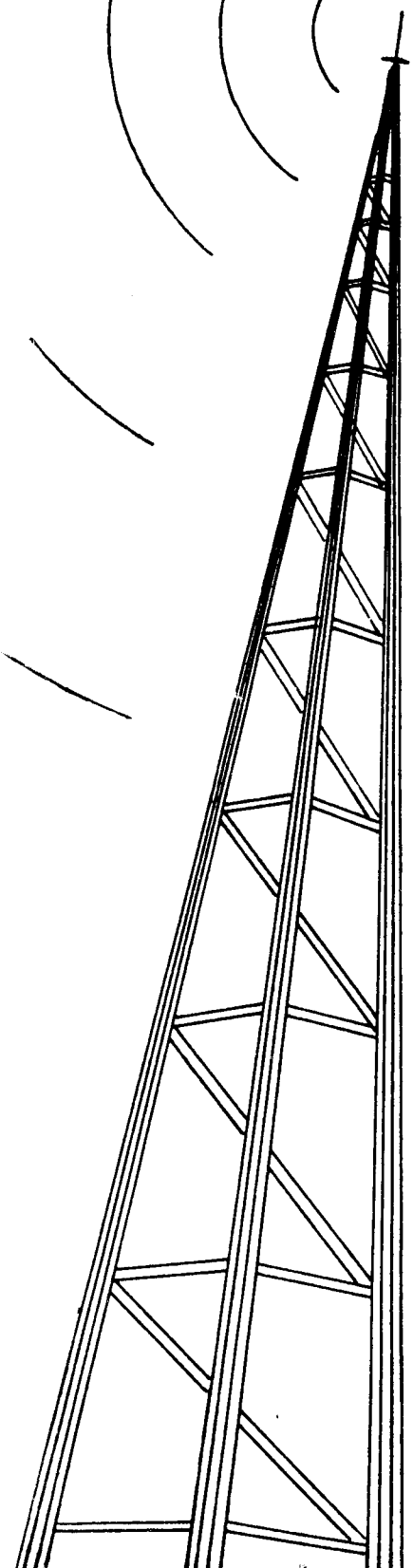
# Q S X
# P E



## 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.**

12 FEB 1980

THE NEXT MEETING OF THE PORT ELIZABETH BRANCH OF THE SOUTH AFRICAN RADIO LEAGUE WILL BE HELD AT THE Y.M.C.A., HAVELOCK STREET, PORT ELIZABETH ON FRIDAY 15th FEBRUARY, 1980 at 8p.m.

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The bulletin roster for the next month is as follows:

| | | |
|---|---|---|
| 2nd March | Brian ZS2AB | 303498 |
| 9th March | Roger ZR2BS | 541461 (bus.) |
| 16th March | Dick ZS2RS | 324737 |
| 23rd March | Andre ZS2BK | 306893 |

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SOMETHING TECHNICAL TO START OFF WITH - GET OUT THOSE SOLDERING IRONS AND GET BUSY.

# Build An Economy Zener Checker

## — versatile test rig

### Why not do it right?

The device shown in Fig. 1 was developed to check zener diodes but it has also been found useful for other purposes.

With no load across the alligator clips, the panel meter will read about 50 volts. With a *silicon* rectifier across the clips, the meter will still read 50 volts for one position of the switch but only .6 volt for the other position. Note that the switch is cross-connected to provide voltage reversal across the diode.

When the alligator clips are connected to a *zener* diode, the meter will read .6 volt for one position of the switch, but for the other position it will read the rated zener voltage up to a maximum of 50 volts.

A third use is to check the total forward voltage across a string of series-connected rectifiers without applying power. This would be about .6 volt per rectifier. This check could not be made with most VOMs because their ohmmeter source voltage is not high enough.

This device *should not* be used to check *germanium* diodes unless the supply voltage is reduced. This can be done by forward biasing a silicon rectifier to obtain a .6-volt source. Then the germanium can be connected across the .6-volt source in both forward and reverse directions to see if the meter reading will drop to .2 volt in the conducting direction.

A 50-volt panel meter is probably optimum for this checker. However, other voltages could be used if the values of R1 and R2 are changed■

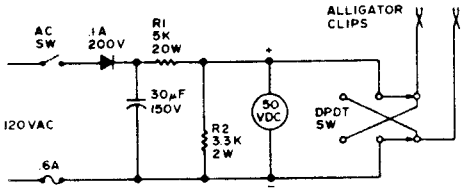


*Fig. 1. Zener checker schematic diagram.*

MINUTES OF THE GENERAL MEETING OF THE PORT ELIZABETH BRANCH OF THE SOUTH AFRICAN RADIO LEAGUE HELD AT THE Y.M.C.A. HAVELOCK STREET, PORT ELIZABETH ON 18th JANUARY 1980.

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PRESENT: 21 members and visitors.

APOLOGIES: ZR2CF, ZS2BK, ZS2CY, ZS2LR, ZS2BF, ZS2KT.

The Chairman welcomed all to the first meeting of 1980 and extended a special welcome to Trevor Elliott, Alan Fanarof, Viv Moore, Peter Tiedt and Gail. He also apologised for the slightly late start, as the Committee meeting had been held first.

MINUTES: The Minutes of the Meeting held 23rd November, 1979 in Uitenhage, having been published in QSX-PE were taken as read, proposed by Cyril ZS2KX and seconded by Peter ZR2CJ.

ARISING: The question of the Port Elizabeth Branch having given the repeater frequency to the Algoa Branch was raised by Brian ZS2TY who said that the Branch was not competent to give the frequency to another Branch and the Chairman stated that the minutes should read "relinquished" and those Minutes are hereby amended.
Kelly ZR2CA presented a donation of R5 from Sam ZR2CF who had suggested that the Branch start a V.H.F. Repeater Fund. The Chairman stated that there had originally been a Repeater Fund, but that this had been incorporated into the General Fund, and he proposed a vote of thanks to Sam.

CORRES: The Chairman asked members to be patient with the amount of correspondence as there was a backlog of two months correspondence since the last meeting in November.

(1) Letter from John St. Clair regarding the increase in licence Fees. This was a copy of a letter sent to the P.M.G. The Chairman said he thought he could speak for the majority who supported these views.
(2) Letter from East Rand Branch - copy of letter to League President regarding the new Radio Regulations. Cyril ZS2KX said this should be taken up as a Branch with the P.M.G.
(3) Letter from Protea Branch regarding car stickers.
(4) Letter from Tak Boland regarding car stickers.
(5) Card of thanks from Eve Dersley for flowers on the recent death of Bob ZS2BJ.
(6) Letter from Band Planner re granting of licence for Cockscomb repeater.
(7) Copy of Handbook for Amateur Operators Licence.

ARISING: With regard to the increase in licence fees, it was felt that many old age pensioners might let their licences lapse if they were not able to afford the R10. It was felt that the Branch might help in some way. Lionel ZS2DD said that it seemed that an Amateur licence was not a privilege any more, and asked for the reason behind it. There did not appear to be any liaison between Headquarters and the P.M.G. as there had been no forewarning of the increase. Members had received their usual reminders to pay R1. Colin ZS2AO said that there might be a greater hold over amateurs and that there could be further increases in the future.

GENERAL: There would be no official Branch courses for the May examination, but a crash course for those who had attended the previous classes would be held. Peter ZS2PD said that if there was sufficient interest for classes for the November exam, then these would be held. Roger ZR2BS said that he had received several enquiries.

GENERAL: (contd) The Chairman raised the subject of a change of venue and the members were unanimous that this should be done. The Park Drive Bowling Club had been approached, who would let the Branch know of their decision in due course. Peter ZR2CJ said that he might be able to get the use of the Yacht Club but this was not considered desirable as the Harbour is a Security Area, and the distance was too great from the Western Suburbs. Viv ZR2CI said that most hotels were only too keen to provide venues for meetings.

Members were reminded of the Component Sale to be held on Saturday 26th January, and the Chairman said that there was a tremendous range of parts particularly for those interested in building and these would be selling for rock bottom prices. The Algoa Branch had been advised of the sale. Many thanks were due to Andre ZS2BK for his efforts in acquiring the parts. If anyone had anything to sell, they could contact Roger and these could be sold for the sellers own account or donated to the Branch.

Cyril ZS2KX had agreed to hold morse classes for those keen to pass the exam. The class would last approx. one hour and a venue would be found.

QSL stickers and some SATOUR QSL cards are available and log books are on order.

The Ladys Slipper Repeater had been completely rebuilt by Brian ZS2AB and should be installed soon. The Grahamstown Repeater frequency would be changed to the new frequency in approximately two weeks time.

Bill Hodges asked if anything could be done about the Scouts being given permission to talk at the Jamboree of the Air and the Chairman explained that this had been raised at the Annual General Meetings but with no success from the P.M.G.'s office.

Trevor ZS2AE asked if all correspondence to the Branch was always read, and the Chairman explained that all correspondence was read in Committee.

There being no further business, the meeting closed at 8.50 p.m. and tea was taken.

sgd.
R.W. Schönborn ZS2RS
Chairman

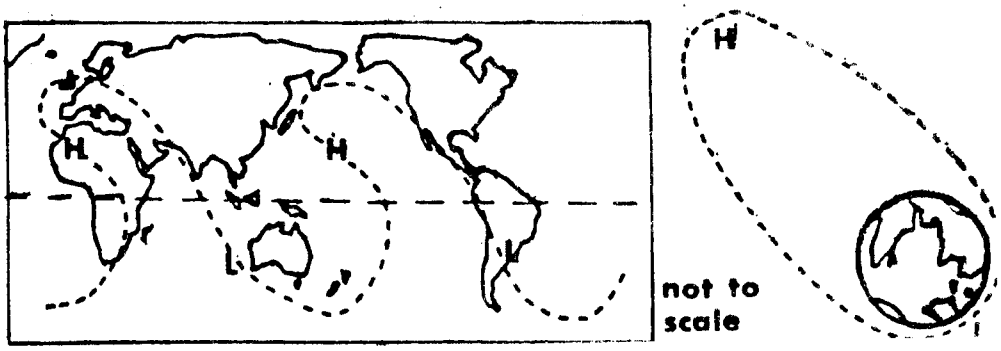
sgd.
M.T. Colson ZS2OB
Secretary

# OSCAR 9

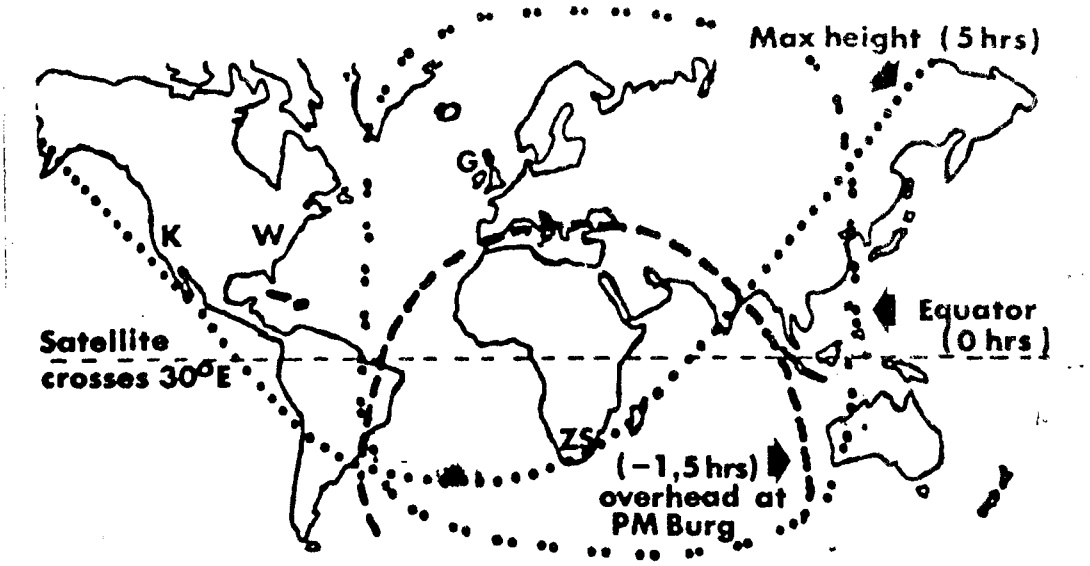
THE FIRST HIGH ALTITIDUE AMATEUR SATELLITE.

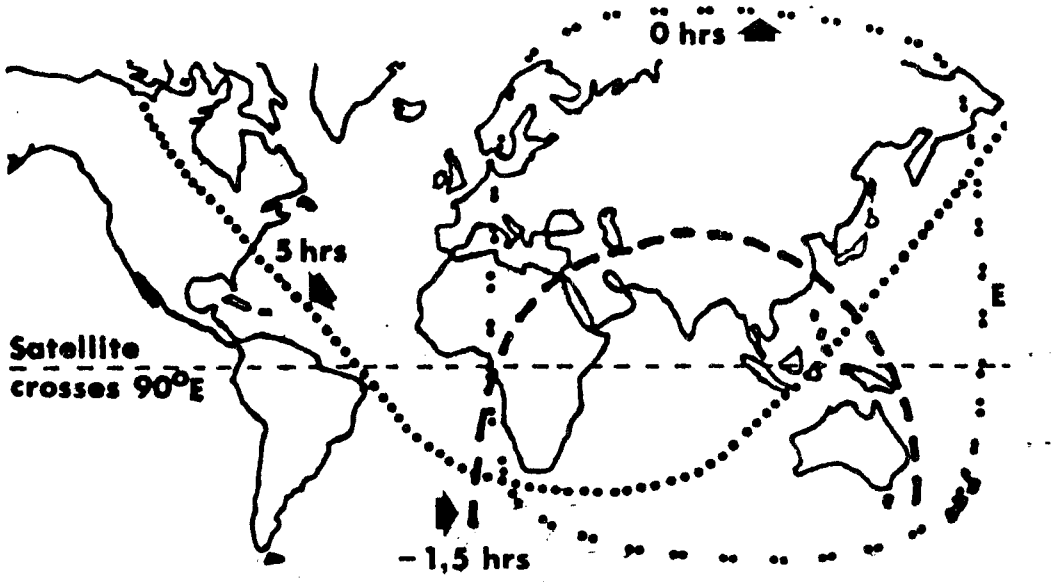
OSCAR 9 will be the first in a new generation of amateur radio satellites known as 'Phase Three'. Up until Oscar 9 goes into orbit, the amateur radio operator has had to be content with low orbiting spacecraft which, because of their limited range were not much more use for communications in South Africa than the 80 metre band. These satellites have, however, provided a valuable service to the experimenter and without the knowledge gained over the last 18 years, the Phase Three satellites would never have become a reality.

OSCAR 9 will be placed in an eliptical orbit, with a low point 1460 km above the earth's surface, and a high point of roughly 36 000 km. The line on the diagram below shows the points on the earth's surface where the satellite appears directly overhead on one particular orbit. It seems a most unusual and impossible orbit until one realises that, as the satellite swings away from the earth, its speed reduces and, at the same time, the earth continues to rotate. Therefore, the longitudinal movement on ascent is very small, whilst on descent it increases very rapidly as the satellite speeds up on its way back down again.




The other two diagrams show two orbits of OSCAR 9. A third diagram showing the satellite coverage at 30° West has been omitted, but it should not be to difficult to visualise the areas involved. The satellite will be at its most useful as it moves from South to North and increasing in height. On passes at 30° East, hams in South Africa will be able to use the transponder for local QSO's from about 2 hours before the equator crossing. Coverage will extend from roughly the Equator down to Antarctica with a small part of South America being also within range. The next half hour will see the range extended to include all of Africa, the Middle East and part of India. The broken line shows the expected coverage at this stage (1,5 hours before crossing the Equator.






Half an hour after being overhead at Pietermaritzburg, the first signals will be heard from the United Kingdom and Europe. Singapore will also just come into range. One hour later, the spacecraft crosses the equator and this situation will probably provide ZS stations with their best chances of dx, due to the fact that the high powered and numerous W's will still be unable to access the satellite. The line with two dots shows the expected coverage. Western Australis will, in fact, most probably be out of range, but there is the odd chance now and again of a brief contact. As the apogee (highest point) is reached, more and more of the northern hemisphere will access the satellite. Just before going out of range to those of use in South Africa, almost the whole of North America will be open for QSO's. On an overhead pass, the following access times are estimated:

| | | | |
|---|---|---|---|
| Africa/middle East | - 6,5 hours. | Europe (Central) | - 6,0 hours |
| United Kingdom | - 5,8 hours | India (all) | - 4,5 hours |
| India (parts) | - 6,5 hours | U.S.A. (New York) | - 3,0 hours |
| U.S.A. (Central) | - 1,0 hours | U.S.A. (West Coast) | marginal |

The orbit period will be eleven hours, and the satellite will reappear 22 hours later on a similar orbit and 30° East of its last equator crossing. 22 hours later the satellite will reappear another 30° further east, and the coverage is shown on the diagram at the top of this page. Successive orbits are 165° apart so each area will only see one orbit per day, the other useful pass being somewhere on the other side of the earth. As the satellite continues to move further East on each pass until it is inaccessible, the other orbit will continue to approach us from the West. It would appear that when neither of the northerly passes can be accessed, we will be able to access the satellite on the downward pass, although this will only be useful for local QSO's in Southern Africa. As the apogee will slowly move from being overhead at 26° N to 57° N over the first year or two, it is impossible at this stage to predict these matters accurately. After 2 to 3 years, the satellite will move to apogee over the southern hemisphere and the contours on the diagrams can be reversed around the equator line. A second Phase 3 satellite will be launched 180° away from the original one to give extra coverage to the Northern Hemisphere.

## The latest details

Uplink: 435,110 to 435,290 MHz
Downlink: 145,810 to 145,990 MHz
Output: 50 watt Circular Polarisation.
E.R.P. required at Apogee: 1 Kilowatt
Orbit period: 11 hours.
High and low points: ± 36000 km and ± 1400 km.
Modes: S.S.B. and C.W..
Inclination to equator: 57°
Longitudinal increment: 165°
Antennae : Omnidirectional (low): 11-13 dB (High)
Launch date: March or May, 1980

ROUND AND ABOUT.

In the Yacht Harbour over the last few days, have been three yachts all with hams on board. "Windrose" with John VP2SSW and Sally, "Tigress" with Charlie W2TUR and Evalyn, and "Sunday Morning" with Charlie KS6GQ and Kathy KS6GR. Yours truly (Marge) took a trip along to the Yacht Harbour and introduced myself and was duly invited on board. What delightful couples they are, some with children on board, and Tigress with two adult crew, but picking up a daughter in Cape Town. They have not been back home for four years, but have been travelling more or less in convoy around the world during that time, to places like Papua/New Guinea, Fiji, New Zealand and all places inbetween. Charlie W2TUR runs a Drake TR4 with a long wire antenna and works 80 to 10 metres. Charlie and Kathy on "Sunday morning" use an Atlas transceiver. They are most impressed with South Africa and will be good ambassadors when they get back to the States. Depending on weather, they will be leaving soon for Knysna, Cape Town, St. Helena and home.

Congratulations are due to Buck ZS2RM, the Chief Communicator at the Airport, who recently received a long service award, which was a gold lapel badge and a certificate signed by the Prime Minister.

June and Mike have been very busy recently getting their eldest son Roger ready for Rhodes University and Headley for school. We wish them luck during the following year.

Listening on 2 metres these days, one hears lots of new calls and new voices, and we would like to congratulate them all and hope they will get stuck into the c.w. very soon and get their ZS calls as soon as possible. Welcome to all the newcomers to the Branch, Trevor, Athol, Hank, Gabriel from Richards Bay, Ray and we wish them a long and happy association with the Branch.

Cyril ZS2KX will be holding c.w. classes on Wednesday evenings at 7.45 at the Y.M.C.A. and is well known for his excellent method of teaching so anyone still wanting to take the test, or those wanting to brush up on their c.w., especially for satellite work, are invited to attend. And talking of c.w. we must congratulate Kelly ZR2CA on passing his Morse test and hope to hear him on the h.f. bands with his new call soon.

SO YOU THINK WE HAVE IT HARD ?? - THE MOSCOW WAY OF LICENSING.

In the U.S.S.R. activity and standards of operating are high and many amateurs seem to be using homebrew transceivers. Considerable official encouragement is given to amateur radio in the U.S.S.R. including access to surplus equipment and technical information. The licensing is very much on an incentive basis and demands considerable effort on the part of those wanting licences. The path to a first-class licence is long and arduous and in essence the procedure is: complete a basic electronic course, join a radio club and take a test (including a 10 w.p.m. Morse test) which licenses you to LISTEN on the amateur bands and log stations; after 6 months you can take a "third-class" test (more difficult examination on simple transmitter theory and practice and 12 w.p.m. Morse test). If you pass this you are permitted to operate a 10 watt transmitter on sections of the 3,5 and 7 MHz bands c.w. and 28 MHz phone. These licences can be renewed only by the operator moving to a higher class. To do this requires another ("second-class") examination and a pass allows operation of a 40 watt transmitter on 3,5 to 420 MHz c.w. (phone restricted to 28MHz). Finally to obtain a "first-class" licence requires the applicant to send and receive Morse at 18 w.p.m., be able to design transmitter and receiver circuits, and build and service advanced transmitters and receivers. If he or she (some 10% of Russian amateurs are YLs) passes, then permission is given to operate 200 watts on 3,5 to 420 MHz c.w. or phone (there are no 1,8 50 or 70 MHz bands in Russia).

Let's not hear too many complaints in future and best wishes to all those who will be writing the exam this year.