Minuteman Repeater Association

The Minuteman

Volume 51 Number 2 November 2021

The Minuteman Repeater Association is a non-profit organization providing communications infrastructure and volunteers for community and emergency events.

Membership Meeting
Wednesday, 17 November 2021
7:30—9:30 pm

Jason Peardon, W1HFP

An Amateur's Guide to Space Weather

Location: Marlborough Central Fire Station, Marlborough
+ Zoom Teleconference

Many hams are involved in SKYWARN and take interest in observing and reporting the weather we experience here on earth. The weather we see each day occurs primarily in the troposphere and stratosphere. But weather also occurs in space. Driven largely by the Sun, space weather primarily deals with conditions in the magnetosphere, ionosphere, thermosphere and exosphere. Space weather and heliophysics are an active and exciting field of study and observation, particularly for hams.

Jason will discuss the various contributors to space weather such as the solar wind, solar flares, coronal mass ejections, cycles of the sun, and coronal holes. He will also discuss the impacts that these things have on us here on earth, what this means to us as radio operators, and how you can observe and monitor space weather yourself.

Jason was lucky to have grown up initially with a x386 IBM clone PC and a dial-up connection. This spawned a 20+ year career in the IT field and counting. He has spent the majority of his career working at software companies and is currently employed as a Director of Cloud Infrastructure & Security for a large software-as-a-service organization developing HR software. Jason is an Eagle Scout, holds a BS degree in Information Systems from the University of Massachusetts Lowell, and resides in Hudson MA with his wife and 3 children.

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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
				Linked to 29.68: 9am-3pm every day		
	Boston	146.820		K1BOS	FTL	PTL
	Remote receive in Brookline Boston: PL = 127.3					
	Billerica	147.120	103.5	W1DC	unlinked	unlinked
	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 "NEW-ENG2" 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)
Note — a repeater can be linked to only one Hub at a time.

President's Corner ~ David Hornbaker, N1DCH

November is upon us! Now is the time for all good Hams to make those last-minute, outdoor station adjustments, preferably before the snow flies.

MMRA salutes its military veterans and thanks them for their services to our nation.

MMRA has resumed conducting Amateur Radio License Examinations. Ronald Rothman – WO1E has been appointed VEC Liaison. Our first test session was October 9th. The next session will be Saturday, November 20th in Marlborough at the Marlborough Central Fire Station on Maple Street (RT 85). You can contact ve@mmra.org for more information. If you are a VE (ARRL VEC) and would like to help, contact Ron wo1e@mmra.org. Note: the FCC requires all new applicants to have an FRN. Social Security numbers are no longer accepted. For more information, check out www.mmra.org/exam.html.

Check out MMRA's newest repeater in Billerica, W1DC, 147.120, PL 103.5. More information is available at https://mmra.org/repeaters/BCA/.

Wednesday, November 17th, Jason – W1HFP will be presenting "An Amateur's Guide to Space Weather", at the Marlborough Central Fire Station. Everyone is welcome, so invite a friend and come out to Marlborough. If you cannot make it out to Marlborough, the meeting will also be available on Zoom.

Mark your calendars! The January MMRA meeting will be a SKYWARN Training presentation by Rob Macedo - KD1CY. The meeting will be in Natick at New England Sci-Tec.

Membership renewal! All MMRA memberships expired in August. Please check your profile and if your membership expired this year, please renew. Renewals may be done on the website, or you can mail your renewal to Minuteman Repeater Association, PO Box 669, Stow, MA 01775-0669. Please allow seven days for us to process your renewal. Please allow 14 days for renewals that are mailed. While you're on the website (https://www.mmra.org) checking your expiration date, please verify your email address. We have had several email bounces recently.

Join us Tuesday nights at 8:00 PM for our weekly Technical Information and Other Stuff (TIaOS) net. There will be a lively discussion on all sorts of HAM issues, including equipment, antennas, software, repeaters, and other stuff. The main purpose is to test our ability to link up the repeaters in case of an emergency or, to support some event like a marathon. You can also join via EchoLink, if your radio is a little under the weather. See below for more information.

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).

Please remember to keep your profile up to date, especially if your email changes. Note that if your callsign changes, send email to contact@mmra.org and we will update your callsign in the database.

Best wishes to all for a Happy Thanksgiving!

73

Dave – N1DCH

Volunteer Examiner Update
Ron Rothman – WO1E ~ MMRA VE Liaison

After 18 months of inactivity due to Covid-19, the MMRA Volunteer Examiner team held its first exam session. On October 9th, 8 VE's met at the Marlborough Central Fire Station The VE's included Ed – W1OED, Dave – N1DCH, Alan – K1ALL, Scott – NE1RD, Paul – N1IZ, Eric – KV1J and Joe- KA1GDQ. It was great to see all of those who attended. Unfortunately, there were no candidates at this session.

Our next exam is being held at the Marlborough Central Fire Station on November 20th at 9:00 AM. Setup is at 8:30 AM. So far, one candidate has signed up. Thanks goes to Eric - KV1J for securing the location.

I would like to thank Bill Wade, K1IJ, for his years of service as VE Liaison. Bill's organization, planning and leadership has led the MMRA VE team to be one of the finest around.

New MMRA Repeater in Billerica
Bruce Pigott ~ KC1US

The W1DC, 147.120 repeater in Billerica has been acquired from the 1200 Radio Club by the Minuteman Repeater Association. Upgrades at the site and to the equipment are forthcoming. Old cables, antennas, and the sidearm will be removed from the tower and clamps added for the guy wires. This may help with the crunchies. The antenna will be replaced, if the problem persists. A new repeater and controller will be installed, plus a link radio to connect to the two HUBs. Equipment will be assembled during the Winter, and installed next Spring. When the new equipment is in place, the sub audible tone will change to 146.2Hz from 103.5Hz.

The Billerica repeater will be a stand alone, open system. Normally the Billerica Amateur Radio Society has a net on Wednesday at 8PM. It has been temporarily moved to the Westford repeater due to crunchies. Once upgrades are accomplished, the system will be linked to the Tuesday night Technical Information and Other Stuff Net.

Missing MMRA Antenna
Dave Hornbaker ~ N1DCH

At the 2019 HamXposition, the last one in Boxboro, our 440 antenna was lent to someone to measure and copy during the pandemic. The note with the call faded to unreadable. This was discovered as we were setting up for the recent HamXposition in Marlborough.

If any readers know the whereabouts of this antenna, please email contact@mmra.org

15 September 2021 Membership Meeting

Dave, N1DCH, called the meeting to order at 7:33 pm EDT at New England Sci-Tech, Natick.

In Person: Dave, N1DCH, president; Bob, K1IW, technical director; Ed, W1OED, member

Via ZOOM: Larry, W1DYJ, trustee; Kevin, K1KWP, treasurer; Jason, W1HFP, secretary; Ed, KC1ECD, member; John, KF1KI, member; Ron, WO1E, VE Liaison; Tom, KB1OQA, net control; John, WA1MDD, vice president; Roger, WA1NVC, director; Kevin, AE1EI, member; Mike, W1USN, trustee; Rob, N1BE, director

AGENDA

VE exam sessions return

- Ron Rothman, WO1E, appointed VEC Liaison
- First Session 9:00 am October 9th, Marlborough Central Fire Station
- Contact Ron (WO1E@mmra.org) for more information
- Please tell your friends, who are interested in taking tests, that they must have photo IDs and FRNs.
- Note: Social Security numbers are no longer accepted by the FCC. Everyone must have an FRN

Note that we need VEs – if you are interested, check out this website for more information: https://www.arrl.org/become-an-arrl-ve.

W1DC – our newest repeater

- W1DC – Billerica, MA., 147.120 MHz (-600kHz); PL 103.5; unlinked currently
- Previously operated by "The 1200 Radio Club", made up of Honeywell employees
- Upgrades planned this winter to align with MMRA standards

W1USN will be retrieving the Kenwood, Power Supply, and Link Radio in the next week or two and will get them to Bob – K1IW, who will be building the repeater over the winter. We can plan on deployment sometime in April. The existing machine will run as-is until then.

Repeater Update

Controllers

- SCOM7330s are out of production. SCOM has about fifty left.
- There are six MMRA repeaters running on the older 7K model, all have the rare VYEX DAB upgrade.
  - Marlborough East 53.81 / 29.68
  - Lowell 442.25
  - Brookline Remote Receiver 146.22
  - Boston Transmitter 146.82
  - Boston 900
  - Marlborough 900
- Do we need to purchase enough 7330's to standardize our repeaters?
- These are out of production and there are about 50 left.
- Cost of a 7330 is ~$550 and there may be a run on them from other clubs.

15 September 2021 Membership Meeting—cont'd

220

- The new MX800 220 repeater for Burlington is ready to install
- Should we consider upgrading our other two ancient 220 repeaters, again to standardize?
- These are out of production and there are only six left .
- Cost of an MX800 is ~$450.

The Board of Directors will discuss and decide if a vote of the membership is warranted.

Upcoming Meetings – will be detailed in the next newsletter

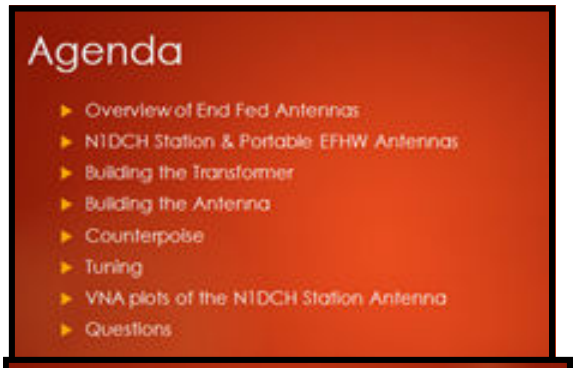
We have added Philip Erickson, Ph.D., W1PJE, for our May annual meeting. Phil gave a very well received Saturday dinner talk at HamXposition

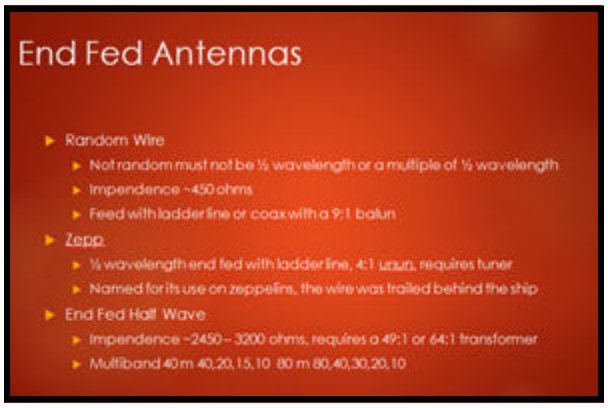
David Hornbaker – N1DCH

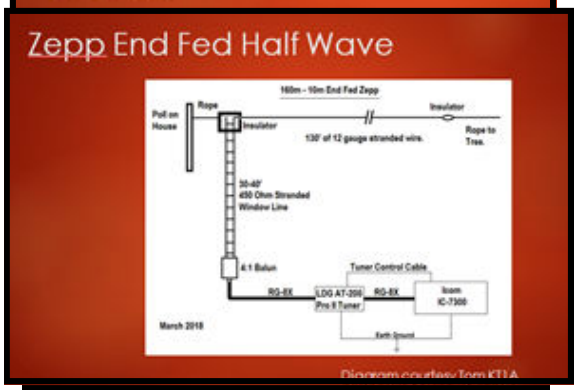
Dave then gave his presentation.

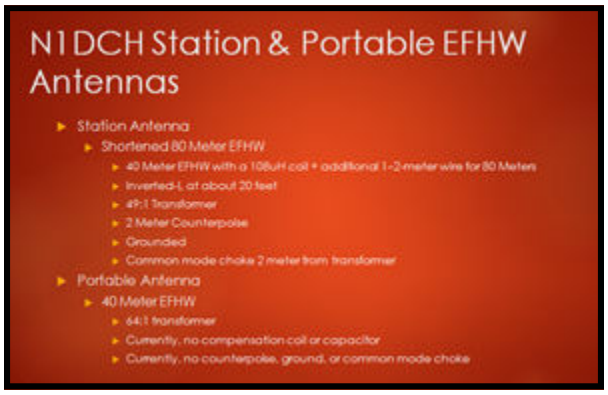
Meeting adjourned at 9:03 pm EDT

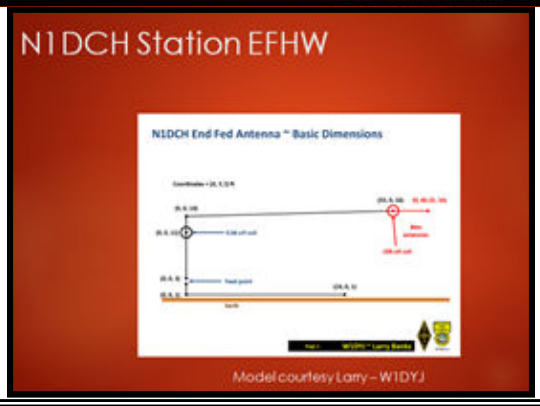
Submitted by Larry Banks, W1DYJ







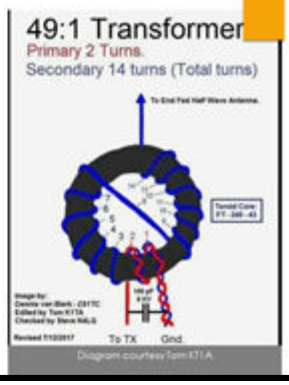




15 September 2021 Membership Meeting—cont'd

Transformer Design

- 49:1 14 turns, 64:1 16 turns
- Wind as tight as possible
- 240-43 or 240-52, stack toriids for more power
- QRP 140-43
- VHF 140-61 (I haven't tried this)
- Use 14- or 12-gauge magnet wire for QRO
  - 18 or 16 gauge for QRP
- Do not apply tape to toriid
- Place in 6x4 waterproof electrical box
- Use a vent or weep holes in bottom to control condensation



64:1 Transformer Mounted in Electrical Box

Antenna Design

- Calculate wire length based on the desired operating frequency on lowest band.
- For example: 7.074 MHz has a wavelength of $\frac{300}{7.074}$=42.408 meters so wire length would be 21.2 meters. but you need extra for tuning so, at least 22 meters of wire
- Antenna should be resonate on 7.074, 14.1, 21.2, 28.2 and antenna designed for 3.574 should be resonate on 3.574, 7.1, 10.7, 14.2, 17.8 21.4, 28.5
- Using a compensation coil and/or compensating capacitor will lower resonate frequency on higher bands. Needed for CW & Digital. Or just use a tuner

Antenna Design

- Use good quality antenna wire, avoid wire that will stretch a lot
- Optimal to have transformer near the ground
- May be deployed in Horizontal, Inverted-L, or Inverted-V configuration
  - If mounting from a metallic mast or tower, mount transformer at top and use a horizontal configuration

To Counterpoise or Not To Counterpoise, That is the Question

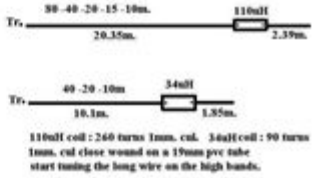
- EFHW need a counterpoise!
- The reason some say a counterpoise isn't needed is because the shield is the counterpoise
  - Coax run needs to be long enough to keep RF out of shack
  - Cannot use a common mode choke near the transformer
  - Add a common mode choke near the transmitter
- If using a counterpoise, make it 10% of antenna length and run it above ground level
  - Place common mode choke at least 2 meters from transformer

Common Mode Choke

- Based on a design by DG0SA
- Flat SWR from 1.8 to 50 MHz
- Greater than 24db common mode attenuation from 1.8MHz to 54MHz
- Wound on 240-43 toriid
- 800 watts, use 2 cores for 1500 watts
- AWG-18 stranded, silver finished, PTFE
- (689) # 101 Balun PART 2: Balun's magic and how to wind an effective working Balun - YouTube

Shortened EFHW Antenna

- Add a coil to a 20- or 40-meter EFHW to produce a shortened 40- or 80-meter antenna
- Add a 110uF coil to a 40-meter EFHW
- Add a 34uH coil to a 20-meter EFHW
- Narrow bandwidth on the added band
- Tune the stub for desired frequency



Tuning

- Erect the antenna with calculated length, wrap excess back on antenna and secure with zip ties
- Measure SWR with VNA or an Antenna Analyzer
- Trim antenna slightly
- Repeat for best SWR
- Tune main antenna before tuning stub

Recap of Northeast HamXpostition, the 2021 ARRL New England Division Convention

by Bob Inderbitzen, NQ1R, ARRL Product Development Manager

Your editor thanks the ARRL

The annual Northeast HamXposition was held on September 10 &12 and hosted the 2021 ARRL New England Division Convention. This was the first time the annual event was held at the Best Western Hotel in Marlborough, Massachusetts.

The ARRL 'team' included Vice President Mike Raisbeck, K1TWF, New England Division Director Fred Hopengarten, K1VR, Vice Director Phil Temples, K9HI, Field Services Manager Mike Walters, W8ZY, Senior Member Services Representative Kim McNeill, KM1IPA, Director of Operations Bob Naumann, W5OV, and Product Development Manager Bob Inderbitzen, NQ1R. In addition, there were several Section Managers and other Field Organization volunteers.

Mike Raisbeck and Phil Temples did double-duty, serving as the convention's Vice Chair and Program chair, respectively.

Although there were some last-minute cancellations from a handful of exhibitors and presenters, attendance was very good, though smaller than the 2019 show. W1 QSL Bureau Co-Manager Eric Williams, KV1J, shared that "considering the COVID concerns, I feel that this was remarkably good attendance."

Among the radio club and organization booths, the Nashua Area Radio Society (New Hampshire) demonstrated a variety of activities to encourage new licensees to become radioactive. An interactive exhibit was also hosted by Sci-Tech Amateur Radio Society of Natick, MA, which operates from the STEM educational center and Makerspace hosted by New England Sci-Tech. An ARRL Volunteer Examiner team tested 13 new and upgraded license candidates, including unlicensed individuals who passed exams for their General and Extra Class tickets.

Eric Williams and his team of volunteers offered great support to anyone seeking W1 Bureau needs. Their exhibit also hosted Bob Naumann who checked DXCC and other ARRL Award applications throughout the convention.

On Friday night, Adrian Ciuperca, KO8SCA, presented at the DXCC/Contest Dinner, recapping the DXPedition and IARU Contest activities and activations from Market Reef and Aland Islands.

Recap of Northeast HamXpostition — cont'd

Bob Inderbitzen gave the keynote address on Saturday morning which included a 9/11 tribute he had prepared, and Color Guard supported by local Scouts. He also attended a Youth Panel and met with many young hams, parents, and their advisors throughout the event, including an undergraduate student in mechanical engineering from Olin College of Engineering in Needham, MA, Zachary Sherman, KC1NXK – exhibiting for Olin Collegiate Amateur Radio Club.

The banquet speaker was Dr. Philip J. Erickson, W1PJE, of Haystack Observatory, a multidisciplinary radio observatory operated by Massachusetts Institute of Technology (MIT). He discussed HamSCI's latest ionospheric science investigations with his group at Haystack covering international, national, and even local aspects of amateur ionospheric science supported in partnership with radio amateurs and scientists.

Editor's note: W1PJE is our May Annual Meeting speaker.

During the banquet, Bob Inderbitzen was recognized by Emcee Mike Raisbeck as the convention's first scholarship winner (1990).

An ARRL Membership Forum was held on Saturday, supported by Fred Hopengarten, Phil Temples, Mike Walters, and ARRL Communications Counsel Dave Siddall, K3ZJ – who was in the area and attended the convention. Mike Walters also led a Section Manager & Affiliated Club Coordinator Forum. The ARRL staff team returned from Marlborough with 72 membership applications (127 in 2019); 22% of these from new or previous members. They also returned with 36 award applications and endorsements – including 24 for DXCC

The Amateur's Code

The Radio Amateur is:

CONSIDERATE...never knowingly operates in such a way as to lessen the pleasure of others.

LOYAL...offers loyalty, encouragement and support to other amateurs, local clubs, and the American Radio Relay League, through which Amateur Radio in the United States is represented nationally and internationally.

PROGRESSIVE...with knowledge abreast of science, a well-built and efficient station and operation above reproach.

FRIENDLY...slow and patient operating when requested; friendly advice and counsel to the beginner; kindly assistance, cooperation and consideration for the interests of others. These are the hallmarks of the amateur spirit.

BALANCED...radio is an avocation, never interfering with duties owed to family, job, school or community.

PATRIOTIC...station and skill always ready for service to country and community.

Paul M. Segal, W9EEA, 1928

20 October 2021 Business Meeting — Minutes

MMRA -- 20 October Business Meeting

Brought to order by President **Dave, N1DCH**, at 7:32 pm at New England SciTech

Present: Dave, N1DCH; Bob, K1IW; Bruce, KC1US; Ron, WO1E
Via ZOOM: Bob, N1BE; Roger, WA1NVC; John, KF1KI; Jon, K1BTZ; Steven, KC1LPZ; James, KC1NBN; Steve, K8ZBE; Steven Lively; Jason, W1HFP; John, WA1MDD; Larry, W1DYJ

Agenda

After introductions, **Dave, N1DCH**, expressed thanks to **K5TEC** and **New England SciTech** for once again hosting our business meeting.

MMRA VE Session Status – Ron, WO1E

First session was held at Marlborough Central Fire Station on October 9

- This turned out to be a "dry-run"
- Eight VEs showed up, but no test-takers
- Lack of PR was attributed – this will change

The next session will be November 20 at Marlborough Central Fire Station

We need to find a permanent testing location and schedule testing sessions for the remainder of the membership year

We would like to investigate electronic testing and submission

- We would need several laptops donated, hopefully identical to reduce the maintenance issues
- If anyone knows of an opportunity for laptop donations, let us know

Ron, WO1E, will submit an article to the newsletter

Repeater Status – Bob, K1IW

Belmont link signal quality improved with new antenna donated by W1DYJ

- Back-story: Bob, K1IW, estimated from his measurements that an additional 3 dB would increase the link signal strength enough to be OK
- Larry, W1DYJ, had a "spare" 6-element 440 yagi, spec'd at 4 dB more than the existing 3-element link yagi
- It worked. It's nice when practice matches theory!

Lowell had an internet disruption

- Installed new Tello/Mifi and upgraded 7K controller to 7330 (the one pulled from Burlington)
- Both the Mifi and 7330 used in Lowell were originally destined for Billerica.
- The 7330 will be covered by the purchase approved the recent membership vote.
- We will purchase another Mifi setup under the maintenance budget since it was essentially used to repair the Lowell internet connection.

A site survey at Brookline found the MMRA remote receiver antenna lying on the roof. This survey also found that the ground system for MMRA antennas was non-existent. The antenna has been put back up. Lightning arrestors and cables have been purchased and will be installed sometime after the Marathon of October 2021.

All other repeaters appear to be running normally

Wachusett Mountain Repeater, W3DEC – John, KF1KI

The W3DEC 448.625 repeater used to be linked to the MMRA network until it failed a few years ago

- W3DEC moved to Pennsylvania a number of years ago and no longer maintains the repeater
- W1SEX is the current trustee

20 October 2021 Business Meeting — Minutes cont'd

- Access/maintenance is difficult – there are FEMA security issues involved

John, KF1KI, has been in conversation with W1SEX concerning linking it again

- W1SEX states that he is willing to make it work again
- Linking it is a trivial issue for the MMRA
- The consensus of all meeting participants was that linking again would be welcome

John, KF1KI, will engage again with W1SEX to encourage him to resurrect the repeater

Upcoming meetings

November Membership Meeting – Jason – W1HFP
Space Weather
Marlborough Central Fire Station, Marlborough & Zoom Teleconference

December Business Meeting
New England Sci-Tech, Natick & Zoom Teleconference

January Membership Meeting – Rob Macedo – KD1CY
SKYWARN Training
New England Sci-Tech, Natick & Zoom Teleconference

February Business Meeting
New England Sci-Tech, Natick & Zoom Teleconference

March Membership Meeting –Tim Duffy – K3LR
Grounding and Bonding
New England Sci-Tech, Natick & Zoom Teleconference

April Business Meeting
New England Sci-Tech, Natick & Zoom Teleconference

May Membership & Annual Meeting – Phil Erickson – W1PJE
Amateur Radio's Emerging Role in Investigating Space Weather Within near-Earth space
TBD & Zoom Teleconference

Newsletter

Deadline: Friday, 29 October
Email W1DYJ@mmra.org or newsletter@mmra.org

Meeting adjourned at 8:18.

Submitted by Larry Banks, W1DYJ

Information Requested — Bill Drago ~ N1GWY

I enjoy working with/on old stuff. I am looking for any information on the phone shown to the left.

The model number is C200E3145. I am looking for a manual and any other related information like software or a programming cable or whatever I can get so I can put this back in service.

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, 17 November ~ Membership Meeting ~ 7:30
Space Weather ~ Jason Peardon, W1HFP
Marlborough Central Fire Station, Marlborough + Zoom Teleconference

Wednesday, 15 December – Business Meeting
New England Sci-Tech, Natick + Zoom Teleconference

Wednesday, 19 January ~ Membership Meeting ~ 7:30
SKYWARN Training ~ Robert Macedo, KD1CY
New England Sci-Tech, Natick + Zoom Teleconference

Wednesday, 16 February – Business Meeting ~ 7:30
New England Sci-Tech, Natick + Zoom Teleconference

Wednesday, 16 March~ Membership Meeting ~ 7:30
Grounding and Bonding ~ K3LR
New England Sci-Tech, Natick + Zoom Teleconference

Wednesday, 20 April – Business Meeting ~ 7:30
New England Sci-Tech, Natick + Zoom Teleconference

Wednesday, 18 May ~ Annual Membership/Elections Meeting ~ 7:30
Amateur Radio's Emerging Role in Investigating Space Weather Within near-Earth space — Phil Erickson – W1PJE
Location TBD + Zoom Teleconference

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	KB1OQA	Tom Turner
Week 3	KC1CLA	Ed Curley
Week 4	K1KWP	Kevin Paetzold
Week 5	K1BTZ	Jonathan Traum

To connect using Echolink / IRLP during the Net:

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

NOTE: we need another NC to be available as a substi-

MMRA Leaders

Executive Board — Officers

President	Dave Hornbaker	N1DCH
Vice President	John Spencer	WA1MDD
Secretary	Jason Peardon	W1HFP
Treasurer	Kevin Paetzold	K1KWP
Clerk	OPEN	————

Executive Board — Directors

Director »2023	Bob DeMattia	K1IW
Director »2023	Roger Coulson	WA1NVC
Director »2022	Rob 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
* Billerica 147.12	Mike Rioux	W1USN
* Boston 146.82	John Mullaney	K1BOS
* Boston 927.0625	Rick Zach	K1RJZ
* Brookline 145.16	Joyce DeMattia	K1IWW
* Brookline Rcv 146.82	Bob Phinney	K5TEC
* 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	Rob 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	Ron Rothman	WO1E
* Net Manager	Larry Banks	W1DYJ
* Web Page Editor	Bob DeMattia	K1IW
* Social Media Coordinator	Steve Umans	K8ZBE

* 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

MMRA VE SESSIONS

Check out https://www.mmra.org/exam.html or email *ve@mmra.org*

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)

Waltham Wranglers Swap Net

The MMRA Network connects to this swap net every Wednesday at 8:45 pm local and *promptly* at 9:59 pm switches over to the Heavy Hitters Traffic Net.

Heavy Hitters Traffic Net

This net is active on our repeaters Sunday through Friday evenings from 10—11 PM.

In both cases, the repeaters that are active are:

2m: Mendon (61), Boston (82), North Reading (715), Quincy (67) and Marlborough (27)
220: Quincy (224.40), Marlborough (223.94)
440: Marlborough (449.925), North Reading (446.775), Hopkinton (449.575)

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.