



PARTicles

The newsletter of PART of Westford, MA – WB1GOF

September 2011

President's Column

- *Andy Stewart (KB1OIQ)*

After a lot of work, all of the QSL cards have been mailed for the K2H special event. Many thanks to all of you who helped: John (W1JMA), Alan (W1AHM), Rich (AB1HD), Rick (W1RAG), and Charlie (K1PUB). We mailed about 300 cards over the last month.

The registration for the Lantern Battery Challenge is happening *now*! If you are interested, please contact NVARC (Nashoba Valley Amateur Radio Club) before it is too late.

I am looking for volunteers to provide amateur radio communications support for the Grace Race in Chelmsford. This 5 mile race includes about 300 walkers and runners, and is held annually to raise money for the orphans in Kenya. The event will be held on Saturday, October 1st, 2011, from 9 AM to about 1 PM. If you play your cards correctly, you can have breakfast with the club and still make it to the event on time. Volunteers need to have a 2m HT, an extra set of batteries, proper clothing for whatever weather we have on that day, transportation to/from the event, and a desire to serve. If you are interested, please send email to kb1oiq@arrl.net.



Please note that NEAR-Fest is approaching! The dates are Friday, October 14th and Saturday, October 15th.

You won't want to miss the next PART meeting, which will be held on Tuesday, September 20th, at 7:30 PM at the Westford Police Station. Our guest speaker will be Terry (KA8SCP), who will talk about ARES, RACES, and Skywarn. This promises to be a great talk, as Terry has many years of

voluntary service to the community in these areas. Thanks, Terry!

During that meeting, we will also have our annual election of officers. This year, none of the offices are being contested, and all of the current office holders are running for re-election: Andy (KB1OIQ), President, Rich (AB1HD), Vice President, Kim (K1ZA), Secretary, and Alan (W1AHM), Treasurer. At our most recent Board of Directors' meeting, we appointed Rick (W1RAG) as the next Director-at-Large. I would like to thank all of the officers for their efforts during the previous year!

I have always wanted to bring my portable QRP station to Bartlett Park in Chelmsford. This past weekend, the weather was sunny and about 60 degrees and it seemed like the perfect day to do QRP in the field. My original goal was to contact people as part of the New England QRP Afield contest. I parked behind the library and brought my setup into the park. After about 20 minutes, I was on the air with my K1, a NorCal doublet antenna, root beer and beer nuts, and my paper log book (I put it into the computer at home).

After about 30 minutes, I was visited by Allison (KB1GMX), Evelyn, and Bob (W1FDR). We chatted for probably 45 minutes, and when they left, I tried to make some QSOs. The 40m band was dead, and the 20m band was full of CW contesters (not NEQRP). Since I couldn't find the NEQRP folks, I decided to make any QSO I could get. I went to 17m and heard somebody calling CQ at a speed that I could handle (about 12 wpm). I called the station and had a short QSO with Paul (G4AFU), who gave me a 339 signal report (he was 599).

Unbeknownst to me, while I was engrossed in that QSO, Bob (W1FDR) had

sneaked back into the park, and was making a video of me while operating (!). At the end of the QSO, I came up for air and noticed



Bob aiming a camera at me. I thought he was taking photos but he was making a video. I joked about him putting it on YouTube, but in fact he did exactly that! Go to YouTube and search for KB1OIQ if you are interested in seeing the short video.

I heard many other stations, some of whom I could copy, but almost all of them were involved in a contest. I made one more QSO with Ken (N4OI) in North Carolina on 30m and packed up the equipment around 3 PM. It was a relaxing 4 hours of fun in a nice park in Chelmsford, which is not used by many people.

73 de Andy KB1OIQ

Upcoming PART Meetings/Events

September 20th, 2011

- PART Meeting. 7:30 -9 p.m. Emergency Communications in Eastern Massachusetts by KA8SCP

October 1st, 2011

- PART monthly breakfast. Westford Regency. 8-10 AM (\$14/\$9; kids: \$8 – see article below)

October 1st, 2011

- Grace Race. Chelmsford, 9am-1 pm contact Andy-KB1OIQ

October 18th, 2011

- PART Meeting. 7:30 -9 p.m. Westford Police station

October 31st, 2011

- PART Pumpkin Patrol 6:00 -10:00 p.m. muster at Westford Police station

Treasurer's Report

PART Treasury 19-July-2011 thru 12-August-2011

	General Fund	Repeater Fund	Checking Total
Old Balance	\$3,209.58	\$456.82	\$3,666.40
Income	\$103.00	\$135.00	\$238.00
Expenses	(\$238.67)	(\$3.00)	(\$241.67)
New Balance	\$3,073.91	\$588.82	\$3,662.73

PART Membership Demographics as of 6-September-11

	Households (New + Renew)	Individuals (New + Renew)
Full (\$25)	38 (11 + 27)	38 (11 + 27)
Senior (\$15)	23 (2 + 21)	23 (2 + 21)
Family (\$30)	8 (1 + 7)	18 (2 + 16)
Student (\$15)	0 (0 + 0)	0 (0 + 0)
Associate (\$10)	0 (0 + 0)	0 (0 + 0)
Grand Total	69 (14 + 55)	79 (15 + 64)

Latest new members:
Robert/KB1VUU (Dracut)
Ron/KB1UMH (Medford)

* To pay dues *

PART, P.O. Box 503, Westford, MA 01886-0015

-or-

Meeting, Westford P.D., 7:30PM, Tuesday, 20-Sep'11

Upcoming Events

- Every Sunday, 8 PM – PART Net on 146.955 repeater
- Every 3rd Tuesday, 7:30 PM – PART Meetings at Westford Police station
- Every Wednesday, 6 AM, Owl Diner Lowell – Breakfast
- Every 1st Saturday, 8 AM, Regency Inn Westford – PART Monthly Breakfast
- NEAR-Fest Friday, 14-Oct'11 and Saturday, 15-Oct'11
Buyers \$10 for Fri+Sat
<http://near-fest.com/index.php>
Deerfield Fairgrounds, 43 Stage Rd. (Rt. 43), Deerfield, NH
- PART Pumpkin Patrol, 6-10PM, Monday 31-Oct'11
See article below for details, contact Terry KA8SCP@WB1GOF.org

Monthly PART Breakfast

Don't forget the monthly PART breakfast the 1st Saturday of each month at the Westford Regency Inn at 8 AM. The full hot & cold buffet breakfast costs about \$14 (includes tip) per person, a cheaper, lighter fare is available for adults and children. **NOTE: PLEASE let the folks who are settling the bill with the staff know whether you had a full or continental breakfast!**

Monthly Breakfast Update

- *Andy Stewart (KB1OIQ)*

It turns out that I miscalculated the price of the a-la-carte breakfast. The hotel charges us \$6.95, and I forgot to add the 18% gratuity and the 6.25% tax. Therefore, I will need to collect \$9.00 (rounded up slightly) for the a-la-carte breakfast, instead of the \$7.00 that I had been collecting previously.

The full breakfast is $\$10.95 + 18\% + 6.25\% = \14.00 (rounded up slightly). This price is unchanged. I'm showing the math for completeness and full disclosure.

I never noticed the problem until last month when I came up \$3.00 short on the collection. I think 5 or 6 people had ordered the a-la-carte breakfast, which is more than any previous month.

I apologize if the correction of my mistake causes any inconvenience.

Summary:

continental breakfast: \$9.00 (new price)

full breakfast: \$14.00 (same price)

kids breakfast: \$8.00

I look forward to seeing you at the next PART monthly breakfast, coming soon.

*Next PART Meeting – September 20th
7:30 PM
– Westford Police Station
Emergency Communications*

Repeater Nets

146.955 Nets – There are a number of nets that are regularly scheduled on the 955 repeater.

- Sunday night at 2000/8:00 PM Sunday Night PART Net – every
- Sector 1C RACES Net – this net occurs the 1st Monday or every month (except when it is a holiday). Skywarn and ARES Nets – these nets are spontaneous when local conditions warranted.

NOTE: You can LISTEN ONLY to this repeater audio by linking to this URL:

<http://www.radioreference.com/apps/audio/?feedId=6253>

442.450 D-Star Nets – There are a number of nets that are regularly scheduled.

- Sunday 8:00 PM [Ozark Mtn D-STAR Net](#) – Reflector 001C
- Tuesday 8:00 PM [New England Amateur D-STAR Net](#) – Reflector 010C

NOTE: The Port B node (442.450) is connected to [REF010C](#) Mon – Fri from 10:00 am until 3:30 pm. The Port C node (145.330) is connected to [XRF019B](#) usually 7x24 unless changed by users.

Users can LISTEN ONLY to D-Star Reflector 10C by linking to this URL:

<http://www.radioreference.com/apps/audio/?feedId=5031>

Public Service

Pumpkin Patrol

As we have done for many years, PART will once again be providing the Pumpkin Patrol service to the Town of Westford. Many of you are veterans and others may be volunteering for the first time... whichever you are... thank you in advance for your help!

Pumpkin Patrol involves the use of Amateur Radio volunteers providing additional eyes and ears to the Town of Westford during the annual Trick or Treat event. Our purpose is to observe and report any potential safety concerns back to the PART Pumpkin Patrol Net Control Station which will be located at the Westford Police station. A report from one of our patrols will get handed off to the Westford PD dispatcher and addressed by the Town's public safety services. Our role is ONLY to report what we see and provide input to our Town's public safety departments.

We normally require 5 - 8 radio operators per "shift" that will patrol various geographical sections of town. Maps and a checklist of locations to watch will be provided when you check-in for your assignment. Check-in occurs at the Westford Police station where we record your call sign and your vehicle information. You do **NOT** need to be a resident of the Town of Westford to volunteer, but a basic familiarity to the town's geography is a plus!

We have quite a few new hams and club members this year. If warranted, a meeting prior to the event may be scheduled. This will give our new folks and veterans a chance to interact and become comfortable with the operation.

The normal time for Trick or Treaters' is 6 PM until 8 PM. Our activities have varied over the years, but we normally will run the operation from 5:30 PM until 10:00 - 11:00 PM. If the weather is lousy, the net closure time will be adjusted accordingly. We try and accommodate every individual's schedule, we



have run with 2 shifts in the past... an early and a late shift. We will accept your offer to assist at any time throughout the course of the evening.

The plans are to use the WB1GOF 2 meter repeater, 146.955 (PL 74.4), for the entire event. So all a volunteer will need is a radio capable of operating on that frequency. A vehicle will help too... but if you don't drive and want to ride shotgun with another ham, which can be accommodated as well. If you'd like to do a bike or foot patrol, please contact me and we could talk thru that kind of an operation.

Feel free to drop me a note with any questions and/or if you would like to volunteer. Pass this along to others who may be interested. Contact Terry-KA8SCP (via email preferably) ka8scp@arrl.net

Grace Race

On Saturday, October 1st, from 9 AM - 1 PM, the Grace Race will take place in Chelmsford. This road race includes runners and walkers on a 5 mile course in the vicinity of the Rt. 129 / Rt. 3 interchange. This is a relatively small road race, with 200 - 300 participants.

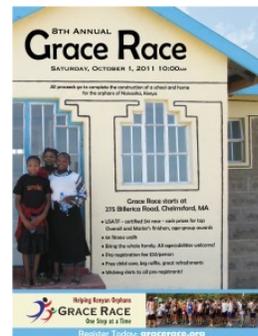
I am looking for 6 - 12 volunteers to help with communication support for this event.

Here's what you will need:

- your own 2m HT and an extra set of batteries
- an orange safety vest if you have one (we can probably loan you one for the event)
- transportation to/from the event
- a desire to help!
- know how to program your radio for the WB1GOF repeater and a simplex frequency

This event will take place regardless of the weather, but we're hardy New Englanders, so this should not present a problem.

If you are interested in helping, please send me an email to Andy Stewart KB1OIQ@ARRL.net



Greater Boston Net Directory

Daily 5:30 pm	Eastern Mass/Rhode Island Phone Net (NTS)	3.915
Daily 7 and 10 pm	Eastern Mass/Rhode Island CW Net (NTS)	3.658
Daily 8 pm	Eastern Mass 2M Traffic Net (NTS)	145.230 (PL 88.5)
Daily 8 pm	Slow Speed CW Net	28.160
Daily 10:00 pm	Heavy Hitters Traffic Net (NTS)	MMRA-linked repeaters: 146.610, 146.670, 146.715, 146.820, and all 222 and 440 repeaters
First Mon 8:30 pm	EMA Section ARES Net	146.610 and all MMRA links
Mon 9 pm	BARC Club Net	145.230 (PL 88.5)
Tue 8 pm	MMRA Club Net	146.610 and all MMRA links
Wed 8 pm	Wellesley Amateur Radio Society Net	147.030; 444.600 (PL 88.5)
Wed 9 pm	HHTN Swap Net	146.640
Thu 8:30 pm	AMSAT Net	146.640
Sat 9 am	Northeast SATERN Net	7.265
Sun 9:30 am	Yankee SSB Net	50.275
Sun 8 pm	Algonquin Amateur Radio Club Net	446.675 (PL 88.5)
Sun 8 pm	Westford PART Net	146.955 (PL 74.4)
Sun 8:30 pm	NSRA Net (with Newsline)	145.470

Member Contributions

Did you lose your cable TV due to Hurricane Irene?

- *Rich Crisafulli (AB1HD)*

Like many others, I lost power soon after Irene hit. When the power was restored, the cable TV was no longer working. Back in 2009 when the switch was made to DTV (Digital TV), I bought a digital TV converter box and was given a homebrew yagi (pictured right) that was a spare by a local Ham. I hooked it up to our TV and was able to watch all the major stations plus a few others.



Newer televisions have the digital converter built in, so depending on the age of your set, you might only need a DTV antenna.

Instructions for this antenna can be found at <http://www.wa5vjb.com/references/CheapYagi4HDTV.pdf>

If you'd rather buy a DTV antenna and/or if you need a DTV converter, they can be found at Wal-Mart or online at Amazon.com

Riding out the Storm at KB1MGI, KB1LQC, KB1LQD QTH

- *John Salmi (KB1MGI)*

We were without power for 26 hrs not to bad at all.

We used a small 1400 watt generator. The generators first priority was to power the sump pump, refrigerator and a light.

The location of our house is protected by a grove of trees and the hill to our south from the wind. We only had small branches break off the trees. During the heavy rains our street flooded with about a foot of water and our back yard started to flood with about 6 inches of water in the low section. As the heavy rains fell I could see the ground water rising up in the sump pump hole.

I have two sump pumps, the main pump is a heavy duty pump and I have a smaller pump that pumps less gpm just above the main one as a backup if the main pump failed. What I found out was that the main pump would bog down the small generator when it started. So I switched over and used the smaller backup pump to do the pumping. Having a small 1400 watt generator can supply you with basic power needs. We all need coffee, Wow we found out that a electric coffee maker draws a lot of watts. It tripped the breaker on the generator. So we would unplug the refrigerator to make coffee. We also used a large Thermos bottle to keep the coffee hot.

The heavy rains did not last too long here so when the sump pump stopped pumping. I was able to power up the Verizon FIOS and the wireless internet and a TV and we were able to watch the news and weather reports. Our neighbor has Comcast and he powered that system up with his generator but it would not come on to watch TV.

Cordless house phones don't work during a power outage. If you have a hard wired phone that should work and if you using Comcast or Verizon FIOS phones their backup batteries will only last 8 hrs or so. Another thing we did was to switch our house phone over to transfer all house calls to my cell phone using the #72 on #73 off feature from the house phone.

Flooding

From what I saw with the flooding around my house and how fast the water was rising we lucked out. The heavy rains did not last long to cause major damage. If we received the rains that that caused all the damage out west and up north of us I could only imagine how many flooded basements and other damage there would of been in our area, and no power to run any pumps.

HF Bands During the power outage

Brent KB1LQD hooked out some batteries to the FT-857 and found no noise on the bands it was nice and quiet. All the electrical things that cause interference in the HF bands were gone. Brent made a few PSK31 contacts.

Planting Aluminum - Antennas for station NE1RD

- *B. Scott Andersen ~ Pelham, NH (NE1RD)*

Buying a new home is both exciting and daunting. After a quarter of a century of condominium living, NE1RD finds himself with an acre plus of land and endless opportunities for ham radio antennas. What should he erect? How should he choose? This brief article goes through some of that thinking and shows the work to date.

Surveying the new property

After visiting more properties than Santa Clause, Sandy and I finally found our dream house just North of the Massachusetts border in Pelham, New Hampshire. Our criteria for the home and the property it sat on were long and specific. We wanted an acre or more, flat topography, few trees, and on high ground. The paucity of trees would limit the options for wire antennas but would also mean no leaves in the gutters and no branches in the yard (or branches crashing through the roof!).

We found what we were looking for. The property is flat and has trees only along a narrow line in the rear, just enough, perhaps, for a dipole. The remainder of the land is suitable only for towers and vertical antennas.

Towers

If I were a younger man, or was more serious about the hobby I might consider a tower with a tribander for 10m-15m-20m on top. I have had the pleasure of working at a contest station (K1TTT in Peru, Massachusetts) and it was amazing. Having top-of-the-line antennas atop tall towers fed with good coax and spun with heavy-duty rotors gives access to the ham bands unlike anything a wires-only operator has experienced. It can be very exciting to hear Asia and the Far East booming in. I knew what I would be giving up by not erecting a tower but the idea of the big, shining aluminum structure in the back yard was tempered by the expense and maintenance problems of ownership.

Towers have a large visual footprint. They also have a large monetary footprint for those who own them. There is the cost of the permitting process to erect the structure, the cost of the tower itself, cost of the concrete base, the guys and anchors, and the grounding system. After that there is the cost of the antennas themselves and the rotors that turn them. Even if the tower was free (and I had offers for free towers) the other costs associated with the erection and maintenance worried me. Further, as I age I find I am more and more fond of keeping both feet on the ground. Climbing to the top of a 70-foot tower to fix a slipping rotor was not something on my bucket list. The money aspect and the fact that I'm basically a coward nixed the tower idea. So, what was left?

Verticals

Vertical antennas were the logical next option to consider. There are different types of vertical antennas. A quarter wave vertical has an element one-quarter wave high with a system of ground radials to reduce ground losses. Such antennas are typically for a single band but a clever system designed by SteppIR with

models called the “Biggir vertical” and “Smallir vertical” makes it possible to have the antenna support multiple bands. Instead of having a vertical radiator of a single length, the SteppIR system has a vertical section comprised of a hollow tube with a metal strip that can extend to differing lengths. If 20m is desired then the vertical radiator extends 16 feet 6 inches. If 15m is desired then a length of 11 feet is extended. A small housing at the base of the antenna adjusts the length and all this is managed by a computerized control box.

I strongly considered the Biggir vertical with the optional 80m coil. This would have given me support for all bands 80-6m with a single feed line. It would have required an extensive radial system (as does any quarter wave antenna). A minimum of 60 radials would be necessary to obtain the performance I desired. The resulting system would have a very low visual impact as only the gray vertical tube would be visible from the street. The radials are buried and the motorized system is at ground level. Two things kept me from pursuing this solution. The first is that it is a complicated, expensive, perhaps even delicate system with lots of things to go wrong. The Steppir controller could die, the motorized system used to extend or retract the tape could fail, the special copper beryllium strip used for the radiator could break or otherwise fail, or the control wires could fail forcing me to dig up the yard to rebury them. And, if this was the only antenna I had and it broke then I would be in sorry shape indeed! No, this seemed too much like putting all my eggs in one basket (and an expensive basket to boot). Those who have them love them. I just did not believe it was for me.

A second design for a multiband vertical was the now popular 43-foot vertical. The idea is this: choose a length that is not a half-wave of any ham band and then let a tuner do all the hard work. For best results the tuner should be placed directly at the feed point of the antenna. This system would still require a system of radial wires. Before getting too far into the research for this possibility I discovered that the take-off angle for the lower bands such as 40m and 30m might be acceptable for chasing DX but the take-off angle for the bands 17m and above would be very high.

Band	Take-off angle	Gain at 10 deg
17	43	-3.2 dBi
15	37	-5 dBi
12	32	-5.1 dBi
10	56	-5.6 dBi
6	65	-7.6 dBi

Table 1: Take off angles for a 43-foot vertical

(Stolen shamelessly from <http://lists.contesting.com/towertalk/2009-03/msg00745.html>)

Long distance communication requires low take-off angles for your signals and for the antenna to be sensitive to those low angle signals. As evident by the contents of Table 1, the computed take-off angle for the 43-foot vertical is very high on bands above 20 meters. The relative “deafness” of the antenna is also evident by the “gains” of anywhere between -3.2 dBi (that is, the antenna is 3.2 dB worse than that mythical isotropic radiator) and -7.6 dBi. Consider a common definition of an S-unit is 6 dB the “gain” for 10m is about a whole S-unit down from an isotropic radiator and heading towards two S-units down from a nicely hung dipole! This was not an antenna that would fit my needs.



Another type of antenna is a *vertical dipole* design sold by MFJ, Cushcraft, and others. Just as wire dipoles need not be fed in the middle (consider a Carolina Windom antenna, for example), vertical dipoles need not be fed in their center, either. In fact, it is easier to feed a vertical dipole antenna near one end (the end close to the ground and the base). If you feed a dipole in the center then the characteristic impedance is somewhere near 70 ohms (when the dipole is in free-space or something close to it). As you move off center the impedance goes up and it becomes more and more difficult to match that 50 ohms your transceiver is looking for. An end-fed system such as the one sold by Par Electronics would have a very high impedance. Par Electronics solves this problem by providing a box that serves both as the mount for the wire and for the matching transformer that converts the 50 ohms from the transceiver to the very high impedance of the antenna. A vertical dipole system has a similar box as shown to the right. Inside this box is a big transformer that converts the impedance presented by the vertical dipole to 50 ohms for the coax feed line and the radio.

Note the spikes coming out of the bottom of the antenna near the matching box housing. While the majority of the vertical element is one side of the dipole, the other side is comprised of a short segment of tubing and these two foot spikes that serve as a capacity hat, making the bottom side of the vertical dipole electrically longer (even if it is physically stubby).

The advantage of the vertical dipole of this design is that you can have multiple bands with one piece of coax and no moving parts. There are no tuners necessary as the antenna is resonant on all the bands it supports. These antennas are also much less expensive to deploy than either the SteppIR or 43-foot verticals because an extensive radial system is not needed. Vertical dipoles have no need of a radial system. Because of these reasons and several others, I selected this design for my backup and SO2R (Single Operator Two Radio) antenna. Specifically, I selected the Cushcraft R8 vertical dipole. The antenna has good performance at low take-off angles, which was the main thrust of my requirements.



More Vertical Dipoles

Vertical dipoles need not be fed in the middle. That said, there are vertical dipoles that are fed in the middle. Force-12 antennas (<http://www.texasantennas.com/>) has the Sigma series of antennas including the Sigma-40, a 24-foot tall vertical dipole for the 40m band, the Sigma-20 (for 20m), the Sigma-15 (for 15m), and the Sigma-10 (for 10m). Other models are also available for other ham bands.

The Cushcraft R8 (described above) covers 40m through 6m, but the 40m band is supported through a fairly hefty loading system that would likely deliver inferior performance to that of an antenna that is closer to full-size. It was never my intention to use the R8 on 40m. Instead, I planned on having a single band, high-performance antenna to cover 7 MHz. The Sigma-40 seemed to fit the bill. A photo of the Sigma-40 appears to the right.

A half-wave dipole for 40m would normally be made of two elements 33 feet in length. Since we are talking about vertical antennas here, this would mean the antenna would be a minimum of 66 feet tall. There are ways of reducing that height, however. One method is to use a *loading coil*. If one creates a dipole that is shorter than a half-wavelength then the antenna will have a capacitive reactance component to the feedpoint impedance. How do you get rid of that capacitive reactance? You put an

inductive reactance in the circuit to counteract it. That is why shortened antennas use loading coils. Loading coils are inductors that create inductive reactance to counteract the capacitive reactance caused by a radiator shorter than its nominal half-wave length.

Another method of reducing the overall length of an element of a dipole is to add a *capacity hat* to the design. A capacity hat is extra material that is not along the length of the radiator. This acts as a delay mechanism that makes the radiator look electrically longer. Again, this adds capacitance that can be eliminated by a counteracting loading coil.

In the case of the Sigma-40, both approaches are used. The elements are made shorter than 33 feet so there will be some capacitance reactance because of that decision. Additionally, capacity hats are added to each length of radiator on the dipole. These artifacts may be seen in the photograph as horizontal bars on both the top and bottom of the antenna. Loading coils are located in the center box. Since the antenna is shorter than a full-sized 40m design for a non-loaded half-wave antenna, the amount of *radiation resistance* (the resistance to current present because the antenna is doing the good work of getting our signal out into the universe) is lower than that of a full-sized antenna. To create a good match for 50 ohm coax and transceivers, a small matching coil is also present at the feed point to bring the impedance of the system up from close to 30 ohms to the desired 50.

The feed point of this antenna is in the center of the structure, half way up, inside the beige PVC cylinder. Ideally, the feed line should be routed at a 45 degree angle away from the antenna to avoid undesirable coupling.

Digging a hole and planting one



All of this is just academic unless we actually plant one of these things! Work began in the yard in mid-August of 2011. The first antenna to be erected was the Cushcraft R8. This antenna is heavy when assembled (23 pounds) and is over 28-foot tall. It works best when mounted above ground level approximately 6-8 feet.

I used a 10-foot galvanized pipe for the mast, burying a little more than 2.5 feet into a round hole (see the photograph to the right) leaving 7.5 feet above ground.

The hole was then filled with two bags of QuikCrete (<http://www.quikrete.com/>) that had been thoroughly mixed with water. That was allowed to set for four days. A long level strapped to the pipe ensured it was perpendicular to the ground. Ropes tied to cinder blocks held everything in place while the concrete cured.



The R8 was then assembled in the driveway where dropped parts were easier to find. The final assembled unit was carefully walked to the mast, bolted to the pipe, slid to the top, and secured. The results are shown below. Note the moon near the top of the frame.

Feeding it

Months before the house was purchased I ordered 1500 feet of BuryFlex (<http://www.davisrf.com/buryflex.php>) RG-213 class direct bury cable. A shallow trench was dug between the house and the three antenna positions planned for Fall 2011 installations: the Cushcraft R8, the Sigma-40 vertical dipole, and the Sigma-20 vertical dipole. The trench did not need to be “pretty”; it just needed to be deep enough to accommodate the several cable runs. Once the cables were laid the

trench was covered with soil. Nature will do the rest and by next year it will be difficult to find that trench again.

Because I am lazy I ran multiple runs of coax. There is a run directly to the three antenna positions and there are two additional runs of coax to the R8, which is in the center of the array. Should one of the coax runs fail I can easily route one of the spare feeds by digging a new short trench between the R8 and the effected antenna. I hope to never need to dig another long trench between the house and the array.

I used considerably more cable than I had expected. Had the run been a straight line between the antenna and the basement window I am using to enter the house my original planning may have been fine. However, the coax runs took a more circuitous route first entering under the fence, then under the deck, then up-and-over the stall under the deck used to house the lawn mower and garden tools, and then finally into the house. Each run probably required an extra 30-40 feet just to make all these extra twists and turns. My three rolls of 500 feet quickly became just one roll. After wiring the three antenna positions (including the two spare runs) I had used 1000 feet of coax!

Adding PL-259 connectors was made easy by a fantastic toolset from DX Engineering (<http://www.dxengineering.com/>) called the **Basic Coax Cable Prep Tool Kit - DXE-UT-KIT1-D (\$99)**. I purchased the basic kit that handles RG-213 size cable and the additional tools for RG-8X. The system comes in a very nice custom case.



The stripping tool first removes just enough material to precisely size the coax center conductor. The second end of the tool is used to remove the outer casing to expose the braided shield. When both cuts are made the coax is perfectly prepared to accept a PL-259 connector. In my zeal and excitement using the tools for the first time I rushed a bit, crammed the PL-259 connectors on the ends of the coax, and caused a short between the center conductor and the shield. Haste makes waste! I paid for my sins by standing in the rain with an ohm meter trying to figure out which connectors were installed improperly. Once I realized my mistake it was easily corrected with only a loss of a few feet on each end of the coax, a few destroyed PL-259 connectors, and a bruised ego.

Planting another: round two

The Sigma-40 is a hefty piece of technology. It comes with a square piece of aluminum ready for mounting in the ground. The drill was much the same as the one for the R8. Dig a hole. Place the mast into the ground and secure with ropes. Ensure the mast is vertical. Add QuikCrete and wait.



The square mast for the antenna extends only about a foot above the ground when installed. The round mast (shown in the photograph to the right) connects to the square mast with two large bolts. This provides a tilt mechanism that allows for the relatively easy raising and lowering of the antenna. Just remove the top bolt and one can walk the antenna down to the horizontal. I used the



phrase “relatively easy” because in reality the antenna is heavy enough and awkward enough, even with the fancy tilt feature, that such raising and lowering is best done with two people. Sandy and I did this together. I would walk the antenna up to the vertical position then she would hold it in place while I managed to feed the top bolt through to secure it.

The round aluminum pipe is not part of the bottom element of the antenna. There is an insulator on the top end of the pipe. This means the bottom of the antenna is about four feet off the ground. That should clear the top of the snow for all but the worst New Hampshire winters (I hope!).

Work to date and what remains

Two antennas are erected: the R8 and Sigma-40. Coax between the house and antenna positions have been run. This is very good progress but more is left to do. The R8 has temporary guys held with cinder blocks. This was good enough to keep the antenna together during Hurricane Irene but a permanent solution with buried anchors needs to be found. Once anchors are in place the rope system needs to be updated to have turnbuckles that would allow adjustment of the tension.

I have purchased a couple of ground rods but they are not pounded into the ground yet. There needs to be (at least) one ground rod per antenna and a bleeder resistor should be put into place to drain charge from the system. One might fear summer and its lightning more than anything winter can muster but I’ve seen static build-up on coax from snow squalls that caused arcing between the center conductor and shield! Getting this in place is a priority before winter hits.

I have completed (though not photographed) the installation of a wooden post near the Sigma-40 vertical. This post will allow a coax run from the center of the Sigma-40 antenna, down at a 45 degree angle, to a point a few feet off the ground where it can meet the long feed line heading towards the house. It is important to run the coax away from these vertical dipole antennas at a 45 degree angle so the coax does not couple with the antenna. I will use a piece of Dacron rope between these two points and “hang” the coax from it to avoid excessive strain on any of the connectors.

Finally, the Sigma-20 needs to be assembled and mounted before the snow flies. This will be my main 20m antenna. I also have Sigma verticals for 15m and 10m that will be installed next year. This gives me a full compliment of contesting band antennas for 10m, 15m, 20m, and 40m. I also have the R8 which is good on all those bands plus the WARC bands and 6m to use as an SO2R antenna. Finally, I may be able to run a wire dipole for 80m in the stand of trees behind the Sigma-40.



As a former condo owner, I can say without reservation: it is nice to have options!

Here is a view of the progress at NE1RD’s apprentice antenna farm as of late August 2011.

#



Pictured are Brent KB1LQD & Joe KB1SSA at the HRO Manufactures day on August 27, 2011. Brent was a winner of one of the ICOM door prizes. Nice!

How it all began - Net humor

In ancient Israel, it came to pass that a trader by the name of Abraham Com did take unto himself a young wife by the name of Dot. And Dot Com was a comely woman, broad of shoulder and long of leg. Indeed, she was often called Amazon Dot Com.

And she said unto Abraham, her husband, "Why dost thou travel so far from town to town with thy goods when thou canst trade without ever leaving thy tent?" And Abraham did look at her - as though she were several saddle bags short of a camel load - but simply said, "How, dear?"

And Dot replied, "I will place drums in all the towns and drums in between to send messages saying what you have for sale, and they will reply telling you who hath the best price. The sale can be made on the drums and delivery made by Uriah's Pony Stable (UPS)."

Abraham thought long and decided he would let Dot have her way with the drums. The drums rang out and were an immediate success. Abraham sold all the goods he had at the top price, without ever having to move from his tent.

To prevent neighboring countries from overhearing what the drums were saying, Dot devised a system that only she and the drummers knew. It was called Must Send Drum Over Sound (MSDOS), and she also developed a language to transmit ideas and pictures: Hebrew To The People (HTTP).

But this success did arouse envy. A man named Maccabia did secrete himself inside Abraham's drum and began to siphon off some of Abraham's business. But he was soon discovered, arrested and prosecuted for insider trading.

And the young men did take to Dot Com's trading as doth the horsefly take to camel dung. They were called Nomadic Ecclesiastical Rich Dominican Sybarites, or NERDS.

And lo, the land was so feverish with joy at the new riches and the deafening sound of drums that no one noticed that the real riches were going to that enterprising drum dealer, Brother William of Gates, who bought off every drum maker in the land. And he did insist on drums to be made that would work only with Brother Gates' drum heads and drumsticks.

"Lo," Dot did say, "Oh, Abraham, what we have started is being taken over by others!" And as Abraham looked out over the Bay of Ezekiel, or eBay as it came to be known, he said, "We need a name that reflects what we are." And Dot replied, "Young Ambitious Hebrew Owner Operators." "YAHOO," said Abraham. And because it was Dot's idea, they named it YAHOO Dot Com.

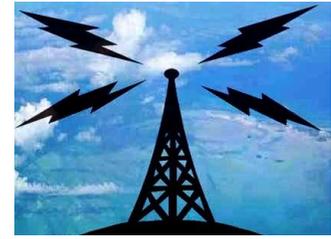
Abraham's cousin, Joshua, being the young Gregarious Energetic Educated Kid (GEEK) that he was, soon started using Dot's drums to locate things around the countryside. It soon became known as God's Own Official Guide to Locating Everything (GOOGLE).

And that is how it all began.

Repeater Information

Repeater Interference

The 146.955 repeater continues to see interference to existing conversations as well as at random quiet times throughout the day and night. The repeater interference committee needs your help in collecting data. If you hear any type of interference, please report the following info to "**repeater**" at "**wb1gof.org**":



- Time: When did the event happen?
- Observing location: Where were you? Were you mobile?
- Frequency: Input only (146.355 MHz)
- What you heard: Voices, tones, kerchunking or whatever.
- Signal strength: Either by ear (noisy, quiet or full quiet) or S meter
- Radio: To get an idea of the reporter's radio situation.

* Most important - what direction: How did you determine direction? This is the most essential piece of information. Even if it's an estimate as in "Roughly east" or "from the Northeast" it's useful. NEVER EVER reply or direct any thing to the sick person causing the interference. Because some of us have answered this person, he knows we are aware of him and that is what keeps him doing it. Also since you are communicating with a non IDing station you are operating just as illegally as he is. YOU ARE BROADCASTING! NEVER TALK ABOUT INTERFERENCE on air. NEVER

If you are interested in assisting in helping us identify the sources of interference, contact Terry-KA8SCP.

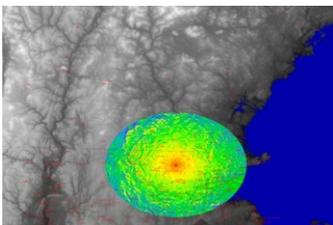
EmComm events and repeater use

Most everyone knows that the 146.955 repeater is used during times of emergency situations, drills and exercises. Skywarn and the monthly RACES drills are the normal events.

So what does this mean to those that are just looking for regular QSOs with other users? It means that if you are in a regular QSO and there is a significant weather situation that has been getting press/air-time lately, you can expect that if severe weather develops in our area, the folks from Taunton-WX1BOX may interrupt a QSO and ask anyone on frequency what may be happening weather wise. The BOX operator will probably ask for specific information, hail, wind damage, property damage from lightning or wind, etc. Please give him the information he needs or tell him that you've not heard of any such activity. You don't need to tell him it is sunny in Nashua!

There may come a time when an unexpected emergency situation arises. These will significant events that may affect life and property. This is where ARES/RACES activity may step in. Usually an NCS will interrupt a QSO and announce the situation and ask for a QSO to cease or to be "aware" of the possibility of priority calls/traffic. Please make sure you leave breaks between transmissions so stations with traffic can get in between QSOs. If there is enough traffic, it may be necessary for your existing/interrupted QSO QSY to another frequency. You should use your best judgment or check with the NCS on what he feels is best.

If you have any questions, please feel free to correspond with either Hugh-N1QGE (Westford RACES Officer and Skywarn NCS) or Terry-KA8SCP (regional RACES Officer and Skywarn NCS) . They will be more than happy to talk about these programs with you.



New additional repeater info is now available on the PART [website](#). Check out the links to the summit information as well as coverage and plot plans maps for the WB1GOF repeaters.

Also our PART/WB1GOF Forums are found at <http://wb1gof.net/forum/>

PART Gear

The PART Quartermaster has lots of great PART-ware for sale including mugs and shirts. You can get information how you can obtain your PART-ware at the monthly club meetings.

Club members are also encouraged to obtain an official PART badge from [The Sign Man](http://thesignman.com/clubs/part.html) (<http://thesignman.com/clubs/part.html>) PLEASE NOTE: There is a new PART badge available if you'd like to order one. Price for badge is \$15 which includes shipping and handling.



EmComm

RACES – The WB1GOF 146.955 repeater is used on the first Monday of every month (except federal/state holidays) for RACES starting at 1930 local time. If you are interested in being part of the local emergency communications team in your community, feel free to contact any of the following folks:

Terry Stader – KA8SCP, MEMA Region 1 RACES Officer
Hugh Maguire – N1QGE, RACES Officer, Town of Westford
Bill Ohm – W1OHM, RACES Officer, Town of Chelmsford
- We need radio operators that can pass messages on to the local emergency management directors in several towns in northern Middlesex County.

Skywarn - The WB1GOF 146.955 repeater is also used for reporting significant weather events to the National Weather Service from our local spotters. We expect to have a local Skywarn training class in 2010, more information as it becomes available. You can provide valuable information even if you have not attended one of the training sessions. Listen to the Skywarn Net Control Station for reporting criteria, when you have information that qualifies, please advise him with your report.

Situational Awareness – Recently, the Massachusetts Emergency Management Agency has asked the Amateur Radio community to provide situational awareness and disaster intelligence information within your local community via RACES, ARES and/or Skywarn stations. Significant events such as widespread power outages can be reported and by agencies such as MEMA to evaluate the scope of a blackout for example. Initially, you should try and contact RACES or ARES operators on the Westford 146.955 repeater to pass this information. More on this new program will be forthcoming.

PART Sunday Night Net – The PART Net each Sunday night is an IMPORTANT part of our regional EmComm function. With each station that checks in from the surrounding communities, we test our ability to communicate vital information to the ham radio community. Sure we announce club info but we can also communicate regional disaster news and serve as a “hub” for news of situations in our communities. The repeater is on a generator, so even if we loose power in the region, an HT with a supply of batteries will reconnect you to other local hams.



PARTicles © 2010, a publication of PART of Westford, MA – WB1GOF

This month's editor: Terry Stader – KA8SCP

PART official mailing address is:
PART, PO Box 503, Westford, MA 01886

Our website is: <http://wb1gof.org>
Contact us at: info@wb1gof.org

