



AWA Newsletter

Issue 24

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Antique Wireless Association of Southern Africa

2 Years and Still Going Strong

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Welcome to the 24th edition of our Newsletter and I hope that you have had as much enjoyment reading them as what I have had compiling them.

Sometimes we have had to scrape the barrel for articles, but most times there is more than enough information out there to be gleaned and gathered.

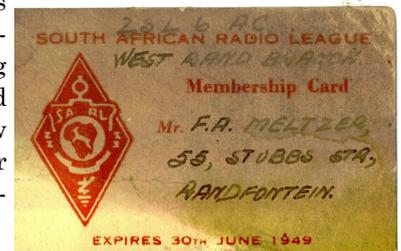
Over the past 2 years there has been quite an interest in the AWA and it's really amazing to see how many Hams there are who take valve technology quite seriously, and how many boatanchors there are out there still in "pristine" condition.

It would be interesting in the new year to put out a survey to see who has

what in their shacks and look for that ultimate oldest working rig in SA. We have asked this question a few times, but don't ever really get much response.

Thanks to all those who have sent me articles and photo's for the newsletter, it's always good to get them. Sometimes I cannot put everything in, but most times the articles are used. Photo's are always welcome and please continue to keep them coming in.

Next year will see us with a new President for the AWA and our thanks to Gary ZS5NK who has stood in the gap this past



SARL Membership Card from 1948

year. May your tubes continue to glow brightly.

All that's left for me to do is wish you all Holiday greetings. For those going away, remember to disconnect and earth your equipment while for those remaining behind we look forward to a few good QSO's over the holidays.

Best 73

Andy ZS6ADY

AWA Committee:

- * President—Gary ZS5NK
- * Technical—Rod ZS5RK
- * PRO—Alan ZS6BIK
- * Member—John ZS6ABJ
- * Newsletter—Andy ZS6ADY

The 'Q' Code :

How much can you remember of the Q code. For myself, there's not too many of them I can recall except the ones that we tend to use regularly.

Many hams don't like using the Q code on phone, as they say it was designed to be used only on

CW. That may be true, but it certainly has proved the test of time in Amateur Radio. Here are a few less frequently used codes :

QRG—What is my exact freq ?

QRL—Are you busy or is this freq busy ?

QRO—Shall I increase power ?

QRQ—Shall I send faster ?

QRS—Shall I send slower ?

QRV—Are you ready ?

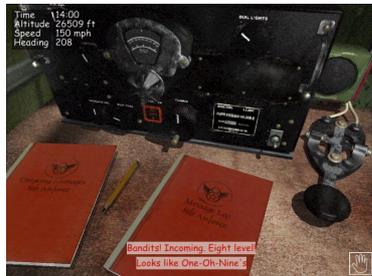
QRX—When will you call again or stand-by.

QRT for now.

CW Net:

The CW net continues on Saturday afternoons at 14:00 SAST and there have been a few regular callers on this net who have always been there. To Ian, ZS5IAN, who will be reading this newsletter in New Zealand, many thanks for the support that you gave the CW net from its inception. Whether Ian was away for the weekend at one of his favourite spots, or at home, he would call in

on the net. Thanks Ian and we look forward to hearing the melodious sounds of your key in SA again soon.



Radio Operators Gear on a B17 Bomber

Of course there are also other regular callers. Barrie ZS6AJY, Pierre ZS6BQS, John ZS5JON, John ZS6JBJ, and a few others heard less frequently.

Pierre has been doing some good PR work on the SARL Forum

about QRP CW, so listen out for a few more stations promising to come on the air with homebrew rigs and others. It's amazing how much interest that thread has generated and how many CW operators there are looking for a way to get going again as well as those forming new interest and wanting to do CW.

If all these things come to fruition, there should be quite a bit of CW activity on the bands.

Looking forward to hearing you all there.

De ZS0AWA/CW

SSB activity:

40m Continues to play hard to get and band activity has been poor to frightening over the last month. Yet we cannot complain about the number of call in's we have had even with poor band conditions. It makes you think we are doing something right or we have a bunch of dedicated hams who just love using their old rigs. I would like to think it was a mixture of both.

It would seem that the 80m relay would still be the best answer for those stations who are skip to the control station and it does make it rather difficult to relay someone

No respite in band activity and certainly nothing in the near future.

from 40 to 80 when they are a Q3 S1 signal.

Please remember the 80m relay on 3615, it's always there and always gives results.

Thanks to Rad who has been helping out with the running of the net while Willem has been off line with antenna problems. The offending tree has been removed from his site and Willem should be back on air shortly.

AM:

The AM group still seem to be functioning quite well with lots of activity over the past month.

We know that there are listeners out there who often tune in to the AM net, so send us a report on how well you receive or not.

Somehow AM seems to work a lot better than SSB under the conditions we have been experiencing and it's wonderful when you hear the carrier come in and the noise disap-

pears as the S meter needle flicks up to an S9 plus. Enough to make you want to be a radio ham.

We know there are a few more chaps out there looking for AM equipment to get a station up and running. If you have any excess equipment you are wanting to dispose of, then drop us a note. It won't sit around for long.

Come and join us on a Wednesday evening or Saturday morning.



ZS6RAD SX28 Magnificently Restored

Reactivating Old Rigs

By Ken Ketner, KA5ELD



Work-up procedure for reactivating long-stored or long-stale tube rigs

(with minor changes to suit RSA conditions from ZS6RAD)

by Ken Ketner KA5ELD

PREPARATION PHASE

Unless you are an experienced tech with TUBE rigs, do not proceed without a manual. Study the manual and schematics until you are familiar with the general operation of the equipment, and the theory of its function. There are many manual suppliers on the web.

My favourite is W7FG manuals www.w7fg.com. Many manuals are available for free download from BAMA at <http://bama.sbc.edu> (this site does not seem to be working) and from <http://bama.edebris.com/manuals/>. Many Swan manuals are available for free download at <http://www.6mt.com>. Yaesu at

<http://www.foxtango.org/foxtango001.htm>. Hallicrafters at <http://www.w9wze.org/>

There are many sites and best is to Google for the item you need.

POWER SUPPLY (may be separate or may be inboard on the rig).

PS 1. BE SURE PS is NOT plugged into an AC source. While the power cord is in your hands, check it for soundness. Take the cabinet parts off, including bottom plates. Using a screw driver, ground to chassis all plus terminals of electrolytic caps. (Yeah, I know it probably hasn't been plugged in for decades, but there is no such thing as probably hurt, and it is a valid habit to form - always discharge electrolytic caps before going into a PS the history of which you don't know - tubes are high voltage gear unlike transistors which are typically low voltage.)

Clean cabinet parts with soapy water and brush. If the finish is bad, I like to have mine powder coated (see the account at

http://www.w9wze.org/Restorations/PowderCoating/Powder_Coating_KA5ELD.htm).

Use a dry 1/2 inch paint brush and an air compressor to blow away dust from chassis and parts (not just a cosmetic thing, because dust or carbon traces can cause electrical problems).

Inspect for obvious damage or problems:

- burned out resistors
- bad solder joints (should look shiny, be complete, have no graininess or dull gray)
- loose or frayed wires/damaged insulation

PS 2. Use ohmmeter to test diodes - normal is low resistance in one direction, high in the reverse direction. Radio Shack has replacement 2.5 Amp 1000 PIV cheaply which should work ok in 900v PS. (Better still 1N5408 series which are 3A)

PS 3. Check all grounds, especially tighten grounds bolted or screwed to chassis (ground connections are part of the circuit too). Sometimes the ground is thru a pot or switch mounting bolt - check those to see if they are firmly tight.

PS 4. Check electrolytic capacitors preferably with a capacitor tester which will slowly apply working voltage (bring the voltage up slowly arriving finally at the working voltage with little or no leakage - if there is leakage after a forming period, replace). One has to remove one lead of the cap to get a good leakage test and for a good re-forming. It is better to reform caps singly instead of bringing them up all at once with a Variac, because "complex systems fail in complex ways." Better to get some surety about these crucial components in the PS instead of relying ONLY on a Variac initial start (which should still be done later). If you have not reformed electrolytic caps, get some info on it (a web

search for REFORMING CAPACITOR using Google will yield several sources of info, such as http://www.angela.com/catalog/how-to/about_caps.html. If you can get or borrow a Sprague Tel-Ohmike or one of the Heathkit cap checkers, you will have the circuits to handle caps of all kinds.

PS 5. If there are any paper or moulded plastic caps (non-electrolytics), replace those with contemporary 600 v moulded brown from RS or Communica 600v or 630v. In some cases, a higher working voltage may be called for - it is ok to use a higher working voltage in the replacement, but not a lower value.

Test continuity on transformers and chokes. Test and secure all mounting bolts on transformers and chokes - if they are loose the components can mechanically buzz when active.

PS 6. Check resistor value with an ohmmeter. Carbon resistors tend to age higher, sometimes quite a bit higher. Crucial resistors in the PS (for example, bleeders) might need replacing. I replace with Metal Film Resistors (source Capacitors and Resistors from RS or Communica).

PS 7. If there is a speaker in the PS, dust carefully with dry paint brush and air. Check to see that the cone travels freely, and that the cone is solidly attached to the voice coil form and to the frame (one source of audio distortion is a loose cone or a voice coil form that drags on the armature or has come loose from the cone. If you got speaker problems, there are procedures for fixing them, but that is a different topic. Check speaker coil and cable for continuity (a faded 1.5 v AA cell makes a good source of low voltage for testing onto the plug end - if the speaker makes clicking sounds, the cable and speaker are ok). The foregoing also applies to moving coil mics.

PS 8. Check and clean connecting cable from PS to rig.

PS 9. Check the value of the fuse **VERY IMPORTANT** - Is it the value called

for in the manual?

THE RIG

R 1. BE SURE the rig is not connected. Remove the top cover and the cover on the final amplifier compartment, and KEEPING YOUR HANDS OUT OF THE PA COMPARTMENT, use a screwdriver to ground the plate cap(s) on top of the PA tubes to ground, likewise ground the top of the high voltage plate choke (the thingy that the suppressors coming off the plate cap(s) are connected to). Remember these are PLATE caps, not grid caps as on entertainment broadcast tube radios for living rooms etc. Plate caps use hundreds of volts, whereas grid caps usually very little voltage.

R 2. Perform the Power Supply procedures PS 1, PS 3, PS 4, PS 5 on the rig.

R 3. Remove tubes one at a time. As you do so, check to see if the proper tube is in the proper socket. A common problem is a wrong tube or a "substitute" that is not really a proper sub. Label sockets with pencil if they are not already marked with tube numbers. Clean each tube with a dry rag (dampness will often remove the lettering), and clean pins with a small wire brush - again this is not just cosmetic - dust can cause heat build-up or electric tracks. Test the tubes. Replace tubes with a good set - as you put each tube back into its socket spray a burst of good switch cleaner (Servisol SUPER 10) into the socket.... Gently wiggle the valve in its socket, remove it and spray again. Allow to dry and then replace the valve In a similar fashion clean and test all dial lamps and be sure the right kind are installed--wrong ones can upset tube filament circuits.

R 4. Spray Servisol into all potentiometers and switches including wafer switches). Flex or operate the pot or switch a few times.

R 5. Check all variable caps for cleanliness between plates, and that plates are not touching. Use a light machine oil to lube the ball bearings of the cap - can apply with a toothpick. Spray Servisol on the wipers of variable caps. Operate to distribute the stuff. Use some 600 wet/dry sandpaper strips to pull thru relay contact points - rough side up, rough side down on the NC, and then hold pressure to do the same with NO contacts. Maybe 6 or 8 passes are indicated per side per NO or NC. Apply a small amount Servisol to relay contacts to

wash any dust away.

R 6. Reassemble the PA compartment and its cover. For any powered tests, always have the cover ON the PA compartment. When removing the PA cover, routinely check that the rig has been disconnected from power source for about 5 minutes then always ground the PA high voltage after removing the cover.

THE SMOKE TEST

This assumes that one has a manual which has been studied and that one has performed the above PS items and R items as a minimum, and that needed repairs have been made.

S 1. Arrange components on a comfortable and safe area. Have the PS in its box, and the rig out of its cabinet, but the PA cover on. Connect an antenna. With the rig turned off and the Variac (or voltage reducing device) turned off, connect the rig to a Variac or other course of variable AC power of sufficient capacity (usually 230 VAC). It is best if the variable AC input is metered so one knows the level of AC going in the set. For sets with tube rectifiers, with the set turned off, set the Variac to put out 60 VAC (with sets having diode rectifiers one can start the Variac at 25 volts).

S 2. Turn off the Variac. Turn the set on. Nothing is happening yet. But time has come to see if any smoke will leak. Use the manual to configure the set for receive only, power switch on. Double check the settings. I usually set RF gain full on and Audio gain full on to start.

Turn on the 25 (or 60) VAC Variac. Since the set is already on, you should see some activity, especially the dial lamps should glow just a bit. If they don't, stop and turn Variac off. Works out why those dial lamps don't light. Once they are lighting, let the set run on low Variac voltage for a while. Observe the tube filaments. Are they lighting? They will typically begin lighting around 120 - 140 v ac on the Variac, sometimes lower. If each and every tube filament is lighting, you may raise the voltage in 5 volt steps, listening for some audio and watching for smoke or noise or anything out of the standard - the first thing you hear may be receiver hiss. If you hear it, peak up the pre-selector or grid control for max hiss. If there is a PA plate current meter on the set, keep an eye on that, and if it reads anything while configured for receive, shut down and work that out. No transmit functions should be

happening now.

I usually begin to hear the receiver, if everything is proceeding well, at around 140 volts Variac input. If you are hearing it, let it run at that level for a while, and again observe for anything out of the way. Raise the Variac by about 10 - 20 volt steps, and tune the controls for reasonable receiver operation. Once it will run without incident at 220v ac, you are ready to test the transmitter portion, and to begin general trouble-shooting and alignment (which I won't venture into at this point).

If the set receives well at 220v ac on a Variac, then you may be ready to run it off the main power outlet. But first check the voltage of your ac source and the specifications in your manual. The older sets were sometimes designed to run at various voltages, often 230v ac. If your standard voltage is high, as many locations now are, this could be a stressful environment for your rig. You might want to run it at factory specified voltage using a Variac as a reducer. Running a small (3 or 4 inch) 240v ac muffin fan set on the top of your rig helps to keep it cool. (Another trick that works well is to buy a 220v ac muffin fan but run it on 110v ac - makes a nice quiet unit.) You can place some stick-on feet on the bottom of the muffin fan and place a line switch in the power cord. Keeping some air flowing helps the old sets a lot. Also consider installing a Weber VST Copper Cap ® rectifier tube replacement

(see http://www.w9wze.org/df.php?dn=Tips/Reduce_Heat_in_Transformers.wp).

While there are a number of good books on receiver servicing, such as PRACTICAL RADIO SERVICING, by William Marcus and Alex Levy, or ELEMENTS OF RADIO SERVICING, by the same 2 guys,

I don't know of a similar book for trouble-shooting a transmitter. If anyone got one for that (other than the ARRL handbook, which is more theory than actual practical service procedures), please let me know.

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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 transmitters and receivers. To encourage all like minded amateurs to do the same thus ensuring the maintenance and preservation of our amateur heritage. We are proud that the Collins Interest Group are firmly associated with our ideals.

Membership of this group is free and by association.

Amateur Code-Breaker Cracks War Puzzle :

By Luke Baker

London - British computer experts acknowledged defeat on Friday after a German amateur radio enthusiast won a challenge to crack secret messages encoded by a World War 2 cipher.

Joachim Schueth, from the German city of Bonn, managed to intercept a special radio transmission and decipher a super-complex code in less than two hours using software he wrote for the challenge.

Britain's Colossus computer, built in the 1940s to break secret German transmissions during the war and painstakingly rebuilt over the past 14 years, was still racing through its computations to come up with a solution.

Schueth's computer program actually managed to crack the hardest part of the challenge - deciphering the code of a Lorenz SZ42 encryptor, which has approximately 16 million million permutations - in just 46 seconds.

"It's a brilliant piece of work, really really impressive," said Andrew Clark, director of Britain's National Museum of Computing, which designed the challenge and is overseeing the running of Colossus,

based at Bletchley Park outside London.

"He's used a program that is highly optimised for this task and he's designed it very well.

"We're really pleased and very impressed. It highlights the strength of the international community working together."

Schueth was not immediately reachable for comment, but on his website he explained in a very low-key way how he had gone about defeating a machine that in its day was the most powerful calculator in the world and the forerunner of modern computing.

"Putting Colossus in a competition with modern computers may be a bit unfair," he wrote.

"Colossus was an ingenious construction and a landmark in the history of computing. But technology has very much evolved since: When fed with a usable ciphertext, the quick-setting program found the setting of all 12 wheels within 46 seconds."

The Lorenz cipher is based on wheels

that can have an almost infinite range of settings.

Colossus, a truck-sized computer built in 1943-4 with the help of mathematicians such as Enigma code breaker Alan Turing, has worked out five of the wheel settings so far and is expected to complete the task in about six hours.

Clark was full of praise for Schueth, who German scientists who helped design the challenge said they had never heard of. He hopes Schueth will visit Bletchley Park to receive a reward.

Colossus was a top-secret project during World War 2 - it only came to light in the 1970s - that helped crack secret German commands on troop movements and supplies. Winston Churchill, Britain's war-time prime minister, credited it with helping to shorten the war by up to 18 months.

