

ANODE

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Editor's Comments

Volume 9 Issue 7 January 2009

Whilst searching on Google...

"Amateur Radio" gives 34300 hits in SA alone. But on closer examination, quite a few are "silent key". I did come across our 'friend' ZS6COG's web site. But it has obviously moved from his original host as the pages hit were also "dead/404". Still the pages are of interest...

<http://www.zs6cog.co.za/>

Unfortunately his projects page has a super-regen design. Which brought back bad memories. In Europe this type of receiver is "verboden" because of the massive amount of inter-

ference they cause. I remember my father detailing his experiences with a super-regen. The circuit would usually burst into oscillation on or around the frequency of interest. This in his time was Medium Wave. This would howl out of every radio in the neighbourhood. The radio receiver would of course be valve and coupled to a long wire suspended at roof height to the bottom of the garden. The 2 to 3 Watts generated would be "transmitted" directly to the neighbours receivers! If it was allowed to persist, a visitation from irate listeners would be expected.

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Try ARDF on 80 Meters

By Joe Moell KØOV

If your club holds only two-meter ARDF events, you're missing half the fun. There's another international foxhunting band, too.

Reprinted (with updates) from Homing In column in 73 Amateur Radio Today Magazine, November 2000

Before two-meter FM took off in the late 1960's, clubs held their mobile hidden transmitter hunts (T-hunts) on the 80-meter and 10-meter bands. Look through ham radio magazines of the 1950's and you'll see a variety of radio direction finding (RDF) antennas sticking out of car windows, including big box-shaped loops and little ferrite rods.

Transmitters and receivers used tubes back then, so "portable" really meant "big and heavy with a handle." Low-voltage dry cells were necessary to light tube filaments, and high voltage batteries powered the tube plates. That didn't stop the ham hiders of that era, who sometimes put their emitters in baby carriages and built them into fake fire hydrants, just like today.

Skywave propagation makes eighty meters a crowded place after dark, so foxhunts on that band were daytime events. (At night, ten meters was preferred.) The winner was usually first vehicle to be spotted by the hider, so hand-held "sniffers" were unnecessary.

Almost a half century later, hams on this
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Special points of interest:

- Contact details on back page (updated October 2008)

Try ARDF on 80 Meters

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continent are rediscovering the joys of shortwave-band RDF. That's because it's an important part of the international on-foot foxhunting scene. Today's solid-state technology makes it easier and much more fun.

Europe Leads the Way

As regular Homing In readers know, competitive on-foot foxhunting (also called foxtailing, radio-orienting and ARDF) follows rules that are promulgated by the International Amateur Radio Union (IARU). They originated in Denmark and England, where the sport began shortly after the second World War. Two meters was added later. Nowadays, IARU's national, regional, and world ARDF Championships expect all entrants to compete in an 80m event on one day and a 2m event on another.

In the early days of ARDF in Europe, fox transmitters were just like the ones used in USA T-hunts of the 1950's---big, bulky and keyed by hand. (From USSR ARDF brochure)



In a few counties such as Sweden, 80 meters is still the primary band for ham radio transmitter hunts. A few years ago, I interviewed Per-Axel Nordwaeger SMØBGU, who put out courses for the 1994 ARDF World Championships near Stockholm. P-A dislikes the signal reflections that plague VHF hunts. "I don't find 2 meters as interesting because its so unpredictable," he says. "You end up in many places other than where the transmitter really is."

Stockholm foxhunts are Wednesday evening at 7 PM in large wooded forests. In most months, that's well after sunset. Snow-covered courses are frequent. The hider puts out seven transmitters, timed to come on

automatically and to transmit one after another in sequence.

"Our old-fashioned receivers interfered with each other," says P-A. "So we had to spread the hunters out. They scatter into the forest two minutes before the first fox starts. They are allowed to continue to search for two minutes after the last transmitter shuts off, then return to the start. About an hour after the hunt ends, the foxes automatically start transmitting again to help the organizer find them to pick them up."

According to SMØBGU, most Swedish radio-orienters use the same receiver design, which is about the size of a cigarette pack. "Two Swedes started building them around 1965," he says. "The circuit has been improved over the years. We can buy them either complete or in parts. The ferrite loop is quite OK. My friend Lars Nordgren SMØOY uses a larger air-core loop instead. It is heavier to carry, but gets a sharper bearing null."



Per-Axel Nordwaeger SMØBGU is ready for the next Stockholm hunt in the forest. Note his cigarette-pack-sized receiver with rod and sense antennas.

Stateside foxhunters know that 2-meter RDF is made more difficult by multipath. VHF signals reflect from buildings, hills and mountains. Bearings are most

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accurate when transmitters and receivers are line-of-sight and there are no large terrain features nearby. When you're in a canyon on the back side of a hill, 2-meter signals are weak, and bearings aren't trustworthy.

Eighty meters is a different story. Groundwave is the primary propagation mode for fox signals on that band in daytime. Long metal structures such as power lines and fences can affect bearings if they are close to the receiver. But in general, bearings are sharper and more consistent than on VHF. Eighty-meter RDF equipment is smaller and lighter, too. That explains why winning times on 80m were two to 16 minutes better than for the same age/gender divisions on two meters in the 1998 ARDF World Championships.

Ewald Stadler DJ2UE of Herrenberg, Germany is a foxhunt organizer and trainer for the Deutscher Amateur Radio Club. He says, "On 80 meters, you have to know your equipment, the null and front-to-back ratio. But mostly it's running, a sport competition. However on two meters, it's a brain competition. You have to be very careful what you do because of the signal reflections. On 80 meters you can stand still and navigate and take your bearing and then go, but on two meters, no way! If you stand still and take a bearing, you may be off by 30 degrees."

ARDF promoters around the USA are adding 80 meters to their events. Starting in March 2000, all of our southern California multi-fox practice/demonstration sessions have had at least one 80m transmitter. Usually the hunters find the 2m foxes first, then start over again on eighty using borrowed gear. Most of them express amazement at the sharp bounce-free bearings on the new band.

Sharp bearings and small lightweight RDF gear make 80m an ideal band for introducing youngsters, particularly pre-teens, to Amateur Radio and ARDF. Would this be a great activity for your next Scout campout or Jamboree-On-The-Air?

Getting Bearings on 80m

Several manufacturers make "longwave-to-microwave" multi-mode hand-held receivers and scanners covering

the 80m band. Available models include the Icom IC-R10, Yaesu VR-500, Alinco DJ-X10T and AOR AR8200IIB. With such a set and an RDF antenna, you're ready for an 80-meter hunt. Be sure that the receiver has CW or SSB modes in addition to FM, because 80m foxes send keyed CW.



Bob Legg W6QYY built this 80-meter RDF antenna to use on foot with his MF/HF/VHF multi-mode hand-held scanner at a southern California hunt.

On two meters, you can get a rough bearing by simply holding your handi-talkie or scanner close to your chest and turning around, listening for the signal null that indicates that the source is behind you. This "body shield" technique won't work with an 80m hand-held, because these long-wavelength signals pass right through our bodies with almost no attenuation.

Reflectors or shields of metal won't make your 80m set reliably directional either. Attempts to shrink 80m yagis, quads and other high-gain antennas to portable size have proven futile. So loop and rod antennas are the best way to get good 80m bearings, just as they were a half-century ago.

Large multi-turn box-frame loops are accurate and sensitive for mobile use (see *Homing In* for August 1991). However, they're too big and clumsy to carry on foot. Winding about the same amount of wire on a small ferrite rod makes for a light easy-to-carry antenna

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that has the same sharp nulls and almost the same sensitivity. Small air-core loops can also be effective if care is taken to achieve good electrical balance.

* In Australia, Ron Graham Electronics sells an 80m ARDF set with rod antenna that looks very much like the Swedish set in SMØBGU's hand above. A new superheterodyne set from Bryan Ackerly VK3YNG is also available.



Adding a vertical "sense" whip or wire with proper signal phase resolves the rod or loop's inherent 180-degree ambiguity. More about the theory and practice of HF loops, rods and sense circuits is in the ARRL Handbook and my book "Transmitter Hunting--Radio Direction Finding Simplified."

80-meter ARDF is ideal for youth and Scouts because the equipment is lightweight and bearings are steady. In this photo from a southern California radio-orienteeing session, Richie Grimes KF6WVY discovers the 80 meter transmitter at the base of a tree, using a borrowed DL3BBX 80m ARDF set. (Photo by Ray Grimes N8RG)

Champion 80m ARDFers of Europe and Asia prefer integrated receiver/antenna sets. Each country seems to have its only favorite design:

* Altai ARDF sets from the Barnaul Radio Factory in southwestern Siberia are used throughout the former Soviet Union. That factory makes the "Altai-3.5" for eighty meters, which has a tunable receiver and loop/spike directional antenna system. The loop is about eight inches in diameter.

* The "Peilempfänger" by Siegfried Pomplun DL3BBX has been popular in Germany and the Netherlands. Siegfried's Web site is in German.

* A rod antenna and superheterodyne receiver set by PAØNHC is popular in the Netherlands. Plans are at his Web site.

* In Austria, the "ARDF80" receiver by Harry Gosch OE6GC is popular. Complete construction plans are at Harry's Web site.

* In the Czech Republic, OK2BWN Radio Sports Equipment sells three compact receiver models.

For many years, eighty-meter ARDF has been part of physical education in Russian schools, including both licensed and unlicensed youngsters. The "Altai-3.5" is one of very few commercially manufactured ham equipment items there. (From USSR ARDF brochure)

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The USA doesn't have a favorite 80m receiver/antenna set yet, but good designs are available. Dale Hunt WB6BYU near Portland, OR developed a home-construction 80m ARDF set that was published in the September 2005 issue of QST Magazine. The receiver is VFO-controlled direct conversion design with about a 100 kHz tuning range that can be set anywhere in the 80/75m band. The antenna is a 6-inch diameter air-core loop. Various prototype versions of Dale's design have been used with success in the USA and IARU Region 2 ARDF Championships. Marvin Johnston KE6HTS is offering completed units and partial kits (circuit board and critical components, without case) for sale. Bare circuit boards for this project ("WB6BYU 80-meter DF Receiver") are available from FAR Circuits in Illinois.



Dale Hunt WB6BYU shows a prototype circuit board of his 80m ARDF receiver at the 2003 USA ARDF Championships in Ohio.

Jerry Boyd WB8WFK of Albuquerque is author of "You Can Build the Albuquerque FoxFinder80" in the November 2000 issue of 73 Amateur Radio Today Magazine. Jerry's prototype unit was used by a USA competitor at the 2000 ARDF World Championships in China. WB8WFK's Web site has updates on this project, including a PLL tuning modification.



Jerry Boyd WB8WFK was the only competitor at the 1999 ARDF Championships in Portland who built his own 80m receiver/antenna set from scratch. He's crossing the finish line in this photo.

International rules for 80m ARDF call for transmitters to have 3 to 5 watts output, keyed CW. Frequency range is 3500 to 3600 KHz. A General class or higher license is required for the hider above 3525 KHz and Extra below 3525 KHz. There's no license requirement for the foxhunters, of course.

The most popular 80m fox frequency is 3579.5 KHz, because inexpensive TV colorburst crystals on that frequency are easy to find all over the world. The finish line beacon frequency should be at least 20 KHz away from the five fox transmitters to prevent QRM on simple receivers.

Most QRP crystal-controlled CW transmitters can be pressed into service as 80m foxes. See my article "Super-simple 80-meter ARDF Transmitter" in the November 2000 issue of 73 Amateur Radio Today Magazine for details of an excellent design by Rik Strobbe ON7YD. More information on this transmitter is at Rik's Web site. Circuit boards for this project ("ATX80 transmitter") are available from FAR Circuits in Illinois. The Hardware Sources page of this Homing
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In site has a parts update for this project.



ATX80 transmitter by ON7YD, described in November 2000 issue of 73 Amateur Radio Today Magazine.

Shoot Up Your Antenna

Fox transmitting antennas for 80m must use vertical polarization to provide best results with loops and rods. Such antennas can be simple if there are trees at the hunt site. I found that a more-or-less vertical wire 20 to 30 feet up into a tree and a single radial wire of the same length usually provide plenty of signal to the starting point without additional impedance matching, even on an IARU championship-size course, when used with the 3-watt ON7YD transmitter.

How do you get the antenna up into the tree? And more important to a harried foxhunt organizer, how do you put five antennas into five trees in a short time? My answer: A slingshot. There are some new commercial slingshot/spinning-reel contraptions for sale to hams, but I have had excellent results with a simple twelve-dollar slingshot from the local sporting goods store. Rather than loft a leader line and then haul up the wire with it, I launch the radiating wire directly.

For me, AWG24 stranded wire with multi-colored Teflon jacket is just right. I found white wire with brown, black and green stripes that camouflages well in leafy trees and on the grass. After one 80m hunt, I asked a hunter what he thought of my antennas. He

said, "What antennas?"

Here are some antenna-launching tricks that I learned the hard way:

1. Tie a "3/8" size lead sinker (10 grams) to the far end of the wire, launch the sinker over a high branch, and the wire will follow. Be sure to secure the transmitter end of the wire so you don't loft the whole wire out of reach.

2. The pile of wire on the ground must offer absolutely no resistance to being pulled up. Allow no tangles, and definitely no tree branches or other debris under the wire to snag it.

3. Hold the slingshot upside-down, so that as the wire falls away after launch, it doesn't tangle in the yoke of the slingshot.

4. Put tape over the eye of the sinker where it connects to the antenna wire. Before I started doing that, I got a nasty cut on my fingertip from the sharp point of the eye on one launch.

NOTE: Use extreme caution with your slingshot. Wear safety glasses and watch out for others nearby. Check and obey local laws. The possession and use of slingshots may be regulated by city/county ordinances and park rules.

The radial wire(s) can just be stretched out on the ground. I usually stick short skewers into the soil to hold the far ends of the radials in place and keep the wire from coiling up. In two locations at the June 2000 ARDF Team USA Qualifying Runs, the foxes were next to a creek, so I dropped the radials into it.

Having only one radial results in a more covert hidden transmitter, but it reduces system efficiency and makes the radiation pattern somewhat directional. If possible, run the radial in the direction of the start point, to put maximum signal in that direction. Use care to minimize the hazard of tripping over it.

More efficient transmitter antennas may be needed if transmit power is lower, receiver sensitivity is less, or if RF noise level is high at the site. For the 1999 IARU
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Region 2 ARDF Championships in Portland, Dale Hunt WB6BYU made antenna sets consisting of a 26-foot vertical wire, three 16-foot radials, and an RF matching transformer. His transformers were wound on Amidon T-130-2 cores, 5 turns on the primary (connecting via 50-ohm coax to the transmitter) and 55-turn secondary (to antenna and radials). I could tell that the matching networks made these antennas work very well, as I copied the foxes several miles away on my mobile rig.

The need for tall trees limits the number of slingshot-friendly 80-meter foxhunting sites in southern California. Standalone 80-meter antennas can be made from 20-foot non-metallic telescoping crappie fishing poles holding up vertical wires, with loading coils at the bases.

Next time your club holds a radio-orienteeing session, why not include at least one 80-meter transmitter? Then let me know of your experiences, so I can share them with Homing In readers. Send e-mail to k0ov@homingin.com



Long commercial fishing poles make excellent antenna supports for 80m ARDF transmitting. This one is at the 2003 USA ARDF Championships in Ohio. The transmitter and battery are in the weatherproof ammunition box.

This page updated 16 October 2007

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Go to this web site for more info :-

<http://www.homingin.com/index.html#toc>

Editor's Comments

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I also went looking for "PC Recycling"

This told me that in SA, with only 140 hits, then only 58 hits, that the reality is we don't recycle PC's in South Africa! Maybe "redistribute" is the more correct word. Remember the old joke? You are moving to Soweto as your furniture is already there. Computer theft in SA is big business. And recycling is not a problem. The PC's never get too old. Re-supply or replacement is the norm for most businesses.

Some links of interest to Radio Amateurs

The Las Vegas Boulevard Tracker

<http://www.g6lvb.com/Articles/LVBTracker/>
[the link to V2 is on this page as well]

East Rand Branch of the South African Radio League

<http://www.zs6erb.co.za/info.htm>
[If you can bear the flashing lights and scrolling text, all of which is so "last century", according to my web designer relation.]

Perhaps you should read this...

<http://online716887.blat.co.za/2009/01/02/hamming-it-up/>

Kick start your laptop?

<http://news.bbc.co.uk/2/hi/technology/5386004.stm>

SDR - the future?

<http://news.bbc.co.uk/2/hi/technology/5382086.stm>

Hull & District Amateur Radio Society

http://www.bbc.co.uk/humber/content/articles/2008/04/09/081_eptas_hadar_feature.shtml

The dream of Carolyn Rule, chairman of the Poldhu Amateur Radio Club has come true.

<http://www.bbc.co.uk/cornwall/marconi/marconicentre.shtml>

Over and Out?

<http://news.bbc.co.uk/1/hi/magazine/4789887.stm>

Droitwich Calling

http://www.bbc.co.uk/herfordandworcester/content/articles/2005/10/21/droitwich_transmitter_feature.shtml

Oh and don't forget...(local)

<http://www.saiee.org.za/museum/>

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"Give a person a fish and you feed them for a day; teach a person to use the Internet and they won't bother you for weeks."

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Xlog 1.9

GTK+ Logging program for Shortwave Hamradio Operators xlog is a logging program for amateur radio operators. xlog focuses on hams who operate shortwave on a daily basis. Logs are stored into a text file. QSO's are presented in a list. Items in the list can be added, deleted or updated. For each contact, dxcc information is displayed and bearings and distance is calculated, both short and long path. When hamlib is enabled through the menu, you can retrieve frequency, mode and signal-strength from your rig over the serial port.

<http://pg4i.chronos.org.uk/linux/xlog.html>

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Ham-Comp and EE Meeting on the 24th

Inspired by my visit to Joop Friday, I am proposing to give a 'talk' on "Simple Networking of HAM PC's" at the meeting on the 24th. To demonstrate the 'right' and 'wrong' ways of connecting the PC's together. The reasons why we do

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things and the ways to test the connection. The software we amateurs can use to network our computers to make our shacks more powerful.

- ☐ In the "Good old days", we could use RS232 or a LapLink connection...
- ☐ P.I.N.G. [Packet InterNet Groper] and how to use it. [Oh go look it up! <http://ftp.arl.mil/~mike/ping.html>]
- ☐ Connecting just 2 PC's.
- ☐ More than 2 PC's, networking, hubs and switches.
- ☐ Name resolution - looking up somebody's number. (Nommer asb.)

The Electronic Enthusiast's meeting will be based around our Direct Conversion Receiver and the Fox Hunting DF units.

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BTW - Ham Radio Control Libraries

<http://hamlib.sourceforge.net/>

The Ham Radio Control Libraries, Hamlib for short, is a development effort to provide a consistent interface for programmers wanting to incorporate radio control in their programs. Hamlib is not a complete user application, rather, it is a software layer intended to make controlling various radios and other shack hardware much easier. Hamlib will allow authors of such software as logging programs, digital communications programs, or those wanting to develop the ultimate radio control software to concentrate on the user interface and the basic function of the program rather than radio control.

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Dates to note (in your PIM/Diary etc)

2nd May, 1st August and 5th December will be "Flea Markets".

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The West Rand Amateur Radio Club

Established in 1948

KG33XU 26.14122 South - 27.91870 East

P.O. Box 562
Roodepoort
1725

Phone: 082 342 3280 (Chairman)
Email: zs6wr.club@gmail.com
Web page: www.jbcs.co.za/ham_radio

Bulletins (Sundays at ...)

11h15 Start of call in of stations

11h30 Main bulletin start

Frequencies

439.000MHz 7.6MHz split

Input: 431.4MHz (West Rand Repeater)

145,625 MHz (West Rand Repeater)

10,135 MHz (HF Relay)

Radio Amateurs do it with more frequency!

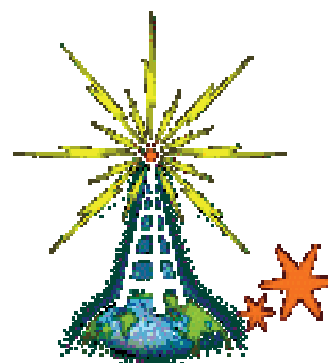
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West Rand members - we need your input!

To make this the best ham radio magazine in South Africa we need your input. Please submit articles, comments, suggestions etc.

Please send plain text with no formatting to the email address below.

In July 2003, we re-published an Anode Compendium on CD. It has the issues from July 2000 until June 2005. This included the new Adobe reader. It has been updated, check with the chairman for details.



We need your input! Email us articles, comments and suggestions please.
zs6wr.club@gmail.com