



# Prospect Hill Intermod

The News Letter of the Waltham Amateur Radio Association  
and the "Heavy Hitters"

Fall 2003

Check out our web site at [www.wara64.org](http://www.wara64.org) !

## INSIDE THIS ISSUE!

- Small Lot HF Antenna
  - Repeater Updates
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- AND MUCH MORE!

## AUCTION 2002 - NEW TIME!

Saturday, November 15, 2003  
10:00 AM - 4:00(?) PM  
Seller Check-In 9:00 AM

Newton Masonic Hall (2<sup>nd</sup> Floor)  
460 Newtonville Avenue  
(at the corner of Walnut Street)  
Newtonville, MA.

## Quicksilver Radio Products

will have an exhibit at the  
auction

<http://www.qsradio.com/>.

They sell mobile, wire, portable  
antennas, and parts as well as  
DC power products. They will  
donate a 2M/70CM magmount  
antenna as a door prize!

Check out the Auction 2003  
page on the club web site for  
more information.

[www.wara64.org](http://www.wara64.org)

## PHI NEWSLETTER STAFF

Editor - John Flood KB1FQG  
Circulation - Ann Weldon,  
KA1PON

## SPEAKERS AND PROGRAMS FOR CLUB MEETINGS

There are always opportunities  
for you and others to make a  
presentation at one of our  
monthly club meetings.

If you have a favorite topic that  
might be of interest to our  
group, you can contact Ann,  
KA1PON on the air or via email  
at [ka1pon@amsat.org](mailto:ka1pon@amsat.org)

To see if a particular meeting  
date is in need of a program  
check the "Meeting Information"  
section on our club web site at  
[www.wara64.org](http://www.wara64.org)

## WE NEED YOU -TO PARTICIPATE AND CONTRIBUTE!

Prospect Hill Intermod (PHI) is  
**YOUR** newsletter. We always  
need submissions of articles,  
information photographs to  
include in each issue. That's  
what makes it interesting for the  
readers. So if you have an idea,  
some thoughts or perhaps some  
photos of your shack or some  
event you participated in, send  
them on in and share them!

You can send things in via e-  
mail to: [flood@krohne.com](mailto:flood@krohne.com) or  
snail mail to:

John Flood, KB1FQG  
79 Waltham Street  
Maynard, MA  
01754

Text should be plain text (ascii)  
like an e-mail message or in  
Microsoft Word format and  
photos should be in JPEG or  
GIF format.

## W.A.R.A. OFFICERS

President - Ann Weldon, KA1PON  
V. President - Richard Amirault,  
N1JDU  
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Donovan, WA1GEP  
Asst. Clerk - Jim Finlay, N1HCF  
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The Waltham Amateur Radio  
Association is affiliated with the  
A.R.R.L.

## MEMBERSHIP PAYS!

JOIN W.A.R.A.  
TODAY!

## A Simple, Effective Apartment HF Antenna

©2003 Eliot Mayer, W1MJ, 24 Hamilton Road, Belmont, MA

Having fallen in love with a city girl, I moved to a duplex in Belmont, MA in 1998.

Technically, Belmont is a small town, but as evidenced in Figure 1, it looks a lot like a city – that's our apartment, but the car on the right is in our neighbor's garage! The trees are not ours, but as explained below, I did utilize a branch that overhangs the corner of our lot.

Fig. 1



After moving in, I did a bit of HF with an attic 15-Meter dipole and a random wire along the side of the house, but performance was disappointing. I wanted something better. I didn't believe that the expensive-but-tiny apartment HF antennas advertised in QST could work very well, so it was time to roll my own.

This article describes my new homemade HF antenna, which

gives me performance that I'm happy with. It is simple, effective, and inexpensive. It is relatively low profile – that is to say, neither my wife nor my neighbors have told me to “get rid of that ugly thing”. In a word, this wonderful antenna is a dipole.

In former home QTHs, and on Field Day, I have had very good performance with a dipole cut for  $\frac{1}{2}$  wavelength on the lowest desired frequency, strung up between trees, fed with TV twin-lead, and matched to the rig through an antenna tuner on all HF bands. It's a trustworthy old antenna design. The basic theory of this antenna is as follows:

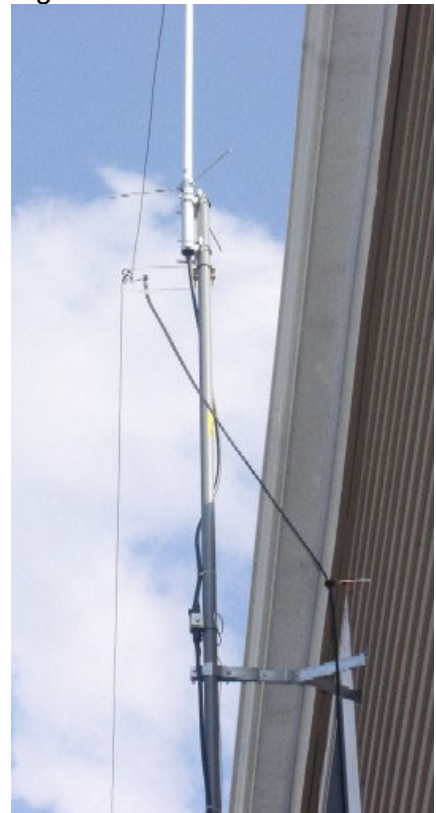
- There will be a high SWR on the feedline at most frequencies, since the antenna length in wavelengths varies from band to band.
- Feedline loss increases with SWR, but also scales with the feedline's specified loss.
- Parallel feedlines (ladder line & twin lead) have such low specified loss, that even with high SWR, they are not very lossy.
- With low feedline loss, the antenna will radiate most of the RF from the radio.

At my QTH, the longest antenna I could easily erect was 87 feet long, only about  $\frac{2}{3}$  of the desired length for 80 Meter CW. Furthermore, the highest point of the antenna is only about 25 feet above the ground and yet performance is good. One

noticeable effect of the shortened antenna is that the tuner tunes very sharply on 80M. If I QSY more than 10 or 20 kHz, I need to retune. Other than that, life is good.

My dipole is shaped something like an Inverted V, with a few extra bends to get the most antenna possible on the tiny lot. A 10' foot mast, side-mounted to the house, supports the center insulator (Figure 2).

Fig. 2

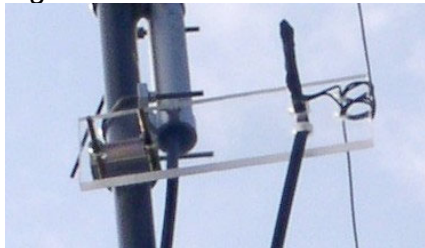


The mounting brackets are close to a second floor window, so that a lot of the work could be done from the window rather than from a ladder. I fabricated the center insulator from an unlabeled scrap piece of some clear material, possible Plexiglas (Figure 3).  
(cont. on page 3)

(cont. from page 2)

The insulator is clamped to the mast just below my 2M/70cm vertical antenna.

Fig.3



The antenna is supported, and kept as high as possible, using potted-plant hangers from the hardware store (Figure 4).

Fig.4



Again, much of the work was done from second story windows. One end of the antenna goes over a tree branch overhanging the corner of the lot, despite K1UGM's cautions, and is then roped down to the fence.

Parallel feedlines are not shielded like coax cable, and should be kept in the clear as much as possible, both outdoors and in (Figures 5/6).

Fig.5



Fig 6.



If you'd like to try a similar installation, contact me for details, and/or to arrange a visit my humble antenna farm.

**Material List**

Quantities are approximate, Radio Shack part numbers are in brackets:

- 1 10' gray antenna mast
- 3 12" wall mount [15-885B]
- 1 U-bolt w/nuts [15-826]
- 100' black insulated 14awg wire
- 3 potted plant hangers, Loew's
- 50' low-loss foam TV twin-lead cable [15-1175]
- 12 standoffs with insulators [15-854]

Editors note:

Full color photos of both of this month articles are available on the electronic copy of the newsletter located on the WARA website.

**A QUICK AND EASY 900MHZ ANTENNA**

The following is a transcript of an email from Kim, WA1PBU and with the new 900MHz repeater on the air, (see listing on page 5) I thought it would be something good to share with everyone. Thanks to Kim for the great idea! (John Flood KB1FQG)

Hey all you 900 Guys, I though I would share this while the hair and hooves are still on it.

I needed a quick antenna, and while this is done at 902 MHz, you can scale for 450, or 1270 or where ever. The task is to make a sleeve de-coupled 1/4 wave vertical.

First you need a length of the cable of your choice. In other words, what you have lying around. In this case I had a length of RG-213, which is a RG 8 type, single copper shield, polyethylene dielectric, with a type N at one end, and a stump at the other.

As a 1/4 wave at 902, is about 3 inches, Circumcise the jacket at about 3 inches from the stump end, and remove the jacket. In picture #1, the shield braid has been pulled inside out and back over the jacket. This works once apparently, and I made the mistake of cutting the center (cont. on page 4)

(cont. from page 3)  
conductor short, and needed to pull the braid back to remove some more jacket but I could not get the braid inside out again. I cut it back and decided to try something else

Fig. 1



In picture #2, a 3 inch piece of copper water pipe, slides over the short length of reversed braid. The fit is good, and the pressure is sufficient for contact. It won't be after a few days outside, but for fiddling, it works. Either way, with the braid folded back or the pipe, they can be slid up and down for fine adjustment of the resonant frequency.

Fig. 2



The end of the pipe can be a 1/4 inch or so above the end of the braid, where the center conductor emerges. This is just like shortening the center conductor. I trimmed both the center conductor, in small increments, and made the pipe

the same length, and needed only a small fraction of an inch, maybe a 1/32, to get the reflected power down to nothing. You will know if the balun is working, by sliding your hand up and down the coax for 3 to 12 inches below the end of the pipe. You may see some variation in the reflected power at 3 inches below the end of the balun (pipe), but by 6, and 9 inches the changes in reflected power will be hard to see (on the watt meter anyway). About 4 watts back at 927 when centered on 902

I held the balun in place with some electrical tape, and suspended it behind the curtain rod in the dining room, using some string. Whoooooee, I can hear the repeater now.

If I were to use this outside, I would bring the braid outside of the pipe, and affix with a 1/2 inch hose clamp. You can also cut short slots in the pipe, so the clamp will be able to compress it over the braid, and keep the braid inside. This has repeatability problems if the slots get too long.

The end where the center conductor comes out, should be sealed, with RTV or some equivalent. Its life time will be not be infinite. It would last longer if shoved inside some 3/4 inch PVC pipe, with a cap on the end. I could see a short (6 inch) one being used in mobile service.

I Hope to try this again, with a 3/4 wave radiator. The balun can stay 1/4 wave or go to 3/4 wave. (Yes it will have a useful response at 1/3 the design

frequency.) Perhaps I'll provide an update in the future.

Hope some of you get something working from this. It's hard to beat for cheap and easy.

>73s

>Kim WA1PBU

## Auction Help Wanted:

No experience needed, will train, one day only.

Saturday November 15 2003  
8:00AM-4:00 PM.

Our busiest times are 8AM-11:00AM and from 2:00 PM to 4:00 PM. Auction runners, check in personal, snack bar attendants, general help.

Please come by for a couple hours in the morning, afternoon or all day. The pay is great, supporting the WARA repeaters, meeting the repeater voices face to face, heavy hitters snack bar.

All helpers are welcome to consign and bid

Contact: Jim Hicks K1QJS,  
toll free  
1(888)544-3777 or

k1qjs@amsat.org

## Waltham Amateur Radio Association Repeater Information

### Nets on the 146.64 MHz Repeater

Net Name	Day	Time	Description	Net Manager
<b>Heavy Hitters Traffic Net</b>	Daily	10:30 P.M.	This is a local net of the ARRL National Traffic System. Third party messages may be sent anywhere allowed by FCC and international rules. Check-ins take messages for delivery by local phone call. Newcomers are welcome; just ask for help on net procedures	<a href="#">Mike Ardai, N1IST</a>
<b>Waltham Wranglers Swap Net</b>	Wednesday	9:00 P.M.	Buy, sell, and trade amateur radio equipment. Wants and offerings MUST be clearly amateur radio related.	<a href="#">John Flood, KB1FQG</a>
<b>Heavy Hitters AMSAT Net</b>	Thursday	8:30 P.M.	This is a local <a href="#">AMSAT</a> Net, holding discussions about amateur satellites, SAREX (Shuttle Amateur Radio Experiment), satellite tracking, and various modes of operation. Net features a "satellite of the week"	<a href="#">Ernie MacLauchlan, K1ELA</a>
<a href="#">Skywarn</a>	As Needed		Meets as needed during severe weather The Skywarn program helps the National Weather Service protect life and property by using weather spotters and amateur radio operator reports to make precise predictions. Those interested in participating should be properly trained; several training sessions are coming up. For more info, contact: <a href="#">Skywarn Coordinator Rob Macedo KD1CY</a>	<a href="#">Terry Stader, KA8SCP</a>

### Waltham Amateur Radio Association Repeater Listing

Input (MHz)	Output (MHz)	PL Tone (Hz)	Callsign
52.25	53.25	71.9	WA1HUD
146.04	146.64	none	W1MHL
223.34	224.94	none	WA1GEP
444.075	449.075	none	WA1PBU
927.1375	902.1375	131.8	W1KSZ

\* **NEW** \*

\* **NEW** \*

\* **NEW** \*



**AMATEUR RADIO & ELECTRONICS**

# AUCTION

*Sponsored by the Waltham Amateur Radio Association and the 1200 Radio Club*

**Saturday, November 15, 2003**

**10 AM – 3 PM**

**Seller Check-in starts at 9:00 AM**

**Newton Masonic Hall (second floor)  
460 Newtonville Avenue  
Newtonville, MA**

***Admission: \$5.00***

**PARKING & ACCESS**

**Metered parking on street, *free parking in municipal lot across Walnut St.* Please do not park in the lot next to the Masonic Hall, or in the Star Market parking lot. Unfortunately, this fine old building does not have a “Handicapped Access Ramp” – there is an elevator but the entrance has five steps.**

**While you are at the AUCTION; enjoy the “Heavy Hitter’s Snack Bar”  
Coffee – Donuts – Soft Drinks – Lunch – Snacks – AND MORE!**

For auction rules and other information, visit <http://www.wara64.org/auction/>,  
or contact Eliot Mayer, W1MJ, w1mj@arrl.net, Tel 617-484-1089

**WARA and 1200 RC** thank the Newton Masonic Associates for the use of their fine facility.

**Directions:**

From 128/I95 take the Route 16 East (Exit #21A), follow Rt 16 into West Newton square, then bear right leaving Rt 16 and following Washington St. About 8/10 mile further, take a right at the light at Lowell Ave., cross the turnpike and take the immediate left onto Austin St. The Masonic Hall is directly ahead of you at the end of the street, and the municipal parking lot is on your right.

From Boston, take the Mass. Pike west to Exit 17 at Newton Corner. Go straight ahead on Washington St. about 1.2 miles to Newtonville Square. At the light at Walnut St. go left over the turnpike and take the immediate right onto Austin St. (The Masonic Hall is on your left as you cross the turnpike.) Park in the municipal lot on your left off Austin St.

Talk-In: 146.64 MHz (-) Waltham Repeater

# WALTHAM AMATEUR RADIO ASSOCIATION

## MEMBERSHIP FORM

The Waltham Amateur Radio Association operates repeaters on 2 Meters (04/64), 6 Meters, 220 MHz, 440 MHz, and 900MHz. The repeaters are free and open for everyone to use. But repeaters have bills to pay, just as you do. A \$15 annual membership would help support these repeaters, as well as help to keep you informed about club activities and other aspects of ham radio. If you cannot afford \$15, please send what you can. If you are inclined to donate more, we will put it to good use. Please print this form, complete it legibly, and return it to:

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

Name \_\_\_\_\_ Call Sign \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

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

Email \_\_\_\_\_ Web Site Address (URL) \_\_\_\_\_

This year's donation enclosed (\$15 nominal): \$ \_\_\_\_\_

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           | _____ Auctions                         |
| _____ Newsletter Writing or Production    | _____ Public Relations for W.A.R.A.    |
| _____ Contribute to the W.A.R.A. web site | _____ Photographer for W.A.R.A. events |

Comments about the club, its repeaters, our web site or the newsletter?:

**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 expiration date on mailing label.*