the Board of Directors: replace with commercial quality equipment, not to exceed $1800
- ***Moved, seconded, and approved unanimously***

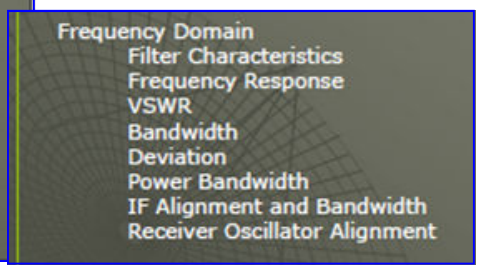
The second order of business was to enjoy Paul's talk; here are a few slides from the talk:

Introduction To Oscilloscopes For The Shack and Bench

Paul A. Topolski, W1SEX







16 September 2020 Membership Meeting — continued

Test Equipment Series

What can I measure with an oscilloscope?

X-Y Mode
- Frequency Ratio
- Passive Component Characteristics
- Characteristics of Active Components such as Diodes and Transistors of all types
- RTTY Tuning Indicator
- RF Amplifier Linearity and Modulation

Test Equipment Series

Scope Technologies

- Recurrent Sweep
  - Good as a waveform monitor only
  - Some will do X-Y mode
  - Not calibrated for amplitude or sweep frequency
  - Old tech, no longer manufactured
  - Difficult to sync waveform
- Calibrated, Triggered Sweep
  - Can be used for waveform monitor
  - Will do X-Y mode
  - Calibrated for amplitude and sweep
  - All current scopes are of this type
  - Trigger circuits provide stable display

Test Equipment Series

Scope Architecture

- Analog or Digital Storage/Multi-Domain Scopes
  - Analog
    - Can be used as waveform monitor with precision
    - Use a CRT for display
    - Best for rapidly changing waveforms such as audio and RF envelopes
    - High end scopes can have cursors and math functions
    - Readily available on the used market for very low prices, often FREE
    - New analog scopes are more expensive than entry level digital scopes
  - Digital Storage Oscilloscope (DSO)
    - Can be used as waveform monitor with precision
    - Use an LCD or computer as a display
    - Best for digital signals and recurring analog signals
    - Entry level scopes have advanced features such as cursors, measurement readouts, and math functions
    - Multi Domain scopes also provide logic analyzer and/or spectrum analyzer functions

Test Equipment Series

Scope Architecture

What should I buy, an analog scope or digital?

The best answer is "YES," get both!

Analog scopes are easier to learn on and are better for monitoring RF envelopes and other analog signals

Digital scopes bring a phenomenal spectrum of measurement capabilities but are far more complex with a steeper learning curve

Regardless of the technology, BUY AS MUCH BANDWIDTH AS YOU CAN AFFORD!!!!

Test Equipment Series

Contact Information

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These are just a few of the slides from the beginning of Paul's talk. ***"You should have been there!"*** The rest of Paul's talk included many examples of oscilloscopes that are available today, examples of how to use them in your ham shack, and what to look for if you wish to purchase one.

I can send you Paul's talk; send a request to <w1dyj@mmra.org >.

21 October 2020 Business Meeting — Minutes

The October 21st Business Meeting was held via ZOOM. President Dave called the meeting to order at 1935 local. Present were:

N1DCH — Dave (President); K1IW — Bob (Technical Officer); N1BE — Bob (Director)
WA1NVC — Roger (Director); KC1LPZ — Stephen; W1HFP — Jason (Secretary)
WA1MDD — John (VP); KC1JUO — Charles (Clerk); KC1US — Bruce (Trustee)
W1DYJ — Larry (Trustee)

Old Business

- **W1BFM Donation Update** (K1IW)
  - ⇒ All good HT's have been sold
  - ⇒ All "small stuff" is taken care of
  - ⇒ Antenna Tower: *Glen Martin aluminum 60' with Hazer* is still available
  - ⇒ Income to date: $562 (via K1KWP)
- **Membership Renewals** (W1HFP) going fairly well
  - ⇒ Email has been sent out

Repeater Usage

- **What can be done to increase usage?** (W1DYJ)
- The general discussion on the TIaOS nets of 29 September and 6 October discussed ideas to increase the usage of the MMRA repeaters. Listed are the ideas that were generated during those nets and during subsequent discussions:
  - ⇒ Bring a friend to the net
  - ⇒ Put blurbs in magazines
  - ⇒ Have breakout sessions on ZOOM meetings Re: special interests
  - ⇒ PR in our Public Libraries
  - ⇒ Listen More / Call more
  - ⇒ Generate local access TV programs about ham radio
  - ⇒ Reconsider the linking schedule for the repeaters
  - ⇒ Publicize the ability of members to link the repeaters (and de-link)
  - ⇒ Run more nets
  - ⇒ Start a Swap Net
  - ⇒ Generate a *New User Guide / Video*

ATN Proposal from KC1LPZ

- **Steve, KC1LPZ, presented a proposal considering the Amateur Television Network**
- See the proposal on the next page
- After discussion, conclusions:
  - ⇒ The concept was generally well received
  - ⇒ This has the potential to be a membership meeting presentation topic
  - ⇒ Steve, KC1LPZ, "volunteered" to continue to look into this

21 October 2020 Business Meeting — continued

MMRA Presentation to be given at the Northeast HamXposition

- **Bob, K1IW, ran through his presentation**
- See page 4 for details about the banquet prize being given by the MMRA

Other Business

- Hub 2 replacement repeater has been ordered (K1IW)
- Repeater Status — some questions about the Brookline D-Star repeater
- Belmont 2M repeater link radio repair delayed due to COVID, same as Burlington 220
- Mendon has been updated (see page 4)

Upcoming Membership Meetings

- November – Jeremy - KB1REQ : Mobile Antennas for Amateur Radio Operation [ZOOM]
- January – Larry – W1DYJ: CW DXCC in Six Months [ZOOM}
- March – Dave – N1DCH: CHIRP programming [ZOOM]

Meeting was adjourned at 2158 local.

ATN Proposal / Letter ~ Steve Babbitt, KC1LPZ

Gentlemen -

I am not an expert at making and writing Proposals so please bear with me as I state the following:

Larry Banks, W1DYJ, on one of the previous Tuesday evening nets about a month or so ago, suggested two things when I brought up the venue of "Amateur TV Network". The first suggestion was easy. Submit an article about it for the MMRA Newsletter. [See the MMRA September 2020 Newsletter, Page 4.] The 2nd suggestion concerns writing a proposal to the Board of Directors on why we should consider exploring our involvement with ATN.

Before I go into more details, it is more important to know why I am writing about this in the first place. The main concept behind all this is adding one more venue to attract younger people to our hobby. Amateur Communications is like any business. If we are not growing, we are dying. Sorry about being so blunt. It's just that we must put in place a succession plan just as we do for our families and businesses as we pass the baton to the next upcoming generations. With that concept in mind, we must have a strategic plan on how we keep our hobby relevant and growing as technology continues to impact what we do.

First and foremost I am not saying the Amateur TV Network is some sort of panacea that will cure our ability to recruit young minds into our hobby. ATN is just one venue. There is a cost both in time and equipment to develop a linkage to this Network. I admit I have no idea on the cost for equipment, but at this point a decision must be made if we are going to consider using digital television let alone link to the Amateur TV Network already operating in California and about 12 other States across the US.

Let me make it clear this Amateur Television Network is not the slow scan analog TV many are familiar with when hams were first experimenting with television. So at this point what we must discuss is whether or not we are going to pursue ATN as one more tool to enjoy for ourselves and potentially attract young adults and youngsters to our hobby.

Thank you for your time on this matter.

Stephen Babbitt – KC1LPZ

Share a Shack!

Editor's Note: **Welcome to the *???????* in a new *MMRA Feature Series*: sharing a member's ham shack. With the current COVID situation many of us are becoming used to ZOOMing rather than meeting in person. Seeing various shacks in the video backgrounds made me curious. If you have a shack you are willing to share, *let me know*. Complex shack or simple, fixed or mobile, new ham or oldie like me, I'm sure that we are all curious about other's shacks. And this will give us all a way to steal ideas from each other — a basic premise of Ham Radio. The feature will appear *based on your input!*** Larry, W1DYJ

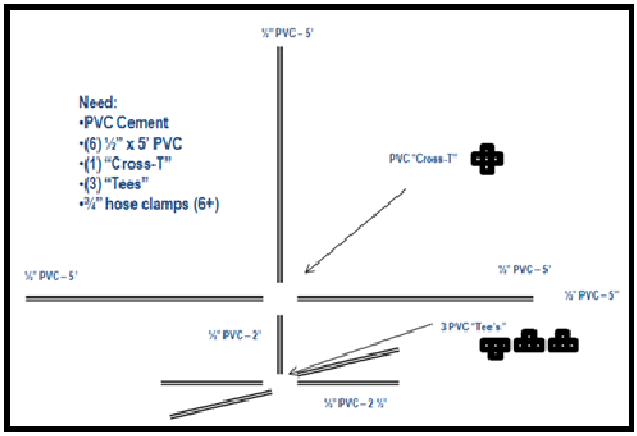
No one sent me any photos, so this is the best I could do.

A Simple 6M Ground Plane Antenna ~ Larry Banks, W1DYJ

Motivation

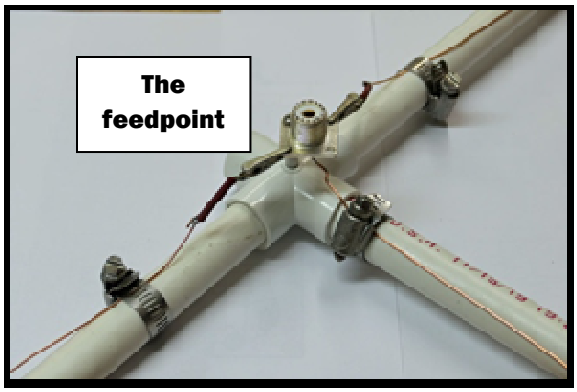
In my role as MMRA net manager for the *Technical Informational and Other Stuff* net I should have the ability to monitor all of the MMRA repeaters. My now 20-year-old TS-2000 and the 2M/70cm FM stick on my roof has allowed me to monitor those repeaters for many years. At last year's New England HamXposition I purchased an Alinco DR-235 MkIII to cover the 220 repeaters, using a simple ground-plane in my attic. (This antenna is detailed on my web site: < https://www.qsl.net/w1dyj/220%20Antenna%20Results.pdf >.) **Now I needed something for 6M.**

Design



I modeled and built a simple vertical dipole made from some #22 hard-drawn copper wire left over from the 160 "dipole" I threw up running around the trees in my back yard. Unfortunately this 6M dipole would be too tall to hang from my attic rafters. After trying to bend it in some way to make it fit, I realized that a simple ground-plane would work and be short enough to fit my attic.

One of my favorite building materials is 1/2" schedule 40 PVC. It's easy to machine, glues together quickly, and there exist a lot of joints, elbows, etc. that you can use to fashion whatever shape you can design. As I wanted to test this on my back deck, I drew up a quick prototype of a self-standing ground-plane – see the basic design of the PVC tubing in the figure above. This might also work well for portable operation if designed to be a quick put-up and take-down structure.



Implementation

A quick trip to the local big-box store got me the PVC to build this. Don't forget to purchase the PVC cement. (And use gloves with that stuff!) A hacksaw and some sandpaper was all I needed to build the structure. I did not cement all the parts together as I wanted to be able to break it down for storage as I was testing it, and later to be able to

A Simple 6M Ground Plane Antenna ~ continued

carry it up to my attic. I used alligator clips to connect the two "grounds" to the "active" element. (Don't forget the story of the guy who built a boat in his basement…)

My modeling showed that 55" of my left-over #22 wire was about the right length to use for the three legs of the ground-plane. I cut this and ran it along the PVC, clamping it at the ends of the three legs with standard stainless-steel hose camps. Setting it up on my deck showed that it was worth the effort.

Results

I first hung this at the eastern end of my attic, near where the coax from my first floor shack enters the attic. This was near the 220 ground-plane that is high in the rafters as that is much smaller, and which works well into the 220 MMRA repeaters so I thought it was worth the attempt. But this larger 6M ground-plane was also near a lot of aluminized air conditioning ducts and just didn't get into the Marlboro 6M repeater. I had to move it to the western end of the attic, which faces Marlboro. It seems to work fine. *I want to thank Dave, N1DCH, for helping me test this antenna.*

Listen for me on the TIOS net when I check in on 6M.

Now that I can monitor all repeaters except the two 900 MHz ones, I am pondering what to do there!

Public Service Report ~ Bruce Pigott, KC1US

This report will be short. *There were no Public Service events this year*.

Actually, there were a number of activities that used repeaters in network configurations. On May 30th, first the Eastern Massachusetts section ARES members ran a drill. Followed by Red Cross hams with an exercise that was run nationwide. The same day, by way of EchoLink, the National Hurricane Center was tied into the network, so operators from this area could be part of the WX4NHC On-Air Communications Test.

Monthly on the first business Monday, the Eastern Massachusetts section Amateur Radio Emergency Service net is run. You can find a repeater local to you at the Linking Info web page, then clicking on the ARES button:
< **https://www.mmra.org/repeaters/repeater_linking.html** >.

At 22:00 on Monday, Wednesday, Friday and Sunday, the Heavy Hitters Traffic Net is conducted. The combination of repeater locations, with IRLP and EchoLink connections, allows good coverage of the EMA section.

When repeaters are used for events, details and schedule are available on the calendar on the MMRA Public Service Info web page.

Upcoming MMRA Meetings

Note: Meeting locations and times are subject to change. Consult the MMRA website for the most up-to-date information. Teleconference numbers will be available one week before a business meeting—if you wish to attend, email contact@mmra.org.

Wednesday, 16 September ~ Membership Meeting ~ 7:30 PM
Introduction To Oscilloscopes For The Shack and Bench
Paul A. Topolski, W1SEX
Location: ZOOM Teleconference

Wednesday, 21 October ~ Business Meeting~ 7:30 PM
Location: ZOOM Teleconference

Wednesday, 18 November ~ Membership Meeting ~ 7:30 PM
Mobile Antennas for Amateur Radio Operations
Jeremy Breef-Pilz , KB1REQ
Location: ZOOM Teleconference

Wednesday, 16 December ~ Business Meeting ~ 7:30 PM
Location: ZOOM Teleconference

Wednesday, 20 January ~ Membership Meeting ~ 7:30 PM
CW DXCC in Six Months
Larry Banks, W1DYJ
Location: ZOOM Teleconference

Wednesday, 17 February ~ Business Meeting ~ 7:30 PM
Location: ZOOM Teleconference

Wednesday, 17March ~ Membership Meeting ~ 7:30 PM
Program your rig with CHIRP
Dave Hornbaker, N1DCH
Location: ZOOM Teleconference

Wednesday, 21 April ~ Business Meeting ~ 7:30 PM
Location: TBI

Wednesday, 19May ~ Annual Meeting & Elections ~ 7:30 PM
Program: TBI
Location: TBI

Wednesday, 16 June ~ Business Meeting ~ 7:30 PM
Location: TBI

Don't Forget! Join Us.

Every Tuesday @ 8 PM
Technical, Informational and Other Stuff Net

The MMRA's repeaters are linked Tuesday nights for the TIOS Net. Keep up with what's happening in the MMRA and ask your ham related questions.

Net Control Operators:

Week 1	W1DYJ	Larry Banks
Week 2	WA1JIM	Jimmy Devaire
Week 3	KC1CLA	Ed Curley
Week 4	K1KWP	Kevin Paetzold
Week 5	KB1OQA	Tom Turner
Substitute	K1BTZ	Jonathan Traum

To connect using Echolink / IRLP during the Net:

- **Echolink Conference *NEW-ENG2***
- **IRLP node 4133**

MMRA Leaders

Executive Board — Officers

President	Dave Hornbaker	N1DCH
Vice President	John Spencer	WA1MDD
Secretary	Jason Peardon	W1HFP
Treasurer	Kevin Paetzold	K1KWP
Clerk	Charles Miller	KC1JUO

Executive Board — Directors

Director »2021	Bob DeMattia	K1IW
Director »2021	Roger Coulson	WA1NVC
Director »2022	Bob Evans	N1BE
Director »2022	James Lee	N1DDK

Technical Officer

Technical Officer	Bob DeMattia	K1IW

President Emeritus

Bob DeMattia K1IW

Technical Officer Emeritus

Bryan Cerqua W1BRI

Repeater Trustees

* Belmont 145.43	Ed Curley	KC1CLA
* Boston 146.82	John Mullaney	K1BOS
* Boston 927.0625	Rick Zach	K1RJZ
* Brookline 145.16	Joyce DeMattia	K1IWW
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* Burlington 224.88	Bruce Pigott	KC1US
* Hopkinton 449.575	Bryan Cerqua	W1BRI
* Marlborough 53.81	Bryan Cerqua	W1BRI
* Marlborough: 29.68, 144.39, 147.27, 223.94, 448.225, 449.925, 927.70 Lowell 442.25 all as W1MRA	Bill Northup	N1QPR
* Mendon 146.61	Kevin Paetzold	K1KWP
* N. Reading 146.715	Bruce Pigott	KC1US
* N. Reading 446.775	Larry Banks	W1DYJ
* Quincy 224.40	Bill Dunn	N1KUG
* Quincy 146.67	Bryan Cerqua	W1BRI
* Weston 146.79	Bob Evans	N1BE
* Weston 224.70	Eddie Mulhern	N1NOM
* Weston 442.70	Dave Hornbaker	N1DCH

Additional, non-Voting

* Newsletter Editor	Larry Banks	W1DYJ
* Emerg. Coord.	Kevin Paetzold	K1KWP
* Pub. Serv. Coord.	Bruce Pigott	KC1US
* VEC Liaison	Bill Wade	K1IJ
* Net Manager	Larry Banks	W1DYJ
* Web Page Editor	Bob DeMattia	K1IW

* Appointed

Contacting the MMRA

Members: mmra@groups.io
Note: This may take some time.
You must be approved by the moderator.
Officers: contact@mmra.org
Control Ops: control-ops@mmra.org

http://www.mmra.org/

@mmraham

https://www.facebook.com/mmraham

Ask your friends to become a member

Just let them know that it is not fully automated. Although they can log into the MMRA website immediately, they need to be manually processed. This could take up to week.

If you haven't updated your MMRA profile in a while, now is the time!
Go to < MMRA.ORG > and log in to do so.

Previous issues of the MMRA Newsletter are available at:
www.mmra.org > Newsletter Archive (on the left)

MMRA VE Sessions
Stay tuned for more in the future.

Notice:

Memberships expired on August 31st. If you have not renewed, please go to our web: www.mmra.org, log in and click the RENEW MEMBERSHIP link.

This is the LAST Newsletter you will receive if you do not renew.

Get connected on the MMRA Repeater System ~ Dave Hornbaker N1DCH

What is the best way to get connected on the MMRA repeater system? Try announcing yourself! Just say your call sign followed by "listening". If you want, you can include the last 3 digits of the repeater frequency. For example, "N1DCH listening" or maybe "N1DCH listening on 925", you may very well get a response. Try to connect by announcing yourself several times.

Most of the time, Marlborough Hub1 (449.495) is linked to the following repeaters, Boston (146.820), North Reading (446.775), Mendon (146.610), Lowell (442.250), and Hopkinton (449.575). Remember that when the repeaters are linked, you need to wait two or three seconds after you key up and before you speak. This is especially important on the TIaOS net on Tuesday when most of the repeaters are linked.

You can also link (and delink) the repeaters yourself. See the information you received when you became a member, or check the User Control Codes once you log into the MMRA web.

Try one of the non-linked repeaters too. There are Hams monitoring them as well. For more information on the repeater network and how it is linked at various times, check out https://mmra.org/repeaters/repeater_linking.html.