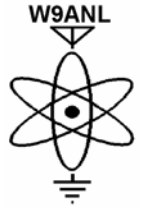


RADIOACTIVITIES

NEWSLETTER OF THE ARGONNE AMATEUR RADIO CLUB



Volume XLIX, Number 6

June 2008

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

Nothing Received.

REMINDERS

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

Old♦Country Buffet♦
59th 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

Nothing Received.

Net control Hangs up Mic After 22 Years

by Jim, KB9CYL

Good evening. This is W9FNM, net control for the Nite Patrol sanctioned by the Argonne Amateur Radio Club through the repeater W9ANL. All radio amateurs are welcome to check into the net. Please call W9FNM, the handle is Paul.

With those words, Paul Begitschke, W9FNM, began his stint as net control for the Nite patrol some time in June of 1985; he's not sure of the actual date. With those same words Paul opened his final Nite Patrol on 06 December 2007. In the intervening years those words were uttered well over 8,000 times to call to order what one passing trucker called "the doggonedest net" he'd ever heard. Due to the declining health of Millie, his wife of 62 years, Paul had to relinquish his net control duties, leave his lifelong home in the Chicago area and move to an assisted living facility near his children in Texas.

First licensed in 1944, Paul fought what he calls "The Battle of Texas" in the Air Force in WWII. In private life he worked as a draftsman at Argonne National Laboratory southwest of Chicago, drawing up plans for nuclear reactors and other equipment.

The Nite Patrol had its beginning in 1982 when it was decided that that the new repeater (145.19 -600) at Argonne would be on 24-hours a day. There were some doubts that anybody would use it at night and the Midnight Patrol was begun just to prove them wrong. A year later the net was moved up to 11 p.m. so Argonne employees on the afternoon shift would have someone to talk to on their way home. When Paul took the helm in 1985, the Nite patrol began. He moved the net to 10:30 local time so everyone could get together after the late local news to discuss how their day went and put in their two cents' worth on whatever the topic of the day might be: weather, sports, pets, kids, or food. The food topic become so woven into the fabric of the nightly discussion that Jim Sandrik, N9HQA, gathered recipes from net members and put together a Nite Patrol cookbook.

Paul had a great voice and folksy manner that welcomed new check-ins like they were lifelong friends. My experience is like many others. Having just received my Technician upgrade in August of 1989, I bought a used two-meter hand-held that had the Argonne repeater programmed in. Paul's was the first voice I ever heard on Two Meters as he ran the net and I knew I was listening to something special. The very next night I screwed up my courage and checked in. Right away Paul asked where I lived and what kind of rig I had and took a

real interest in the new check-in while putting the rest of the net on hold. I'd heard him do that countless times since. No one knows the exact number, but many SWL's got licensed just so they could check in and join the group.

Although we had check-ins from all over the Chicago area and northern Illinois, I had the good fortune of living only half a mile away from Paul and got to know him very well, helping him with antenna projects and driving him to area Hamfests. My wife, Judy, and I would drive him and Millie to various club events and they treated her like they'd known here all their lives. It's impossible to feel ill-at-ease with Paul and Millie.

Paul's dedication to the Nite Patrol was legendary. Once he phoned me at net time to see if I could take the net because paramedics were getting ready to take Millie to the hospital in an ambulance. Other times we had to leave parties so he could go home and run the net – even though most of the regular check-ins were at the party. "But some of them aren't here, Jim," he'd say and off we went. A nearby new repeater had Paul concerned that it might interfere with the Nite Patrol. He conveyed that concern to the repeater's owner who made concessions to respect Paul's wishes and the net continued without interference.

Just as legendary was his dedication to these check-ins. He knew all the regulars by name and where they lived along with what they did for a living and their spouse's name. He even kept what he called his "infrequent check-in list" so that when a call from the past checked in he could greet him or her by name.

Paul's gentlemanly demeanor was tested on more than one occasion by jammers and Paul carried on like they weren't even there, showing no change in his composure. Other times even regular check-ins would get into a conversation and forget there was a net on. Paul would gently remind them that he was net control and the net would continue in its usual orderly manner.

There's no way to tell just how many different Hams have checked into the Nite Patrol during Paul's tenure, but we took a count one year and came up with almost 400 different calls. It's a very diverse group from doctors and laborers to retirees and grade school students. One of the regulars a few years ago was a barge pilot on the Cal-Sag Channel which runs close to the repeater and we once had a pilot check in aeronautical mobile from somewhere over Colorado. We've kept many a lonely trucker company on his way through the Chicago area or during the night as he was parked while waiting to unload his rig. The one constant

was Paul, a true gentleman of the airwaves, taking a group of strangers and turning them into friends.

The Nite Patrol continues because we wouldn't know what to do with ourselves at net time but mainly we keep it going in honor of Paul's stewardship for almost a quarter of a century. Our net control team does a great job, but the Nite Patrol just isn't the same without W9FNM, the Friendly Net Master.

-- Jim Riley, KB9CYL, 12121 W. Venetian Way, Orland Park, IL 60467; 708/218-0695; kb9cyl@hotmail.com.

Grounding

by Deni, W9DS

January 1989 technical correspondence column QST brought an unusual technique used by the US Army Signal Corps. Presented by Lt. Col Aus (ret) W2PF. Reports improved techniques for mobile field tactical radio stations. The ground system consists of a cable connected to a copper rod driven several feet into earth. The ground resistance and RF impedance are not optimal.

Improving the system consists of employing about 4 ground rods after many tests of RF impedance readings analysis of recorded data and RF transmission tests came to the conclusion that using four series connected ground rods, driven only a foot or two into earth, provided the most efficient ground system. Improving my ground system here in Burr Ridge tremendously. I have had ball lightning in my yard and strikes to isopole 2 meter aerial turned pole black. All my equipment has never been down, but lost one TV before using this same system. I check it out each year since 1988 and all is well since then. W9DS.



Corkscrew Aerial Polarized

by Deni, W9DS

A dual polarized aerial is of value since reflections and other effects on receiving a transmitted wave rarely has the same polarization. So, dual aerials was a thing FM broadcasters dreamed up.

Mr. John Schultz, W2EEY, turned on the light with a complicated aerial that appeared in CQ Magazine April 1969. Combination of horizontal and vertical polarization, or circular polarized wave, will couple to

any dipole orientation, except, of course, end on. A form of helix was born.

This type adapted for FM was picked up by hams. The halo comes to mind, but that was horizontal only. Units can be stacked for gain in the vertical plane for home station installation for HF.

A transmitting aerial circular polarized means the receiving aerial can have any orientation, not just vertical or horizontal, and provides the same receive signal level. A dual dipole is used. It looks like halos intertwined to be 2 halo aerials and their ends spread apart.

Polarization is the orientation of the electric field along an electromagnetic wave. The vertical and horizontal line representation of a wave is deceiving in that we forget a constant reversal occurs at each half cycle of the electric field direction. The electric field can rotate around its line of travel, although for simple horizontal or vertical polarization. These are basic linearly polarized wave. When electric field changes direction and rotates its axis, whether in the vertical or horizontal planes are unequal or equal, the polarization is circular or elliptical.

Although a dipole extracts power from an elliptical wave, the level would vary because of non-uniform nature of the wave with dipole orientation. The power of any dipole orientation would absorb from circularly polarized waves will vary – as long as dipole is at right angles to the traveling wave direction – since the wave power distribution is uniform.

The circular waves have specific direction of circular waves. It is no matter if linear aerials are used, but if 2 circular polarized aerials are used they must make the same direction of rotation. That's circularly wave can be produced by combining signals from separate vertical and horizontal dipoles set at right angles to each other. These separated aerials must receive equal power with a phase difference of 90 degrees creates circular polarized waves. A phasing line of $\frac{1}{4}$ wave between two dipoles at 90° angles to each other will do it.

Another way is to physically feed dipoles in phase, but separate current elements in each aerial by 90 degrees or $\frac{1}{4}\lambda$. The two current elements produce circular waves if each element is rotated in its plane. The resultant wave is still circular. The aerial form becomes a one turn helix. These "current elements" all are in phase and constant amplitude.

Fork Screw Aerial Polarized

by Deni, W9DS

The simple dipole $\frac{1}{2}$ is a two turn aerial. Total length of aerial is $\frac{1}{2}\lambda$ total lineal length, diameter is 0.08λ and spacing between dipole ends is only 0.03λ . Such aerial will work even at 3 feet 10 inches at a height of 3 feet on 15 meters. The Q is very high.

To get better bandwidth with constant current around elements requires 2 one-turn elements each $\frac{1}{2}\lambda$ length and spacing between tips of each element is 0.13λ . Current acts as two separate one-turn elements were present. Total effect is omni directional pattern with circular polarization. With some ease dipole elements can be mounted and fed from a transmission line. Basically, a delta match is used in each dipole element with 2 delta arms paralleled where they are connected to the transmission line. These delta arms are moved equally along each dipole element until a match to transmission line is made. The impedance can be varied as desired using the delta arms. A perfect match is possible to any coaxial transmission line.

It is possible to stack a number of dual-dipole elements. Example: use one full wave spacing and in phase feed for 2 meters 60" apart place coax tee 40" from each element using RG59 and feedline RG8U to transceiver.

How about gain. Well, we could use each element singly as a vertical and dipole simultaneously. Sorry, but the dipole beats out our corkscrew by $\frac{1}{2}$ db and that's barely noticeable. As elements are stacked. Gain, as compared to dipole, does increase at about $\frac{1}{2}$ db per added dual-dipole element. Then, a 4-bay array has a true gain of 2db.

This aerial has been used in commercial FM transmitters. John hope hams (W2EEY) says for 20 meter DXing because of its compactness. Get rid of ground plane verticals which landlords hate and use the inconspicuous corkscrew aerial. Effective on both horizontal and vertical polarized signals and added feature of free static and lightning protection.

Pennant Flag Diamond Delta

by Deni, W9DS

One sixty hams looking for an independent aerial above ground that captures signals with less noise and boosting up the weak signals using 20/40 db amplification such an under taking was printed in July 2000 QST by K6SE, Earl Cunningham. K6SE had Jose, EA3VY, attempt to find an answer by computer modeling.

The answer came a triangular pennant. It has top and bottom wires coming to a point of the pennant 49 feet away from vertical part. Aerial 4' above ground is fed at center of vertical part with 725 ohm terminating resistor at point of pennant. Aerial has 23db front to back ratio on 160 meters with cardioid azimuth, but on 80 and 40 meters, it is not very deep. Jose sent him other configuration: flag point fed pennant, point terminated pennant, diamond, delta, and flag. These new designs were quite broad banded. Between 1.8 to 7.3 MHz, they have a null at the rear of the cardioid pattern at least 20db down from the front.

Supports used must contain no metal. Jose design was adjusted so that feed point impedance was close to terminating resistor value and reactance was zero. Now aerial is non-resonant and easy to feed with an impedance matching transformer. The final pennant design (point-ended pennant) has 14 foot vertical section with the point of pennant 29' from vertical section bottom pennant is 6' above ground and resistor value of 903Ω. Rear of cardioid pattern, the null 37.5db down from the front, feed point resistance is 860Ω with zero reactance. Varying aerial height 1 foot to 25 feet has no effect on pattern or feed point impedance.

The flag, an enclosed rectangle loop with 2 vertical sides 14' vertical sides and two 29' horizontal sides. 945 ohm resistor is placed at middle of one of the vertical sides. Feed point is located at other vertical element center of flag. Feed point impedance is 945Ω with zero reactance and real null of 35db of cardioid pattern from front. Gain of the flag is 5.5db greater than pendant.

The diamond is shaped like a rhombic vertical aerial. Vertical section 14' horizontal 29'. The termination and feed point resistances are 925 ohms each. A delta was made 17' vertical and 28' horizontal with resistor at one bottom corner of the triangular loop and feed point at the other corner. Feed point and resistor both are 948 ohms.

To read the signals due to feed degradation make suitable match transformer to step down 900 ohm impedance to 50 or 75 Ω coax. Problem two: Pattern degradation by common mode currents on feed line via unbalanced coax line to the balanced transformer winding. Use choke balun at transformer end of cable. Ten to twelve turns wound onto coil one foot diameter.

Multi-element arrays of these aeriels are possible using point-fed pennant in 2 element end fire array, two broadside, and four element end-fire / broadside configuration.

Switchable directive aeriels using 2 or more to cover many directions can use point fed pennants, but flag aeriels can't be used. The diamond and delta can be used in a switchable array. Good listening.

15 Meter Delta Quad

by Deni, W9DS

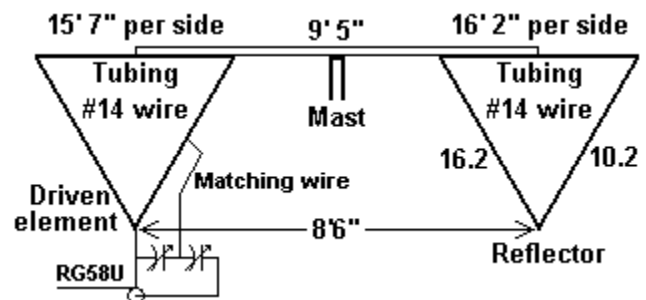
WA2BLY had his finished 15 meter quad on display in May 1978 CQ Magazine in the WOSAI monthly feature column. Made from wire and plastic drain pipe, the photo is shown above the aerial schematic. WA2BLY said his aerial is easy to build and get working.

The aerial is turned by hand. It is above the roof. The delta loop has 2 capacitors that he adjusts from the roof using a SWR meter and the matching wire for the lowest 1.1 to 1 SWR. Spacing between elements is 8' 6". Both capacitors are double spaced 100pf variables. Matching wire is 20" long, spaced 3" from driven delta loop. The wire and capacitors are adjusted for lowest SWR.

Boom is 2" PVC pipe, wire is #14, and coax feed line is RG58/U. The top portion of the delta loop is aluminum tubing with lengths 15' 1". For driven element top other 2 sides are wire sections using same dimension length. The reflector is 15' 2" aluminum tubing at top the 2 hanging wires #14 are the same length and soldered together at the bottom. No tuning needed here. The boom holding up the two delta loops has a length of 9' 5" 2" diameter PVC. Turned by the Armstrong method from ground. WA2BLY (not found on any ham radio license file he passed away or upgraded) said he worked Japan and Europe in a valley with large trees surrounding the aerial in the novice band.

Well, that's saying too much about how it really works DX. I did that on my Windom up 30' above a corn field the winter of 1959.

The author address in 1978 was Menlo Park, CA. JA's out there are as thick as black flies I encountered on a trip to Canada a few years ago.



<p>ARGONNE AMATEUR RADIO CLUB P.O. Box 741 Lemont, IL 60439</p> <p>Officers</p> <p>PRESIDENT Bruce Epperson KA9H VICE PRESIDENT SECRETARY Kurt Boerste KB9ZFR TREASURER Charles Doose KB9UMF DIRECTOR Dick Konecny K9IB DIRECTOR Torben Lauritsen KF9MI DIRECTOR Charles Doose KB9UMF DIRECTOR Tim Smith N9UEB DIRECTOR 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 20th 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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