AWA NEWSLETTER CENTENNIAL EDITION

Affiliated to the SARL

Antique Wireless Association of Southern Africa

Inside this issue:

AWA Committee:

* President—Ted ZS6TED
* Technical Advisor—Rad ZS6RAD
* Secretary/PRO—Andy ZS6ADY
* Western Cape—John ZS1WJ
* KZN—Don ZS5DR

Reflections:

Issue Number 100.

I would never have thought that when we started this Newsletter in January of 2006, it would have continued for so long to where we are now.

I can really only thank all those who have passed on items and articles that have enabled me to put together this monthly Newsletter.

I think in all the time we have been going, we have only ever missed one month, when my laptop was donated for the betterment of the impoverished in SA.

Whether it actually improved anyone's life, I don't know.

There have been some fun filled pages and other times when I have really had to scrape along and rack my brain, the little that there is, to fill the pages. For the majority of times though it has been a very fruitful and interesting part of my input to amateur radio.

I personally have learned a lot from the many articles that have been gleaned and published in this Newsletter.

To think, this Newsletter now finds its way to many different parts of the world, certainly has nothing to do with me, but due to many of our readers passing it on to friends who pass it on to friends etc.

To all of those of you who have found some interest in these pages, thank you so much for your encouragement and kind words. To those of you who have not found any interest in these pages, don't blame me. I'm just the editor.

Of course I would appreciate more articles and items from our readers and anything you think may be of interest to others. That old saying of you can only please some of the people some of the time does apply here, but I have yet to have anyone ask to be taken off the mailing list, so it appears we are pleasing most of the people, most of the time.

Thanks to all the contributors. Thank you so much for the flow of articles that have come in and please don't stop now. Your input is greatly appreciated.

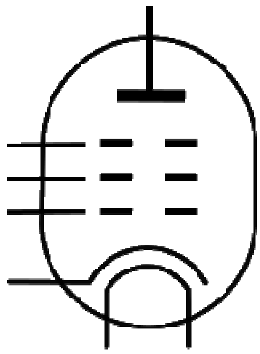
May I have the ability and the steam to put together another 100 issues and may they come quickly, because I fear I may become too old to type anymore.

Best 73

DE Andy ZS6ADY

WIKIPEDIA

A **pentode** is an electronic device having five active electrodes. The term most commonly applies to a three-grid amplifying vacuum tube (thermionic valve), which was invented by the Dutchman Bernhard D.H. Tellegen in 1926. The pentode consists of an evacuated glass envelope containing five electrodes in this order: a *cathode* heated by a filament, a *control grid*, a *screen grid*, a *suppressor grid*, and a *plate* (anode). The pentode (called a "triple-grid amplifier" in some early literature was developed from the tetrode tube by the addition of a third grid, the suppressor grid. This served to prevent secondary emission electrons emitted by the plate from reaching the screen grid, which caused instability and parasitic oscillations in the tetrode. The pentode is closely related to the beam tetrode. Pentodes were widely used in industrial and consumer electronic equipment such as radios and televisions until the 1960s, when they were replaced by transistors. Their main use now is in high power industrial applications such as radio transmitters. The obsolete consumer tubes are still used in a few legacy and specialty vacuum tube audio devices.



Pentode symbol
Electrodes from top to bottom:
:anode (plate)
:suppressor grid
:screen grid
:control grid
:cathode
:heater (filament

CW Activity:

There are times that I become quite excited about the prospects of CW, not only here in SA but on the DX bands as well.

I see regular updates by Eddie ZS6BNE about contacts made on the DX bands using CW and QRP RADAR contacts.

A very small group have started coming up on Thursday evenings on 40m, and this is also quite exciting.

Contacts with Division 1 are made easy on 40m from 19:00 in the evenings. On the odd occasion there is a bit of DX to be heard in the background, but normally not enough to destroy any sigs to the Western Cape and also local stations.

My thanks to those who brave the bands to come out on a cold evening and play some CW.

Many of you have heard me professing my disappointment in local CW and prophesying the total collapse of CW on the bands.

Well, maybe its time I changed my tune.

I would of course prefer to see a lot more activity on the bands in CW, but then there are not that many interested parties in SA to really see that happening.

I suppose it sort of became a self fulfilling prophecy that a lot of people kind of looked forward to when CW was removed from the pre-requisite for an open amateur licence.

There were those who were quite jubilant of course when this was removed, while some of us were not too happy about the whole exercise. Did the removal of CW as a pre-requisite actually increase the membership or amount of people who became active operators ? I suppose it's a debatable point.

On the flip side of the coin though, there are those who have fought to keep CW active and alive on the bands.

This has resulted in a few of the old dogs, coming back to the kennel and getting their hands back in on CW, but I don't think it has encouraged many newcomers to the mode.

Ray GE0ML Collection

SSB activity:

There is still plenty of activity on the bands on SSB. One of the things that amaze me are the amount of people writing the ARE these days and joining the swelling ranks of amateur operators in SA.

I read somewhere in an article the other day, there are over 75,000 active operators in the US. Now that's ama-zing !

Most days and evenings you can find someone on the local bands, 40m and 80m, and more often than not on Dx bands. The bands are still very usable compared to a few years ago when a QSO on 40m was something to be desired.

I still think there should be more interest shown to the new operators and they should have to go through some kind of training to familiarise themselves with operating procedures. I know this always raises some heckles with people, but lets face it, operating etiquette is something we all want in amateur radio. (Well a lot of us anyway). Its what makes us what we are.

The SSB nets of the Western Cape and the National net is still well attended and its pleasing to hear the number of call signs on a Saturday morning. The western Cape group is growing in leaps and bounds too.

The QSO Party was a real success this year and thanks to all those who took part. It was so good to hear so many people on the bands and conditions were good, for a change. The last 2 years conditions were pretty dismal, but that did not dampen the enthusiasm, and this year proved to be even better.

Well done to all who participated.

Drake T-4X

AM:

Conditions on AM have been pretty good, especially on the Saturday morning net. Of course now with the onset of winter, the bands are opening up much later and really only become usable after 06:00 in the morning.

The advantage of this is that one can then stay nice and snug in a warm bed for at least another half an hour before heading to the shack.

Wednesday evening band conditions are also pretty good at the moment while we have this lull between the summer storms and the winter cold fronts. All stations are well worked from Div5 and Div6.

The QSO party was also quite well attended in the AM section. I was very surprised to hear the amount of stations getting out there and trying out AM on their rigs. Some on valve sets, but of course many on solid state rigs too.

One or two of the stations I had contact with said they were using AM for the first time ever on their rigs and were surprised at how well it worked. Using AM requires a certain amount of skill, as it is very different to SSB, and most of the stations seem to have mastered it quite well.

Of course we will always keep telling those using solid state rigs on AM to be extremely cautious with the amount of output power used. Its just so easy to fry those finals when using AM because of the way the signal works. The duty cycle is just so much more than SSB.

Looking forward to hearing many more of you joining us on the AM nets, whether you are using valves or solid state, please feel free to join us.

Heathkit DX40

De-mystifying the Wadley loop
by Richard ZS6TF AWA Historian

In the analogue world that existed until the mid-1960's, the quest for frequency stability by radio designers was dominated by the extensive use of crystal oscillators in all manner of switched super-heterodyne configurations, and the tunable band portion typically between 200 and 1000kHz was executed by a variable oscillator. Since the invention of the superhet by Armstrong in 1918, this variable oscillator had been the primary focus of designers seeking to eliminate frequency drift and non-linearity, a multi-disciplinary challenge of mechanical, thermal, and electronic optimisation.

The conditions for sustained free running oscillation of an active device (in those days a valve or nowadays a semiconductor junction device) are that the loop gain of the circuit must be 1 or more, and the phase shift around the circuit must be zero. With a tuned circuit of some kind or a crystal in the feedback loop, zero phase shift occurs at one unique frequency, the resonant frequency of the tuned element at which the feedback circuit appears to be purely resistive, and therefore the active device oscillates at that frequency.

Drift can be short, medium, and long term in nature. An oscillator's frequency can change rapidly in a period shortly after switch on, change in a slow uniform way over time, suffer erratic deviations, or lose repeatability over the life of the radio. The factors that contribute to oscillator drift are non-linearity of the active device, variation in the supplies to the active device, mechanical stability from movement or vibration of the frequency determining elements and enclosure of the oscillator, stability of passive component values, thermal effects on the components and circuitry, and variation in loading of the output.

Designers met these challenges with improved active devices with lower inter-electrode capacitance, careful selection of active device operating points, stabilised supplies, crystal ovens, total screening, permeability tuning, temperature coefficient offsets in LC circuits, and buffering.

The first production Wadley loop receiver, the Racal RA17, was demonstrated to the British Admiralty in 1954 (see "what's in a name?" AWA newsletter #40 April 2009). Until then the top dog in receivers was the Collins 51J4 and its military version the R380.

Both receivers tuned a 30 MHz range in 1 MHz segments and neither had a product detector for SSB, relying on BFO injection for lower or upper sideband resolution. Collins chose low intermediate frequencies, and to minimise possibility of images and spurious responses inherent in the functioning of the mixer stage of a superheterodyne, they employed dual conversion on most bands, and single or triple conversion on others to a last IF of 500kHz. They employed 10 crystals in local oscillators generating fundamental and harmonic mixing frequencies which required complex switching and mechanical snail cams to operate a series of ganged permeability tuned circuits.

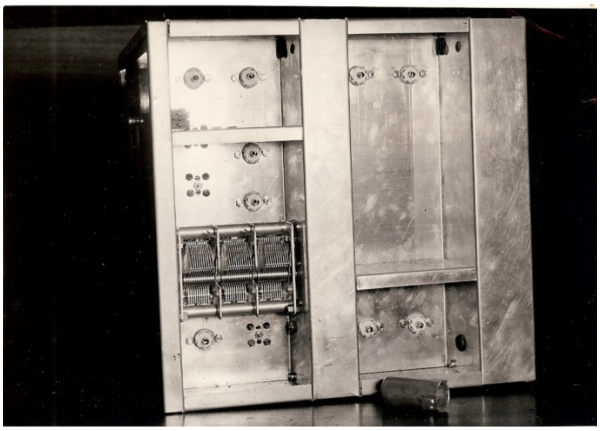
Wadley's design was triple conversion over the whole range and chose a high first conversion frequency to push any images way above the entire input range of the receiver, and a final IF of 100kHz where audio bandwidth and selectivity were optimised.

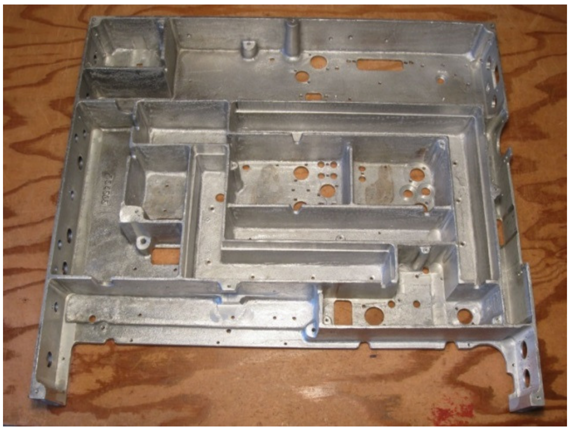
What gave the Wadley design in the RA17 stability 10 times better than the Collins?

The first local oscillator (The MHz control) was mixed with the amplified incoming signal, and separately with a 1MHz crystal signal that was rich in harmonics at 1MHz intervals. These two signal paths were separately amplified in band pass amplifiers tuned 2.5MHz apart and mixed in a third balanced mixer to produce a 2.5MHz +- 500kHz (2 to 3 MHz) variable intermediate frequency. Whichever way the 1st local oscillator might drift, the one channel would see the difference signal and the other the sum of the drift and these would cancel out mathematically in the third mixer to leave a signal as stable as the crystal harmonic generator. What followed was a conventional superhet circuit down-converting the 2 to 3 MHz signal to a low intermediate frequency for demodulation and audio output in the conventional manner, the second local oscillator tuning becoming the kHz control.

If it was that easy, how did nobody but Wadley discover it, and what were the drawbacks?

Initiated in the SSS radar developments during WW2, Trevor Wadley was an enigmatic practical genius engineer surrounded by scientists and mathematicians who was in the right place (TRL, CSIR, and the NITR) at the right time. His ability to think a new design onto paper for manufacture incurring only minor changes in production is legendary. His designs progressed in the 1940's and 50's from the Ionosonde, where mixing signals with a crystal harmonic comb generator was first employed to obtain a wide frequency sweep, to a highly stable heterodyne wave meter design with a drift free oscillator, followed by the Wadley loop receivers and transmitters, to the Tellurometer distance surveying equipment for which he is equally well known. The drawback of the Wadley loop was the potential for birdies. Unlike images, birdies are internally generated by unwanted direct signals, harmonics, and mixing products from the oscillators forming part of the receiver circuit. They resemble unmodulated carriers and render parts of the tuning range useless or insensitive, and generate unwanted audio beat frequencies. Just before the presentation time to the British Admiralty in 1954, the RA17 prototype was still beset with this problem. In desperation the chassis was band-sawed in half and additional screens installed to quell the birdies, happily with complete success.





Prototype screening

Aluminium die cast chassis for production.

The remedy in production was exceptional attention to filter design and screening compartments for all the likely suspects. This came at a cost as an RA17 when it came on general release to the public was priced at the same level as a medium luxury car.

The iconic Wadley loop receivers: Clockwise from top left Racal RA17, Racal RA117, Barlow-Wadley XCR30 & Yaesu FRG7

The most famous Wadley loop radios are depicted above and all are most sought after by enthusiasts today. None of their service manuals spell out the operating principle of the front end, presumably to preserve competitive advantage. The RA117 was an adapted RA17 for the American market which used American valves, and employed an additional frequency conversion stage. It is not clear why because the performance is no better. Contemporary anecdotal comment attributed this to lack of gain in the mixers using the American valves. The portable Barlow Wadley has a reputation for being temperamental, difficult to align, not well accepted in the domestic market due to 2 tuning knobs, but loved by its cult followers and QRM sleuthers, benefitting from the sharp directionality of the built in ferrite rod antenna. The FRG7, with crystal filters and a design clearly owing significant input from the master himself, is a competent legacy of the design using a fixed 2nd local oscillator and a tunable band-pass amplifier in the final IF circuit giving the best performance of all in terms of cross-modulation and overload and still revered by amateurs and short wave listeners alike.

Lesser known implementations and derivatives of the Wadley Loop are the Drake SSR-1,Realistic DX-300, Standard C6500, Kyoritsu RA003B, and the National NC500. Like the Yaesu FRG 7000, and FRG 7700 that followed, they all underperformed the originals.

With the rapid advancement of LSI technology in the1970's, the cost of phased lock loop synthesisers plummeted and became the standard that displaced Wadley's innovation.

If ever there was a worthy radio for an AWA member to locate, acquire, repair and use, the Wadley loop radios have a place in your collection as a piece of truly South African heritage.

AWA/KARTS Open Day and Fleamarket

It was definitely a good day to have a Fleamarket. The sun was out, it was warm, there was coffee on the go and boerie rolls. The stalls were all fully manned and everyone was set to go.

As the people started arriving, so the atmosphere warmed and conversations were abundant.

Rad ZS6RAD got the AWA station up and running and conditions could not have been better on the band either. Even the Div 1 stations were coming in a good Q5 readability to the temporary station that had been set up.

There certainly was a lot of activity as the day wore on and when I wanted to take some pictures of the military rigs John (the colonel) ZS6BNS had on display, I was threatened with all sorts of things that may happen to me. Actually, that's not true, I just didn't think of taking any photo's of the fine display he had gone to the trouble of organizing. Of course he made it look even more official being dressed in his fine uniform.
Well done John, certainly made a change to see some of the modern stuff the military uses today. Eddie would have loved some of that for his Radar setup.
Selwyn ZS6SEL, had some fine looking Hallicrafters and Heathkit equipment on display, as well as his stall selling all sorts of odds and ends.

As can be seen below, the AWA table was manned and looked after by "Captain Grump", who was caught at just the right moment as he was about to tell me to take a hike.

Thanks KARTS, it really was a great day.

The Long Wire Antenna W8JI

Technically a true "longwire" needs to be at least one wavelength long, but Hams commonly call any end-fed wire a longwire or random wire antenna.

Long wire or random wire antennas are very simple antennas. They can come close to half wave antennas in efficiency, although efficiency decreases as they are made very long or installed closer to earth. Like every antenna that exists, random or long wires have advantages and disadvantages.

Advantages	Disadvantages
no heavy expensive coaxial feedline hanging from the span	single wire "feeder" and "ground lead" radiate
very simple to install and construct	can be a problem for lightning
excellent stealth antennas	single wire feedline can be burn or shock hazard
inexpensive	require a tuner or matching system

Because the radiating area is often brought into or near the operating position, longwires often create RF interference to consumer goods or RF in the operating room. The easy installation part comes from generally needing only two supports, and not having a heavy feedline hanging from mid-span like a dipole. The long expensive feed cable normally associated with a doublet or dipole is not needed, the antenna wire itself serving as a "feedline".

The antenna itself works just as well as any other wire of similar height and length. Any or all problems are in the counterpoise and feed system. The difficult problems associated with random wire or longwire antennas are caused by ground currents and radiation from the single wire feeder.

End-fed antennas, or antennas with the single wire feeder brought into the shack, come with a little misconception. One commonly repeated myth or "theory" is that half-wave antennas, being resonant, do not require a counterpoise, or that some magical length of antenna will prevent RF in the shack. This does not mean the antenna will be worthless and not make contacts, it simply means something else replaces the missing counterpoise area and we also bring RF fields right into the shack. The feedline, as well as everything connected to and surrounding the single-wire feedline and counterpoise, becomes part of the radiating system.

This creates three potential problems:
1.) The feedline, mast, and things around the feedline connect through the antenna into the receiver. This brings noise into the receiver.
2.) The feedline, mast, and things around the feedline become part of the radiator. This brings voltage (electric fields) and current (magnetic fields) directly into the shack.
3.) The feedline and grounding affects SWR and tuning.

Since we often do not have a baseline for noise, unnecessary additional noise will often go unnoticed. The remaining two issues are more likely to be noticed, but only if we run enough power to cause RF burns, power supply shutdown, or other forms of RFI.

Transmitter power levels, feedline length and routing, and the susceptibility of equipment to RF problems greatly influence things we most likely notice. This is why some people (usually with QRP power levels) swear by end-fed half-waves, while others (usually with higher power) avoid end-fed antennas. The reason for that is simple, end-fed half waves have common mode feedline current problems affecting their performance, and these common mode currents cause inconsistency in user satisfaction.
In nearly all cases, if we notice it or not, an inadequate counterpoise hurts antenna pattern and efficiency. This is why high power stations often have more efficient, more ideal, antenna systems. Higher power very often excludes use of power wasting systems, because the wasted power often creates significant local problems. If 5% of 10 watts is exciting the desk with RF, it isn't any big deal. If 5% of 1500 watts excites the desk with RF, the result can be hazardous.

I wouldn't have a problem with a 1500 watt transmitter into a longwire antenna with a tuner remote from the shack and house. I would likely have a fire, or damage equipment, if I brought a single-wire feeder into the house! With 5 or 10 watts, I wouldn't care.

How the Longwire or Random Wire Antenna Works.

The antenna element works the same as any other antenna. Electromagnetic radiation comes from current flowing over a spatial distance along the wire.

The single wire feeder not only radiates electromagnetic energy, it has very strong electric and magnetic induction or energy storage fields surrounding the wire for some distance out from the wire.

In order to force current up into the feed wire and antenna, the matching or feed system has to "push against" something else.

For every milliampere of current flowing into the feed wire of the longwire antenna, an exactly equal current has to flow into a ground system of some type! In any non-terminated antenna, currents and voltages are transformed along the antenna. This transformation is caused by standing waves. This means ground lead currents can increase or decrease along the ground wire and everything connected to the ground wire or ground system. Voltage changes also along the ground or counterpoise system, just as it does in antennas. The voltage caused by antenna return currents, and the return current, will become stronger (more intense) or weaker (less intense) because of standing waves on wiring and equipment cases.

These ground currents, displacement currents, or common mode currents cause everything connected to the matching system to become "hot" with RF. The result is generally all sorts of RF interference to active devices or even physical harm to the operator, such as actual burns or on lower bands like 160-meters..... electrical shocks! These unwanted but very necessary currents ideally should flow through the lowest impedance path and widest area path we can manage.

Noise from Longwire Antennas.

Radiation and fields surrounding the single wire feed system not only leak out, unwanted noise and signals can also leak in. Radiation from the feeder and everything connected to the matching system, as well as common mode currents, also allows **common mode noise ingress**. This deteriorates receiving system noise performance.

Common mode currents and induction field coupling also decreases transmitting efficiency. This effect adds unnecessary loss to the system.

If things are just right (like having a fairly good RF ground in the shack) and power is fairly low, we can often "get away" with having a random wire or longwire brought directly into the shack, but that is more a matter of good fortune than good planning.

Curing RFI and Reducing Noise, and Optimizing Performance, with Single Wire Feeds

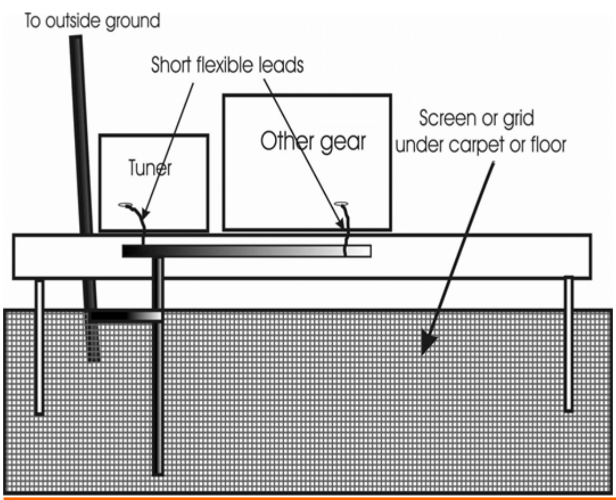
Repeating and expanding on what was said above, radiation and fields surrounding the single wire feed system not only leak out, unwanted noise and signals can also leak in. This is an unsolvable problem with a single wire feed. The very best we can do is relocate these problems to an area where they cause no noticeable problems.

We can do this by relocating the feedpoint. Relocating the feedpoint can move strong magnetic and electric fields away from the operating position, house wring, consumer devices, and our sensitive equipment. This reduces noise into the antenna feed system, and RFI caused by the antenna feed system.

Method 1, grounding.

Ground rods have limited effectiveness, except perhaps on very low frequencies. This is not saying we should not have ground rods, but rather depending on them for RF grounds is not a good idea. The RF ground should if possible contain radials or counterpoise wires and not just ground rods. Ground rods do very little good for RF! As a matter of fact adding ground rods can ***decrease*** RF efficiency when an insulated counterpoise is used.

With fairly low power and good luck, one way to mitigate noticeable problems is a ground plane at room level. This ground system can be as simple as strips of foil laid under a carpet. These conductive wide strips of foil would then be connected back to a wide station equipment ground buss. Stained-glass hobby suppliers sell adhesive backed copper foil that works very well, and is easily soldered. Another choice is aluminum foil, but this requires pressure connections that tend to be less reliable over time. As an alternative to copper foil strips, a metal screen or grid of wires at floor level can be used. This system can be right under the carpet, or can even be directly below the floor. it is important whatever is used, that is have a low impedance RF connection to the cabinets or chassis all desk equipment.



This type of counterpoise system makes the entire room, including the operator, "rise" in voltage and match the equipment chassis voltages. It also disperses or spreads the current and voltage around, reducing intensity of localized electric and magnetic fields. This is very effective for a second floor (or higher story) RF ground. Like standing on a metal plate carrying high currents, there is little potential difference between different areas of the high-conductivity counterpoise sheet.

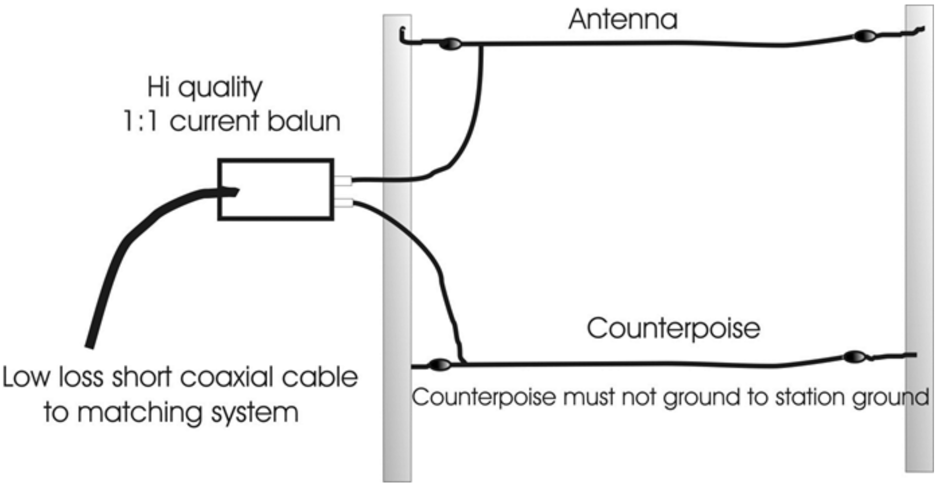
The antenna lead from the tuner "longwire" terminal to the antenna should parallel and be reasonably close to the outside ground lead, if possible. This forms a two-wire transmission line, which helps to reduce external fields. the single wire feeder should be kept away from the operator and RF sensitive equipment. The lead to the longwire antenna should be as short and direct as reasonably possible, because the feed wire is a leaky transmission line.

The grid of foil, metal screen, or wire grid does not need to be too dense. Below 30 MHz, spacing conductors one to two feet apart is nearly as effective as a solid sheet.

If we can't do that, then sometimes a 1/4 wave counterpoise along the baseboard will work. But it is fart better to disperse the current in a widely spread-out path, making all areas of the operating area have similar RF potential without concentrated currents.

Method 2, Keep Problems Outside
The best method of taming a long wire is to install a good low-loss current or choke balun just outside the operating room. This effectively puts distance between the leaky feeder and radiating ground leads outside and away from sensitive equipment.

Basic Simple System
A system like this is ideal for a minimal investment unobtrusive counterpoise. This system, even with a minimal RF ground, keeps common mode currents out of the operating area. This system reduces noise and RFI. It generally eliminates the need for a shack "floor groundplane". The balun must be a reliable current balun with high common mode impedance. A voltage balun, or a single core 4:1 balun, will make things worse. The counterpoise can be a ground system like radials instead of a single counterpoise. It just cannot connect back to the station entrance ground, or the balun's ground. If it is a single wire or a few wires, they should be insulated from earth and kept a little distance above earth. Ideally the single wire counterpoise should be directly under the longwire antenna, and a few feet above earth. Remember the counterpoise will have considerable current and voltage, and might be an RF burn or shock hazard.



Because a counterpoise is less than perfect, and can even have a fairly high impedance on some bands, the counterpoise system will try to "ground" back through the station gear. **Unun's and voltage baluns** have a low impedance path for common mode currents, and will not isolate counterpoise currents from the shack equipment. A current balun isolates the ground path from the counterpoise to the shack. The balun must be a high quality current balun, not an unun or voltage balun. It should be a 1:1 ratio with high common mode impedance and high voltage breakdown. The coaxial feedline, since it operates at high SWR, should be high quality and as short as possible.

Ideally the counterpoise wire should be elevated above earth. This minimizes earth losses, and the counterpoise should not be connected to a ground rod or especially to the station ground. The required lightning and safety grounds must all be on the coaxial side of the balun. Unless the ground system is nearly perfect with near-zero RF impedance, it is best to keep the antenna's ground or counterpoise isolated from the feedline shield and station equipment.

Improving the System Above
At the expense of simplicity, a better ground will improve efficiency. A better ground would be multiple radials, or multiple counterpoise wires. The ideal system, in which efficiency would nearly equal that of a balanced center-fed system, would be a ground system similar to radials for a vertical. The ground system can include existing wire fences or metal plumbing, or might be a totally new system installed just for the antenna. A good enough ground system, or large area counterpoise system, reduces RF voltage on the ground terminal. If the voltage on the counterpoise or radial ground system is large enough to present a low impedance, station equipment and the antenna ground systems can be tied together. Isolation, such as a current balun, might not be required. The counterpoise, in effect, becomes "less hot" with RF voltage.

Such a system would minimize RFI and electrical noise problems. With a large system of multiple wires, current density in lossy earth surrounding the radials is reduced.

One common misconception is a near-perfect ground needs 120 quarter-wave or half-wave radials. This is not true. Even 15-20 radials can form a very low loss ground. All we can do is install the best ground we can manage. The more wires used in a counterpoise or ground, and the more spread out the conductors are, the less critical and frequency sensitive the system becomes. The point of diminishing returns is generally around 15-25 radials. If 40-60 reasonably long radials are used, any further increase becomes meaningless. A semicircle of 10-20 radials radiating outward from the feedpoint, generally following the antenna direction, is usually good enough to make further work a waste of time. The best systems would centre equally on each side of the antenna, if possible. Small systems should be suspended above ground, if possible, to minimize losses.

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Antique Wireless Association of Southern Africa

Mission Statement

Our aim is to facilitate, generate and maintain an interest in the location, acquisition, repair and use of yesterdays radio's and associated equipment. To encourage all like minded amateurs to do the same thus ensuring the maintenance and preservation of our amateur heritage.

Membership of this group is free and by association.

Notices:

Net Times and Frequencies:

Saturday 06:00—AM Net—3615
Saturday 07:15—Western Cape SSB Net— 3630
Saturday 08:30— National SSB Net— 7140; relayed on 14140
Saturday 14:00— CW Net—7020
Wednesday 19:00— AM Net—3615, band conditions permitting.

AWA Website is operational;

Visit the website at : **http://awasa.org.za/** and register on the site.

RESULTS OF THE AWA QSO PARTY:

Thanks to all who took the time to join us on the QSO party. The SSB section was obviously the more popular of the 2 but there was still a lot of interest shown in the AM section. Band conditions played a big part in the whole affair and were absolutely perfect for both sections.

AM— First place Richard ZS6TF
Second Johan ZS4DZ

SSB- First Place Renato ZS6REN
Second place Johan ZS4DZ
Third was shared by Patrick ZS1PDY, Theo ZS6TVB and ZS6KTS who all scored the same points

There were 80 station's logged in total on the SSB section and 35 logged on the AM Section.

A total of 9 logs were sent in.