

Q S X P E

*Port Elizabeth Branch of the
South African Radio League*

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



National Call	145.5 Mhz
P. E. Repeater	145.05/65
Grahamstown	145.15/75
Lady's Slipper	145.10/70

ZS2PE

Bulletin: Sunday 08h40
HF: 40m — 7098 KHz
VHF: FM-145,700 MHz

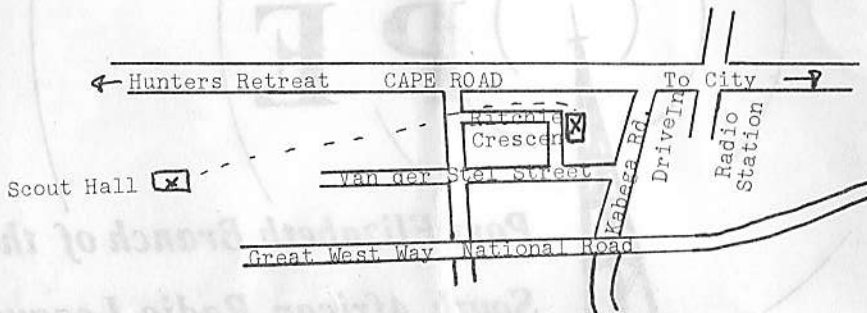
OCTOBER 1984

Port Elizabeth Branch

>NOTICE OF MONTHLY MEETING<

THE MONTHLY MEETING OF THE PORT ELIZABETH BRANCH OF THE SOUTH AFRICAN RADIO LEAGUE WILL BE HELD AT THE SCOUT HALL, RITCHIE CRESCENT, KABEGA ON FRIDAY 19th OCTOBER, 1984 AT 8p.m.

A diagram showing you how to get there is shown below:



At the Annual General meeting of the Branch held in September, 1984, the following members were elected to serve on the

COMMITTEE

CHAIRMAN: Brian ZS2AB (303498) VICE CHAIRMAN: Dick ZS2RS (322111)
SECRETARY: Marge ZS2OB (303498) TREASURER: Pete ZS2PJ (301493)
MEMBERS: Trevor ZS2AE (321746) Gordon ZS2GK (306776)
QSX-PE: ZS2OB and ZS2AB.

Silent Key

It is with the deepest regret that we advise you of the death of Bert Ellin ZS2EA. Bert was taken ill suddenly this past week and did not recover after an emergency operation. Bert has been a member of the Branch for many years and served on the Committee from 1972 to 1974. He has over the years contributed many technical articles and cartoons for QSX-PE and the present cover design is one which he did some years ago. Bert's electronics knowledge, particularly with regard to logics and computer design was unsurpassed and many have benefitted greatly from the assistance which he gave so willingly to any who showed a genuine interest. Bert conducted three sessions of classes dealing with digital electronics, from which many people, not only radio amateurs benefitted. In recent years, Bert closed his watch-making business and devoted his full attention to the design of computer-based and other logic equipment with a local company. The funeral took place on Saturday 6th October and was attended by a number of local amateurs. To Bert's wife Dorothy and the other members of the family we extend our sincerest condolences.

MINUTES OF THE GENERAL MEETING OF THE PORT ELIZABETH BRANCH OF THE SOUTH AFRICAN RADIO LEAGUE HELD AT THE SCOUT HALL, BROADWAY AVENUE, SUNRIDGE PARK, PORT ELIZABETH ON FRIDAY 17th AUGUST, 1984.

The Chairman extended a warm welcome to the ladies and especially to Garth Laaks S83A who had moved to Port Elizabeth. He wished him and his family and long and happy stay. A welcome was also extended to Sarel Roussouw ZR2EM, John Hardy, Brian Gruss ZS2BG, Barry Fennell ZS2DT and Mike Bosch ZS2FM.

PRESENT: 28 members and visitors.

APOLOGIES: ZS2BK, ZS2AP, ZR2FC, ZS2KX, ZS2LO.

MINUTES: The Minutes of the General meeting held 20th July, 1984 having been published and circulated in QSX-PE were taken as read, proposed by Colin ZS2AO and seconded by Lynn ZR2FE.

FINANCE: Brian ZS2AB the Treasurer reported that to date 100 members had renewed their subs.

CORRES: Letter re Repeater facilities at Mount Rd. station.
Letter re permission to operate ZS2JAM at JOTA station.
Card of thanks from Cyril ZS2KX.

- GENERAL:
1. Congratulations were extended to Percy Buckley ZS2RM on the receipt of his DXCC badge for 305 countries.
 2. The Chairman read the letter from Pretoria regarding our use of the Mount Road Police station for repeater facilities.
 3. Mention was made of the venue of our monthly meetings. During the past eight months it had proved very convenient because it was reasonably central. However, a problem had arisen as the Scouts now wished to use the hall until 9p.m. on Fridays. We were somewhat loathe to have to look for another venue and the suggestion was made that we have the meeting on another evening. After a show of hands, it was decided that Wednesday might be a good evening.
 4. The Chairman tabled a list of equipment in the estate of the late Johan Coetzee. This was to be sold by tender. The two items marked had been modified. All were reasonably priced.
 5. Andre ZS2BK had donated a power supply for Branch funds, plus screened cable and BNC plugs.
 6. The Annual General Meeting would take place at the usual venue in Walmer and would again be followed by a braai and social get-together. Garth S83A was invited to come along and bring his family. The Secretary was asked to invite the Hopkins'.
 7. A navigational exercise by the Algoa Flying Club on 15th Sept and 5 stations would be required for comms. It was felt that it would be pointless to operate if there were less than 12 entries for the Navex. Those willing to help to contact Colin ZS2AO.
 8. It was important to note that the date of the A.G.M. was 22nd September and not 15th as stated in QSX PE.
 9. Brian ZS2AB reported that the Ladies Slipper Repeater was back on the battery and charger.
 10. Mike Bosch asked if anyone wished to order crystals for the new frequency of 51,4MHz for use in the PRC 261 to contact him.

There being no further business, the meeting was closed and tea was taken. Thereafter a most interesting and informative talk and demonstration of old and new cinema techniques, particularly regarding sound was given by Mike Bosch ZS2FM. Dick thanked Mike warmly and said movies would never be the same again.

sgd:
R.W. Schönborn ZS2RS
Chairman

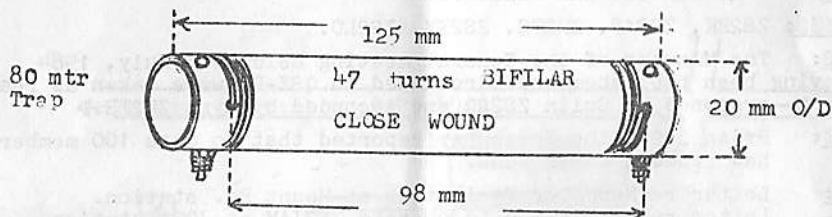
sgd:
M.T. Weller ZS2OB
Secretary

TRAP RESONATORS

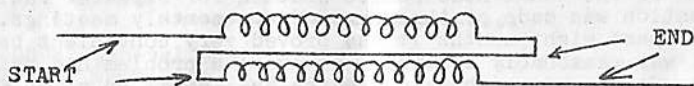
A New Version from Bill ZS6KO.

INEXPENSIVE, EFFICIENT TRAP COILS.

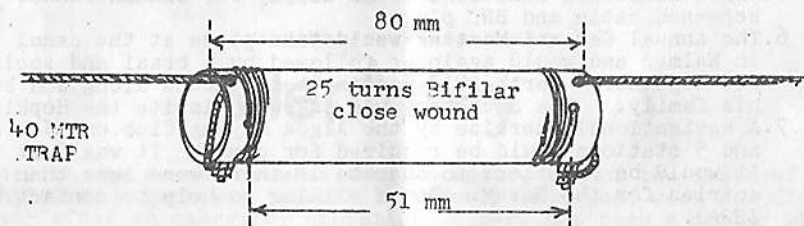
These traps are made without the use of capacitors or coaxial cable. The traps are small, the largest one which is an 80 metre trap, measures 20 by 125mm. The former is made of 20mm diameter PVC electrical conduit. The wire is plastic covered, the wire diameter is 0,5mm and when the plastic covering is included adds up to 1mm diameter.



A screw with washers is placed at each end of the former to anchor the wire, while the cross connected ends are pushed back into the former. Holes are drilled opposite the screw holes for anchoring the antenna wire.



The Bifilar (i.e. two wires wound in parallel, or simultaneously) winding is cross connected i.e. the start of the one winding is connected to the end of the other winding. In this way the capacity effect between two adjacent windings is used to form the tuned L/C circuit.



All windings are bifilar.

20metre traps 13 turns

40metre traps 25 turns

80metre traps 47 turns

resonant at 14 mHz

resonant at 7 mHz

resonant at 3,5 mHz.

The traps will effectively trap off the ends of the antenna on each higher band.

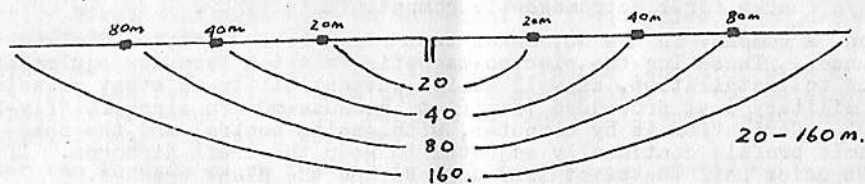
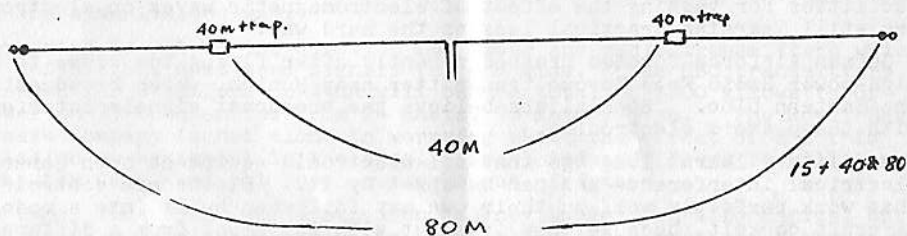
In a three band trap dipole using traps on 40 and 80 metres and made to operate on 40, 80 and 160 metres, the whole system will resonate on 160 metres when a 1,8 mHz signal is fed into it.

When a 3,5 mHz signal is fed into the system, the 80 metre traps will isolate the outer sections, and only the section between the 80 metre traps will radiate.

So also the 40 metre section will radiate between the 40 metre traps when a 7 mHz signal is fed into it.

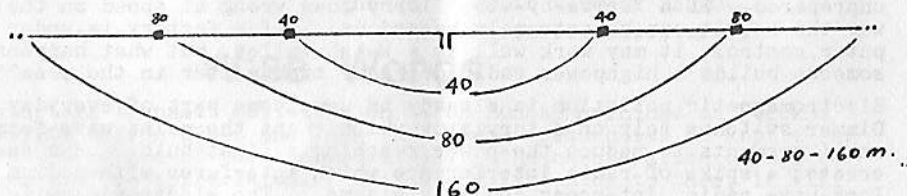
In a trap dipole designed for 40 and 80 metre operation, using only a 40 metre trap, operation is possible on 15 metres when the dipole acts as an extended double Zepp, with a low SWR.

If 20 metres is to be included, then 20 metre traps must be wound and included in the antenna system. In this case the system will not operate on 15 metres.



For the above 20 to 160 metre trap dipole, the total length is slightly less than an 80 metre dipole.

The inductance caused by the traps in the antenna creates loading on the lower frequencies and thus tends to shorten the system.



Acknowledgements to "Watts" Pretoria Branch.

Radio beams damage electronic components

The current craze for controlling mechanical and electrical equipment with microprocessors may end in tears.

The military is familiar with the problem of electromagnetic waves interfering with electronic components, but many civilian designers and manufacturers have never even heard of it.

The motor industry is developing cars which rely on computer control for the engine, steering, gearbox and brakes. Prototypes have failed when driven too close to a powerful radio transmitter. The Royal Shakespeare Company also has its problems. It is desperately trying to persuade the BBC not to build new transmitter aerials near Stratford-on-Avon. Two nights of low-power test transmissions wiped clean the memories of three electronic typewriters and made the theatre's computer-controlled stage lighting unusable. Even the US and European armed forces, which have facilities for testing the effect of electromagnetic waves on electronics are still learning practical lessons the hard way.

A German Airforce Tornado crashed recently after flying too close to the high-power Radio Free Europe transmitter near Munich, which broadcasts to the Eastern bloc. Specialists believe the broadcast signals interfered with the plane's electronics.

The military learnt long ago that all electronic equipment both generates electrical interference and can be upset by it. Electronic controls that work perfectly well on their own may fail when built into a modern aircraft cockpit, because they interact with equipment from a different manufacturer that also works well on its own. That is why the military always checks for electromagnetic compatibility (EMC).

Eaton, a company in the US, makes test rigs for the British Ministry of Defence. These log the electro-magnetic emission from new equipment prior to installation, as well as its susceptibility to stray emission. The military test procedure is strict, because modern aircraft "fly-by-wire". Navigation is by computer, with engine control and the aerodynamic profile continually adjusted to keep the craft airborne. If the electronics fail the pilot is powerless and the plane crashes.

Although barred from discussing military procedures, Eaton is free to talk about civil industries such as the motor companies which are now switching from traditional electromechanical controls.

Many industries are totally unaware of EMC and are grossly under-estimating the problems of switching to electronic control," says Graham May of Eaton UK. "Europe is behind the rest of the world. Manufacturers are unprepared. If a "Drive-by-wire" lorry goes wrong at speed on the motorway the result can be extremely hazardous. If a factory is under computer control, it may work well in a Welsh valley, but what happens if someone builds a highpower radio or radar transmitter in the area?"

Electromagnetic pollution is already an unwelcome part of everyday life. Dimmer switches rely on a thyristor which chops the mains wave-form into small segments to reduce the power reaching a light bulb. But each chop creates a spike of radio interference which interferes with medium or long-wave radio, intercoms and baby alarms. The electronic switching in a modern washing machine can cause a series of clicks on the sound of any hi-fi system in the house. Astronomers using radio telescopes worry about microwave ovens in the vicinity leaking high-frequency radio energy which will be picked up by their sensitive aerials.

The high-power radar system of a modern airport can cause computers in the area to fail unless they are screened by protective metal shielding which is earthed. A German car manufacturer recently tested a prototype vehicle with electronic engine controls. It failed mysteriously on the motorway. A second vehicle, sent to pick up the driver also failed in the same spot. A local broadcast transmitter was saturating the area with radio energy.

Manufacturers in the US have already learnt that a tractor with electronic ignition must be tested before sale, to check that it will not fail when the driver uses a CB transmitter or drives it across a field under a high-voltage power line.

One way to guarantee EMC is to limit electromagnetic emission from the interference source. Factories which run electronic arc-welding equipment should be located well away from other factories and housing. If not, the factory can be screened with earthed metal cladding. Chicken wire is much cheaper, but the mesh blocks only certain frequencies. The metal reinforcements, buried in the walls of a concrete building, work in the same limited way.

Screening is out of the question for radar and radio transmitters which, by definition, must send signals far and wide. The BBC transmitters planned for Stratford-on-Avon will beam a total of 1800 kilowatts of power on 79 frequencies from 24 masts, 90 metres high. The Royal Shakespeare Company is not alone in worrying about the effect of all this emission on equipment in the area. Local industry fears it will corrupt computer data, and put local networks out of action.

In cases like this, where emission is inevitable, the alternative, but even more expensive approach, is to shield all equipment in the area from incoming signals by enclosing it in an earthed metal cage. But connecting wires will still act as an aerial at frequencies which are a fraction of the wavelength.

A minor design modification, for instance, in the length of wire harness in a car, can radically change the car's susceptibility to radiation of a specific frequency. If the car has an electronic engine-management system, it may just stop working.

After the Tornado crash the RAF is looking for ways of tightening EMC standards even further. But it knows that no amount of shielding can safeguard fly- or drive-by-wire hardware against electromagnetic pulses. This is the pulse of a very powerful radio energy which follows a nuclear explosion, and creates such high voltages in any metal or wires that transistors and microchips quite literally disappear in a puff of smoke.

From the "New Scientist" August 1984.
Thanks to Colin Ashwell ZS2A0.

Wise Words

Headquarters transmit bulletins on CW on Sunday mornings on 7020kHz and 10120kHz from 07h40 and ask that these frequencies be kept clear during the period of the transmissions. The co-operation of all our members will be appreciated. What about listening to them, it will be good practice!



bulletin roster

21st October	Trevor ZS2AE
28th October	Gordon ZS2GK
4th November	Brian ZS2AB
11th November	Dick ZS2RS

THIS and THAT

Welcome We would like to extend a very hearty welcome to the following who have joined the Branch during the past month and wish them a long and happy stay with us: Barry ZR2DN and Avril ZS2NU Guthrie of Grahamstown and Peter Smith ZS2-150 of Jeffreys Bay.

CONGRATS are extended to Gordon Knapp ZS2GK who has completed his 200 cw contacts and has sent away copies of his log for his phone licence. Well done Gordon.

THANKS A letter of thanks has been received from Roy Waldek on behalf of the Algoa Flying Club in appreciation for the communications network during the navigational exercise held on 15th September.

THE METRE - REDEFINED. (Sky and Telescope Jan 1984).

The fundamental unit of length was originally defined as one ten-millionth of a quadrant of the Earth's polar circumference. For practical purposes it was defined until 1960 as the distance between two lines on a platinum-iridium bar kept at the International Bureau of Weights and Measures in Paris. Thereafter, it was defined in terms of wavelengths of Krypton-86 light, until October 1983 when the General Conference of Weights and Measures adopted a new definition thus:- "The Metre is the length of the path travelled by light in a vacuum during a time interval of $\frac{1}{299\,792\,458}$ of a second".

This should help the people doing the PMG exam in November and those of you who wish your antennas to be accurate to the nth degree!

DID YOU KNOW? That two famous professors demonstrated successful wireless apparatus before Marconi did, but were not interested in commercialising their systems? In 1894 the English professor Oliver Lodge demonstrated a complete wireless telegraphy installation comprising Hertz's generator with a Morse Key for transmitting and a combination of Hertz's resonator and an improved version of Branly's coherer for receiving. In addition, he connected the receiver to a Morse recorder so that the dots and dashes were recorded as marks inked on paper. It worked well, but Lodge was a physicist and not interested in its practical application.

The following year, a Russian professor Popov used a somewhat similar receiving apparatus to record lightning flashes in thunderstorms and increased its sensitivity by attaching it to an earth plate and a lightning conductor. He was thus the first to use an antenna but, like Lodge, was not concerned with the commercial use of his discovery. (With acknowledgement to Practical Wireless).

REWARD: A reward of 500 microfarads is offered for information leading to the arrest of HOPALONG CAPACITY. This unrectified criminal escaped from a Weston primary cell where he had been clapped in ions. He is charged with the murder of his Ant Enna and Uncle Con Densor, as well as the injunction of an 18 turn coil called Milli Henri, who was found choked and robbed of valuable joules. He is also charged with the theft of a rich Heaviside Layer cake from Mrs. Di Pole.

The Electro Magnetic Force spent the night searching for him in an electro magnetic field where he was reported to have gone to ground. They had no success and now believe he has returned ohm via a short circuit. He was last seen with his friend Eddy Current riding a kilocycle. Eddy was playing a harmonic. Charges against Hopalong Capacity are being pursued under Ohm's Law. (Acknowledgments to TIARC Newsletter December 1983 and Durban Branch).

There are two ways to be rich - one is to have lots of money and the other is to be satisfied with what you've got.

COUNTRIES LIST

VP2V	Brit. Virgin Island	ZL	Chatham Is.
VP5	Turks and Caicos Islands	ZL	Kernadec Is.
VP8	See CE9	ZL5	See CEO
VP8	Falkland Islands	ZM7	Tokelau Is.
VP9,LJ-Z	So. Georgia Island	ZP	Paraguay
VP8,LU-Z	So. Orkney Island	ZS1,2,4,5,6,(H5,S4,S8,T4,V9)	Republic of South Africa.
VP8,LU-Z	So. Sandwich Island	ZS1	See CE9
VP8,LU-Z,CE9,		ZS2	Prince Edward and Marian Is.
HFØ,4K	So. Shetland Island	ZS3	Namibia (South West Africa)
VP9	Bermuda	1AØ	Sov.Mil. Order of Malta
VQ9	Chagos	1S	Spratly Is.
VR6	Pitcairn	3A	Monaco
VS5	Brunei	3B6,7	Agalega and St. Brandon
VS6	Hong Kong	3B8	Mauritius
VS9	See 8Q	3B9	Rodriques Is.
VU	India	3C	Equatorial Guinea
VU7	Andaman and Nicobar Is.	3CØ	Annobon
VU7	Laccadive	3D2	Fiji Island.
W	See K	3D6	Swaziland
XE	Mexico	3V	Tunisia
XF4	Revilla Gigedo	3X	Rep. of Guinea
XP	See OX	3Y	Bouvet
XT	Upper Volta	3Y	See CE9
XU	Kampuchea	4K	See CE9
XV	Vietnam	4S	Sri Lanka
XW	Lao Peoples Dem. Rep.	4U	I.T.J. Geneva
XZ	Burma	4U	Hq. United Nations
Y2-9,DM,DT	German Dem. Rep.	4W	Yemen
YA	Afghanistan	4X,4Z	Israel
YB,YC	Indonesia	5A	Libya
YI	Iraq	5B,ZC	Cyprus
YJ	New Hebrides	5H	Tanzania
YK	Syria	5N	Nigeria
YN,HT	Nicaragua	5R	Malagasy Rep.
YO	Rumania	5T	Mauritania
YS	Salvador	5U	Niger
YU	Yugoslavia	5V	Togo
YV	Venezuela	5W	Western Samoa
YVØ	Aves Island	5X	Uganda
Z2,ZE	Zimbabwe	5Z	Kenya
ZA	Albania	60	Somali
ZB	Gibraltar	6W	Senegal
ZC	See 5B	6Y	Jamaica
ZD7	St. Helena	70	Peoples Dem. Rep. of Yemen
ZD8	Ascension	7P	Lesotho
ZD9	Tristan da Cunha and Gough Is.	7Q	Malawi
ZF	Cayman Is.	7X	Algeria
ZK1	So. Cook Is.	7Z	See HZ
ZK1	No. Cook Is.	8J	See CE9
ZK2	Niue	8P	Barbados
ZL	New Zealand	8Q,VS9	Maldivo Islands
ZL	Auckland and Campbell Islands.	8R	Guyana
9L	Sierra Leone	9A(M1)	San Marino
9M2	West Malaysia	9G	Chana
9M6,8	East Malaysia	9H	Malta
9N	Nepal	9J	Zambia
9Q	Rep. of Zaire	9K	Kuwait
9U	Burundi	9X	Rwanda
9V	Singapore		
9Y	Trinidad and Tobago		

- (5) So if you want that rare QSL card:
 (a) QSL direct or via the manager.
 (b) Include s.a.e.
 (c) Include IRC's.
 (d) Do not assume a reply when sending QSL's via the bureau and remember that even when you QSL via a manager, the return rate is about 85% and response time 3 - 6 months.
- (6) The countries that you will most likely receive a card from via the bureau are: USSR - Japan - Europe and less likely via the bureau are: Caribbean - Indian Ocean - Africa.

SO IF YOU WANT THAT QSL, TAKE THE INITIATIVE.

Pierre ZS1AP.

(Acknowledgments to Ragchew - Cape Town Branch).

QSL'ing via the Bureau

Some tips for sending cards via the bureau.

1. Place QSL sticker in the right hand top corner on the back of the card.
2. Write the callsign of the station worked clearly on the back of the card, just below the sticker.
3. Sort your cards into countries in alphabetical order and in the case of countries like the U.S.A. or Japan try and sort them into numerical order also, e.g. W1, W2, K3, etc.
4. If possible fasten a plain band of paper around each group of cards.
5. Tie up parcels firmly with tape and string and make sure you have the correct postage.
6. If you wish to receive cards from the bureau monthly, send them twelve, self-addressed and stamped envelopes of the correct size.

These few points will really facilitate the job of the QSL bureau and make the handling of cards quicker and easier.

Marge ZS20B.

ULTRA-MODERN RECEPTION

Radio is the manly art of shouting brave words into a defenceless microphone.

Everytime we hear a disc jockey play to top 40 tunes, we get the shakes thinking what the bottom 40 must sound like.

When I was young, before the invention of the transistor, I used to listen on a cat's whisker. Got a lot of interference though - it kept purring.

Quintophonic sound is the latest thing with radio enthusiasts. The music goes around and around, and it comes out of here, and there...and here...and there...and there...and here...and here...

The ideal voice for Radio may be defined as having no substance, no sex, no owner...and a message of importance to every housewife.

Sense doesn't make sense in radio.

If you don't get off the air...I'll stop breathing it.

(Frank Muir of BBC fame).

How to QSL successfully

Reason for QSL card.

- (a) to confirm that a QSO took place on a certain day, at a certain time on a certain band and in a certain mode.
- (b) to have proof of such a contact when applying for awards, e.g. DXCC WAS, WAZ, AAA and many others.

REMEMBER: The QSL card is the final courtesy of a QSO.

Basics:

- (a) Use 24-hour UTC (Universal Co-ordinated Time.)
- (b) Write out the name of the month, e.g. 2 August 1984, not 2/8/84.
- (c) Write or print clearly.
- (d) Always send a s.a.s.e. or s.a.e. with return postage.
- (e) If you include some thing that has to be folded, place in the envelope with the fold at the bottom.
- (f) Be patient.

Explanations.

- (a) Due to all the different time zones it is a must to use some kind of standard time e.g. UTC. Also formerly known as G.M.T. and Zulu time as was used by the military.
- (b) If a station is worked on the 2nd Aug. 1984 and you put 2/8/84, ham operators in some foreign countries will have problems. Just about the whole world abbreviates in the sequence of day, month and year, but not the U.S. and countries under their influence like Japan. They use the month, day and year sequence and will read the date as such.
- (c) Be sure that all entries on the card are readable. If your handwriting is poor, please PRINT. You may get your card back or it may be filed in File 13 if the sorting party can't read it.

DO NOT correct mistakes; make out another card, because corrected cards can be disqualified on an "altered" basis when applying for awards.

- (d) (i) s.a.s.e. stands for "self addressed stamped envelope" while s.a.e. meand "self-addressed envelope".
(ii) When QSL'ing to or via a manager, please include return postage as the postage expenses come out of the manager's pocket. If you don't send some means of returning the card, it will come back via the bureau or not at all.
(iii) QSL's via the bureau should not be in an envelope, unless you want to include postcards or photos.
(iv) When you request a card from overseas managers or hams direct include IRC's (International Reply Coupons) for return postage plus a s.a.e. IRC's are available at your local post office.
(v) Be careful of sending "green stamps" (U.S. dollar bills) for in some countries it is an offence to possess foreign currency.
- (e) If you fold your s.a.e. put the fold in the bottom of the envelope in which you enclose it. Enclosures like this can be cut in half by the letter opener.
- (f) Be patient. Managers have various ways of receiving log information but the most common is by mail. Sometimes it (log info) may take 6 months to arrive from remote islands. It is not uncommon to wait 6 months to 2 years for a QSL card via bureau.

Conclusions.

- (1) QSL'ing is expensive, no doubt about that, but remember it is also costly for the person on the other side.
- (2) The % response rate via the bureau after waiting for 1-2 years is alarmingly low at 50%.
- (3) The bureau is cheap but slow.
- (4) The rarer the DX station is, the more expensive it becomes for that station, because of the demand for cards and the less likely it is you can expect a card via the bureau.

Propagation News

From ARRL Headquarters Newington CT. September 18 1984 to all Radio Amateurs.

The solar flux fell steadily from 93 on Sept 3 to 73 on the 15th and 16th. This range of flux variations is reminiscent of the summer of 1977. The last time when we had two days with the flux at 73 came in the middle of April of that year, when Cycle 21 was only nine months old. Despite the solar flux decline, radio propagation was generally fair to good, and getting better, thanks to the improving position of the sun with respect to the northern hemisphere. The 21 MHz band has had some good days, and 28 MHz is coming alive gradually, both bands will get better in October. The improvement will not be spectacular but this is no time to be writing off these bands as useless. The rise in the solar flux, expected after about the 20th, should help things along noticeably. We are in a period of relative geomagnetic calm, to last through to about the 20th. The balance of the month and the first days of October are likely to be more erratic, with auroral effects expected in the Northeastern USA and adjacent Canadian areas. American sunspot numbers for September 6 through 12 were between 0 and 22, with a mean of 8,4.

Thanks to Percy ZS2RM.

for sale

From the Branch Treasurer, Pete ZS2PJ, phone 301493:
Log books R1.50 each. QSL stickers - R2.50 per sheet.

-
- 1 Kenwood TS 130S with new frequencies, 10, 18 and 24,5.
 - 1 Kenwood mobile antenna system - all band. Old frequency bands.
 - 1 Daiwa CN 620A dual movement SWR/Power meter for 1,8 Mhz to 150MHz range (0-20W/0-200W and 0-1kw switchable).
- The lot for R850.00. Sold separately will be slightly higher.
Contact Gerry Meaker ZS2K at P.O. Box 529, Grahamstown, 6140 or phone 0461-3229.

Yaesu FRG-7 HF receiver in good working order. R275.00.
Contact Mr. B. Smither. Home 523059. Work 541474.

		Instant Printing	
TELEPHONE 22614		9 ST. PATRICK'S ROAD PORT ELIZABETH 6001	
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