



ZERO BEAT

A Publication of the
Hampden County Radio Association
<http://www.hcra.org>



FEBRUARY 2008

Next Meeting:

Friday, February 1, 2008:

The Technology of Segway at 7:30pm

The Presidents Message from Jim KB1JVF

I find myself in need of apologizing again! The past meeting was the first time that I met and took the presenter to supper. Donna was late due to traffic and we were very late to start the meeting. I guess I'll have to take some measures to make sure that isn't repeated again.

The February meeting is a little different in that we will take a look at the Segway. If you're not familiar with the Segway, it's a two wheel mode of transportation that is gaining favor with the Government, has shown up at NearFest, and the Big E. Body position is what steers it. Hope you'll come out to see a new fangled idea, up close and personal.

I will have camera at the February meeting to start taking orders for badges, come early as I won't be able to take pictures when the meeting starts and it's first come first serve and only 4 badges this month as we are just getting started and this is a trial set.

I'm working a few things. As you can expect Field Day, hey, it's February and some of the Press needs to go out as people in high office and others set calendar's months in advance. The first year I was involved in Field Day. The site and information was still up in the air in May. The press is just to get out information so people will see what we are doing. Not a change from the Fun, and Emergency Drill. (See not saying Contesting) What can you expect from the Field Day Chairman.

We are on the list for the Big E for this year, so stay tuned for future developments. I'm working on two information Board locations, one a fly-in at Barnes Airport, and the other the Westover Air Show. Add a possible special event station at the Post 350 Catfish Derby, and re-investigating the request for a special event station at the Old time Radio Museum in Ct. Throw in Dave KB1MU and the Titanic Special Event Station and you can't say there's nothing to do at the H.C.R.A. (Late update all the above have started to take shape! I've talked to the Barnes People and the Westover show, the Catfish Derby, and the Ct. Museum and all are happy to help and excited to have the HCRA on board!)

Almost every month I say the club isn't anything without you. Donna Halper visit was not one of our biggest get togethers. I'd like to know why more people didn't show up. I'd also like to know if you consider I'm doing something wrong, or something I could do better.

Remember March is warmer, and it's the HCRA "Show and Tell" meeting. I've heard that a few people are going to have "stuff" to show.. But I haven't smelled soldering iron's in the morning air!

HCRA Board Meeting – January 15, 2008

Members present: Greg N1AEH, Larry WB1DBY, John KI1A, Ed KB1NWH, Dave AA1YW, George KC1V, Jim KB1JVF, and Dave KB1MU

President- Jim Harrington KB1JVF

The HCRA is planning to have an information booth at the fly-in operated by the new Pioneer Valley Military and Transportation Museum. Jim is also working with Westover Air Reserve Base to allow an information booth at the Great New England Airshow to be held during the month of September.

Vice President- Dave Cain, AA1YW

February raffle prizes are all set. Dave was given a number of gift subscriptions to World Radio. These will be used as raffle prizes.

Treasurer- Greg Stoddard, N1AEH

Club balance as of Jan 5 was \$5587.00

The Feeding Hills Church was paid \$92.00 for the use of the hall for Jan and at least Dec meetings.

The board voted to renew our listing in the "clubs" section of World Radio.

Dave AA1YW was reimbursed for past raffle prizes.

Secretary- Dave Isham KB1MU

No report

At Large- Ed LaCombe KB1NWH

No report-

Program- Johnny Linville KI1A

Nothing to report-

Technical- John Stark, N1JIO

Not Present

Membership- George Collins, KC1V

Report- any new members?

Chasing Down Renewals

ZB Editor- Larry Krainson, WB1DBY

Report- Content needed for ZeroBeat

Old Business

Jim KB1JVF has contacted the Granby Selectmen's office concerning our use of Dufrense for field day. The club was advised to submit an application for field day, even though the rates for this year have not yet been set. Jim will continue to pursue this matter.

New Business: Future Planning.

Dave KB1MU has asked for the use of the club's TA-33jr beam and one of the AB-577 tower units. Dave is also looking for a rig to use for the Titanic Special Event operation. This event will take place on Fri April 11 and Sat April 12.

Dave also reminded us that there is a bill coming soon to the state legislature concerning the use of cell phone in a car. This bill may affect our ability to operate mobile. All amateurs need to watch this bill in the legislature and may also require contact with your local state representatives.

HCRA 10m Net

Join NCS, Tom Doyle (n1muv),
each Monday night at 7:30 PM (local) on

28.375 MHz

Get the latest local word, join good friends,
take part in good conversation each week!!!
Anyone can join in, don't be shy!!!

Have you tried IRLP yet?

IRLP is the Internet Radio Linking Project, connecting radios over the Internet. With your 2m radio, you make contacts all over the world. HCRA sponsors an IRLP node, in South Hadley, MA. It is there for your use, please give it a try (at least turn it on and listen) 146.46 simplex, 114.8hz PL Kx1x, Node #7270, South Hadley, MA.

For a list of IRLP nodes and other IRLP information, go to:
<http://www.irlp.net/>

WE NEED YOUR SUGGESTIONS

We are asking for your suggestions and ideas for future HCRA meetings. The recent success of HCRA has been, in part, because of its interesting and timely key speakers and topics.

If you can help, please contact Johnny, Ki1A at
Ki1A@comcast.net or (413) 543-9367

Zero Beat Contributions: Anything of interest is welcome.
Please submit your ideas, articles and more to
wb1dby@comcast.net. Thank you,
Larry, WB1DBY, Zero Beat Editor

Questions, Comments, and Suggestions
Can Be Directed To:

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JUST TALKING:

A \$5.00 Portable, multi-band, direct fed, long wire antenna

My intent has been to regularly present a concept with a very basic view and not any heavy technical detail. My hope is that someone will try something different because of one of these articles and then learn by doing. - (And we need more hilltoppers too!!!)

Before I introduce my favorite antenna which is known by several names, I would be amiss if I didn't speak to the dangers of this type of antenna which includes the original windom, also fed by a single wire. Everyone should take the time to review Supplement B (Specifically for Amateur Radio) of OET 65, or spend the money for the ARRL version.

If you elect to review the following link, peruse the document first, looking at the examples, as this makes most of the document easy reading. There is a form at the end if you are so inclined which I do hope you are.

<http://www.fcc.gov/oet/info/documents/bulletins/#65> Open supplement B (OET65b)

I love my long wire antenna. For the purist, this antenna is only "long" when it is multiple wavelengths long but I am not writing for semantics. When I first began using it for QRP Hilltopping, it was terrible. I wanted to blame it on conditions, but I knew better. After a few disappointing attempts, it began to improve, then better, and now it is one of my best performers, and the most versatile.

First, the length of mine is 56', or 100' depending where I setup. (I try to keep away from a half wavelength on my frequencies as this has caused me trouble.) Second, I get it as straight as possible, and as high as possible, and plug it directly into my tuner. Most importantly, a quarter wave counterpoise is required for each band. This counterpoise should be a few inches above the ground, insulated, and as straight as possible. This critical counterpoise is the second half of the antenna, and provides the RF ground for the tuner/radio. Using a long (or random) wire here didn't work for me.

Because, one end of the antenna is pulled high into the trees, it typically functions as a vertical with very good results. However, RF is now present at the rear of the radio, and very close to the operating position. If you have followed the above guidelines, then functionally, you should not have any problems including hot mikes, or keys.

From an RF exposure standpoint, I feel very safe that I am within the RF exposure limits due to my operating characteristics, but you would never catch me operating 100w contest on a weekly basis with this type of feed/antenna. (Your HT antenna is the same type of antenna.)

73's

The HCRA Mystery Writer :-)

Items For Sale:

FOR SALE: Yaesu FT-817ND 5 W portable transceiver. HF plus 6 and 2 meters and 70 cm, CW, SSB, AM, FM. Has optional W4RT 500-Hz CW filter. Very low hours. Bought new in 2005 and repacked in the original carton. QRP station package includes Paddlette mini CW paddle and mini Outbacker-style portable telescoping antenna that can attach to the rear SO-239. Free delivery within 25 miles of Springfield, MA. Asking \$500 + pack/ship for all. Rick Lindquist, N1RL, n1rl@earthlink.net, 413-789-6394.

FOR SALE: 60 Feet of Rohn 25G...no rust....

8 Foot top section.

AS-25G rotor shelf

Ham 4 Rotor and box...

ALL for \$500

All or part for sale...call for price if package not wanted in whole!

N1BAA - Jose Castillo n1baa@comcast.net

Items Wanted:

Tailtwister (T2X) rotor...no box....

Wire for new beverages...need 5000 feet...

N1BAA - Jose Castillo n1baa@comcast.net

Editors Note: Due to space constrictions, the pictures from the Donna Halper meeting in January will be published in the March ZeroBeat.

HCRA Ham Shack of the Month

Jose—N1BAA



ANTENNAS:

6L10 on 32 foot boom
6L15 on 36 foot boom
5L20 on 42 ft boom
2L30 and 2L40 on 26 foot boom
FORCE 12 4BA (10-12-15-17)
7L6M on 39 foot boom
160M shunt fed tower
8 RCING BEVERAGES

RIGS:

ICOM 756 PRO 2/ AL-1200 amp
ACOM 1000 AMP

HF Antennas for Morons — Part 2

By Rick Lindquist, N1RL

A newcomer recently contacted me to ask about the Cushcraft R7000 vertical I'd reviewed more than a decade ago in *QST* — back when I was still on the HQ staff. I took the antenna in partial payment for preparing the "Product Review" and had it up at our place in Connecticut. After moving to Massachusetts some eight years back, however, I never reinstalled it, and I believe someone in the club now has it.

It's been my experience, both as an ARRL staffer and otherwise, that radio amateurs everywhere have a high interest in antennas. Yes, there's lots of antenna information — and misinformation — out there. I don't claim to have a corner on the market, but I have been a ham for 50 years now and have a pretty good idea what works and what won't. Sometimes I've tried the experts' ideas without success; other times I've experimented and found that something the experts say *shouldn't* work very well did just the opposite.

The ARRL TIS: A Valuable Resource

Getting solid technical information can be a real problem, though. So, here's a recommendation: If you're an ARRL member (and I strongly advise *everyone* to join), the League Technical Information Service at HQ is at your disposal to answer any and all queries of a technical nature, including antenna questions. E-mail tis@arrl.org. Lab Manager Ed Hare, W1RFI, and his staff are both savvy and helpful. The TIS has gobs of information on a variety of topics on the ARRL Web site. Check out www.arrl.org/tis.

Vertical or Horizontal?

My new ham correspondent was contemplating a vertical antenna because he has what he called "a rather short backyard." Well, I'm on a half-acre lot here in Feeding Hills, of which the house occupies a fairly sizeable footprint, so I'm a bit restricted in what I can put up. Nonetheless, I've so far managed to fit three wire antennas — all of my antennas are wires — including two dipoles and a vertically mounted loop.

For newcomers eyeing their own antenna situations, my primary question would be this: What HF bands do you want to operate, and what kind(s) of operating do you plan to do most — ie, DXing, contesting, local/regional nets or groups, that sort of thing? Second, How much room do you have to install an antenna?

The answers to these questions will have considerable bearing on what kind of antenna will work best for you.

Small Antennas and Bandwidth

The usable bandwidth — the span of spectrum over which the SWR is 2:1 or less without using an antenna tuner — of any "short" vertical (like the R7000) or a shortened dipole without any sort of loading is bound to shrink as you move *down* in frequency. For example, in the case of the R7000, its 40-meter bandwidth was approximately 125 kHz. So, if you're a CW operator, you'd be able to pretty much cover that segment of the band plus the digital frequencies without a tuner. Likewise, if you're a phone operator, you could cover most of the 'phone band without a tuner. That said, using an antenna tuner to stretch the bandwidth won't necessarily be detrimental to your signal, although you'd have to expect some loss in the tuner.

Equally Poorly

Let me state up front: My personal preference in antennas, outside of my mobile setup, is some kind of dipole or some kind of loop. I have both types up at present, and my backyard is a bit crowded overhead with wire! My loop is vertically polarized, by the way.

There's an old humorous ham radio saying: "A vertical is an antenna that gets out equally poorly in all directions." Some folks claim that *any* dipole will outperform a vertical, but I haven't necessarily found that to be the case. I operate mobile with a vertical (a HamStick or similar) and work lots of DX, even on 40 meters. Other factors come into play. Some verticals have traps, not the most efficient design. Traps can be a source of power loss, especially when they do double duty as loading coils.

On the plus side of the ledger, a vertical is *omnidirectional*, while any dipole is going to favor certain directions. Given a vertical's omnidirectional characteristics combined with the inherent lower angle of radiation, you might be able to hear and/or work DX you wouldn't hear on a dipole. *Truly large* verticals and vertical arrays — think AM broadcast antennas — are terrific for DXing on the low bands, 80 and 160 meters.

Carolina What?

I'm not a fan of "ready-made" antennas, particularly gimmicky products like the so-called "Carolina Windom" (not a "Windom" at all but an off-center-fed dipole or OCF). Despite what antenna manufacturers want you to believe, their designs do not defy the laws of physics. In other words, there's nothing new under the sun.

As I mentioned in Part 1, a lot of hams believe that the better your SWR (or VSWR), the better your antenna will perform. This is one of the selling points of the "Carolina Windom." *Not true!* I could put a 50- Ω resistor at the end of a piece of feed line and attach dipole legs to each side of it, and you'd have close to a 1:1 SWR across just about any band you used, but the "antenna" probably wouldn't put your signal much outside the confines of Hampden County. Some old timers might remember that one unscrupulous manufacturer actually marketed such an antenna a few years back. A sealed "black box" at the feed point contained a circuit board and a non-reactive 50- Ω resistor, both potted in thick, black tar. The circuit board was just a scrap and not connected to anything!

So, an antenna that exhibits an SWR of 2:1 or less across all bands for which it's designed does *not* necessarily mean it will "get out" better than an antenna for which you may need to use a tuner, such as a plain-vanilla Zepp (dipole fed with balanced feed line) that can be used on multiple bands. In short, sometimes simpler *is* better — and it's almost always a lot less expensive!

The G5RV as originally designed by Lou Varney, G5RV, is a 20-meter antenna, although it will work elsewhere with a tuner. It's 102 feet long, fed in the middle with balanced feeders. I have one up here. Antennas of any other configuration cannot legitimately call themselves "G5RVs," even if they happen to be 102 feet long (some of those out there are not). Mine works best on 20, of course, although with a tuner it also performs pretty well on other bands, and I've even used it on 80, where it's a bit short.

As I said in Part 1, what makes me *really* nuts are the outrageous claims of antenna makers or pundits that some new dipole configuration or another either exhibits appreciable gain over a "conventional" dipole or will work all bands with a low SWR *and* no antenna tuner — or both — through some mystical sleight of hands. Beware of advertisers' antenna performance claims. If they sound too good to be true, they probably are.

Balanced to Unbalanced

It's pretty simple to interface balanced feed line, such as the plastic-coated 450- Ω impedance stuff you can get from The Wireman and other sources. All of my wires are fed with 450- Ω feed line. They all terminate in 1:1 current baluns outside the shack (ie, in my backyard), and a coax feed line comes into the shack. (I've also used 4:1 voltage baluns with good success.) Baluns are a subject that's probably beyond the scope of this article, however.

Some commercially available antenna tuners will directly accommodate balanced feeders because they have a balun inside the box. A balun is simply a transformer, and you can encounter situations where the balun will heat up (heat = power loss), sometimes excessively, because it cannot handle the impedance transformation required. I recall almost melting one, in fact.

You can get good performance out of a dipole of any length — it need not necessarily be “cut to frequency” — with a combination of balanced feed line (typical 50 or 75- Ω coax cannot handle the high SWRs involved without excessive loss) and a good antenna tuner. I typically can get a match using the tuner built into my ICOM IC-756PROIII, but I also have a homebrew antenna tuner to cover the situations where the radio's tuner won't cut it. Most internal tuners will accommodate up to a 3:1 VSWR or so.

Stretching the Landscape

If you have a couple of trees in your yard that are, say, 100 feet apart, I'd be tempted to put up as much wire as you can fit comfortably in that space, get it as high as you can, feed it in the middle with balanced feed line, stick a balun (**balanced-to-unbalanced**) on the end of the balanced feed line and run coax into the shack (as short a piece as practical, since it will have SWR on it). Or you could put up a cut-to-frequency 40-meter dipole (approximately 66 feet, plus or minus) fed in the middle with coax. This typically will also work on 15 meters with out a tuner (or much of one), and you *might* even get it to work okay elsewhere by using a tuner, although some losses are inevitable.

If you don't have much space at all — or a spouse who doesn't want “all those messy wires” in the yard — you might find a multiband vertical just the ticket. Let's face it: It's not easy to move trees to create the necessary span. You also may want to consider a single-support antenna, such as an inverted V (a dipole with its apex at the highest point) or a “sloper,” which can be fed at its lowest point. I've known folks to have great luck using slopers with a remote antenna tuner right at the end of the antenna.

I advised last time to get your dipole at least a halfwave off the ground for the band you're using. Nice if you have the tall trees or tower but not always possible. In general, the lower a dipole (or other wire) is relative to the band you're operating, the higher its angle of radiation. So, you might get better local/regional/US reports using a lower dipole but not be able to work DX as well, and vice versa. The very high dipole may not perform as well for close-in contacts. As a general rule, though, higher *is* better.

Directional Wire Arrays

I'd promised to discuss how to roll your own directional arrays using combinations of dipoles and other assorted pieces of wire. This topic probably deserves a Part 3 of “Antennas for Morons.” Chapter 8 in *The ARRL Antenna Book* (21st ed) covers this topic in great detail. In any event, here are a few concepts to think about, especially with Field Day looming on the horizon.

You can create your very own beam for any band, even for 40, 80 or 160 meters, using simple wire elements. You don't need a tower or a six-figure salary. One of the simplest wire arrays in the two-element parasitic wire beam. This is the same principle that aluminum-tubing Yagis use.

The unidirectional design — ie, the antenna favors the direction you most want your signal to go, say, Europe — consists of a simple dipole cut for the band in question with a slightly longer wire — about 5 percent longer — parallel to it. Spacing depends on the band, but think something along the lines of a quarter-wavelength. So, to make a unidirectional 40-meter beam, you'd take your dipole — the one you may already have installed — and place the slightly longer wire, called a *reflector*, “behind” the dipole, parallel to the dipole and about 20 to 30 feet from the dipole.

This array will radiate in the direction of the dipole (which is the “front” of the antenna in this case). Some trial and error may be necessary to come up with the optimum spacing and element lengths. Typically, the dipole, or *driven element*, in an array like this will have to be a little shorter than a standalone dipole for the same band.

That's because of mutual coupling between the driven element — your dipole — and the single-wire reflector.

Want three elements for additional gain? Put a *director* wire element in front of the dipole, cut approximately 5 percent *shorter* than the dipole and, again, parallel to it.

System gains will vary, but you can expect something on the order of 2-3 dBd gain (over a dipole) for a two-element array. That's about one-half a standard S unit. The three-element job will give you maybe 4 to 5 dBd gain. Your mileage may vary. Keep in mind that any beam also aids reception by attenuating undesired signals originating off the sides or back of the array.

The Bug Zapper

Want to be able to "fire" your signal off either, or both, sides of your wire array? In that case, you'll need to have a means to electrically shorten and lengthen the two parasitic elements, ie your "director" and "reflector," from your shack at will. You can do this by installing a "stub" of balanced feed line (either the 450- Ω stuff mentioned above or some 300- Ω TV downlead, if you can still find it) in the center of each parasitic element. Now this means you'll have *three* feed lines — two balanced and one (probably, but not necessarily) unbalanced — on your system. This could be a deal breaker with the spouse or the neighbors.

A short digression: I had a system like this in place when I was living in rural Southwest Virginia (in my KX4V days). The guy next door wanted to know what "all those wires" were in my yard. I told him it was a giant bug zapper, and he believed me.

Okay, back on topic now. Each of these parasitic elements should be on the order of 5 percent longer than the driven-element dipole (I used a loop for a driven element in my KX4V system). At the end of each "stub," connect a tuned circuit, a coil and a capacitor. You can jerry rig simple antenna tuners for the task or just gin up your own. Depending on the frequency and the length of the stubs (which will probably be different), you'll need either a parallel or a series tuned circuit, although in some cases just a plain ol' variable capacitor across each stub will do the trick. In any case, the tuned circuit or variable capacitor *should*, with some experimentation, be able to tune each parasitic element to perform either as director or a reflector — or even as two directors, if you want bi-directional radiation with some gain.

Remember too: The *more* elements you have parallel to your dipole driven element, the *shorter* the driven element will need to keep the SWR in the vicinity of unity (1:1). The mutual coupling among the elements will drive down the feed-point impedance of the drive element too.

You can use the same approach for a two-element array, by the way. Less wire, less experimenting, less aggravation from the spouse or dumb questions from neighbors.

You can use these same principles to create your own *vertical* wire or aluminum tubing arrays, too. I haven't even touched on the area of *phased* arrays, which is what multi-tower AM broadcast systems employ. These are easy to do as well — for horizontally or vertically polarized systems — and this may be a great topic for a future installment.

So, have fun! If you have questions, please e-mail me: n1rl@earthlink.net.

PHOTOS ON NEXT PAGE

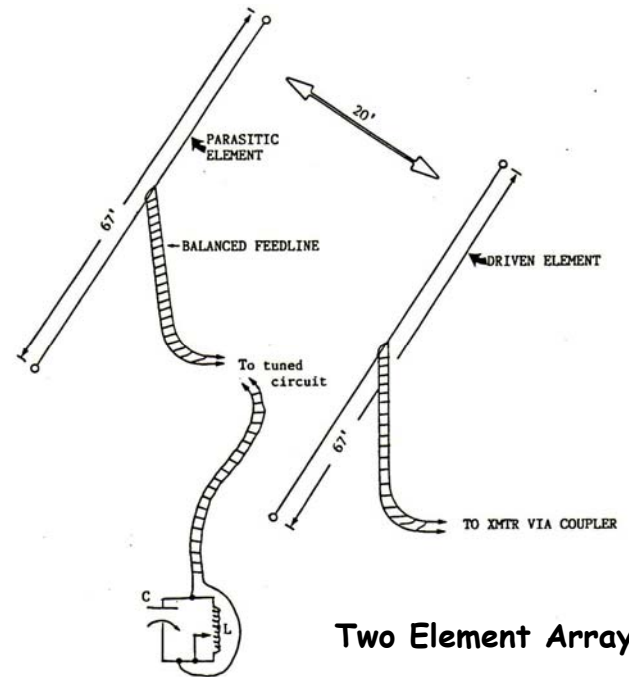
Balun Lineup



<Two-element-Array.jpg>

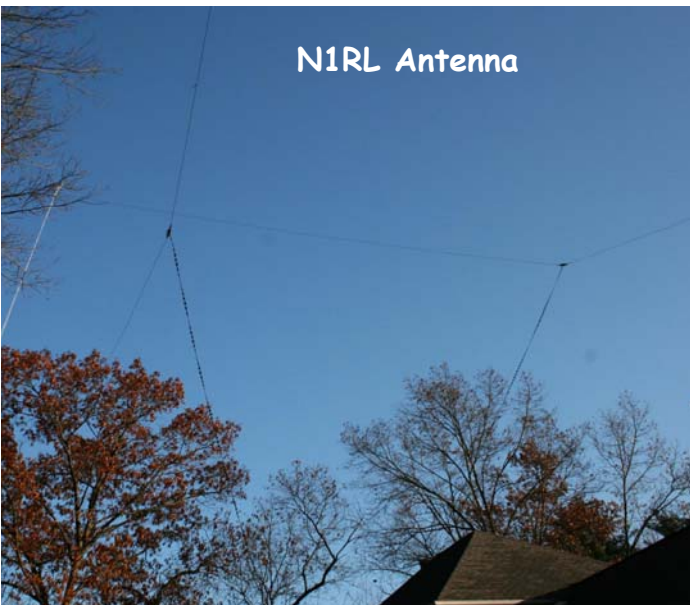
A two-element parasitic array with a stub-tuned element: The L/C circuit is tuned slightly higher or lower than the operating frequency to create either director or reflector conditions on the parasitic element. This array is optimized for 40-meters. Both elements here use balanced feeders, but you could cut the driven element "to length" and feed it with coax.

<BalunLineup.jpg>



Two Element Array

N1RL Antenna

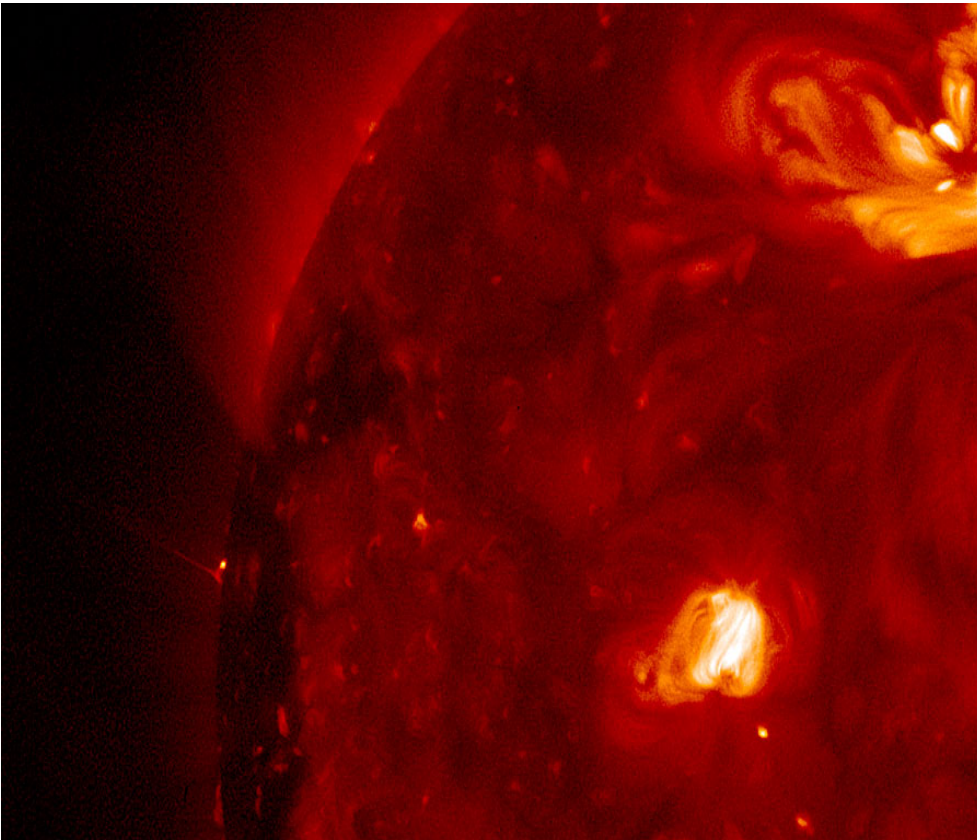


The lineup of baluns at the ends of my balanced feed lines from my backyard "antenna farm."

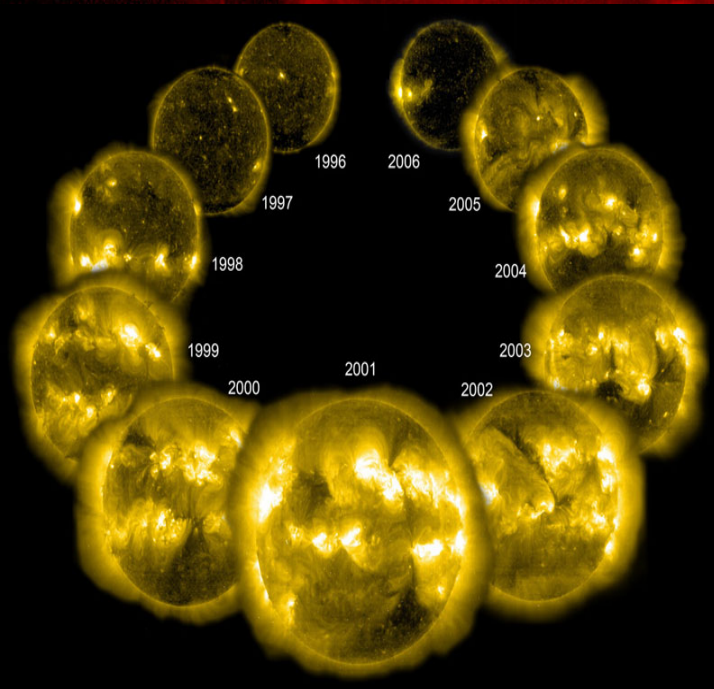
<N1RL-Antenna.jpg>

Part of the N1RL antenna farm: At left is a 260-foot center-fed Zepp. Perpendicular to it is a G5RV.

Explanation: What powers the solar wind? [Our Sun](#) is known to emit a powerful [wind](#) of particles with gusts that can even [affect astronauts and satellites](#) orbiting Earth. The cause of the [solar wind](#) has been debated for decades but is thought to be rooted in [Alfvén waves](#) generated by the ever changing [magnetic field](#) of the Sun. [Newly released images](#) from the Japanese [Hinode satellite](#) appear to bolster this hypothesis, imaging an average of 240 daily [plasma jets](#) that are excellent candidates to fuel the outwardly moving [Alfvén](#) waves. The jets and waves are themselves ultimately created by [magnetic reconnection](#) events, rapid events where lines of constant [magnetic field](#) suddenly move extremely rapidly, dragging [electrons](#) and [protons](#) along with them. [On the image](#) left, one such jet is visible in [X-ray](#) light. Bright spots show relatively energetic regions [elsewhere on the Sun](#).



A Complete Solar Cycle from SOHO
Credit: [SOHO](#) - [EIT Consortium](#), [ESA](#), [NASA](#)



Explanation: Every eleven years, our Sun goes through a solar cycle. A complete [solar cycle](#) has now been imaged by the sun-orbiting [SOHO spacecraft](#), celebrating the 12th anniversary of its launch yesterday. A [solar cycle](#) is caused by the changing [magnetic field](#) of the Sun, and varies from [solar maximum](#), when [sunspot](#), [coronal mass ejection](#), and [flare phenomena](#) are most frequent, to solar minimum, when such activity is relatively infrequent. Solar minimums occurred in 1996 and 2007, while the last solar maximum occurred in 2001. Pictured above is a SOHO image of the [Sun](#) in extreme [ultraviolet light](#) for each year of the last [solar cycle](#), with images picked to illustrate the relative [activity](#) of the Sun.

New England Area Ham - Electronic Flea Market *** DATES *** 2008 P 1 of 2

All events are Ham Radio/ Electronic related except ~ _____ ~

2008	Contact	Source
~~~~~		
2 Feb Chelsea ME AARA @Crystal Falls		Bill K1NIT 207 623 9075 A+
16 Feb Marlboro MA AARC @Intermediate Sch		David 508 357 2273 A
17 Feb Westford MA Radio 39 Antique @Regency \$10@8		Cindie ARC 866 371 0512
23 Feb Milton VT RANV @HS \$5@8		Mitch W1SJ 802 879 6589 W+
24 Feb Hicksville NY LIMARC @LevitHall \$6@9\$20/T@7		Richie K2KNB 516 694 4937 W+
8 Mar FeedingHills MA MTARA @176Garden \$15/T@7 \$5@9		Cindy K1ISS 413 568 1175 W+
15 Mar Pomfret CT ECARA @Comm Sch		Paul KE1LI 860 928 2456 A+
30 Mar Southington CT SARA @HS \$5@8 \$20/T@6:15		Chet KA1ILH 860 628 9346 F
30 Mar Henniker NH CVRC @Comm Sch		Jim NS1E 603 428 7436 A+
4,5 Apr Lewiston ME AARC ME Conv @Ramada		Bill N1KAT 207 782 4862 A+
5 Apr Londonderry NH IRS @Lions Sellers\$15@6 \$3@8		Lynne KB1FEM 603 421 0940
6 April Framingham MA FARA @Keefe Sch \$25/T@7:30 \$5@9		Bev N1LOO 508 626 2012
13 April LaGrangeville NY M+BARC @TymorePk		Jim K2JIM 845 427 2702 A
19 Apr Manchester NH NEAntqRC @BingoCtr \$15@7:30\$5@8:30		Charlie 603 898 4821 F
19 Apr S Portland ME PAWA @AM Legion \$5@8 \$10/T@6:30		Mike N1GRO 207 797 6584 W+
20 April Cambridge MA	FLEA at MIT	Nick 617 253 3776
	Third Sunday April thru October	

Meeting Location:

Meetings are held at the Feeding Hills Congregational Church, 21 North Westfield Street, Feeding Hills, MA 01030.

The church is located across from a Pride gas station.

Parking is in back of the church.  
Access is HP accessible.

Talk-in is available on the 146.94 repeater.

**Next Meeting:**

**Friday Night**

**February 1, 2008**

**7:30pm**



The Hampden County Radio Association  
P.O Box 562  
Agawam, MA 01001



PLEASE HAND CANCEL