

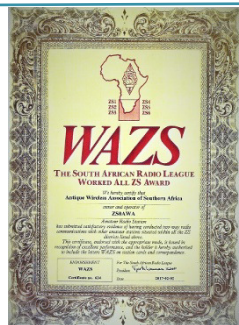


Newsletter

The Antique Wireless Association of Southern Africa

144

July 2018



Reflections:

One of our discussion points during the month of June, was about CW. John ZS1WJ asked if we believed that CW was still an important mode for the AWA and how many would like to get back in to CW again.

I am sure this raised a few eyebrows as many hams in SA today believe that CW is dead, never mind a dying mode.

During the discussion, there were a few old stalwarts who professed their love for CW and that they still used it on a regular basis. There were also a few who said they may consider getting back in to CW again, but it would take a bit of coercion. Nothing painful of course, but just gentle arm twisting.

Then there were a few who actually said they would like to get back in to CW again and they would seriously consider it.

Daryl ZS6DLL, probably one of the newest hams that I know to CW, then told us about a group of hams that he had heard talking about CW on 2m and how they would like to learn. When he interjected, he was immediately roped in to become a tutor for this group. Now that is what I call getting in to the nitty gritty of things.

I have joined this group on a few occasions and these guys are really serious about learning CW and Daryl is doing a great job tutoring them.

How well I recall my days of learning CW all on my own, no computer programmes, but a 4 track tape with some random letters on and the will to learn this new language.

Today we have so much information available and so many software programmes that have been

written to learn CW that we should all be able to learn it again in a very short period of time. But I think SA hams have built their own mental blocks around CW and just really are not interested as they see it as an outdated mode that should be relegated to the junk pile.

If you are a keen DX'er, then you really need to listen around the bands and see how quickly you could get your DX awards using CW. That's how many ops are out there still.

But then, it's entirely up to you and how much you are interested in Amateur Radio. Are you just going to be a local rag chewer, or do you want more? Consider trying it using CW.

Best 73
DE Andy ZS6ADY

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AWA Committee:

- * President and Western Cape—John ZS1WJ
- * VicePresident—Renato ZS6REN
- * Technical Advisor—Rad ZS6RAD
- * Secretary/PRO—Andy ZS6ADY
- * KZN—Don ZS5DR
- * Historian—Oliver ZS6OG
- * Member—Jacques ZS6JPS

WIKIPEDIA

Amateur radio: In most administrations, unlike other RF spectrum users, radio amateurs may build or modify transmitting equipment for their own use within the amateur spectrum without the need to obtain government certification of the equipment. Licensed amateurs can also use any frequency in their bands (rather than being allocated fixed frequencies or channels) and can operate medium to high-powered equipment on a wide range of frequencies so long as they meet certain technical parameters including occupied bandwidth, power, and prevention of spurious emission.

Radio amateurs have access to frequency allocations throughout the RF spectrum, usually allowing choice of an effective frequency for communications across a local, regional, or worldwide path. The shortwave bands, or HF, are suitable for worldwide communication, and the VHF and UHF bands normally provide local or regional communication, while the microwave bands have enough space, or bandwidth, for amateur television transmissions and high-speed computer networks.

In most countries, an amateur radio license grants permission to the license holder to own, modify, and operate equipment that is not certified by a governmental regulatory agency. This encourages amateur radio operators to experiment with home-constructed or modified equipment. The use of such equipment must still satisfy national and international standards on spurious emissions.

Amateur radio operators are encouraged both by regulations and tradition of respectful use of the spectrum to use as little power as possible to accomplish the communication. This is to minimise interference or EMC to any other device. Although allowable power levels are moderate by commercial standards, they are sufficient to enable global communication. Lower license classes usually have lower power limits; for example, the lowest license class in the UK (Foundation licence) has a limit of 10 W.

Power limits vary from country to country and between license classes within a country. For example, the peak envelope power limits for the highest available license classes in a few selected countries are: 2.25 kW in Canada, 1.5 kW in the United States, 1.0 kW in Belgium, Luxembourg, Switzerland and New Zealand, 750 W in Germany, 500 W in Italy, 400 W in Australia, India and the United Kingdom, and 150 W in Oman.

HF Happenings:

The SARL Newbie QSO Party

This is a fun activity to encourage all new radio amateurs to become active from 08:00 to 20:00 UTC on Saturday 7 July 2018. The QSO Party is a phone only contest with activity between 14 125 to 14 300 kHz; 7 063 to 7 100 and 7 130 to 7 200 kHz and 3 603 to 3 650 and 3 700 to 3 800 kHz.

The exchange is a RS report and a phonetic character found in the table below. Each QSO is worth the number of points found in the table below.

If the contact is made with a newbie radio amateur, who is an amateur less than one year, the points are doubled. The station may be contacted one per band.

Log sheets in MS Excel format must be submitted by 16 July 2018 by e-mail to ZS3VdK@webmail.co.za. A certificate will be awarded for 1st, 2nd and 3rd places and the result of the first 10 positions will be posted to the SARL forum.

Length being radio amateur	Phonetic character	Point per contact
Less than 6 months	Alpha	7
One year	Bravo	5
Two years	Echo	4
Three years	Golf	3
Four years	India	2
More than 4 years	November	1

WRTC 2018 Activity Programme

Five awards will be available for contacts made with the 63 competing stations in the World Radio-sport Team Championship (14 to 15 July). The 63 call signs will be announced on 12 July during the opening ceremony.

Worked All WRTC Stations (minimum one QSO with each WRTC station)

WRTC Sprint (work all 63 WRTC stations as fast as possible)

WRTC Most QSOs (work up to 630 QSOs with WRTC stations: 63 callsigns x 5 bands x 2 modes)

WRTC 2018 Distance Challenge (the kilometres between you and the WRTC stations will be summed up for all QSOs)

Assistant Judge (special prizes will be drawn among all those who send in their log until 18 UTC on 15 July)

See www.wrtc2018.de/index.php/en/activities/wrtc-2018-en for detailed information.

2018 Dayton Contest University (Videos and Slides are now available)

Tim, K3LR, reports, "Thanks to Icom America (Ray, N9JA), the Dayton CTU Professors and Teri, K8MNJ (organizer and webmaster), the slides in PDF format from all 2018 presentations (and many past years) and several 2018 CTU YouTube videos are now available. Go to the Contest University Web site at <http://contestu-niversity.com>. Click on FILES for the PDF slides and click on VIDEOS for links to the available recorded sessions (thanks to KC1CWF). Hope to see you at Dayton CTU 2019!"

African DX

Contacts with stations on the African continent count towards the SARL's All Africa Award (www.sarl.org.za/pub-lic/awards/awards.asp)

Algeria, 7V (Special Event). Noury, 7X2JV, Amine, 7X2VB, Toufik, 7X2DE and Charef, 7X4CZ will be using the special call sign 7V5ID during the month of July from Stidia, Mo-staganem. Activity is in celebration of the 57th anniversary of Algeria's Independence. Activity will be on 160 - 10 metres using CW, SSB and FT8, with five rigs running 100 watts using multiple antennas. QSL via 7X4CZ. Look for the logs to be posted to Club Log and then after 6 months to LoTW.

Guinea, 3X. Gary, 5H9GB, will be active as 3X/5H9GB from the Republic of Guinea very soon. Activity will be on various HF bands. QSL via G4SVV. No other details were provided.

Malawi, 7Q. Alex, IW5ELA, will be active as 7Q7ELA from three different lodges in Malawi between 17 and 26 September. Operations will be from Game Have Lodge (17 to 20 September), Mvuu Camp (20 to 23 September) and Makokola Retreat (23 to 26 September). This will be a suitcase operation using a Yaesu FT-857 transceiver into vertical antenna. Activity will be

Calendar:

July

1 - Start of SARL Financial Year and membership payment is due; **ZS5 Sprint**
 2 - Closing date Top Band logs
 6 to 8 – Umtamvuna Festival, Port Edward; Dullstroom Winter Festival; Lazy Hippo MTB Stage Races, Hanover
 7 - **SARL Newbie QSO Party**; Rhodes Run, Rhodes EC
 8 to 14 – Vrystaat Arts Festival, Bloemfontein
 9 - Closing date ZS5 Sprint logs
 13 - *Friggatriskaidophobia*
 14 and 15 - **IARU HF Championships and WRTC 2018**; Franschhoek Bastille Festival
 14 - **RaDAR Challenge**; October RAE registration opens; West Rand ARC AGM
 15 to 20 July 1916 - The Battle of Delville Wood
 16 - Closing date Newbie logs
 17 - Provincial schools open
 19 - Delta Aquariid meteor shower
 19 to 22 – Schreiner Karoo Writers Festival, Cra-dock
 21 - **Winter QRP contest**; Pretoria ARC Flea Market
 22 - ZS2 Sprint
 25 - Closing date for August Radio ZS
 27 to 29 – Winter Celebration, Hogsback
 28 - RSGB Islands on the Air (IOTA) contest; Cape Town ARC AGM; Closing date for Ra-DAR logs; Closing date QRP contest logs
 29 - RSGB Islands on the Air (IOTA) contest; Closing date for ZS2 Sprint logs

on various HF bands using mainly CW. QSLs will be sent automatically by the Bureau. For direct, send an e-mail request to iw5ela@gmail.com

Burkina Faso, XT2. Peter, S54W, Janko, S57L, Robert, S58Y, Rado, S59ZZ and Tine, S50A will be active as XT2SZZ from Bobo Dioulasso between 22 to 30 October. Activity will be on various HF bands and 6 metres as well. The Slovenian team will also participate in the CQ WW DX SSB Contest (27 and 28 October) as a Multi-Single/Low- Power entry. QSL via S59ZZ.

African Islands

IOTA frequencies

CW: 28 040 24 920 21 040 18 098 14 040 10 114 7 030 3 530 kHz

SSB: 28 560 28 460 24 950 21 260 18 128 14 260 7 055 3 760 kHz

Mauritius, 3B8. Karel, OK2ZI, will be active as 3B8/OK2ZI from Pointe aux Sables, Mauritius (AF-041), between 26 July and 4 August. Activity will be on 80 to 10 metres (160 m depends on local conditions) using CW, SSB and the digital modes. Rig is a Kenwood TS-480HX into an Inverted VEE, Vertical or VDA's. QSL via his home call sign, direct, by the Bureau, Club Log's OQRS or LoTW (6 months after expedition).

Morocco, AF-118 New. The DX-World.Net is reporting that "Planning is now underway for a team of IOTA acti-vators to be active from Los Farallones Island. Dates and more information to follow soon. The call sign 5C9A is applied for."

Word to the Wise

Birdies - Birdies are unwanted RF or AF signals generated by or within equipment or receiving systems. Switching power supplies, computer CPU clocks, Ethernet cables and poorly shielded internal oscillators are among the common birdy generators. A couple of ways to reduce birdies you may be hearing from your computer's networking gear include using common mode chokes on all the networking cables and switching to higher-speed networking gear such as gigabit Ethernet to move some of the frequencies out of the HF bands. Sometimes changing the location and orientation of network cables also can help.

WRTC 1990

With WRTC 2018 <http://www.wrtc2018.de/en/> occurring in just two weeks, Dave, K3ZJ, reminds that the promotional video for the first WRTC event held in Seattle, Washington in 1990 is available on YouTube <https://www.youtube.com/watch?v=7axUWjfmHWI>. "The movie captures the international goodwill, optimism and energy of the early 1990's." Younger versions of some of today's contesters can be seen in this video.



A simple regulated power supply design

John ZS5JF

A question I am often asked is “How does a regulated power supply work?” The simplest way to answer this is to consider an analogy, how a steam engine speed control governor works. In 1778 James Watt invented a simple but effective centrifugal governor to control the speed of a steam engine when the item it was powering changed the load on the engine. It is a form of “closed-loop” servo system, whereby the output speed is sensed and the amount of steam allowed to pass to the engine is varied, so regulating the speed to a target value. Watt’s governor is shown below in Figure 1.

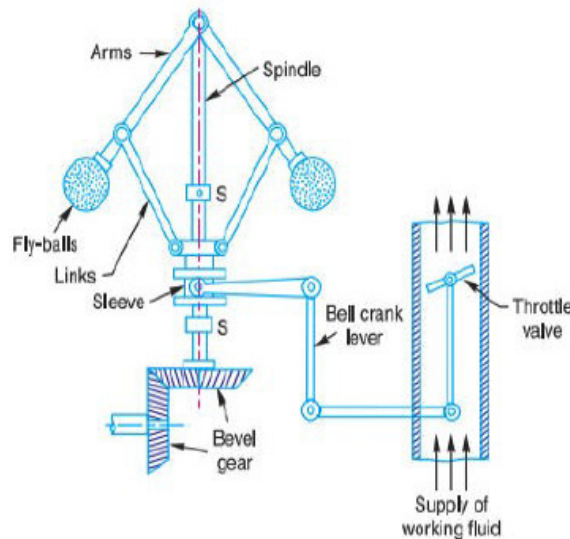


Figure 1 Watt’s steam engine governor

Two heavy weights are fixed to arms which can move up and down. These are called “fly-balls” and the engine drives the vertical spindle shaft through a system of gears from the crankshaft. As the speed increases the balls move outwards and via the links pull up the sleeve. The linkage extends via a bell crank to the steam throttle valve. If the speed increases beyond a safe point the steam throttle is progressively closed so slowing the engine down. The physics of this are explained in Figure 2.

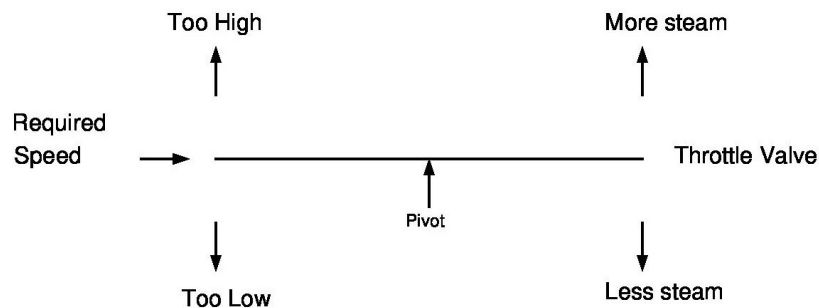


Figure 2 Diagram of the control system

The horizontal line is a “see-saw” and it is pivoted in the centre. If the speed increases the left hand side moves upwards and the right hand side moves in the opposite direction. The throttle valve is connected to the right hand end of the beam.

In an electronic power supply regulator we use the same principle. In place of the speed we substitute “Voltage” and for steam “Current”. The simplest electronic regulator device in common use today is the National Semiconductors LM-431. This device has been around for many years, it preceded the LM-741 as we can tell by the part number, but it is so good it refuses to die!

National Semiconductors no longer exists, it was purchased by Texas Instruments (TI) a few years ago. However, the LM-431 is, like t made by many different manufacturers today. Fairchild (now owned by On-Semi) part number is the KA-431 etc.

It is a small plastic device in the common TO-92 three legged package and looks like a transistor. But it has several transistors and other bits inside it as an *Integrated Circuit*. What is inside the LM-431 is shown in Figure 3.

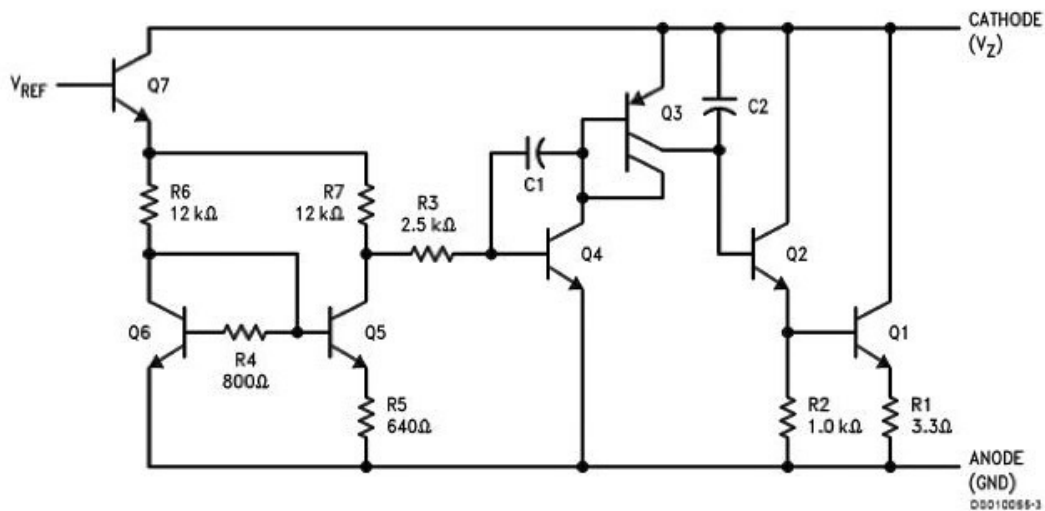


Figure 3 Internal diagram of the LM-431 IC

Essentially, the LM-431 behaves like a zener diode as a “*shunt regulator*”. The difference is that unlike a normal zener diode its voltage can be adjusted by a third pin. This is called the Vref pin. The internal reference voltage of the LM-431 is nominally 2.5V. In use it is just like a zener diode. When the Vref pin is connected to the cathode of the device, if the voltage applied to it via a dropper resistor is more than 2.5V it will draw current to pull down the voltage across the device to 2.5V. Figure 4 shows the connection details for the LM-431. It is essentially an Op-Amp with a beefy output transistor to pull current to ground. The limit on the current it can sink is about 100mA, depending on the voltage across the device. The maximum voltage is 36V. The LM-431 basic building block is today incorporated into many different power supply regulators.

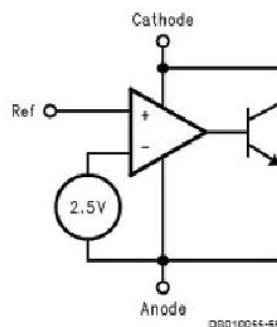


Figure 4 LM-431 connection details

However, if the Vref pin is connected to a potential divider using resistors it can be used to drive a regulator transistor to supply almost any voltage desired up to about 30V. A simple 5V regulator is shown in Figure 5. The series pass transistor (TR2) will determine how much current it is capable of supplying.

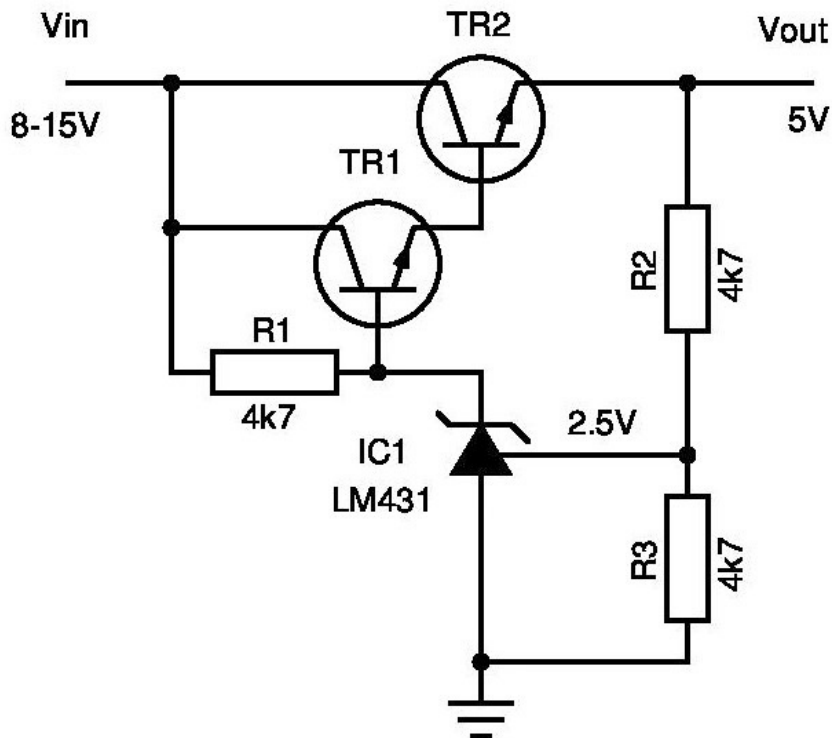


Figure 5 A simple regulated supply using the LM-431

The output voltage of the 5V supply is sensed by the potential divider of R2 / R3 and is applied to the Vref pin. Since R2 and R3 are the same value then when 5V appears across the output of the supply then 2.5V will be present on the Vref pin. The supply is in full regulation. If a load applied to the output causes the output voltage to drop then the LM-431 senses this and turns up the voltage across it until the Vref pin again has 2.5V.

TR1 is an emitter follower and it needs $\approx 0.7V$ more on the base for the emitter to be at the correct voltage. Since TR1 and TR2 are in series then the base voltage of TR1 needs to be about 1.4V more than the desired output voltage. In this example it needs to be about 6.4V. Hence, the input voltage must be at least this value for the regulator to work correctly.

Note that this simple supply has no current limiting protection, a short across the output is likely to make TR2 fail due to over-dissipation.

To change the output voltage we need to calculate a new value for R2. If R2 is set to 10k Ω the output voltage is determined by the formula :

$$V_o = (1 + R_2/R_3) \times 2.5V$$

Since R2 is now $10 / 4.7 = 2.12$ greater than R3, the voltage will be $(1 + 2.12) = 3.12$ greater than 2.5V. It will be 7.82V. If an exact voltage is desired then R3 can be substituted for a pre-set resistor to allow fine adjustment. The value of R3 should not exceed about 10k Ω .

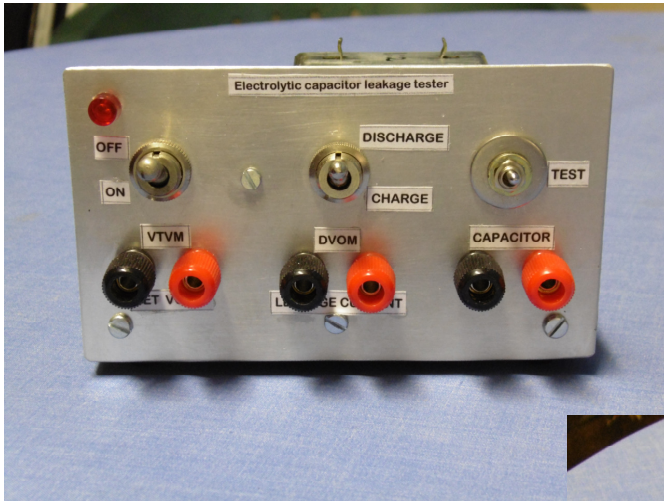
Electrolytic Capacitor Leakage Current Tester

James Fairlie ZS5ABW

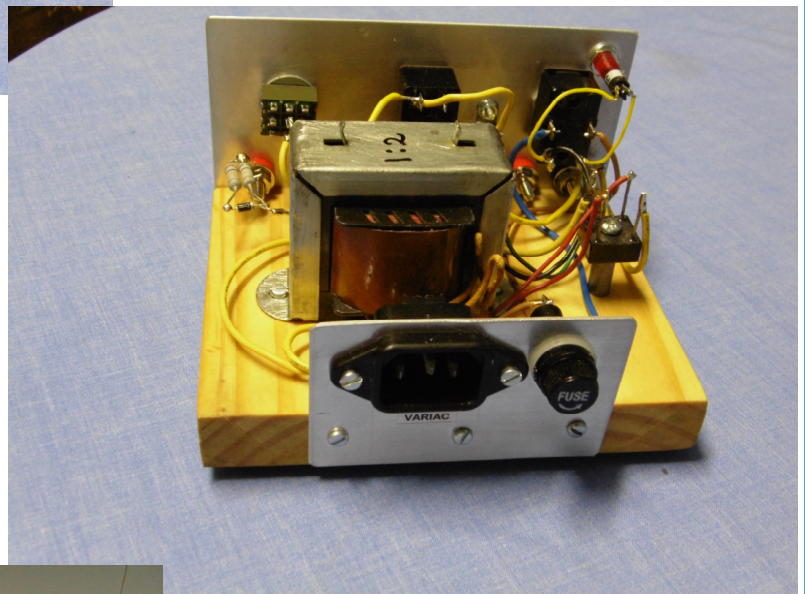
As a result of the article on the leakage current tester by John ZS5JF. James decided he was going to put it to the test and built the tester as mentioned below. For more of the instructions, you can read the article by John on the June edition of the Newsletter. I wonder if anyone else has built any of the small projects that have been listed in the Newsletters ?(Ed)

Below are photos of my interpretation of the above, based on the article by JohnZS5JF, that appeared in the June newsletter. I use a 1:2 mains transformer powered by a variac, the resultant dc voltage after the rectifier bridge being set to what is required. I use a VTVM to monitor this voltage. Close to 500v is possible. The digital multimeter is used to measure leakage current. The capacitor under test connects as you see. The test switch is a spring loaded toggle switch.

ps. Tks to John ZS5JX for donation of the transformer.



Front View



Rear View



Additional Equipment—doing the test.

CW a Dying Mode of Communication ??

When I first started CW it was as a result of wanting to become a fully licensed Amateur Radio Operator. I can hear you all taking a big breath and then that heavy sigh as you say "Here's another one of those CW operators are the only real amateurs".

You couldn't be further from the truth.

The point is, at the time when I became a Ham, that was the requirement in order to get on to phone. Times have changed and so did the regulations.

My point here is, why is it that some people are so against CW ?

I had the pleasure of going through that sweaty moment when you make your first CW contact. My God, someone has come back to my call for CQ. What do I do now ? Immediate panic sets in and you break out in a cold sweat as you try to read the call sign of the op coming back to you. Your brain is in an absolute frenzy as you try to read the slow steady controlled dah dit dahdit that comes back to you. You are so concerned about what you are going to do that you don't even get the name of the operator or his QTH. The sweat rolls down your body as panic sets in. That is exactly what happened with my first contact with ZS6AQW, Evert.

Now I know there are many who will be able to associate with what is written in the above paragraph, because nearly all of us went through the same thing. Something the phone operator did not experience. Its all made so easy these days, plug and play radios you don't even have to tune up.

Eventually I was so into CW that I became a member of the Cape CWIG (CW interest group).

Within no time I had completed 200 CW contacts and I could submit this to the SARL so I could go on to phone. The worst was yet to come, because once I did that, I became like many radio operators and started to lose the CW touch. It was a lot easier to talk than sit pounding away on a brass key.

For years I never even thought about using CW again. I lost touch with all the operators I had come to know over the year of using CW. Today I wonder what happened to many of them.

From the first time that Samuel Morse transmitted his signals along a telegraph line and then progress moved to wireless telegraphy, people have been infatuated with radio and the wonder of this marvel where sound gets transmitted through the air and we can listen to it and today even watch pictures transmitted in the same way.



In the early years after the war and amateur radio was once again allowed, CW was the main means of communicating. Amplitude modulation did nothing to destroy communication by CWT. Not even SSB made a significant change to that.

In the larger ham communities, eg USA, EU, UK, CW is still very much alive. Just listen to the DX bands and hear how many CW stations are still active. CW is still taught by many of the local clubs and many young radio operators take it in their stride to learn CW, even though it is no longer a requirement.

In NZ and Aus, there are still many CW operators and they grow daily. There is still a lot of interest in this mode in Asia and

many of the Russian and Italian stations love to use CW. Probably because of language issues.

I was privileged to have a QSO with a station from Thailand the other day who has achieved just about every DXCC award you can think of, on phone. I was his first ZS contact on CW. I had to ask how this was possible.

How is it then that here in sunny SA, there was so much against CW and its requirement in the regulations, that it has almost died out totally ?

A few years ago, after being gently coerced to start a CW group for the AWA, I discovered that CW had lost none of its charm and charisma at all. I had a real struggle to get my brain back in to gear again to read CW but it did not take too long to pick up the rhythm again.

Sending was a problem, with a light touch of arthritis in the hands, I found I could not send for very long using a straight key, but then a paddle with an electronic keyer sorted that out. The straight key pictured in the article is my original key that I used on my Hallicrafters HT37 and scored up over 200 CW contacts as ZS4AC, in the Northern Cape.

The Bencher paddle opposite, was my next option, proudly bought from Om Mossie who himself used it for many CW contacts.

There have been many different groups that have tried to revive CW in SA, but none have been very successful. There are still a few of them that run on a daily basis. The Cookie net that operates daily at 14:00 on 7020, when band conditions are good, otherwise one can find them on 3550. The AWA CW net on Saturdays at 14:00 on 40m, running at 12 WPM to try and encourage newcomers. And the interest in these groups is limited to a bunch of no more than six or seven operators.

Local CW contests attract no more than the same amount of operators.

I have often heard people say, "hey, I want to get back in to CW again, can I join you guys ?". But then you never hear from them again.

I know there are still some very ardent CW ops here in SA that tend to concentrate mainly on DX and DX contests. Maybe the slower guys who like to ragchew are not really your cup of tea, but it would certainly do a lot to those guys to hear more operators on the local bands replying to a call of CQ.

Maybe we could use some of the local repeaters that stand idle for so long, to try and get CW classes going again. CW should not be something that we hang a sign on that says "Lost Forever". It should rather be something that we see as part of our heritage, like valve radios, and make moves to try and revive interest in this wonderful mode of communication.

I was quite thrilled to be the second recipient of the AWA CW trophy at the last AGM, but my worry is, who will it go to next ? Are there any other CW operators out there in the AWA that we would be able to pass it on to ? I am sure we will find someone.

The trophy is a massive brass straight key that was donated to the AWA. Built originally by Jeff Wright ZS6FIX, refurbished by Ted ZS6TED. It is presented to the AWA Member who has contributed the most to CW for the year. So far Barrie ZS6AJY and myself are the first two recipients. Lets hope it an be passed on to many more operators during the coming years.

Be radio active, stroke your key today and give it reassurance, it will not rust away.

Andy ZS6ADY



Valve Amplifiers Explained

We have a copy of Valve Amplifiers Explained, by John Fielding ZS5JF up for grabs.

This book will be raffled at R20 per entry and is to be drawn at the 2018 AGM.

To enter, you can deposit R20 into the following account and send us proof of payment and your name will be put into the draw. Please use your call sign as reference when making the deposit.

Account Name: A G Cairns
Standard Bank
Benoni
Acc No: 225334119

The following is the preface from the book:

This new book by John Fielding ZS5JF, is for everyone who uses - or is considering using - an HF or VHF linear amplifier. While some amateurs may be of the opinion that valves are an obsolete technology and semiconductors are a better way, John Fielding very definitely thinks otherwise! After reading this book you will be under no illusions that, in his opinion, valves are far superior to semiconductor devices for most linear amplifier applications. As he says, "When you need real power and very good linearity, a valve is very hard to beat."

Essential reading for anyone building a valve linear amplifier, the author guides the reader through the choice of valves for various purposes. Valve Amplifiers Explained starts with a chapter on basic valve theory and explains how to inter-

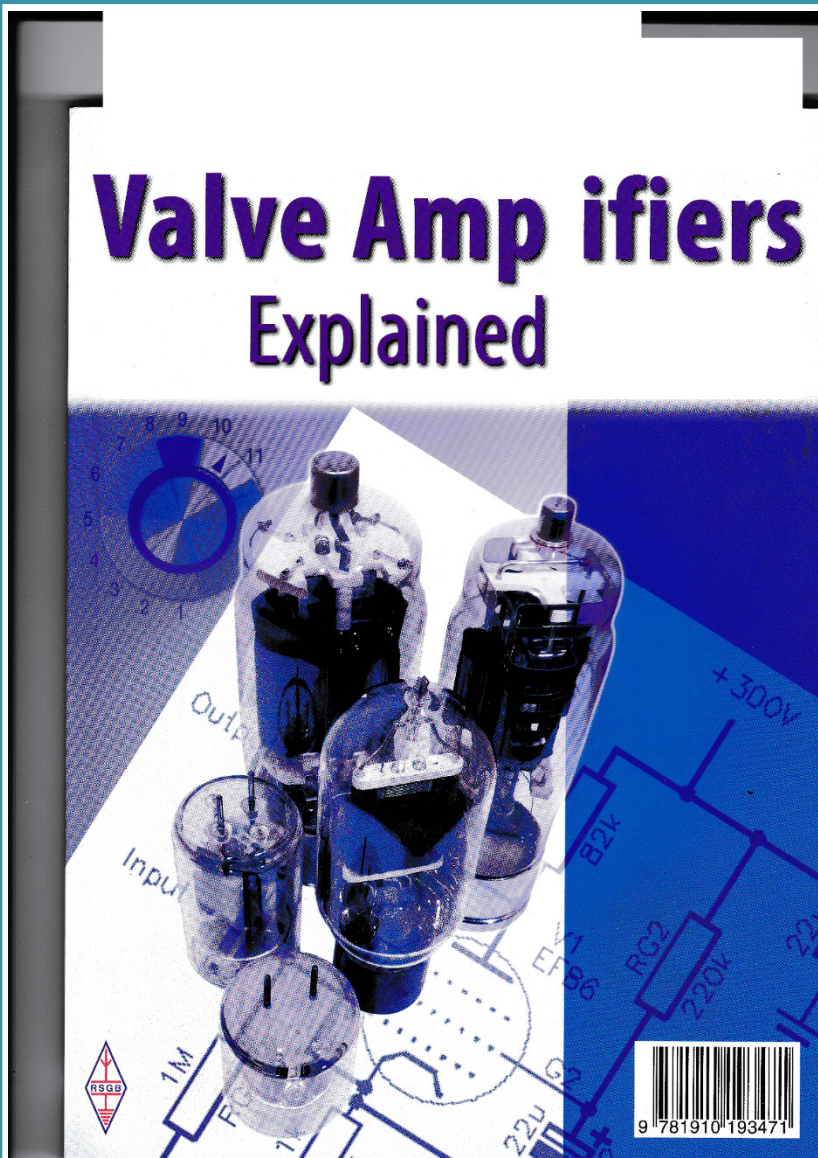
pret valve characteristic curves. The various classes of operation of amplifiers - Class A, Class B, Class AB1, Class AB2 and Class C - are all covered in detail. The relative merits of grounded cathode and grounded grid amplifiers are discussed and a chapter is devoted to the causes of distortion in valve amplifiers - and how to avoid such distortion. The author explains that linearity is primarily a function of the power dissipation of the device and the supply voltage and he devotes a whole chapter to good power supply design. The various protection circuits that an amplifier should have are also covered. While the

book is equally relevant to HF and VHF enthusiasts, a chapter is devoted specifically to the design of VHF RF power amplifiers. Another chapter even discusses liquid cooling of valve amplifiers.

There is advice too for those who, instead of building an amplifier, are considering purchasing a commercially-made linear. Those who use commercial linear amplifiers and want to understand more about how they work will not be disappointed.

As John says, "There is a certain aura about valve equipment. The glowing filaments and the gentle buzz of a high voltage power supply are a sort of magic few have had the pleasure of knowing." After reading Valve Amplifiers Explained you will want to join that elite few!

(You can also give your donation to any of the Committee at any gatherings where you may meet up with them and they can pass on the money to the account. Be sure to give your name and call sign.)



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**Antique Wireless Association
of Southern Africa**

Mission Statement

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

Membership of this group is free and by association. Join by logging in to our website.

Notices:**Net Times and Frequencies (SAST):**

Saturday 06:00 (04:00 UTC) —AM Net—3620
Saturday 07:00 (05:00 UTC) —Western Cape SSB Net— 3630
Saturday 08:30 (06:30 UTC)— National SSB Net— 7140; Sandton repeater 145.700
Echolink—ZS6STN-R; ZS0AWA-L
Relay on 3620 for those having difficulty with local skip conditions.
Saturday 14:00 (12:00 UTC)— CW Net—7020; (3550 after 15 min if band conditions not good on 40)
Wednesday 19:00 (17:00 UTC) — AM Net—3620, band conditions permitting.

For Disposal:

HEATHKIT DX100U AM/CW TRANSMITTER FOR RESTORATION
HEATHKIT DX100U SPARES EX SCRAPPED UNIT
HEATHKIT DX60 AM TRANSMITTER
HEATHKIT HX20 MOBILE TRANSMITTER
HOMEBREW AM TRANSMITTER FOR RESTORATION OR SPARES
HOMEBREW AM MOBILE TRANSMITTER

I also have a vast accumulation of valves and vintage components.
Please let me know what you are looking for . I may be able to assist you.
For further details contact John ZS5JX on 0824865280
or johnnormanzs5jx@gmail.com.
I am located in Durban.



Any one interested in a C11 Transmitter ? The radio was picked up at an auction in Pretoria and Pieter ZS1FPO has the details. For any interested parties, contact him by email at pieter.geldenhys@gmail.com.