



PROSPECT HILL INTERMOD

THE OFFICIAL NEWSLETTER OF THE WALTHAM AMATEUR RADIO ASSOCIATION
& THE HEAVY HITTERS

www.wara64.org

SPRING 2009

INSIDE THIS ISSUE!

- Repeater Upgrade
- Getting on 900 MHz
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NEW 900 REPEATER

On December 13, 2008 we had the good fortune to change out our existing 927.1375 repeater with a Motorola MSF 5000. Randy, N3HFK was able to obtain the "non working condition, slated for parts" MSF, made the necessary repairs and brought it back to life! Thank you Randy! Thanks to Rick, K1RJZ for warehousing, Roger WA1NVC and Will N1PXA for fine tuning and technical support. Thanks to John, K1BOS and Bill, KB1QMY who made the trek up the hill to help with installation!

Photo KB1QMY



K1BOS, KB1QMY and N1PXA

WALTHAM 900 MHz

The large footprint of the WARA 900 repeater has just grown larger. Currently we are "RF" linked with Hopkinton, 927.8875 which, as of this writing, is linked via IRLP (Internet Radio Linking Project) with Marshfield and Wrentham.



MOTOROLA MSF 5000

Please remember when accessing the machine you will need to pause about a second or two after keying up, to allow the IRLP link to completely connect. Also be sure to pause a bit between transmissions, by doing this, you are giving other stations on the IRLP link a chance to chime in. See you on 900!

MEETING UPDATE

Meetings are now held on the last TUESDAY each month at 7pm in the Waltham Public Library. (except July and August) "Talk-in" on 146.64 MHz. Check for the latest updates in the "Meeting" section on our club web site at www.wara64.org

WELCOME NEW MEMBERS

W.A.R.A. would like to welcome all new members to the club! Thank you for joining and we hope to hear you on the air soon!

GETTING ON 900 MHz

Randy Krenz, N3HFK

The latest wave of 900 MHz interest in the north east started about 5 years ago. Richard Solomon (W1KSZ) of W.A.R.A. and others were among the early experimenters in this area that had interest in coercing 900 MHz commercial radios into the ham band.

For the amateur operator who is accustomed to cell-phone quality communications on VHF or UHF repeaters, the 900 MHz band poses some interesting challenges.

The RF propagation at 900 MHz is noticeably more line-of-sight than VHF or UHF. As such, the band can be more easily subject to mobile flutter or picket fencing and can be less forgiving if a hill gets in between you and the repeater. Some have likened the

900 MHz repeater experience to a UHF repeater that is less forgiving at the edges of the coverage area. Where you might get noisy on UHF, you might drop out completely on 900 MHz for example. Simplex operation poses similar challenges and does not appear to be extensively used in the Boston area, except for at flea markets, hamfests and such.

Some 900 MHz transceivers may not be suitable for the amateur band.

There is no 900 MHz gear specifically targeted for the amateur portion of the band, however, commercial gear is available.

Photos: Staff



10 channel Motorola GTX

Since some of the newer commercial radios can cost thousands of dollars, hams typically pick these radios up used. Many such radios are available at hamfests and on the Internet at very affordable prices and tend to be in good condition. In the North East, Motorola 900 MHz equipment seems to be the most popular. Motorola Spectras, GTXs, MaxTracs, and MCS2000s are popular mobile rigs and Motorola MTX9000s, MTX9250s, GTXs, and MCS2000s are popular handhelds.



32 Channel Motorola MTX 9000

Kenwood and others also have some nice commercial radios for the 900 MHz band as well. However, not all 900mhz commercial radios are a good choice for the amateur band.

Be sure to use the appropriate coax for your install.

The selection of low loss coax cable and connectors for use at 900 MHz is most important. As the frequency increases, feedline loss also increases. At 900 MHz, whereas RG-58 coax is commonly used in mobile installations, LMR-195 is a similarly-sized coax which performs better at 900mhz. where RG-8 or RG-213 coax is commonly used in fixed installations, RG-9913 or LMR-400 are similarly-sized coax cables which perform better at 900 MHz.



LMR-400 ULTRAFLEX COAX

Some types of connectors commonly used by hams are less suitable for 900 MHz. PL-259 type connectors should be avoided at 900mhz. N-connectors or BNC-connectors are much more appropriate at these frequencies.



Type N Connector

Choose a good antenna

As with any installation, high gain antennas, or directional antennas, can further improve performance. Antennas can be found through retail outlets specifically tuned for the amateur band of 902-928 MHz. Do a quick search on the web and you should be able to find an antenna to suit your needs.

As with many facets of ham radio, 900 MHz operation isn't for everyone. Reliable wide-area coverage can often be more easily accomplished at lower frequencies, and it can be easier to get on the air with more well-established bands, particularly



for less technical hams. That being said, several aspects of 900 MHz communications and the use of commercial radio equipment generally seems to have captured the interest and imagination of a many New England hams. In some respects, perhaps it is reminiscent of days gone by when hams had to understand and tinker with technology a little more in order to successfully get "on-the-air". Whether you are a new or old ham, technical or non-technical, 900 MHz may be worth a look!

CAPITAL FUND

We are still in need of more repeater and antenna upgrades. You can help keep *your* repeaters on the air by making a small contribution to the W.A.R.A. Capital Fund.

Go online to:

www.wara64.org

(see the membership link) to donate or, Make checks payable to: "Waltham Amateur Radio Association"

mail to:

W.A.R.A. Capital Fund
Post Office Box 411
Waltham, MA 02454

INTERNET RADIO LINKING PROJECT

Randy Krenz, N3HFK

Over the past few years, there have been a lot of new 900 MHz Amateur Radio repeaters appearing in the North East. Much of this activity has been fueled by the availability of a large quantity of high quality Motorola MSF-5000 900 MHz repeaters that were pulled out of commercial service in New Jersey and made available to

area hams at very attractive prices. When a repeater is located at a suitable site (a.k.a. high elevations) with low-loss feedline and a quality antenna, these repeaters can service a meaningful coverage area.

www.nerepeaters.com

The above link lists current 900 MHz repeaters available in the New England area.

In an effort to further promote 900 MHz interest and create a wide 900MHz communications infrastructure, some 900 MHz repeater clubs and owners have linked multiple such repeaters together. A good example of this is the New England 900 MHz IRLP (Internet Radio Linking Project) This project utilizes Internet Radio Linking Project (IRLP) voice-over-IP (VOIP) technology to link 900MHz repeaters in this area together over the Internet.

Once linked in this fashion, a user of a particular repeater is simulcast to all involved repeaters, allowing seamless cross-repeater communication. Currently, repeaters in Waltham, Hopkinton, Marshfield, Wrentham, and Hingham are "full-time" connected to the New England 900 MHz IRLP reflector with at least two more repeaters planned in the near term. Which particular repeaters are linked to this system can be seen in real-time on channel 9125 at the following web link.

<http://status.irlp.net/IRLPnodedetail.php?nodeid=9120>



Homebrew 900 MHz Link controller, Randy N3HFK

While the wide-area-coverage and corresponding traffic levels aren't for everybody, these linked systems, as well as a growing number of great-coverage standalone 900 MHz repeaters, have been instrumental in bringing 900mhz enthusiasts together and generally promoting 900 MHz interest in this area.

A few operating guidelines are critical when using IRLP linked repeaters:

1. **Listen before transmitting as activity on such systems tends to be higher.**
2. **When transmitting, key up for about 1 second before beginning to speak. This gives the links time to come up. Otherwise people on other linked repeaters will miss the beginning of your transmission (typically a call sign) and possibly cause confusion on the repeater.**



3. **Leave a pause in between transmissions for breaking stations. Otherwise you may not hear people on other linked repeaters who are trying to join (or break) in.**

In addition to the multitude of fixed 900mhz repeaters (linked and standalone) available in this area, the GEMOTO group of amateurs, www.gemoto.com usually provide a portable 900mhz repeater system at area hamfests and flea markets and there is usually quite a bit of 900mhz activity at these events.

Photo: GEMOTO.com



Mike Giovannucci, N10MJ with his seed stock of 50 Motorola MTX9250 900MHz portables.

WEBSITE

Be sure to visit our website which recently received a "make over" last fall. Here you can find the latest updates on what is going on in the club. In addition, you can buy club merchandise to support W.A.R.A., pay your membership or donate, check Field Day information, view member links and more. Soon we will be making more additions to the site. Please feel free to

submit photos, suggestions and comments. We welcome your input. Please check back often. www.wara64.org

FIELD DAY 2009

Eliot Mayer, W1MJ

*In the last issue of PHI, I reported on the successful first-time FD joint venture between WARA and a school club in Brookline, the Clay Center Amateur Radio Club (CC-ARC) in 2008. We're about to do it again on **June 28 and 29**, building upon last year's success.*

ARRL Field Day (FD) is an annual emergency preparedness exercise, a "contest that isn't a contest", a social event, and more. WARA will operate FD 2009 with the CC-ARC from the grounds of the Dexter-Southfield School in Brookline, MA.

What I find most exciting about this joint venture is the golden opportunity it presents to promote ham radio to a group of potential young future hams. In June, the school's Summer Science Camp is in session.

Last year, CC-ARC club secretary Bob Phinney, K5TEC invited the science campers and their families to visit FD, and quite a number did so. Bob plans to make an even bigger effort this year to attract visitors from the camp. We hope to get some of them hooked on ham radio by having them operate the "GOTA" station (Get on the Air) on 20 Meter single-sideband (voice) and one or two digital modes (RTTY, PSK31).

At the end of FD '08, Dan Rajczyk, N1KJN stepped forward and offered to be the general

chairman in '09. This has freed me up to serve as the GOTA coach. CC-ARC president Forrest Gasdia, a high school junior, will also help with the GOTA station, so the visitors will know that not all hams are old guys.

Photo: W1MJ



Debbie, AB1IC brought some yummy food to FD '08, and was eventually coaxed into trying her hand at HF contest-style operation. Assisting her with logging is the old-time Heavy Hitter formerly known as Scott, WA1OTF, now living in Texas and signing NT5SM. Scott's job as an airline pilot luckily brought him to Boston for FD weekend.

I would like to encourage WARA members to participate in FD '09. Field Day has always been my favorite part of ham radio (N1PXA once said, "Eliot, it sounds like Field Day is to you what the Dayton Hamvention is to me").

Check out the plans on www.wara64.org/fd

I encourage you to support our new chairman by signing up early, so that Dan will know what to expect for participants and equipment. Having had this role last year, I can certainly say that it's nerve-wracking when FD is near, and you don't know if you have the people and stuff lined up to pull it off.



Photos: W1MJ



W.A.R.A.'s youngest member, Eilif, KB1NYQ made quite a few contacts on both CW and SSB.



Dan Rajczyk, N1KJN, operating HF SSB during FD 2008

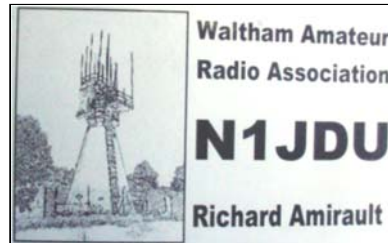
If you aren't interested in or able to commit to participating, consider just dropping by the site for a short visit to check out the operation. You are welcome to operate our HF or VHF stations for a few minutes – or not – as you please.

Please understand that one of our goals is to teach operating skills to those lacking experience – whether they be a potential new ham or an old-timer who only operates on repeaters. In other words, we are the exact opposite of FD operations that focus on high scores and therefore give preference to "big gun" contesters. And besides, FD is the "contest that isn't a contest" because there are no prizes or plaques for the high scorers.

CLUB BADGES

Richard Amirault, N1JDU

At a club meeting a few months ago there was some discussion on making W.A.R.A. name tags for the up and coming Field Day event at the Clay Center. I was not in charge of that project, but I was able to find a really inexpensive solution, see photo.



WARA BADGE, Richard N1JDU

Time is running out! If you would like one of these pinback badges, just let me know. E-Mail your callsign and what name (full, or first, or nickname, or whatever) you would like to, Ramirault@Verizon.net

I will have them at the next club meeting before Field Day, and of course, at Field Day itself if you can't get to the next club meeting.

ONLINE DONATIONS

Eliot W1MJ

As of April 27, 2008, we have a balance of \$872.32 in our general fund, and \$319.81 in our Capital Fund. The majority of our members are now joining, renewing, and donating to the capital fund online. To do so, go to www.wara64.org and click on "Membership".

JUNE PICNIC 2009

Join us Tuesday, June 30th for a picnic (on the hill) at Prospect Hill Park in Waltham! This is an informal pot luck type picnic. Richard, N1JDU is bringing the grill, hamburgers, hotdogs, buns, condiments and paper plates. Anything else you wish to bring would be most welcome, soda, ice, chips, potato salad etc... This is not a club funded event, your donations are welcome.

Arrive anytime you are able to after about 4:30pm. We wrap up before dusk as the gates to the hill will be locked. Talk in on 146.64.

Be sure to check the website for details.

Here are some photos Eliot, W1MJ sent in of our June picnic in 2008.

Photos: W1MJ



Our picnic chef (and club president), N1JDU



K1UZK and K1UGM





AB1IC and K1REM



N1DIZ, K1UGM, WA1HUD, W1LSB, KB1CJ



KB1KTT and K1BOS

W.A.R.A. OFFICER WANTED

After many years of recording and reading minutes as the WARA Clerk, Jim Finlay N1HCF has stepped down from the position. Club President Richard Amirault N1JDU is taking care of the minutes for now. If you would be interested in taking the position of Clerk, aka Club Secretary, please step forward.



John KB1FQG "scores" a treasure at NEAR-Fest, Spring 2009

W.A.R.A. OFFICERS

- PRESIDENT** - Richard Amirault **N1JDU**
- V. PRESIDENT** - John Flood **KB1FQG**
- TREASURER** - Eliot Mayer **W1MJ**
- ASSISTANT TREASURER** -
Bob Martinson **K1REM**
- SECRETARY** - Open

PHI NEWSLETTER STAFF

- EDITOR** - Mark Bolls **K1KGG**
- Submit all articles to mark@k1kgg.net

Thank you to all who have contributed to this issue of PHI. We are always looking for articles and new material to publish. Please send in your photos, story or short article for the next issue of PHI !



The Waltham Amateur Radio Association is affiliated with the A.R.R.L.



The Amateur Radio Crossword Puzzler

By H. Ward Silver, N0AX

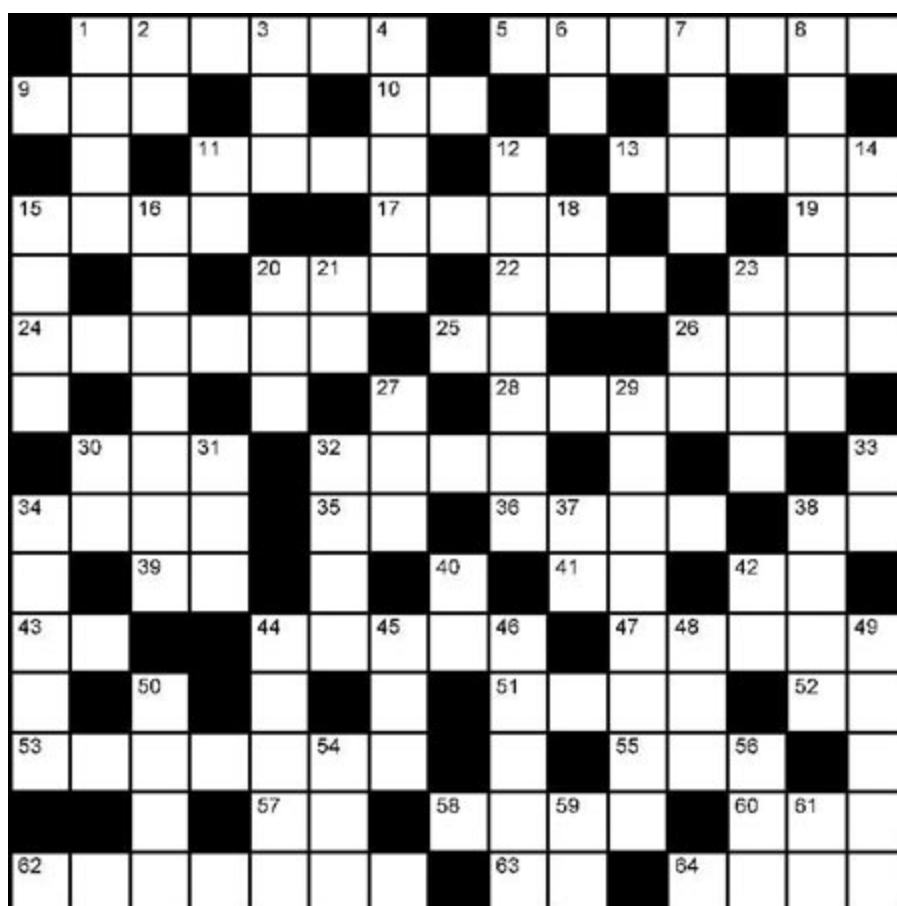
March 20, 2004

"It's a Bird, It's a Plane, It's an Antenna!" Tickle your brain with visions of a Super Antenna while working through this construction-themed puzzle.

Ah, spring is in the air. Can the first antenna work parties be far behind? You can hear the climbing belt, the slingshot, the coiled ropes out there in the garage, calling your name. The *Antenna Book* is sitting on your nightstand with bookmarks at those special projects. Ready? Set... Go!

Ward "Sky Hook" Silver, N0AX, authors--among numerous other things--the Amateur Radio Crossword Puzzler, which appears twice a month on the ARRL Web site. He can be reached by e-mail at n0ax@arrl.net or by surface mail at Aetherworks Publishing, 22916 107th Ave NW, Vashon, WA, 98070.

(Reprinted with permission from www.arrl.org
More puzzles can be found at <http://www.arrl.org/news/puzzles>)

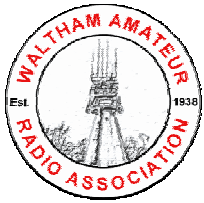


Across

1. This always comes first
5. Recover from damaged items
9. Type of screw head
10. Horizontal direction (abbr.)
11. Set of tools
13. Throws a shot
15. Agency in charge of safety (acronym)
17. Accidentally let fall
19. Transmitter output (acronym)
20. Type of plastic pipe (acronym)
22. Utilize
23. A contest category using spotting assistance (acronym)
24. Wheel used for lifting with ropes
25. Answer only (Morse prosign)
26. Feeling good
28. Found with a block
30. Gentle blow
32. A heap of stuff
34. Difficult
35. What goes down must go here first
36. Ladder step
38. That (Morse abbr.)
39. Determining direction (acronym)
41. Makes time with 37 Down
42. End of message (Morse prosign)
43. Supposing
44. Raise yourself on a structure
47. Rebuild or repair
51. Type of relay
52. Unit of inductance (abbr.)
53. Wrap guy wire around these
55. Short pull
57. Internal receiver signal source (acronym)
58. What the tower sits on
60. Type of organic antenna support
62. Unusual or unorthodox devices
63. Metric distance (abbr.)
64. Divulge a secret

Down

1. Antenna wire stretches and
2. One of several
3. Loop or hole
4. Cubic measure of volume
6. Most conductive metal (chemical symbol)
7. Unit of potential
8. Used for lifting on a tower (two words)
11. Gauge (abbr.)
12. Type of weight that provides tension
14. Desired outcome
15. What you say after 17 Across happens
16. A rope for raising or lowering
18. Comes after the signature
20. Large mail-order ham radio vendor (acronym)
21. Near or against
23. Take care of your....
26. Weak (abbr.)
27. Tear
29. Foundation material
30. Technical Field Organization appointment
31. Type of computer document (acronym)
32. Apply tension
33. Quiet (abbr.)
34. Lift with a rope or cable
37. Makes time with 41 Across
38. Cut to length
40. Greeting before noon (Morse abbr.)
42. One of the continents (abbr.)
44. Coaxial feedline
45. Forms on antennas in cold weather
46. Separate by force
48. Web address abbreviation for colleges
49. Hit this with a hammer
50. Attached with a knot
54. More than a little
56. Form a flexible solid
59. Scandinavian prefix, neighbor to 61 Down
61. Scandinavian prefix, neighbor to 59 Down



WALTHAM AMATEUR RADIO ASSOCIATION

MEMBERSHIP FORM

The Waltham Amateur Radio Association operates repeaters on 6 Meters, 2 Meters, 220 MHz, 440 MHz, and 900 MHz. The repeaters are free and open for everyone to use. But repeaters have bills to pay, just as you do. A \$20 annual membership would help support these repeater expenses, as well as help to keep you informed about club activities and other aspects of ham radio. If you cannot afford \$20, please send what you can. If you are inclined to donate more, we will put it to good use. Please complete this form legibly, and return it to:

**Waltham Amateur Radio Association
Post Office Box 411
Waltham, MA 02454**

Name _____ Call Sign _____

Street _____

City _____ State _____ Zip _____

Telephone # _(_____) _____ Are you an ARRL member? _____

Email _____

This year's donation enclosed (\$20 nominal): \$ _____

How would you like to receive our club newsletter?

Email

First Class Mail

Check if you would like to get involved in any of the following Waltham ARA activities:

_____ Repeater Maintenance/ Construction _____ Speaker for Club Meetings

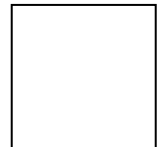
_____ Public Service Activities _____ Public Relations for W.A.R.A.

_____ Newsletter Writing or Production _____ Photographer for W.A.R.A. events

_____ Contribute to the W.A.R.A. web site

Visit the W.A.R.A. web site at: <http://www.wara64.org>

Waltham Amateur Radio Association
P.O. Box 411
Waltham, MA 02454



Please check your membership expiration date on mailing label.

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