



WA Newsletter

#80

September 2012

A Member
of the
SARL



Antique
Wireless Association
of Southern Africa

Inside this issue:

CW Net	2
SSB Activity	2
AM	2
Reconditioning Tubes	3-5
Presidents Corner	6-7
Notices	8

AWA Committee:

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

Reflections:

At last we are back on track with the newsletters and hopefully will stay there.

With a few projects on track too, I am hoping that before the end of the year I will be able to get most of them finished.

How often I am sure, we tend to find ourselves snowed under with projects we have undertaken.

My problem is that I will start to strip one rig to go ahead with refurbishing, and then find there is a fault that will take a bit of time to sort out.

This is the worst kind, because the next thing one does is to shelve it until you can do the big job, and then immediately start to strip the next one.

Now the problem starts to

multiply, because on this one, you find a similar thing, so you wrap it nicely and shelve it for a while, with all the best intentions of getting to it as soon as you can.

Next thing you know, you're in to the next one, completely forgetting about the other two that have been shelved in the meantime.

The unfinished projects start to escalate and ever so quickly too. Then before you know it, something happens that tends to occupy more of your time than you intended, and the shelves are full of unfinished projects.

I don't know about anyone else, but this is where I find myself at the moment.

I have now resolved, to

tackle one project at a time and get that one finished before even thinking about the next one.

As the old saying goes, "procrastination.....", but I am certainly going to try my best to get this on track.

Who knows, by the end of this year, I could have a few more working rigs in the shack and the project shelves looking empty.

I am sure I am not alone in this, because I know I have bought one or two projects that have been started, and never got finished, and it has been up to me to get them back together again.

These are the things that make antique radio so interesting.

Best 73

DE Andy ZS6ADY

WIKIPEDIA

BATTERIES:

In electricity, a **battery** is a device consisting of one or more electrochemical cells that convert stored chemical energy into electrical energy. Since the invention of the first battery (or "voltaic pile") in 1800 by Alessandro Volta and especially since the technically improved Daniell cell in 1836, batteries have become a common power source for many household and industrial applications. According to a 2005 estimate, the worldwide battery industry generates US\$48 billion in sales each year, with 6% annual growth.

There are two types of batteries: primary batteries (disposable batteries), which are designed to be used once and discarded, and secondary batteries (rechargeable batteries), which are designed to be recharged and used multiple times. Batteries come in many sizes, from miniature cells used to power hearing aids and wristwatches to battery banks the size of rooms that provide standby power for telephone exchanges and computer data centres.

CW Net:

What a pleasure it is to be back on the CW net again. There are a few new call signs on the net which is really great and I want to say a big thanks to Barrie ZS6AJY for looking after the CW net in the time I have not been able to be there.

With the growth that has happened, it certainly looks like he has done a great job.

How is it that CW seems to have kept its allure for so many years, to attract people from many different areas to a mode of operation that is so old, yet still so young.

A mode of operation that has been the founding for many forms of digital communication like packet radio and JST.

You can't really get away from it, CW will never really die out. There will always be some form of communication that will utilise the basics of CW telegraphy.

Looking at the magnificent keys that have been manufactured over the years, one can also see that it really has grabbed the interest of some extreme engineers as well as some ardent home-brewers.

If one looks at what is available on the internet, there are really some magnificent keys that have been made, of course many of them at a price that most of us would balk at, especially seen as they are in USD.

But yet, one has to wonder, why this interest in keys, be they straight or paddles or vibroplex or whatever ?

Could it be there is a revival in CW taking place ? Well maybe not in SA, but in many other parts of the world, yes.

There certainly is an interest in CW in SA, but I would not dare to call it a revival.



How long will it be before it really takes off in SA ? I would rather take my chances on betting on a donkey in the Durban July than try to predict this one. It could take a while.

Until then, lets keep on trying and keep on tapping out the ageless language of CW

SSB activity:

Well the bands have been pretty active this last while and 40m is still behaving extremely well.

The number of people calling in on a Saturday SSB net still grows with every week and people don't manage to get more than a turn or two during a net. Which I itself is encouraging, because it means there is still a lot of interest out there in what we do.

Who could imagine that this association would have survived 12 years already. It has not been because of anything that we have done, but because of what we believe in.

Membership of the AWA has grown over

these 12 years and now stands at 143. As we say in our Mission statement, if you associate with the AWA, we class you as a member.

The SSB net on a Saturday morning really bears witness to this and to the following not in the AWA, but in Antique wireless.

Valve radios that have survived over the years and still give their owners so much pleasure.

Now before I go off on a tangent here, let us keep on calling in on 40m and keep the support for the AWA going.

The bands have been in good condition and we can be sure they will still be this way for

a while to come.

Looking at predictions from the pundits predictions, we can only hope.



Hallicrafters HT37

AM:

The AM net on Saturday mornings is still well attended with a good call in of AM operators testing Musical Frequencies. Band conditions are almost always good with the 80m band opening with the sunrise and getting stronger as the time goes on.

Unfortunately there are times when the long skip tends to fade a bit for the division 5 stations, but then the local stations get the advantage of really good 5/9 plus signals with the quality of the MF's really being shown.

An average of 6-7 stations call in every Saturday morning and it takes on average about 20 mins between transmissions.

This does not deter those who call in, be-

cause in between you get the opportunity of hearing how the other stations are set up, what rigs they are using for the AM transmissions and of course the varying tastes in music.

I might be bold enough to say that nearly all of the operators are music lovers of some kind and not just trying to make an impression about who can transmit AM the best or the strongest, or the loudest. It takes a bit of skill to be able to set up an AM station to transmit a good signal without any distortion in the audio, and this is demonstrated by every station that comes up.

We have spoken often enough about the do's and don'ts of transmitting on AM and I think

that most people have listened to the advice and really take a bit of time in setting up their stations to make sure there is pure enjoyment to all those who join in or listen to the net.

I hope I have whet your appetites to try out your skills on AM. Do come and join us if you feel any of these attributes match you.

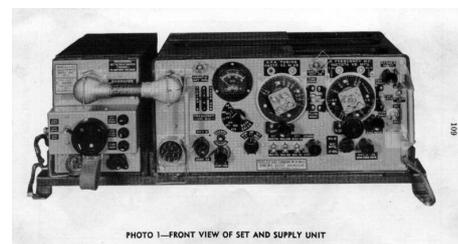


PHOTO 1—FRONT VIEW OF SET AND SUPPLY UNIT
Wireless Set 19 MkIII

RECONDITIONING TUBES

FRITZ GEERLIGS
PA0FRI

EMISSION

The filament of a tube with either directly or indirectly heated cathode emits a flow of electrons, which depends on the voltage on the anode and grids. Even if the tube is cut-off electrons are emitted. This is a continuous process that ends when the cathode is "exhausted". In a tube having a directly heated cathode, the emission gradually decreases, the tube becomes "soft". Emissions of an indirectly heated tube can drop quite suddenly and is often accompanied by an increase of arcing (flashover). Furthermore, the filament suffers the most from switching because the warming up caused more damage than standby. Therefore, in a broadcasting transmitter the filaments are not switched off after the end of a transmission. Does not switch off the filaments if you using a PA at different times a day, then a tube will last an amateur lifetime.

In general, the most wear is due to overload (overdrive) and insufficient cooling. Excessive ventilation is better than poor cooling. Overheating (fig») the tube (seals) can damage the gas density of metal with glass or ceramic compounds. Also a heavy in-rush current causes a too rapid expansion of the metal causing permanent damage.

Probably you also always keep a few spare tubes in stock. Why? You know the practice, if one get rid of spare tubes probably the next day the PA's tube is broken (according to Murphy's law). It is wise to use the spare tubes once a year to stabilise the state of cathode and vacuum. A tube is never absolutely gas-tight. In the course of time, molecular particles sliding along the pins into the tube. Therefore combinations of substances (getter) are added to cure, but the longer the spare tube is unused the more the vacuum will be polluted, one sees a bluish glow close to the anode if the tube is in action.



Deforming of the anode due to inefficient cooling.

REACTIVATING OR RECONDITIONING A TUBE

To prevent arcing in a new or long time unused tube, it is wise to prepare (reactivate) for his task. It should "initiated" by heating or "degassing" in order to optimise cathode and vacuum. Residue of gas is removed or absorbed, and the cathode regains its optimal emission. If that is omitted, there is a greater risk of spark-over (flashover) between anode and other internal connections. That may be a (permanent) damage to cathode, filament and grids. Damage to a tube can also be the cause of arcing and decreased transmitting power.

The reactivation is the easiest by heating in the amplifier. Disconnect the anode voltage and heat the tube for about one hour with the filaments on and put the fan off. Note: many ceramic tubes are overheated with the fan "off".

Reconnect anode HV, activate the fan and get the tube to draw the specified idling current while holding down the PTT switch. Then leave to stand for at least an hour. To prevent any oscillation during the process, the output should be connected to a dummy load. After this treatment and if everything remains stable the drive may gradually be increased to the specified value or to the maximum anode current. So if one think a tube is worn or "useless" do not throw away, see fig»!



Still works well despite the black

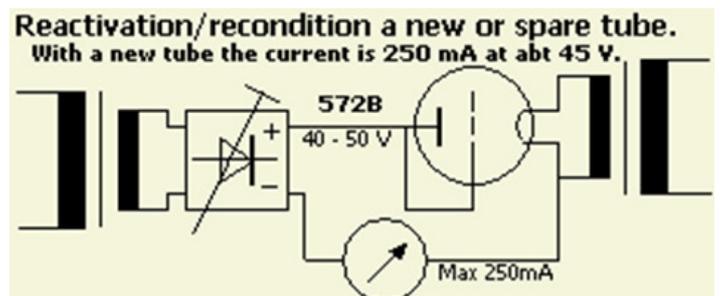
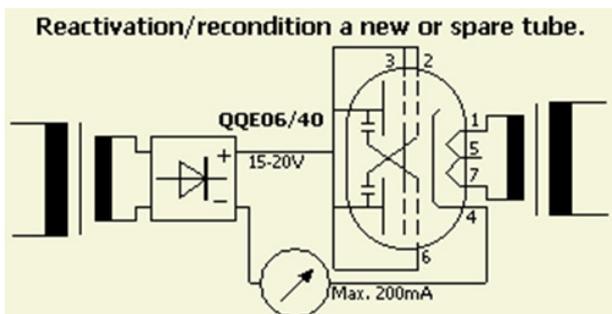
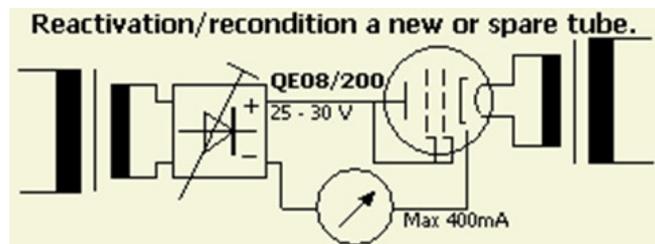
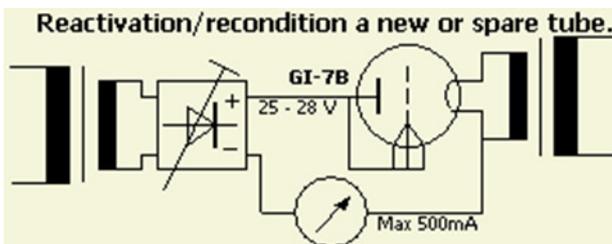
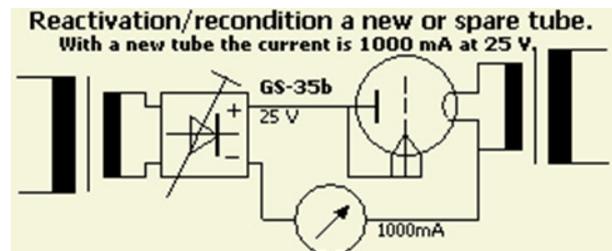
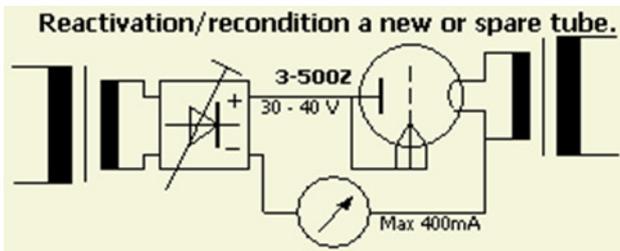
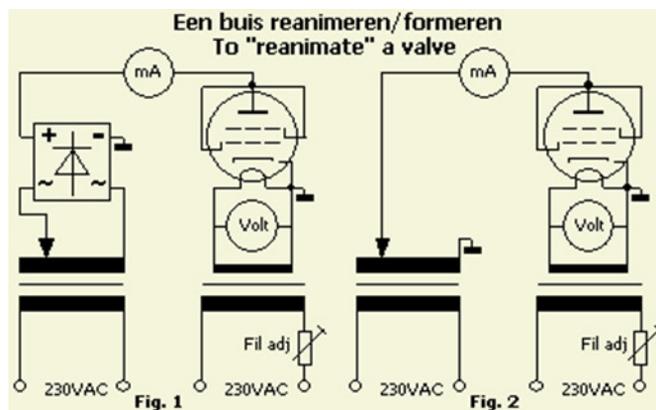
METHOD OF RECONDITIONING

On the Internet you can find all kinds of complex, colourful, cumbersome and lengthy procedures to achieve the same result, but try this old fashioned method:

Get a socket, heater transformer, mA meter and a variable DC supply. Connect the filament and connect all grids to the anode. Note: the tube is temporarily used as diode so that the required anode current is obtained with low DC voltage. Heat the tube for one hour with only the filament voltage on. Then apply DC, set the voltage and see if any current flows, gently adjust the voltage for maximum allowable anode current.

VARIOUS TUBES

The reconditioning of a 3-500Z is relatively simple. With a DC voltage 0 - 40 V you should be able to get around 400 mA anode current with maximum 40 V DC on the anode. Apply 4.9 V to the filament and "cook" the tube for an hour. Then connect the variable supply and adjust DC for 400 mA anode current. The process must be maintained until for example a stable 38 V/400 mA is obtained.



Reactivation/recondition a new or spare tube.

Test used tubes.		
TB3/750	1	55V/500mA
TB3/750	2	56V/500mA
TB3/750	3	70V/500mA
SRS360	1	68V/500mA
SRS360	2	73V/500mA

Reactivation/recondition a new or spare tube.

Test good used tubes.			
Cathode current	500mA	400mA	
PL519	1	12.30V	10.40V
PL519	2	12.30V	10.40V
PL519	3	12.70V	10.50V
PL519	4	13.30V	10.66V
PL519	5	13.32V	11.16V
PL519	6	13.50V	10.80V
PL519	7	13.54V	11.40V
PL509	8	13.75V	11.16V
PL519	9	14.05V	11.47V

Reactivation/recondition a new or spare tube.

Test used tubes.			
QB3.5/750	1	49V/350mA	30V/180mA
QB3.5/750	2	55V/350mA	30V/180mA
QB3.5/750	3	62V/350mA	30V/180mA
4-125A	1	66V/350mA	30V/200mA
4PR400A	1	44V/350mA	30V/100mA

Reactivation/recondition a new or spare tube.

Reactivation/recondition a new or spare tube.
A good GU-43B draws 800mA at 12V.

Tube	4 x GU-43B tested				4 x Q-1P/42 tested				Q-1P/41
800mA	14V	12V	12V	14.5V	12.5V	12.5V	10.5V	12.5V	12.5V
900mA	15V	13.5V	13V	16V	13.5V	13.5V	12V	13.5V	13.5V

Reactivation/recondition a new or spare tube.
 With a new tube the current is 1000 mA at 25 Volts.

To compare you need a good tube to determine at which voltage the maximum anode current is obtained. A tube is not cooled unless the manufacturer requires that its product (eg ceramic tube) must be cooled as the filament is on. Eventually use a fan for the seals to prevent over heating. If a tube is new or for a long time unused, the current will gradually increase so that the voltage had to be decreased. Actually the fixture should be permanently monitored because it is possible that the current suddenly jumps to a higher value, a sign that the tube becomes "better". If for a period of a couple of hours the anode current remains stable at a particular voltage for example GU-43B: 12 V/800 mA, then the reactivation may be terminated. One may extend the reconditioning, my experience is that after 2 - 5 hours the process can be stopped because the tube is worn out but it's worth a try.

SAFETY

ON4JMV wrote: "a GU-43B was modified according to your instructions. The tube was not used for a long period of time. I wanted a degassing process during the night with filament and anode voltages on. The next morning I saw that a fuse of the mains fuse box was blown. I replaced a new fuse and the PA started up normally, but after a few seconds I heard a strange stronger becoming hum, immediately I realised that the high voltage transformer was burning out! There was some smoke and happily my camera was on hand so I took in a reflex a few pictures. During the third shot the transformer was on fire. The worst thing was that fuse of the mains fuse box did not blow. This could happen at night with dangerous and annoying consequences.



NEVER OR NEVER leave an operating device unattended. One can not always be as lucky or how a hobby could turn into a nightmare. " So beware, be careful!

President's Corner

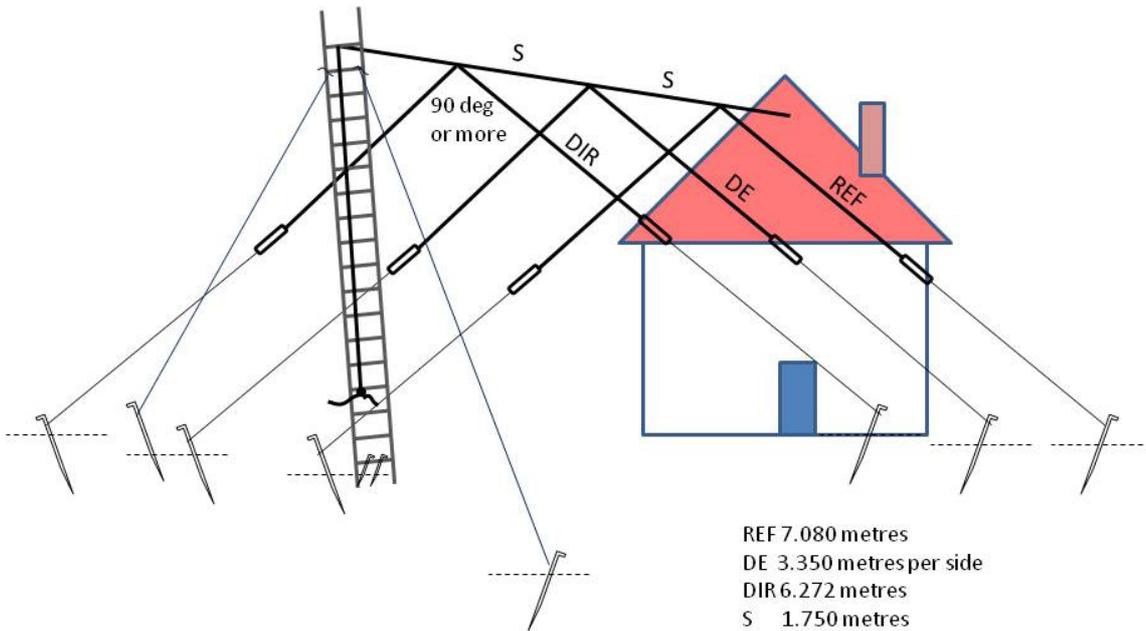
"OUT OF THIN AIR" by Richard ZS6TF

The title is borrowed from G3VA Pat Hawker's paperback book on antennas easily built at home with common materials. I built my first antenna in 1978 from this book which was a 10 element ZL Special for 2 metres and the book which I still possess, is a recommended read for anyone interested in rolling their own. Driven by a need to keep sked with the British-South Africa net on 21365kHz at 16h00Z every Sunday from the northern hemisphere, I needed something better than my trusty tri-band inverted vee for 80,40, and 20 to communicate on 15. I have a spider-beam packed away in a carton, which performed well the last time it was erected but it is a real mission to put it together, besides which it needs a tower and a rotator, and with a turning radius of 5 metres it is unwieldy to handle on the ground and to put up. The design criteria for the new antenna were simplicity, lowest cost, use of limited materials and facilities to hand, and unobtrusiveness due to proximity to a national monument. The inspiration came after a boring but essential job of installing a new hot water geyser. The new one was mounted further away from the distribution board so the old wires were used as pull wires through the conduit for the new longer wires. Left over was a bunch of short lengths of 2.5mm² section copper wire and the idea to make a wire beam was born. The design process began on Saturday morning, consisting of trawling the web for inspiration in case anybody had done it and published it. The nearest I got was a 2 element vee for 15 metres consisting of a driven element and a reflector. This was supposed to be rotatable but it required a convenient tree to hang it from, which I do not have. Then I found another 2 element vee for 30metres consisting of a driven element and a director. I scaled this one to 15 metres and made a synthesis of the two designs to make the three element wire beam pictured below.



The "boom" is the same 2.5mm² wire and the passive elements are attached by baring a small section of the wire, winding it around once and soldering. The two halves of the driven element are attached to the coax inner and outer conductor, both isolated from the boom, and the coax is strapped along the boom wire with cable ties. The driven element insulator was located by small twists of wire soldered either side on the "boom" wire.

Construction is very much as for a single inverted vee, and I made the 6 insulators and the driven element centre insulator from a single piece of 6mm tufnol 75 x 100 from the scrap box. The only proprietary items were a PL259 plug and 25metres of RG58U. I used a TV pole attachment at the ridge of the house and a borrowed extension ladder suitably guyed, became the other support. By Sunday mid afternoon I was ready to test. Chalk and cheese is inadequate to describe the difference. First station heard was ZS3Y OM Volker on 21320kHz blasting a hole in the Italian curtain to work DX pileup at strength 8, (S1 on the other antenna). There was a contest in progress and to hear F,4X4, and 5Z4 at comparable strength meant 15 was open. A whiff of RF from the FT897 showed all was well and the SWR plot at 100watts showed less than 1.5 across the band. Proof of the pudding was to work Rad ZS6RAD, Norman ZS6CVF, and Dave ZS6UD from the portable station in France on the net on Sunday evening. Here is the design in case anyone might want to try it, even vintage gear likes a good antenna.



15 Metres 3 element inverted vee wire beam
The "VEEGI" by ZS6TF

If you have created anything "out of thin air", especially vintage wireless related, please email the story to me for inclusion with others in the AWA newsletter for the benefit of members.



Kevin ZS6KAT station with his refurbished FL and FR101's

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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 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:

Saturday mornings from around 06:00 or when band conditions allow. Frequency—3615.

SSB Net—Western Cape net Saturday morning from 07:30. Frequency 3612

National net Saturday mornings from 08:30. Frequency —7070 with a relay on 3615

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

(Times given are CAT or SAST)

Wanted:

Set 19Mk3 - Contact Henk ZS4HUL 0829557988

FT201 Main Crystal and Heathkit 104A. Contact Dior ZS6DJD
