



AWA Newsletter

85

February 2013

Affiliated to the SARL



Antique Wireless Association of Southern Africa

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AWA Committee:

- * President—Richard ZS6TF
- * Technical Advisor—Rad ZS6RAD
- * Secretary/PRO—Andy ZS6ADY
- * Western Cape—John ZS1WJ

Reflections:

Is it only me or are there others who at times just feel like throwing it all in, getting rid of all the equipment you have collected over the years and just putting up your feet and taking it easy for a while.

Then I think to myself, well, what if after I get pins and needles in my feet from having them up in the air for so long, I decide I want to get back in to amateur radio, because, after all, I would not let my licence expire. If I had to re-write the exam I would probably fail.

So maybe I will just ignore my shack for a while and stay away from the radios.

I'll work in the garden, or paint a room, or fix some of those things the XYL has been asking me to do

for the past year. You know, become active, or something like that.

After the first few days, I can already feel the attraction of my shack, like a drug. I start to think about a few modifications I would like to do, move a few of the rigs around. Get some of those well spoken about projects finished so I can add some new old stock to the racks.

I start to imagine what it will be like to operate some of the rigs I was busy restoring and I'm hooked again. I can't wait to get back in the shack and fire up some of the rigs.

The worst of all is that the feeling doesn't last too long. After several CQ's on CW and a few wild calls on 40m, the interest starts to wain again.

Then all of a sudden someone comes back and tells you you have a 5/9 plus into Koppies, and the blood starts to flow again.

What it is to be a radio enthusiast, because that's what it really is all about. It's the enthusiasm we show when called on to do things. It's the knowledge that there will nearly always be someone out there with a similar interest and a similar feeling, ready to come back and rag chew with you. It's the understanding that goes with the hobby knowing there are others who have had similar problems to what you are experiencing when your radio goes south.

Nah, I think it must just be me !

Best 73

DE Andy ZS6ADY

WIKIPEDIA

Special Properties of RF Current

Electric currents that oscillate at radio frequencies have special properties not shared by direct current or alternating current of lower frequencies.

- The energy in an RF current can radiate off a conductor into space as electromagnetic waves (radio waves); this is the basis of radio technology.
- RF current does not penetrate deeply into electrical conductors but tends to flow along their surfaces; this is known as the skin effect. For this reason, when the human body comes in contact with high power RF currents it can cause superficial but serious burns called *RF burns*.
- RF currents applied to the body often do not cause the painful sensation of electric shock as do lower frequency currents. This is because the current changes direction too quickly to trigger depolarization of nerve membranes.
- RF current can easily ionize air, creating a conductive path through it. This property is exploited by "high frequency" units used in electric arc welding, which use currents at higher frequencies than power distribution uses.
- Another property is the ability to appear to flow through paths that contain insulating material, like the dielectric insulator of a capacitor.

When conducted by an ordinary electric cable, RF current has a tendency to reflect from discontinuities in the cable such as connectors and travel back down the cable toward the source, causing a condition called standing waves, so RF current must be carried by specialized types of cable called transmission line.

CW Net:

The CW net has continued to run along without too many hiccups and a regular attendance of about 5—6 stations.

It's always great to hear these stations on freq and always good to be able to work them on CW.

I must say, I have been making a concerted effort these last few weeks to try and come up as often as I get the chance on CW frequencies in an effort to improve my own sending and receiving.

I have taken the advice of Ian ZL2IAN and set myself some targets to try and achieve during the course of the year. The first is to get my sending and receiving up to 15 to 20 WPM and second to try and get my WAZS in CW.

The first one I can see being quite achievable, but the second I seriously have my doubts about.

Looking at my requirements, the 39 required div 6 stations and the 15 required div 1 stations are probably the biggest hurdles I will have to face. I don't know if there are that many CW operators in those 2 divisions to actually achieve those numbers.

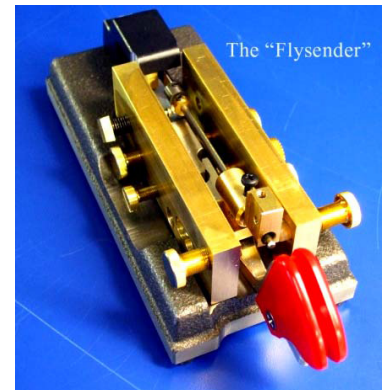
But try we will, in the words of Yoda, and succeed we may.

Every CW contact I make that I can add to my log is an achievement, and when done I feel quite good about it. As daunting as it may seem, I will certainly give it a go and see how far I can get. Who knows, I may just be pleasantly surprised.

The main problem of course is trying to get the contacts confirmed either by hard copy QSL or by electronic version on the SARL website.

Whichever way it goes, you can be sure to hear me calling CQ on 40 and 20m, looking for any CW contacts.

Be sure to come back to me, even if it's just to exchange numbers and call sign.



SSB activity:

By now, we are well in to running the SSB net on a Saturday morning using a topic of discussion.

There have been some interesting topics and even more interesting replies that have come out on air.

Personally, I have been enjoying this format tremendously. My only regret, is that I have not recorded them, as there has been some good Newsletter material which may have been lost as a result of this.

But now it's time to ask you, the member, your opinion. What do you feel about the new format?

It may just be that for some it is boring and

you may decide to no longer come up on frequency. That is the last thing we want to happen.

Looking at the percentage of call ins, we have increased in the number of calls being taken on the Saturday net in leaps and bounds. So it obviously is proving to be popular.

Send us an email, or write a letter, but please let us have your thoughts on the new format. The last thing we want to do is drive any of our regular members away, or even make new members think twice about calling in.

Band conditions have been quite favourable over the last few weeks with nearly all divi-

sions being well heard and most stations having good readability.

Looking forward to hearing many more of you on the SSB net.



Yaesu FT200

AM:

The AM net on a Saturday morning continues to be well attended often with up to 8 or 9 stations calling in.

This seems to be the norm and 80m, although not fantastic, seems to always be consistent.

With the winter months approaching, the start time is moving out by a few minutes every Saturday, allowing the Div 5 stations to call in a bit later, before band conditions go out and we start to lose them.

The Wednesday evening net will also start to be better now as the summer storms move away and evening QRN starts to dissipate.

Already we have noticed a marked improve-

ment in band conditions on the evening net and we have had a few good evenings already.

The stations operating on AM these days seem to be moving towards the valve rigs more and more and it is pleasing to hear the progress being made on AM and the quality of the AM transmissions. Once again, the music that is transmitted is just a test of the quality of the AM being put out and we should remember the regulations pertaining to the transmission of music on this frequency. We certainly are privileged in SA to be able to do music transmissions.

We hear rumblings of many more people looking at restoring AM rigs and are looking

forward to hearing some of them on frequency. If you are just a listener, then send us reports on the various stations, it would be appreciated by all.



Gonset 100

ALC Adjustment Procedure

Alan Applegate (K0BG)

An Automatic Level Control (ALC) circuit governs the signal strength going into the power amplifier in a ham radio transmitter. It keeps the amplifier input in the designed range for linear operation.

Depending on the ALC circuit design and how hard it is driven (by the microphone output level and mic gain setting), the ALC circuit can distort the signal and cause interference.

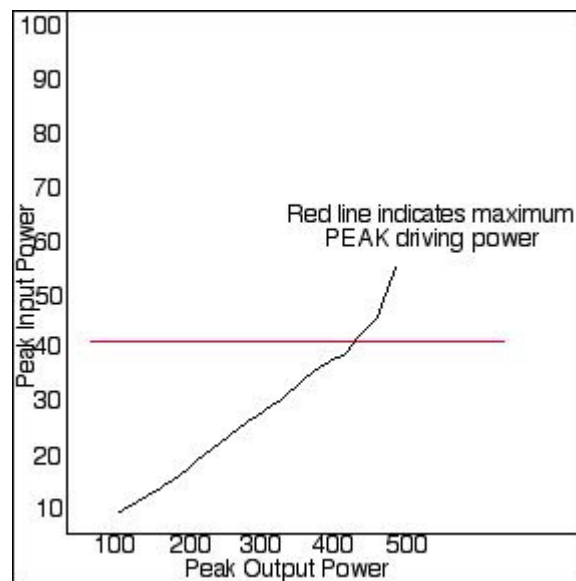
This article is about how to operate a transmitter at the optimum point—where the average signal level is as high as possible without noticeable distortion or interference.

Contrary to popular belief, modern HF amplifiers do not require a full 100 watts to drive them to full output. The truth is, most tube amplifiers only need about 65 to 80 watts for full rated output, and some as little as 40 watts. Depending on their input circuitry, some solid state designs require just 25 watts! Regardless of their design (tube or solid state), over driving any amplifier produces a lot of negative results. Intermodulation distortion (IMD) is increased, tube (transistor) life is shortened, power supplies are over stressed, and the resulting splatter is anger inducing.

With the exception of most solid state mobile amplifiers, almost every modern amplifier has an ALC output. ALC, which stands for Automatic Level (Linearity) Control, provides an adjustable negative-going DC voltage which is fed back to the transceiver to control the amount of drive to the amplifier. If it is connected, and properly adjusted, ALC can limit or eliminate the aforementioned negatives. The problem is a lot of amateurs never connect the ALC believing that the 100 watts PEP their transceiver delivers can't overdrive their amplifiers. This is an erroneous notion. Even when it is connected, all too often it is not adjusted properly.

The proper level is easy to arrive at and requires just two pieces of test gear; a dummy load and a peak-reading wattmeter. The dummy load is necessary for obvious reasons. The need for a peak reading wattmeter is less obvious. Without getting into a deep technical discussion about power supply dynamics and other esoteric data, let's just say it is best to adjust the ALC by transmitting via SSB while monitoring the PEP.

Before we start let's go over what we're going to do. We're going to set the ALC just at the level where the power out is just below the point where the amplifier transverses into non linearity (the chart at right was made for a fictitious solid state amplifier, but clearly shows the transverse point). Then we're going to increase the ALC slightly so we're well into the linear portion of the amplifier's power curve. So here we go.



First, set the transceiver to put out its standard 100 watts PEP (into a dummy load). Your speech patterns are important here, and rather than say "test, test", recite your address, city and state.

Next, tune up your amplifier like you normally do, but with the ALC disconnected. WATCH YOUR DRIVE LEVEL! 30 to 50 watts is typically enough for tune up purposes. When you're finished put the amp in standby.

Next, hook up the ALC and turn the amplifier's ALC adjustment pot fully on (usually clockwise). Turn on the amplifier and transmit in SSB again with full drive. If the ALC is working as it should, the peak power out will be well below what it was without the ALC connected. Slowly decrease the ALC level while continuing to talk. At some level, the peak output power will stop increasing. The control should be turned back up until the power again drops. A good rule of thumb is 10% down from the peak power out. This keeps the amplifier well within its linear curve. If you're not going to use any built in speech compression, this is where you want to stop (more on this in a minute).

The last item is to readjust the transceiver's drive level. It should be reduced just to the point where the peak power starts to drop off. Next, turn the amplifier to standby and measure the peak power out of the transceiver. Increase it by about 10%. There's a good reason for this. Using a little more ALC than is required, and with just a little more drive than is required, will provide a moderate amount of RF compression. If you intend to use speech compression, you'd be well advised to increase the ALC level an additional 10%. Remember, compression puts heavy demands on power supplies, no matter how well they are built. Whether excessive IMD is caused by overdrive or power supply dynamics, splatter is splatter!

The aforementioned is applicable to tube or solid state amplifiers alike. However, if you're using an amplifier without an ALC output (SGC SG500, Ameritron ALS-500, etc.) then I suggest you read the article on my web site geared toward those units. Incidentally, most of the new series of solid state amplifiers hitting the market these days, require the ALC to be connected as it is an integral part of their built in self-protection scheme. What's more, solid state amplifiers are much less forgiving of overdrive than most tube ones, and extra caution is warranted.

To close, allow me to add a few bits of wisdom. It is indeed possible to drive any amplifier with more power and get a little more power out of it. What you have to do is ask yourself, is it worth it? Not only does overdriving cause excessive IMD (splatter), it taxes every other part of your station, and shortens the lives of every part in it. And for what purpose? Do you really believe an extra 50 or 100 watts out will make that rare DX station suddenly hear you out of the pile up morass? I seriously doubt it. But I do know this. A good, clean signal with just a hint of RF compression is a prescription for increased contacts, to say nothing of the comments you'll receive about having a clean, clear signal, and one free of trash and splatter. Moderation is the key. Think about it!

Alan Applegate, K0BG

<http://www.k0bg.com/>

Conclusions

- The ALC meter is an important tool for finding the best mic gain. Check the operating manual for recommendations.
 - Both experts advise keeping ALC activity low—setting the mic gain so the meter just shows ALC activity on your voice peaks.
 - Alternatively, use a wattmeter to find the point where the *peak* power stops increasing as you turn up the mic gain, and operate just below that gain setting. Note that the *average* power continues to increase with mic gain, well past the onset of ALC activity. Use the ALC meter, and avoid the temptation to maximize *average* power.
 - The speech compression circuits (sometimes called speech processors) in many transceivers can cause distortion that decreases the intelligibility of your signal. G8JNJ advises turning off compression in the FT-897D unless your signal to noise level is low because of band conditions.
 - If possible, use a second radio or the monitor function on your transceiver to listen to recordings of your audio.
 - Collect on-air signal reports in a variety of band conditions.
-

PRESIDENT'S CORNER

By Richard ZS6TF

YOU ARE NEVER TOO OLD TO LEARN

About 3 months ago I had the pleasure of observing one of our more technically enabled and professional members, trouble shoot a popular 1970's pre-microprocessor, solid state rig that had 28 volts applied to it due to pass transistor failure in the PSU. I was the intelligent (?) spanner boy and marvelled as the maestro systematically and speedily gave the kiss of life to a transceiver that I had pronounced all but dead. Very few instruments beyond the multimeter were used and I learnt that "the ear is our most sensitive instrument". After seeing dead components fly off the PCB with amazing deftness, I realised I had to overhaul my own soldering/de-soldering equipment and techniques as a matter of urgency.

More recently, Rad our technical guru mentioned over the air he was testing capacitors in situ in a rig with an ESR meter. I bared my bosom in front of the 80 metre gang and asked "what is an ESR meter?" He kindly emailed 3 articles to me which set the ball rolling on a very satisfying, and useful project. None of the articles really defined the construction process with certainty and I was able to do a bit of Google research and a bit of own R&D to come up with a user friendly mains powered design that works very well, and refreshed in the process my op amp theory lost in the grey matter.



The meter measures ESR "Equivalent series resistance" in the range 0 to 25 ohms at 100kHz, to enable a good, dodgy, or unserviceable judgement on the capacitor to be made. With it you can winkle out the ESR hiding behind the inconvenient open circuit of the capacitor, and since the lower the ESR the better the capacitor, it differentiates between a really good one and a short circuit. Best of all, the measurements can be made in-situ without disconnection because the ESR will be much lower than any other resistance across the capacitor. The meter has a terminal voltage across the probes below 100 mV, too low to switch any semiconductor junctions on that may be present in the circuit and affect the measurement.

In another learning experience I have uploaded the full constructional article to the AWA Yahoo group for the benefit of those members who would wish to build one. I know our PRO Andy wishes that more use is made of the group and I think if members start posting useful info and pictures on the site it will take off.

Your President has just taken a step into the unknown by agreeing to host the Sandton 70 cms IRLP repeater node at his QTH in sunny Bryanston. IRLP provides a DTMF tone selectable audio link using VOIP technology over the internet to one of thousands of VHF and UHF repeaters globally. Maybe this will provide a useful relay path to our Western Cape members for the AWA SSB net on a Saturday morning.



THERE are a number of reasons why the "HQ-120-X" has won such universal approval among leading amateurs. From start to finish it was designed with one thought in mind—performance. Six bands are used to provide low C tuning circuits with maximum gain and uniform sensitivity. The antenna compensator provides maximum signal-to-noise ratio with a given antenna system. A Hammarlund patented variable selectivity crystal filter provides just the right degree of selectivity at all times. High stability is maintained with voltage regulation and drift compensation. There are, of course, a number of other features such as calibrated band spread dial, automatic noise-limiter, and the usual beat oscillator, send-receive switch, phone jack, etc. There is nothing fancy about the "HQ"—it's all receiver.



CRYSTAL CARBON • MICROPHONES • STANDS

SHURE CRYSTAL MICROPHONES

A high grade line of new type crystal microphones. Noted for high quality sound reproduction. Extensive tested for all types of A.W. work requiring exceptionally fine tonal quality. No make current required.

MODEL 78H SOUND CELL TYPE

H7731.
List. \$85.00.
YOUR PRICE. \$38.22

A conveniently small, demountable wide-range crystal microphone for high quality reproduction. Has exceptionally wide frequency response from 50 to 10,000 cycles. Emphasizes a special "brass" sound. Cell completely chromium-plated including protective screen. Electrically shielded. Only 1 1/2 inches in diameter. 3 in. high. Supplied complete with internal plug and receptacle which fits all standard microphone stands.

MODEL 70H DIAPHRAGM TYPE

H7691.
List. \$22.50.
YOUR PRICE. \$13.23

A superior crystal microphone of the diaphragm pressure-actuated type. Special oscillator principle employed aids in effectively handling a wide range of sound. Output, -60 db. Beautiful cast chromium-plated case. Mounts directly on mike stands having 3/8" threaded shaft, or may be surge-mounted by means of hook and eye. Supplied complete with 7 ft. shielded rubber-covered cable.

74A "Spheroid"

H7698.
List. \$37.50.
NET
\$22.05

Radically new, absolutely new directional wide-range crystal microphone of striking appearance. Specially shaped small diaphragm drives a new type "Granite" diaphragm which uniformly reaches the diaphragm uniformly from any angle through 360°. Excellent frequency response is flat within 5 db. from 50 to 10,000 cycles. Output level, -55 db. Weighs only 1/2 oz. 2 1/2 inch diameter. Complete with locking ring and standard adapter having 3/8" thread.

MODEL 73A LAPEL MICROPHONE

H7696.
List. \$25.00.
NET
\$14.70

Invaluable for soundings and stage presentations. Particularly useful for moving about freely. Assures consistently dependable pickup. Has exceptionally faithful response characteristics. Output level is minus 65 db. Free from internal or background noise. Weighs less than 2 ounces; only 2 inches in diameter. Has spring clip for easy fastening to clothing. Equipped with 1 1/2' of shielded rubber-covered cable.

ASTATIC CRYSTAL MICROPHONES

Newly developed, exceptionally well-built crystal microphones. Feature excellent frequency response characteristics and relatively high output level. Ideal for all high quality public address work.

MODEL D-104

H2190.
List. \$22.50.
YOUR PRICE. \$13.23

A new improved crystal microphone of rugged construction. Uses a Piezo C7 piezo element. Practically undisturbable. Response equally well in any position. No hiss or background noise. Has excellent frequency response essentially flat from about 50 to 10,000 cycles; output level -45 db. High impedance; may be connected directly to tube grid. No field or button current required. Housed in an attractive chromium-plated case. 2 in. diameter; 1 1/2" thick. Supplied with 8 ft. rubber covered shielded cable and handy mounting hook.

D-2 WATCH CASE MODEL

H2192.
List. \$25.00.
NET.
\$14.70

A small, light crystal microphone of exceptionally good frequency response characteristics. Uses a newly perfected Grafil Crystal and very dual tone diaphragm design. Non-directional. Frequency response is flat from 50 to 10,000 cycles. Output level -45 db. Very attractively designed in beautiful chromium-plated, rugged construction. Case 1 1/2" in diameter, 1 1/2" high. Supplied with 8 ft. 1 1/2" diameter, 1/8" thick shielded cable and handy mounting hook.

MODEL K2 MULTIPLE UNIT

A very attractive crystal microphone which employs two diaphragms in a balanced opposition driving a torque crystal element. Unique design makes it absolutely non-directional. Has essentially flat response characteristics from 20 to 6,000 C.P.S. and an advantageous rise of 10 db. at 10,000 C.P.S. Output level, -55 db. in diameter. 2 in. diameter. High fidelity quality sound work in Broadcasting Studios, High Fidelity Public Address Systems, etc. Equipped with insulated plus and minus diameter, 1 1/2" in diameter, 1/8" thick shielded cable and shielded receptacle to fit any 3/8" threaded shaft. Supplied with 8 ft. of cable.

BRUSH SOUND CELL CRYSTAL MICROPHONE

MODEL BSR. Well-designed crystal microphone. Ideal for all sound work where true high quality is required. The precision ground surface consists of two distinct piezo-electric diaphragms. Has essentially flat response characteristics and complete wide frequency response characteristics and the complete elimination of phase shift or diffraction. Output level -45 db. 4 1/2" inches high; 2 inches wide; 1 1/2" in diameter. Supplied with 8 ft. of 1 1/2" diameter, 1/8" thick shielded cable. Price all 3/8" threaded stands. Supplied with 8 ft. of cable.

SHURE MICROPHONE STANDS

MODEL 51DC

A new, moderately priced stand. Very attractively finished in rubber-black. Uses 1 1/2" chrome circles on base. Has adjustable height between 24" and 30" inches. Standard 3/8" threaded shaft. H7733. List. \$25.00. NET. **\$13.82**

MODEL 53R

High quality attractive floor stand with ring. Uses an automatic friction-lock for simple sure adjustment of the stand to height desired. Has hollow stem for cable. Ideal for use with all types of ring mounting microphones. Pinch-bolts in rich rubber-black with chromium-plated collar and ring. Heavy chrome base is 10 1/2" inches in diameter. Height adjustable to top of ring, 29 to 75 inches. Supplied complete with 8' microphone section. Silver, 1 1/2" dia. H7734. List. \$25.00. NET. **\$9.41**

MODEL 53A

An inexpensive attractive floor stand with an automatic friction lock. Made in three sections adjustable from 31 to 60 inches. Has a handsome 10 1/2" base. Finishing is finished in rubber-black with chromium-plated hardware. Complete with standard ring and springs. H7736. List. \$25.00. NET. **\$7.35**

MODEL 61A

High quality 16 inch Barquet Stand finished in polished nickel. Complete with ring and springs. H7737. List. \$25.00. NET. **\$2.94**

UNIVERSAL MICROPHONES

MODEL "XX" TWO BUTTON MICROPHONE

H7550.
List. \$10.00.
NET.
\$5.88

Develops truly faithful, natural tone. Has good frequency range. Equipped with Durabone diaphragm, pure gold contacts. Inexpensive built, and comes per button.

MODEL "W" LAPEL MICROPHONE

H7555.
List. \$5.00.
NET.
\$1.76

Very compact, sensitive lapel microphone. 100 ohm single button, gold spot center diaphragm. Size, 1 1/4" x 1/2" inches.

MODEL "XX" TWO BUTTON MICROPHONE

H7551. Similar in design to above but of single button type. A high quality unit. NET. **\$4.41**

MODEL "BB"

Double button microphone with protected stretched diaphragm. Frequency range, 50 to 5,000 cycles. 90 ohm per button. 2 inch diameter. H7552. NET. **\$14.70**

AMERICAN MODEL "EL" TWO BUTTON MICROPHONE

An outstanding carbon microphone value. A die-cast ruggedly constructed unit featuring natural tone diaphragm. Has stretched 102 Diaphragm diaphragm. Has essentially flat frequency response from 50 to 2,000 cycles. Standard impedance, 90 ohm per button. 1 1/2" inch diameter. H2185. YOUR PRICE. **\$4.90**

AWA 10th Birthday.

For those of you who have been with us from the beginning, you may just remember that it was in March 2003 that the first meeting on air of the AWA of Southern Africa was took place.

Now it is 10 years later and we are celebrating 10 years of being on the air and many various activities that take place on air. In celebration of this, we have designed a special QSL card.

In order for you to get this celebratory QSL card, you need to contact ZS0AWA during one of the QSO parties, or activity days that take place during the year. That would be the CW activity day on the 3rd and 4th of February. The AWA QSO party on AM and SSB on the 11th and 12th May and the QSO party on the 12th and 13th October.

Should you have a QSO with ZS0AWA on any of these dates, send us a QSL with a SASE and we will send you the QSL Card.

ZS0AWA - 10

THE OFFICIAL CALL SIGN OF THE SOUTHERN AFRICAN ANTIQUE WIRELESS ASSOCIATION

10TH ANNIVERSARY 2003 - 2013

To Radio	Date	UTC	MHz	Mode	RST

Many thanks for our QSO, PSE / TNX QSL! **73 de ZS0AWA**

2003 CLIFF ZS6BX
2004 BUSHY ZS6M(SK)

2005 ROD ZS6RK
2006 ANDY ZS6ADY

2007 GARY ZS6NK
2008/9 RAD ZS6RAD

2010/11 DON ZS6DR
2012/13 RICHARD ZS6TF

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Get your backdated issues at
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group/AWA_SA/](http://groups.yahoo.com/group/AWA_SA/)

**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 yester-days 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:**

The following are times and frequencies for the AWA nets:

AM Net—Wednesday evenings from around 19:00, when band conditions allow.
Saturday mornings from around 05:00. Frequency—3615.

SSB Net—Western Cape net Saturday morning from 07:30. Frequency 7070
National net Saturday mornings from 08:30. Frequency —7070

CW Net—Saturday afternoon from 14:00. Frequency—7020.

(Times given are CAT or SAST)
