

Q S X P E

ZS2PE

FREQUENCIES:

Bulletin	3640 Khz
	7107 Khz
National Call	145,5 Mhz
P.E. Repeater	145,05/65
Grahamstown	145,20/80
Lady's Slipper	145,10/70



***Port Elizabeth Branch of the
South African Radio League***

P.O.Box 462, Port Elizabeth. 6000.

14 JAN 1980

PORT ELIZABETH BRANCH.

Chairman	Dick Schönborn ZS2RS	541461 (B)	324737 (H)
Vice Chairman	Andre van Deventer ZS2BK	28501 (B)	306893 (H)
Treasurer	Frank Burrell ZS2CY		511259 (H)
Secretary	Marge Colson ZS2OB		302334 (H)
Members:			
	Brian Weller ZS2AB	21173 (B)	303498 (H)
	Cyril Goodman ZS2KX		23639 (H)
	Roger Jenkins ZR2BS	541461 (B)	

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NOTICE.

THE NEXT MEETING OF THE PORT ELIZABETH BRANCH WILL BE HELD ON FRIDAY 18th JANUARY, 1980, AT 8 P.M. AT THE Y.M.C.A., HAVELOCK STREET, PORT ELIZABETH.

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KENNISGEWING.

DIE VOLGENDE VERGADERING VAN DIE TAK PORT ELIZABETH SAL OP VRYDAG 18 JANUARIE 1980, OM 8 N.M. BY DIE Y.M.C.A., HAVELOCKSTRAAT, PORT ELIZABETH GEHOU WORD.

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The Bulletin roster for the next month is as follows:

27th January	Roger ZR2BS
3rd February	Dick ZS2RS
10th February	Andre ZS2BK
17th February	Marge ZS2OB
24th February	Frank ZS2CY

If anyone has any items of news for the bulletin reader, please let them know. Your help will be greatly appreciated.

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The Chairman and Committee members wish to take this opportunity of wishing all members and their families and very happy, healthy and prosperous 1980.

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Die Voorsitter en Lede van die Komitee van die Tak Port Elizabeth wens alle lede en hulle families 'n voorspoedige Nuwe Jaar. One wens u geluk en gesondheid.

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DON'T FORGET THE FLEA MARKET TO BE HELD ON 26th JANUARY, AT THE SCOUT HALL BEHIND THE CATHOLIC CHURCH AT 512 CAPE ROAD, LABEGA. SEE ELSEWHERE IN THIS NEWSLETTER FOR FULL DETAILS OF HOW TO GET THERE AND JUST WHAT GOODIES THERE ARE ON OFFER. ROLL UP, ROLL UP. LET'S SEE YOU ALL THERE.

ROUND AND ABOUT.....

By now, most must have heard of the new Rules and Regulations pertaining to Amateur Radio, which have recently been published by the Postmaster General. Some of the more interesting one are - the fact that one does not need to apply for permission to operate mobile or portable anywhere within the boundaries of the Republic. One need only announce the Division in which one is operating. The rules no longer state that communication must be either in English or Afrikaans, but state only "plain language". However, this will probably be clarified by Headquarters. For those who still remember "the good old days", musical frequencies are once again allowed on 80 meters. Will we hear "The Yellow Polka-dot Bikini" once again? There are various concessions as far as Teletype operation is concerned, and there does not seem to be any restriction on the power used for portable or mobile operation, other than the 150 W D.C. and 400 W P.E.P. for sideband. The one that seems to affect us all more than any other is the fact that licence fees are now R10. There do seem to be various interpretations of this from various Postmasters, so the best thing to do is sit tight and wait until you get a notification to pay up the further R9.

We would like to congratulate Peter ZS2PD on the excellent results achieved by his exam class. Congratulations to the following members of the Branch who passed: Peter Wilken, Peter Tiedt, Viv Moore, and to the following who have also now decided to join the Branch: Trevor Elliott, Ray Connolly and Athol Bruyns. Welcome back to the fold also to Norman ZS2RI who has also acquired an new H.F. rig and can be heard on the Bands. All the new Certificate holders are very keen to get their ZS calls and will be getting stuck into CW as soon as possible.

Congratulations are also due to Frank ZS2CY and Audrey on the marriage of their daughter Joan. Also to June ZS2JJ and Mike ZS2MJ on the fact that their eldest son obtained a First Class Pass in his matriculation examination.

We hear that Ken Bradley ZS2HI is still ill after his brain haemorrhage and we all hope for a rapid improvement.

Available shortly from the Branch will be car stickers in English or Afrikaans at a price of R1, some of which goes to Branch funds. These are printed white on blue and read "Talk to the World. Become a Radio Amateur". "Praat met die wereld. Word 'n Radio Amateur". They should be ready for the February meeting. Also available are some SATOUR QSL cards. These are most attractive and are available for 1c each, which covers the cost of postage which the Branch had to pay. It will be a long time before QSL cards are available at the price, so take advantage now.

We hear that Andre ZS2BK has been very busy on the bands lately burning the midnight oil, and managed to work six new and fairly rare countries while he was on the Pacific-Caribbean net. Andre was also recently involved with the rescue drama of a yacht near Singapore and you will be able to read all the exciting details in next issue of QSX-PE.

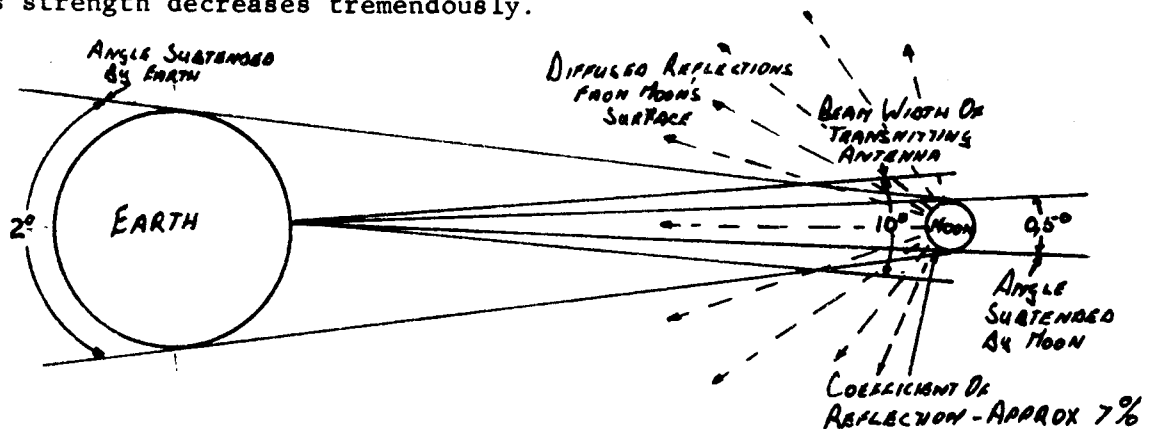
Colin ZS2AO, having recently moved QTH to the Cotswold area, has got his newly extended and galvanised tower up, with the beam and various other antennas as well. Coming down the by-pass from the Western suburbs, one is quite surprised to see a beam sprouting out of the road bridge over the bypass.

Selwyn, ZS2SS, who does quite a lot of travelling around in his new job, has been very active from Transkei, where he has permission to operate, and from all the QSL cards which have been pouring in, it looks as though he will have DXCC mobile.

Brian ZS2AB and family were on holiday in Durban for a while, and then went out to Sundays River in their caravan for a holiday from their holiday. By all accounts, it was enjoyable.

(Is it really made of green cheese?)

The most well-known characteristic of a radio ham is his ability to always try the impossible, usually failing. One of these near impossible experiments is to communicate via the moon. VHF amateur bands have always been very popular for experiments. There is a very wide frequency spectrum available on these bands. While being line of sight communications only, very little interference can be caused. The basis of Moonbounce or EME which stands for Earth Moon Earth, is to use the moon as a passive reflector. This means that when two stations anywhere on earth can see the moon simultaneously they can communicate on VHF or UHF (Very, or Ultra High Frequencies). ZR's, do not get too excited!! Although this sounds like the answer to some of you, it is not so easy. When a signal travels to the moon and is reflected back to earth its strength decreases tremendously.



First of all the transmitter power is fed to a high gain aerial that is directed to the moon and is able to follow it. The moon subtends an arc of 0,5 degrees from the aerial, while the half power beamwidth is approx 10 degrees for the large aerials used for moonbounce. Large does mean LARGE or to be more exact an aerial with a gain of 25 dB or equivalent to about 300 elements. So of all radiated power only a very small amount does strike the moon, the rest passes out into limitless space. The signal that does strike the moon has already been attenuated by the path of 356 000 to 407 000 km. The reflectivity of the moon is 7% and that is in all directions. From the moon the earth subtends an arc of about 2 degrees, thus only a very minute portion of the reflected signal gets back to the earth. This signal again is attenuated by a path of 356 000 to 407 000 km, and is then spread over the earth surface of about 252 000 square kilometer. Compare this area with the area of a large aerial (A few square meter) and you will understand that hams are considered as excellent study material for psychiatrists and suchlike.

However, with a lot of ingenuity (and more) and patience a system can be put together that enables EME contacts. The requirements and success of a system can be calculated when decisions are made on equipment.

The formula to use is as follows:-

$$\frac{S}{N} = P - F_t + G_t - P_l + G_r - P_n$$

Where $\frac{S}{N}$ Signal to noise ratio (dB)

P Transmitter output power (dBW), thus with reference to 1 watt

F_t Aerial feeder loss (dB)

G_t Transmitter aerial gain (dBi), thus with reference to an isotropic radiator

P_l path loss (dB)

G_r Receiver aerial gain (dB)

P_n Receiver noise power (dBW)

P_n is calculated as follows:

$$P_n = 10 \log_{10} K.B.T.t$$

Where K Boltzmann's constant of $1,38 \cdot 10^{-23}$ watt/HZ

B Bandwidth of the receiver

T_t Total of noise sources

T_t is calculated as follows:

$$T_t = T_a + (F_r - 1) \cdot T_f + F_r \cdot T_r$$

Where T_a Aerial temperature (K)

T_f physical temperature of the feeder (K)

F_r Receiver aerial feeder loss (as a ratio)

T_r Receiver noise temperature (K)

P_l path loss is a constant for each frequency

i.e. For 2m (144 MHz) $\times 253 \text{ dB} \pm 1 \text{ dB}$

for 70cm (432 MHz) $261,5 \text{ dB} \pm 1 \text{ dB}$

So that a path loss of 253 dB is equivalent to an attenuation of 10^{-25}

Now fill in some equipment specification and see what performance we can expect.

Suppose we have the following equipment:

1000 watt (many times more than we are allowed, thus special permission is required).

$$1000 \text{ watt} = 30 \text{ dB}$$

F_t 1 dB

G_t 25 dBi (300 elements)

P_l 261,5 dB (for operation on 432 MHz).

G_r 25 dBi

B 100 Hz (Standard cw filters are 1000 Hz)

T_a 100°L (sky temperature)

T_f 290°K (ambient temperature)

F_r 0,5 dB 1,122

Tr 75°K (noise figure of 1 dB. "Normal" receiver noise figure is 4 dB or a I_r of 438°K .)

Thus $T_t = 100 (1,122^{-1}) 290 + 1,122.75 = 219,53^{\circ}\text{K}$

Now $P_n 10 \log_{10} 1,38^{-23} 219,53. 100 = 185,2 \text{ dB}$.

And $\frac{S}{N} = 30 - 1 + 25 - 261,5 + 25 - 185,2 = 2,7 \text{ dB}$.

Thus the received signal will be 2,7 dB or a half S point above the noise level.

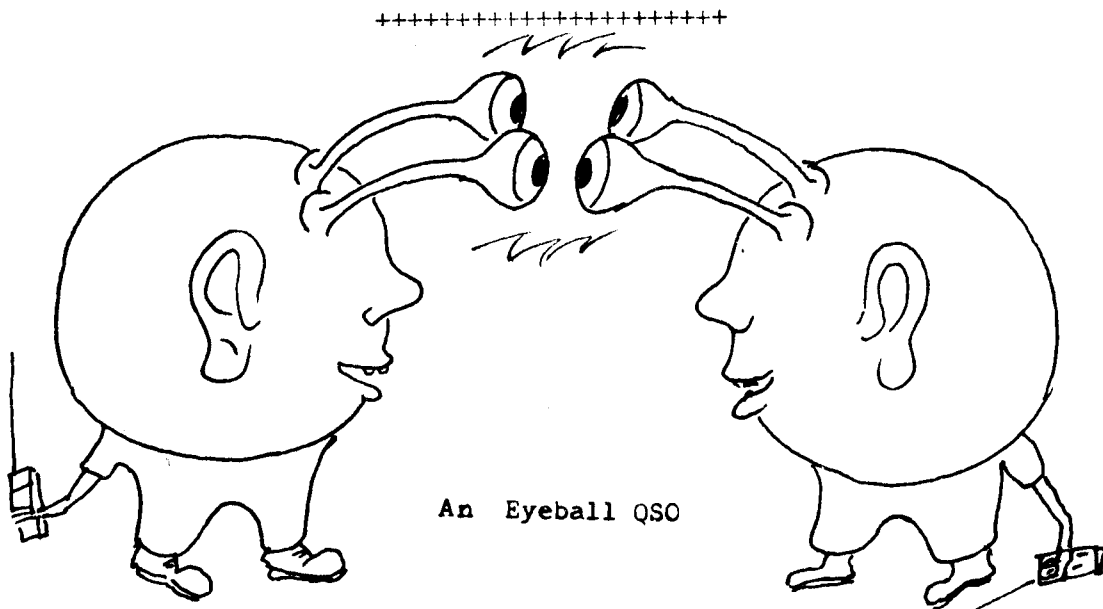
As a signal has to travel over a distance of roughly 763 000 km a time delay of 2,54 seconds will be found and therefore one can also listen to his own signal coming back.

The most significant problem that can arise with this system is Faraday rotation which means that the signal coming back can be of a different polarisation than the receiving aerial. This can mean an attenuation of 20 - 30 dB. However, the solution to this problem is to change the polarity of either the transmitter or receiver aerial.

How many stations are active on EME? There are a number of stations active in the U.S.A., Canada, Europe, Japan, Russian, South America, one in Australia and one in Zimbabwe Rhodesia (ZE5JJ) the latter being the only station on EME in Africa. (see footnote). 2m, 70 cm and 23cm are frequently used, where 70 cm is the most popular. The Worked All Continents Certificate has already been issued for 70cm contacts only. Competitions for EME are arranged with great success. If you want to start with EME you will not be the only nut. You cannot do ZE5JJ a greater favour as he has been waiting for years to work an African station to complete his WAC.

Thanks to Ton ZS4BU and QRX News letter. S. TVL).

(Footnote: No doubt, if you watch television, you will have seen that a group of Division 5 stations and also a Division 6 station have recently been successful with EME. What about a 300 element antenna in your backyard).



FOR SALE.

KYOKUTO 2 METRE TRANSCEIVER FML44-10.SXR

PERFECT WORKING ORDER : R225

CONTACT BRIAN ZS2TY 0422-21717

COMPONENT SALE !!

BARGAINS GALORE!

SATURDAY 26th JANUARY
2-30 P.M.

SCOUT HALL - OLD CAPE ROAD.

DIODES - 100v. - 15A. 50v - 15A. 100v. 4A.

MUFFIN FANS - PANEL METERS - RELAYS

TOGGLE SWITCHES - HEAT SINKS - TRIMMERS.

PLUG IN MODULES WITH TRANSISTORS + CERNET TRIMMERS

LARGE WIRE WOUND RESISTORS - POWER TRANSISTORS.

CAPACITORS - IDEAL FOR POWER SUPPLIES.

32,000 mfd - 40v.

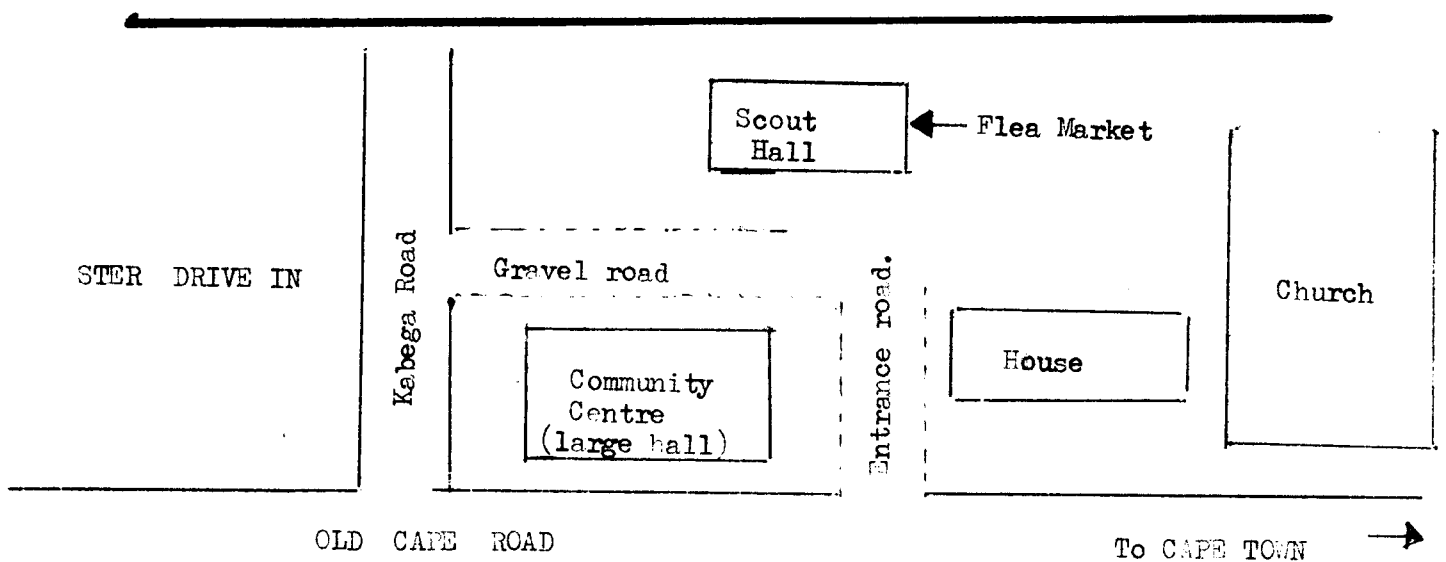
16,000 mfd - 40v

9,800 mfd - 75v

37,000 mfd - 25v

16,500 mfd - 30v.

1,100 mfd - 250v.



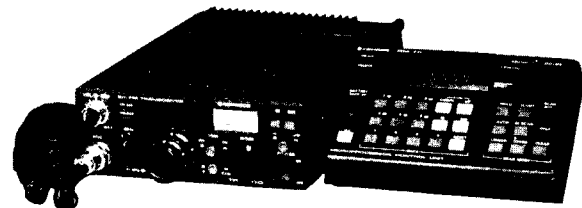
NOW IN STOCK

TS-120S

KENWOOD



TR-7600



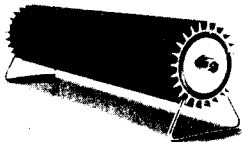
VB-2300
(TR-2300)
2m FM Power Booster



MC-10
(50 k Ω)
Hand Microphone



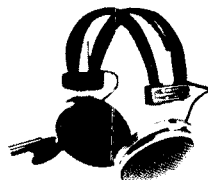
MC-30S (500 Ω)
MC-35S (50 k Ω)
Hand Microphone



RD-300
Dummy Load
(300W)



RD-15
Dummy Load
(15W)



HS-5
Deluxe Headphones



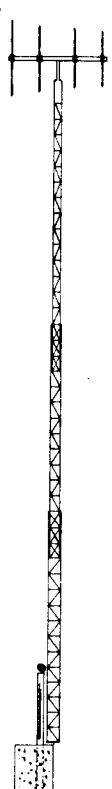
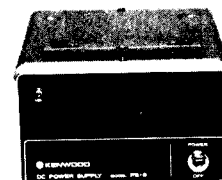
HS-4
Headphones

TR-2300



The TR-2300 is a compact 80CH FM transceiver designed for use in the 2 meter band. The TR-2300 is engineered with the latest techniques in all solid-state construction. The small and lightweight design of the TR-2300 offers you a versatile use.

PS-6



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