



A Member
of the
SARL



Antique
Wireless Association
of Southern Africa

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

AWA Newsletter

#76

May 2012

Reflections:

One of the greatest communication episodes that have ever happened in my life was when the moon landing took place.

I was a young lad in boarding school in the Eastern Cape, (which seems like an awfully long time ago) and one of the teachers placed a hi-fi system on the stage of the school hall and played it through the sound system to a packed hall of about 300 pupils.

It was amazing as we sat and listened to the relay from the lunar surface to the Kennedy centre and then the relay to the Voice of America, which was heard around the world.

I always wondered about how clear the communication was and how we were able to listen to it on the

other side of the world.

That was the beginning of my interest in radio communication.

It was only many years later that I would come to understand exactly how radio waves worked and how it was the transmission could be sent around the globe. One thing for sure, it must have been a good sunspot year.

I often wondered about how they actually managed to get the relay back from the moon to earth. Of course today we know exactly how it happened and how easy it was. Many an amateur enthusiast has worked moon bounce over twice the distance those radio waves had to travel. Many have marvelled at the achievements that have been made since then.

Many have taken part in those achievements and discovered a wonderful world of radio communication.

Isn't this hobby (for sake of a better name) wonderful? How many different facets are there in this great and wonderful world of communication?

How many of these different facets have we actually explored? I know, speaking for myself, probably not as many as I could have.

I often listen to the "muddlers net" and hear another facet of amateur radio. CW, digital communications which encompasses so many areas, slow scan TV, SSB phone, AM, Satellite, it's all there. Just waiting for someone to take an interest.

Enjoy whatever facet you are interested in.

WIKIPEDIA

SUSCEPTANCE

In electrical engineering, **susceptance** (*B*) is the imaginary part of admittance. The inverse of admittance is impedance and the real part of admittance is conductance. In SI units, susceptance is measured in Siemens. Oliver Heaviside first defined this property, which he called *permittance*, in June 1887.

Oliver Heaviside (18 May 1850 – 3 February 1925) was a self-taught English electrical engineer, mathematician, and physicist who adapted complex numbers to the study of electrical circuits, invented mathematical techniques to the solution of differential equations (later found to be equivalent to Laplace transforms), reformulated Maxwell's field equations in terms of electric and magnetic forces and energy flux, and independently co-formulated vector analysis. Although at odds with the scientific establishment for most of his life, Heaviside changed the face of mathematics and science for years to come.

CW Net:

What is it that makes CW so enticing ?

Is it the fact it was one of the first modes of communication used to send messages over long distances ? Is it the fact that it was the mode of communication used by ships to send messages to each other and by lighthouses to warn of impending danger ?

Is it because it was the first form of wireless communication used by aircraft and used during the war years to keep troops and the war machine informed of happenings ?

I think it was all of these and many more. CW certainly has a vibe and a feel of its own that you cannot really explain to people. They have to experience it themselves in order to understand what its all about.

Unfortunately, these days there are less

and less people around to help others experience that vibe and feel the thrill of being able to communicate by means of a series of dots and dashes. This is starting to lead to the demise of CW which will become as extinct as the Dodo unless we do more to preserve it.

I was quite encouraged to read on the SARL Forum that the Sandton club is trying to introduce CW to many of their new members who have recently passed their exams, by getting someone to come on the local repeater to give them the thrill of CW.

It was encouraging to hear about Pierre ZS6A work that he has done to secure a WAZS 200 in CW. His will be the 2nd certificate to be issued when he gets all the confirmations he needs. Well done Pierre.



CW continues to live for now. Lets keep it going by joining a group, a contest, a QSO party, whatever it may be. Lets keep CW alive by using it more and more and retaining the frequencies allotted to the mode.

Hope to hear many of you in coming days on CW. Even if its for a brief exchange or a rag chew. In the words of another, "May the Morse be with you".

SSB activity:

Well the AWA Valve QSO party has been and gone for the first leg.

Conditions on Sunday were really not great as it came up dark and cloudy here in Benoni and the wind blew and I thought we were going to be in for a big one.

Then the wind died down, it stayed cloudy and cool and the noise on the band was running high.

There were still a few contacts made and SSB was working fine on 40m. I managed to bring in a good number of contacts on the band even though I started late. It was disappointing there were not more stations around

and interest certainly seems to have decreased over the last two years.

The Saturday morning net still brings in an average around 15 to 20 callers, which is always nice to hear so many on frequency. The Western Cape still seems to be a no-go zone with conditions never great at that time of the morning.

I do notice the bands are actually quite busy these days. With many of the new hams coming up on frequency, there certainly seems to be an increase in interest. Many of the clubs are running courses and taking newcomers in to the RAE which is great to see. South Africa could do with an injection

of enthusiasm in to the ham fraternity. Who knows, we may even have a few interested in valve radios ?



Yaesu FT200

AM:

The AM leg of the valve QSO Party was very disappointing. I managed 10 contacts in total and was on frequency from 15:00 until about 18:00 the evening.

What was even more disappointing, was not hearing many of the regulars from the AM net.

A few newcomers to AM who were quite surprised at the effectiveness of AM and the great signals being received. The band was perfect.

My 32V-3 is up and running again and putting out as good a signal as it was before and Don gave me a write up of the work he did with some photos for this issue. It certainly was not as easy as he makes it out to be, but

nevertheless he did a fantastic job of reviving the old rig.

Unfortunately, the very first week we got up and running on AM, Don suffered a melt down of his 32V-1 of the high voltage caps and then the main transformer on his HT 37 decided to terminate itself.

I suppose this is one of the problems of running such old equipment, that it is very susceptible to failure of components that have worked so successfully for so many years. I am sure we are not the only ones to suffer these problems and many of you can attest to similar incidences.

There is nothing more heart stopping than seeing the smoke escaping from one of these

rigs while you are busy working some MF's and not being able to go back and let others know you have a problem.

I have revived my project of getting my CE100 up and running so I can have a standby AM rig in case of next time.



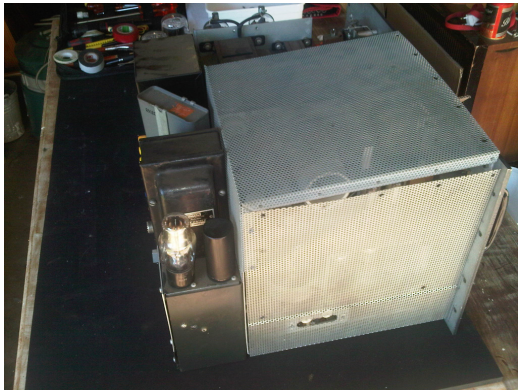
CE100V; 600L; 75A-4

ZS6ADY Collins 32V-3

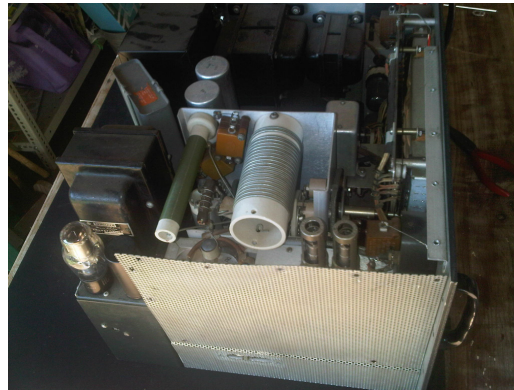
Repairs by Don ZS5DR

When the cry for help came from Andy to have a look at his 32v3 I could not resist, I knew it was not going to be easy and in my busy Salt Mine schedule I started to regret having offered to do the repair as I was hardly home.

Anyway one morning I got down to it, opened the beast and started looking, firstly checking the power supply and rectifiers as we were getting the 250 volts shutting down when turning on the HT.



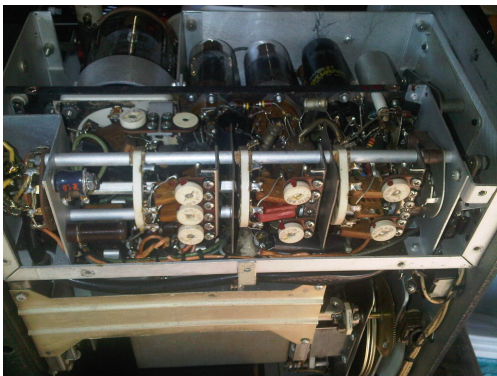
Opening up



Revealing the PA valve

First I removed all the valves just in case one was faulty But it was Not going to be as simple as that... There was a short somewhere but when the line was not energised it did not read as a short, I patiently unhooked every 250V line and As Murphy would have it, it was the last one I checked that had the fault.

I measured a resistance to ground and in the maize of wires finally found the offending component a Trimming Cap !! this was unhitched but other damage had occurred due to the short, a 1 M ohm resistor had burnt and this was located inside one of the tuning coil cans.



RF Final, Multiplier valves and defective centre trimmer trimming caps

I figured out how to remove the can, luckily this Can could be removed without having to remove other components to expose it. I also noted that the coil had got quite hot but luckily not burnt or gone open circuit.

As we needed the Trimming Cap I put the rig back together as I was on another trip out the country and Andy placed an order in the USA for some caps to be sent out. The parcel arrived and I got busy replacing the defective cap along with another that had previously broken but was not used on the 80m Band. The 1 M ohm resistor was replaced and the Coil and Can re assembled.

The time of truth came after the 3 min warm up the HT was turned on and NO Joy, No more short on the 250 v line, HT was present BUT No Grid voltage indication, oh boy... well I had run out of time again and had to shoot off on another trip before I could go any further.

I asked Andy to get a set of valves for me, which I collected from him at the airport on my return. I was expecting the worst at the airport security but they did not even bat an eye at the valves and let me through without any problem. So I was back home suffering from Congo Gut but finally got the time to spend a few hours on the 32v. I again traced the circuit and confirmed the -75 Grid Volts present So one by one I replaced the multiplier valves and the final but still no Joy or Grid voltage. By the Way I did measure the -75 volts as indicated on the circuit diagram, I did not have the first buffer amplifier valve as Andy had not included that in the box.

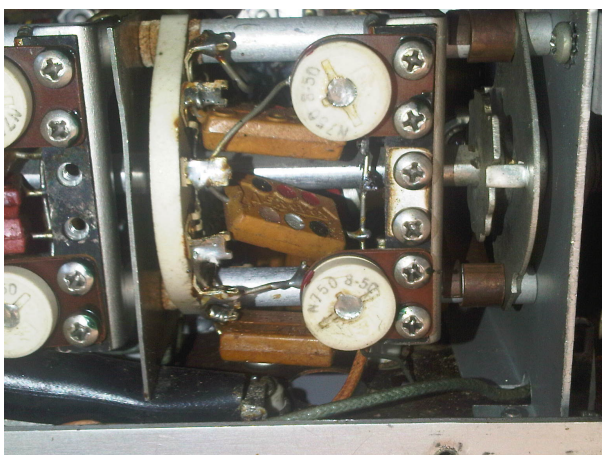
I had also contacted Andy and asked him if there were any tricks to get the Transmitter to work and he said it sometimes needed a little bump !!! but that did not help this time...

I had also asked Andy for the valve voltage charts which I now had and started to inspect each pin. As I had not replaced the Buffer Amplifier valve I decided to start there first. I found that the 250 v was not getting through to the anode of the buffer amp valve so I checked the 500 uH choke and found it open circuit. The choke was carefully removed and I found that a wire had come off one of the legs, this was re soldered wrapped with thin copper wire and soldered again, I re inserted the choke and was ready to test, LV on ... Warm up and HT.

We had RF, I quickly tuned the 32v and was happy to see 80 watts of carrier. I then turned off removed the new valves and replaced all the original valves. Turned on, warm up and HT. We were in business with 80 Watts RF Carrier. As I was about to head off for another trip I tweaked the new caps that were installed and re assembled the 32v3. Once in the box I could not resist trying the Tx again but this time no HT, My heart fell and I walked away in disgust...

Curiosity got the better of me and I found that the HT safety switch had not engaged when I returned the transmitter to the Case. I made up a spacer and hey presto all was back to normal again, the 32v3 tested ok and was ready for delivery.

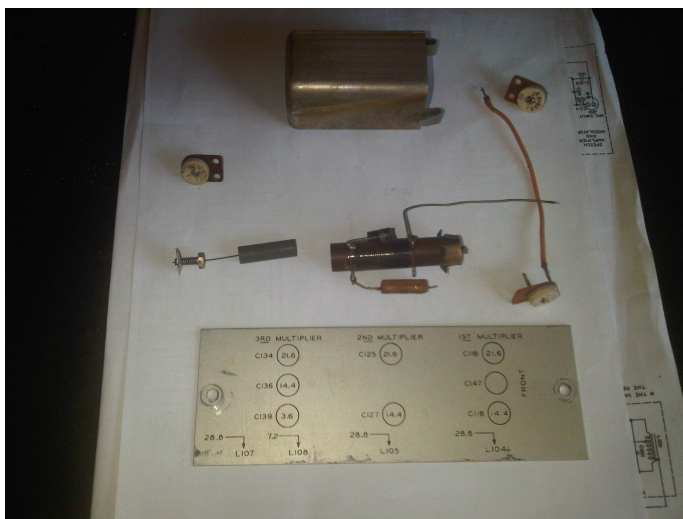
Removed defective centre trimmer



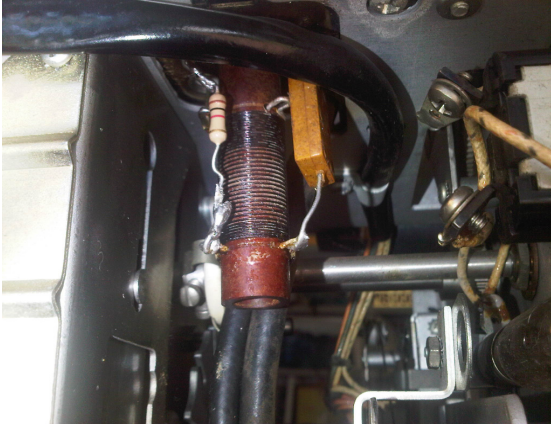
Coil can removed with remains of burnt resistor



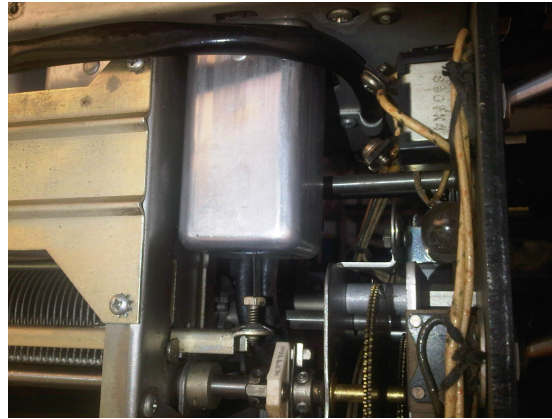
Defective trimmer left, contents of Can in centre and new trimmers on right



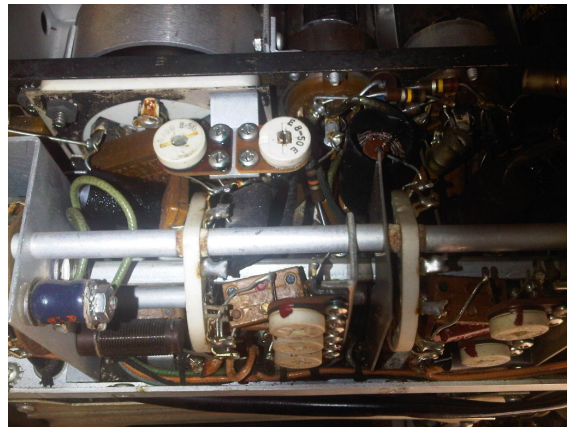
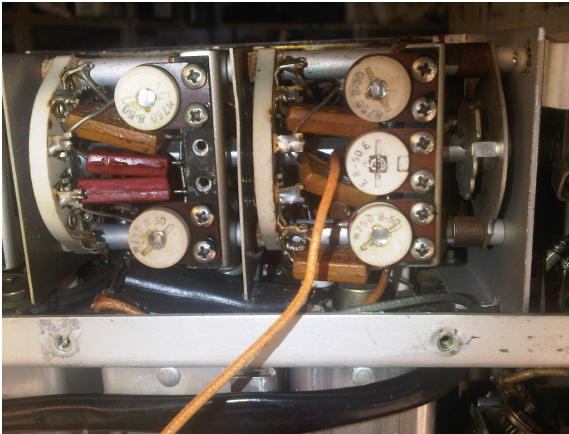
Coil back in position with new resistor



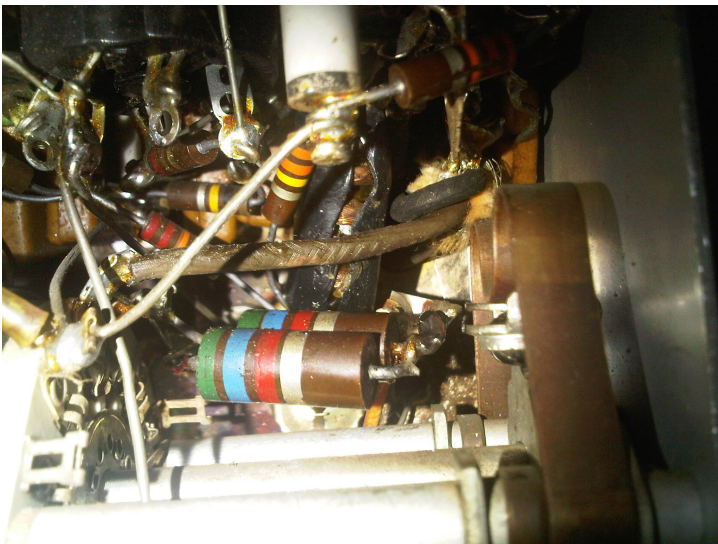
Coil Can back in place with tuning slug in place too



New Trimmers back in Place



Repaired Choke can be seen inside the cut open black plastic sleeve



Presidents Corner

HOME BREW

Homebrew defines the process of home-constructing radio equipment using parts and designs gathered from varied and often improvised sources.

In 1913 when the RSGB was founded, there were no manufacturers of components or equipment for amateur use and the only way to get on the air was home construction in its entirety. Compositions of wood, ebonite, Bakelite, brass, copper, and mysterious crystals, with beautifully executed hand-made condensers and coils, were combined with precious wire ended triodes and banks of accumulators and dry batteries, giving access to the "short waves", allocated to amateurs as they were thought by the authorities to be of "no practical use".



John Streeter, SA's first radio amateur A1A in Capetown in 1919

In the 1930's, radio amateurs led by the ARRL and RSGB publications, handcrafted reasonable-quality valve based transmitters and receivers. They were often housed in racks to support serious iron, comprising a PSU at the bottom which emitted an ethereal purple glow from the mercury rectifier tubes, a harmonic exciter, an audio modulator chassis, and a big bottle finals. It was common for a well-built "homebrew rig" to cover all the HF bands (1.8 to 30 MHz), on CW or AM of course. For the more affluent, high quality components were freely available from National, Miller, Eddystone, and the like to give homebrew equipment a professional appearance.

The second world war put a stop to amateur radio activities for 5 years, but as soon as hostilities ended, the vast pool of war surplus radio equipment released over the following decade fuelled the greatest ever upsurge in amateur home-brew activity as it was stripped for components, or modified and adapted for amateur use. The main driver of course was cost, as fully built commercial amateur radio equipment was beyond the reach of most amateur's pockets. The publications of the time followed this line and home-brewing was greatly encouraged.

In 1950, CQ Magazine announced a \$1000 Cash Prize home brew contest and lauded independently-built equipment as "the type of gear which has helped to make amateur radio our greatest reservoir of technical proficiency." The release of new devices such as the 6146 valve in 1953, the début of solid state devices, and SSB transmissions, caused the societies' designs to be totally renewed from a re-hash of pre-war designs up until then, creating great competition to be at the leading edge. In the 1950s and 60s the kit phenomenon arrived and many amateurs constructed their stations from kits from Heathkit and other suppliers. Inexpensive good performance transceivers were arriving from the east, and homebrew began its steady decline from the pinnacle of the G2DAF receiver and linear designs.

Today, few amateurs own and operate completely homebrew or kit-built amateur stations so homebrewing now means mostly, the building of antennas, antenna tuners, power supplies, linear amplifiers, QRP transceivers, and a bit of test-gear.

However, there are many new ham radio kit suppliers, particularly QRP, and a resurgence in the use of CW on our crowded bands has renewed interest in valve home brew minimalist Hartley, TNT and TPTG transmitters coupled with regenerative receivers. Remarkably, in today's radio technology environment of microprocessor-controlled, synthesized, DSP-filtered digital radios, and SDR's, many amateurs are putting aside their solid-state rigs, wiring-up their own tube rigs on wooden boards, and putting them 'on the air'. We are lucky to have access to the wealth of knowledge freely shared by AWA oldtimers who may have few nice components stashed away if you have a worthy project and they will appreciate your help in other ways to keep them on the air in return.

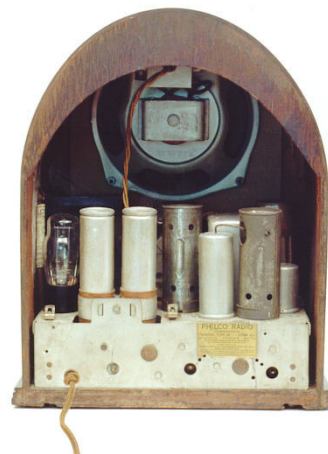


If we could survey all collectors and historians to determine the most beloved brand name of radio's golden age, Philco would probably be the hands-down winner. For some reason, the brand seems to have acquired an unusually strong friendly and "homey" connotation. The picture of a family "gathered around the living room Philco" is called up again and again in works of fiction and nonfiction dealing with the 1930s. And if you don't believe that the classic Philco cathedral is one of the most popular radio designs ever created, I invite you to see how many times you can spot its familiar image in the antique radio related advertising pieces now on your desk and workbench. But besides being a "friendly" radio company, Philco was also known for its hi-tech innovations. Its "Mystery Control" radios, "Music on a Beam of Light" phonographs and living room disc recording equipment fascinate the radio collecting community now as much as they did the radio buying public for which they were created. Philco was organized in 1906 to make storage batteries for electric vehicles, its familiar brand name being an acronym for "The Philadelphia Storage Battery Company." As gasoline edged out electricity as the motive power of choice for cars and trucks, one of Philco's competitors, the Exide company (also Philadelphia-based,) got and kept the edge as a supplier of original equipment batteries.

However, Philco's effective marketing tactics gained it a significant piece of the replacement business. The growth of the radio industry, beginning in the early 1920s, gave Philco the opportunity of getting in on the ground floor of a brand-new market. Storage batteries for powering radio receiver filaments. Seizing the opportunity, Philco tackled the new market and developed \$4.7 million in sales by 1924. Later, the company diversified in the radio area, adding battery eliminators (known as "Socket Powers") to its line. By 1927, sales amounted to \$15.4 million. The introduction of the AC-powered radio in the late 1920s made Philco's batteries and battery eliminators obsolete. But the company had penetrated the radio industry with an established name and a network of dealers. So it decided to stay on, moving to the manufacture of complete receivers. Philco made the change in a careful and methodical manner, beginning as a radio assembler, purchasing engineering services and components on the outside.

Eventually, it brought engineering and major component manufacture inside, enlarging the plant and converting it to full assembly-line operation. Philco's aggressive marketing tactics and careful manufacturing controls made it a sales leader, gaining third place in the industry (behind Majestic and Atwater Kent) by the end of 1929 and first place by 1930.

Over the next 10 years, Philco dominated the radio industry, but in 1939 it began to diversify into other household appliances. Later, as a result of wartime government contracts, Philco expanded into basic research and actively sought government business. During the 1950s, profits declined and Philco sold out to Ford in 1961. In 1974, because of tough Japanese competition, Ford sold the Philco Consumer Products Division to GTE Sylvania, retaining the Aerospace Division. In 1981, GTE sold the Sylvania Consumer Electronics Division to North American Phillips.



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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 18:30; Saturday mornings from around 06:00 or when band conditions allow. Frequency—3615.

SSB Net—Saturday mornings from 08:30. Frequencies—7070 with a relay on 14125.

CW Net—Saturday afternoon from 14:00. Frequency—7020.
(Times given are CAT or SAST)

Results of the AWA Valve QSO Party :

AM— Patrick ZS1PDY = 11
AM — Andre ZS1JEN = 8
AM— ZS0AWA = 75

SSB— Theunis ZS2EC = 43
SSB— Patrick ZS1PDY = 44
SSB — Andre ZS1JEN = 15
SSB— ZS0AWA = 105

Thanks to all those who supported the afternoons and sent in logs.