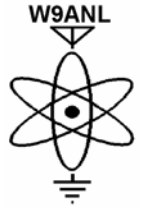


# RADIOACTIVITIES

## NEWSLETTER OF THE ARGONNE AMATEUR RADIO CLUB



Volume XLVIII, Number 11

November 2007

### Club Meeting

Unless otherwise noted, AARC general meetings are the second Tuesday of the month at the Argonne cafeteria at a table on the north end of the room. Any club member is welcome. To arrange for a gate pass contact Bruce Epperson at epperson@aps.anl.gov phone 630-252-3495 or Chuck Doose at doose@aps.anl.gov phone 630-252-6037.

### The Treasurer's Report

by Chuck KB9UMF

Members: East 18; Associate 40; Newsletter 6; Retired 13

Balances: Checking \$3,610.62; Cash \$0.00; ANL fund \$30.00

Distributed as: Club \$2,978.74; Repeater \$594.88, Newslite \$37.00

For the period August 1, 2007 thru October 31, 2007:

Income: Dividend \$5.64; Rptr \$1.11

Expenses: None

### REMINDERS

CLUB BREAKFAST: Always the 2<sup>nd</sup> Saturday of each month, 8:30 AM at:

***Old♦Country Buffet♦***

**59<sup>th</sup> Street and LaGrange Road in LaGrange**

CLUB NETS: Thru our Club Repeater 145.19.

SKYWARN NET: Mondays in season  
at 7 PM with Deni, W9DS.

THE CLUB'S 9PM NET: every Monday with  
Jack WA9FVP.

THE NIGHT PATROL: every night at 10:30 PM  
with Paul, W9FNM.

THE BREAKFAST CLUB: every morning at 8 AM.

THE NOONTIME NET: every weekday at noon.

### Mil's Corner for November

02	WB9THV	Joe	Downers Grove, IL
04	W9WJL	Charles	Madison, WI
20	W9QBH	Bob	Albuquerque, NM
28	WB9VUT	Fred	Plainfield, IL

### My First Aerial

by Deni W9DS

GOTHUM, Yes, I sent off to California a letter containing an order for the 160 to 6 meter, the V160. It was shipped and arrived at the local Berwyn station and the man who gave me the aerial told me the package had substantial damage and I was to fill out an insurance paper to get my money back.

It was a hassle between my uncle and me. He wanted to give me a Windom that he had built for field day operation, but I liked the Gothum advertising and spent the money for it. So, now I had to eat humble pie. Ok, I'll take the Windom.

I got the broken vertical Gothum home. I had an element broken in half. The original had a 7/8 tube that was placed into a 1-inch tube (at the) slit end making an overall length of 23 feet. The 7/8 pipe was busted, but the shipping company paid me back in full with a check sent to my home in Timber Lake Estates. I did save the coil and used the 7/8 section on 20 meters. It was mounted on a fence post. Placed right outside my window, it took very little inductance to get it to work. Tap on the coil was done with alligator jaws soldered to the center of the 50 ohm coax line, ground shield at ground stake.

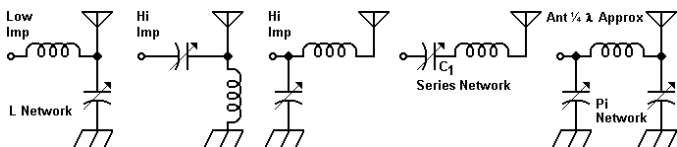
So I ran this for a few years, setup for AM back then. I was shocked to stumble over the Gothum instruction and operation sheet. Just filled one side of a sheet of paper that was blank on the back. So, here are the instructions exactly as printed in 1963. Now I placed my order in 1961, I guess it was an error by Gothum or I picked it up from somebody at a hamfest or one of the ham stores that dotted all over Chicagoland. Sooooo!

Instructions for vertical antenna (read through):

1. Insert the 7/8" tube into the 1" tube (at the slit end), making an overall length of 23 feet. Tighten down holding clamp.
2. Install the loading coil at the bottom of the vertical antenna by passing the clamp bolt through the loop at one end of the loading coil and tightening down.
3. Mount aerial in vertical position, using four metal mounting straps (furnished) to hold in place. Mounting straps are placed at bottom, spaced 2 feet

apart. Other holding devices that may be used are: TV brackets; U-bolt fittings; clamps; or insulators. Aerial may be mounted a few inches above ground, or even on a tower, provided aerial is not grounded. If aerial is mounted against conductive material, insulating tape (or insulation) may be wound around tube at mounting strap location. This will effectively insulate aerial from ground. In high wind areas, a dowel or bamboo section can be put in the tubing to strengthen it.

4. Feed output of transmitter (or pi-network or antenna tuner) to the vertical aerial with 52 ohm coax transmission line, either RG8U or RG58U. 27 ohm coax line can also be used, with its losses. An alligator clip should be soldered to the inner conductor of the coax, and the best loading position determined by attaching the alligator clip first to the free end of the loading coil and checking the loading of the transmitter. With pi-network or antenna tuner output, no adjustment is usually needed. If adjustment is needed, simply move alligator clip up the coil, a turn at a time. If no satisfactory adjustment can be reached, coaxial line can be trimmed until perfect loading is achieved.
5. The outer shield of coaxial line should be well grounded at aerial site, and also at the receiver and transmitter. If it's not convenient to install a good ground system, then a connection to a cold water pipe or steam radiator will do. Radials not required.
6. The V160 operates on 160 meters by using the entire coil; on 80 by using about 18 turns; on 40 by using about four turns. The V80 operates on 80 meters by using the entire coil; on 40 by using 4 turns. The V40 operates on 40 by using the entire 40 meter loading coil. With any vertical antenna, the whole loading coil is by passed (not used in the circuit) to operation 20, 15, 11, 10, and 6 meters.
7. Some transmitters have loading problems on some bands, due to design limitation. To overcome loading problems, or to be able to load vertical on any band form the radio shack without changing loading coils tap use one of the following combinations of simple turners, with value of about 150mmfd. For capacitors and 100 micro henries for the coil.



8. Some suggestions of getting proper loading if any difficulty is encountered: change length of coax line and particularly avoid too short a line; change height of antenna above ground; change location of antenna if it is being detuned by surrounding objects; make

sure aerial is not shorted or grounded; make sure you have a good ground connection for outer coaxial braid line; use one of the tuner combinations shown above or a commercial tuner.

Copyright 1963 Gothum

## My AEA Isopole

by Deni W9DS

This aerial has been a good one for all the years from the summer of 1994 to the summer of 2007. Now I sport a Diamond 3-5/8 wave aerial at that same 20 foot level at the same location on my home the SWC of home and thanks to N9QGU who helped me giving up one of his Saturday mornings at this QTH. I just got the cable to the rig this Sunday morning. Now to the Isopole.

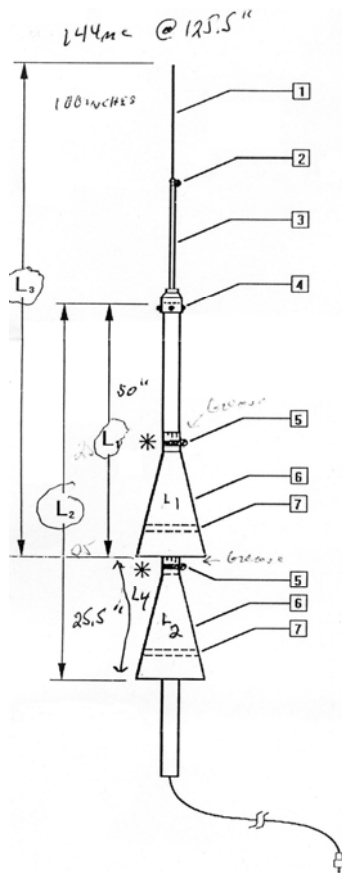
The AEA Isopole was bought at a Cicero, Illinois hamfest. It was used daily as was the Ringo Ranger, its predecessor. Putting the Isopole together wasn't easy because of the 2 skirts or cones it uses. It is mounted on a 1 1/4 inch pipe some kind of conduit and it had to be exactly eight feet long. I had to use gloves to avoid sheet metal cuts. Where these two cones contact the 1 1/4" pipe the cone neck has four cuts and is clamped to the pipe. Use a silicone grease, but before that prepare the area by scraping the AEA and apply petroleum jelly or the silicone goo.

The kit from AEA contains only the aerial parts; tip rod, 2 small stainless steel hose clamps, upper tube and matching network assembly, 3 1/4" x 20 machine screws, 2 large stainless steel hose clamps, 2 decoupling cones, and 2 expanded polyethylene cone stabilizing discs which keep cone vibration down.

The assembled cone should be at DC ground, noted by measuring a short between the upper element and the mast. Run 50 ohm coax through 8 foot pipe into PL258 female upper rod use RG-8 coax length longer than 20 feet. Tuning is moving the two cones into their positions relative to the spacings listed at 146 MHz, and they are shown on the diagram. Cone bottom opening is 6 1/2" rivets number 3 spaced 3 inches from top then 10 1/2" and at 10 1/2" leaving line hand a quarter left top opening is 1" & with 6 tabs cut 1 1/2 inches long so as to be able to slide cone on 1 1/4 mast up or down to make it work at 146 MHz.

You will need a measuring tape or yardstick, flat bladed screwdriver, nutdrivers 1/4" and 5/16", scraper to shine things up if rusty, and silicone grease.

P.S. My Diamond is way off 2 meters to the high side. I call Diamond in the morning. I better keep my Isopole.



IsoPole 144			
For MHz	L1	L2	L3
137	55" 1.40m	80.5" 2.04m	110" 2.79m
146	50" 1.27m	75.5" 1.92m	100" 2.54m
151	48" 1.22m	73.5" 1.87m	96" 2.44m
153	47" 1.19m	72.5" 1.84m	94" 2.39m
158	44" 1.12m	69.5" 1.77m	88" 2.24m

**Parts List:**

1. Tip Rod
2. Small Stainless Steel Hose Clamp
3. Upper Element Tube and Matching Network Assembly
4. 1/4" x 20 Machine Screws (qty. 3)
5. Large Stainless Steel Hose Clamp (qty. 2)
6. Decoupling Cone (qty. 2)
7. Expanded Polyethylene Cone Stabilizing Disc (qty. 2)

**Equipment Needed:** Mast, recommend use of low-cost steel 1-1/4" TV mast available at most hardware, TV or electronics stores. Mast must be a minimum of 8' long for 137 MHz (no maximum length). Minimum inside diameter is 0.75" and maximum outside diameter is 1.275".

**Tools Needed:** Accurate measuring stick or tape; Flat-bladed screwdriver; nut drivers: 1/4" and 5/16"; flat file (for removing paint from mast); silicone grease or petroleum jelly.

**\*Scrape or file away any paint where the decoupling cone contacts the mast.**

**NOTE: The IsoPole is DC grounded. A short between the upper element and the mast should be evident with an ohmmeter.**

**Cush Craft Ringo Ranger**

by Deni W9DS

It was Feb 9, 1990 the time that I bought mine. Purchased second hand from an estate through a friend who was handling the sale. The aerial covers 135 MHz to 180 MHz by adjusting vertical element and tuning rod. By the way, I remember an early article featuring this exact aerial before it was modified. This tuning rod was heavy gauge wire that attached to the base aluminum pipe and from the bigger short base pipe 1 1/4" OD which would attach to a mast. There was another short thin tubing for frequency adjustment, which is raised or lowered for your frequency range. The feed point is on the wire that is adjusted on a flange soldered to the 1 1/4 pipe. The wire is attached to the inner tubing at the bottom and a shorting bar goes from coax center to the wire and slides to adjust the SWR for maximum forward power. Then tape coax cable to outside of mast every 3 feet or so.

The conversion kit added gain it is 3 half waves in phase by using a 1/8 wave phasing stub. The parts list included:

- 8-32 x 5/8" stainless steel machine screws
- 3/8 plastic cap for top 1/2" and 5/8" telescope clamps
- 1/2" x 21" 0.049 wall aluminum tubing
- 1/2" x 24" 0.049 wall aluminum tubing
- 3/8" x 35" 0.028 wall aluminum tubing
- 10 1/2 inch long formed aluminum phasing stub

**Tuning Instructions:**

Mount bridge at aerial for tuning. Set your 144 MHz rig to your favorite operating range center. Now adjust transmitter and bridge for maximum forward power. Check the SWR or reflected power with bridge in reverse position. Move away from aerial when making adjustments.

If SWR is high, loosen tuning rod clamp adjust rod slightly in either direction. If SWR drops, adjust to no reflected power showing on the bridge.

My operating habits were many I used it on a 20 foot mast at the SWC of the home. After a while my signals were dropping off. I brought the aerial down took elements apart. All connections contained white powder residue, so what was I to do? Cleaned up and out as much of that powder by tapping each single element as possible. Then wiped all aluminum ends after shaking it. Then I bundled all of the elements together. It was sold at an earlier Sandwich, Illinois hamfest about 1994. Then at the Six Meter hamfest in Cicero, Illinois hamfest I bought my AEA Isopole, but that's another story.

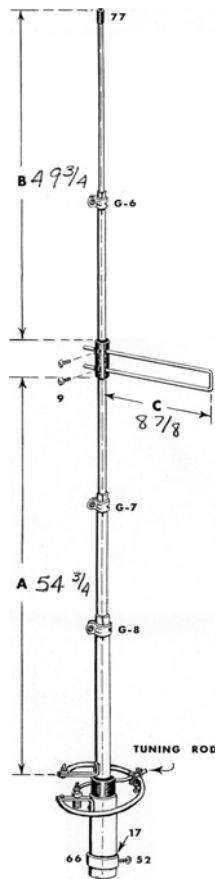


CHART 1 *1/8" = 1mm*

Freq. MHz	Dimension A	Dimension B	Dimension C
135	59-1/2"	54-1/2"	9-3/4"
137	58-3/4"	53-3/4"	9-1/2"
140	57-1/2"	52-1/2"	9-1/4"
142	56-3/4"	51-3/4"	9-1/8"
145	55-1/2"	50-1/2"	9"
147	54-3/4"	49-3/4"	8-7/8"
150	53-1/2"	48-3/4"	8-3/4"
152	52-3/4"	48"	8-5/8"
155	51-3/4"	47"	8-1/2"
157	51"	46-1/4"	8-3/8"
160	50"	45-1/2"	8-1/4"

## Simple 8JK Beams

by Deni W9DS

A simple directive array for 7 to 50 MHz is the Flattop or 8JK Beam. It has a bidirectional gain falling between 4 and 6 db. Plus, the 8JK makes a low angle radiation and for maximum skip on multi-hop DX even at low heights above ground, about  $\frac{1}{2} \lambda$ . The original 8JK design with 2 single dipoles fed 180° out of phase was difficult to match due to low impedance at the feed point, but today we might be able to match that low impedance.

The twinplex employing 3 wires folded dipole raised impedance to 275 ohms, a good match for 300 ohm line, when cut for 7 or 14 MHz. Making folded dipoles from 300 ohm twin lead may then be fed by 72 ohm coax line. The aerial can be shortened 30% by folding the ends inward without hurting array performance. This allows a 14MHz, 26 by 11 foot turning area and 13 foot turn radius. Since aerial is bidirectional permits only 90 degree rotation, and not 180 degrees.

Freq	dipole Length	length of phasing Section	distance between dipoles
7.0	66' 9"	25' 8"	22'
7.2	65' 0"	25'	22'
14.0	32' 4"	12' 10"	11'
14.2	32' 3"	12' 9"	11'
21.0	22' 3"	8' 6"	8' 3"
21.3	21' 11"	8' 5"	8' 3"
28.5	16' 5"	6' 4"	5' 6"
29.0	16' 0"	6' 3"	5' 6"
50	9' 4"	3' 7"	3'
52	9' 0"	3' 6"	3'

### An Old Farmer's Advice:

- Good judgment comes from experience, and a lotta that comes from bad judgment.
- If you get to thinkin' you're a person of some influence, try orderin' somebody else's dog around.
- The biggest troublemaker you'll probably ever have to deal with watches you from the mirror every mornin'.
- Always drink upstream from the heard.

<p><b>ARGONNE AMATEUR RADIO CLUB</b>  P.O. Box 741  Lemont, IL 60439</p> <p>————— <b>Officers</b> —————</p> <p><b>PRESIDENT</b> Bruce Epperson KA9H  <b>VICE PRESIDENT</b>  <b>SECRETARY</b> Kurt Boerste KB9ZFR  <b>TREASURER</b> Charles Doose KB9UMF  <b>DIRECTOR</b> Dick Konecny K9IB  <b>DIRECTOR</b> Torben Lauritsen KF9MI  <b>DIRECTOR</b> Charles Doose KB9UMF  <b>DIRECTOR</b> Tim Smith N9UEB  <b>DIRECTOR</b> Dale Travis AG9H</p> <p>e-mail: w9anl@bigfoot.com  www.bigfoot.com/~w9anl</p>	<p>MEMBERSHIP is open to all who are interested in amateur radio. This club is sponsored by Argonne National Laboratory. Employees of ANL or DOE-Chicago are eligible for full membership. Auxiliary membership is available to non-employees.</p> <p>W9ANL/R is an open repeater, coordinated on 145.19 MHz (-600 input). The AARC repeater has been in operation on this frequency pair continuously since February 5, 1982.</p> <p>CLUB NETS: 2 meter fm 1) Regular, every Monday evening at 9:00 and 2) the Night Patrol every night at 10:30, both on W9ANL/R. The Peanut Whistle Net (PWN) every Sunday at 1:30 p.m., and many evenings at 8:30 p.m. on 1932 kHz (cw/am/ssb), QRP.</p>	<p>RADIOACTIVITIES is published monthly by the Argonne Amateur Radio Club as a nonprofit newsletter intended only for the use of its membership. Material appearing here does not represent the official position of Argonne National Laboratory or the U. S. Department of Energy. Please give credit to the author and to Radioactivities or the Argonne Amateur Radio Club, when using original material published here. Deadline for submissions normally is the 20<sup>th</sup> of the preceding month.</p> <p>EDITOR Dale Travis AG9H  EVENTS  SKYWARN ACTIVITIES Deni Lamoreaux W9DS</p> <p>Please send club and editorial correspondence to the club address, or to travisdj@bigfoot.com Please include "AARC" in the subject.</p>
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