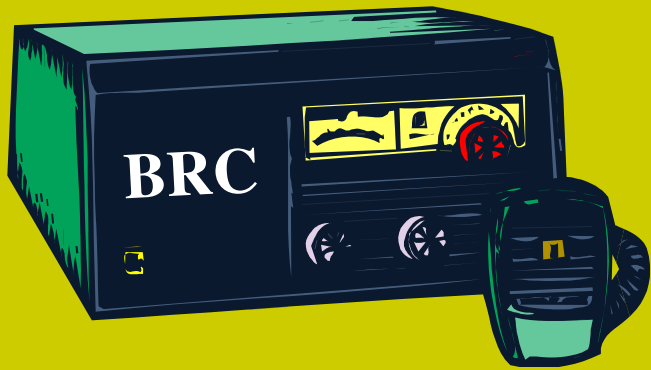


OFFICIAL NEWSLETTER OF THE
BORDER RADIO CLUB
EAST LONDON



FEEDBACK

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Cape to Cairo - Eastern Europe and eventually Germany

Last year Karl-Heinz ZS2BC travelled from East London to Germany in his Toyota Pickup (a Land Rover towing vehicle). On the 16th of February 2010 he gave a talk to the BRC members. If you did not turn up to see this, you missed a great night. What an interesting journey we took, looking at the dozens of photographs that Karl-Heinz had taken to document his "Journey of a Life time". Many thanks were given to ZS2BC. He is preparing to drive his Toyota back from Germany down the West coast of Africa (He is made of Strong Stuff).

This magazine will publish photographs of his trip in the April edition of Feedback.



**(Note: IF YOU CROSS THE NORTH KOREAN BORDER ILLEGALLY YOU GET 12 YEARS HARD LABOUR.
IF YOU CROSS THE IRANIAN BORDER ILLEGALLY YOU ARE DETAINED INDEFINITELY.
IF YOU CROSS THE AFGHAN BORDER ILLEGALLY, YOU GET SHOT.
IF YOU CROSS THE SAUDI ARABIAN BORDER ILLEGALLY YOU WILL BE JAILED.
IF YOU CROSS THE CHINESE BORDER ILLEGALLY YOU MAY NEVER BE HEARD FROM AGAIN.
IF YOU CROSS THE VENEZUELAN BORDER ILLEGALLY YOU WILL BE BRANDED A SPY AND YOUR FATE WILL BE SEALED.
IF YOU CROSS THE CUBAN BORDER ILLEGALLY YOU WILL BE THROWN INTO POLITICAL PRISON TO ROT.
IF YOU CROSS THE THAI BORDER ILLEGALLY YOU ARE IMMEDIATELY DEPORTED AFTER A SPELL IN THE MONKEY HOUSE.
IF YOU CROSS THE BRITISH BORDER ILLEGALLY YOU GET, A JOB, A DRIVERS LICENCE, SOCIAL INSURANCE CARD, MONEY FROM SOCIAL SECURITY, FOOD STAMPS, CREDIT CARDS, SUBSIDISED RENT OR A LOAN TO BUY A HOUSE, FREE EDUCATION AND FREE HEALTH CARE.)**



SARL DIARY**NO ICASA INVOICES YET ?**

ICASA invoices for licence renewals have been delayed and will only be mailed after 11 January 2010. The grace period has been extended till 28 February 2010. (Editor: If you are reading this without having renewed, then you are too late. Take your 2009 license and pay R27 at the Post Office ASAP and hope they accept your delay).

**BOOK NOW FOR THE SARL NATIONAL CONVENTION PE 23-25 April 2010**

The SARL National Convention will be held in Port Elizabeth from 23 - 25 April 2010. Book before 15 March and get into the draw for a 2009 ARRL Handbook

**New Ham Antenna Installed**

AMSAT News Service Bulletin 326.01

New Ham Antenna Installed on the ISS Columbus Module

ARISS US hardware Manager Lou McFadin, W5DID says that all the teamwork and effort to expand the ARISS amateur radio station aboard the ISS were successful this weekend when the new dual band 2m/70CM antenna was installed on the outside of ESA's Columbus module.

Lou congratulated the team, "This is an example of what can be achieved by volunteer hams working closely with a space agency. This antenna project was funded entirely by AMSAT-NA and volunteers who built the antennas for both an ESA experiment and for ARISS. I am very proud of all the teamwork and effort that has gone into this project."

The new ARISS antenna is very similar to the antennas already on the Russian service module. Once the antennas are in place the ARISS team will be working to bring amateur radio to the Columbus module.

In conclusion Lou noted the tremendous contribution from ESA for the experiment, the launch and the EVA making this expansion of amateur radio aboard the ISS possible.

NGQAMAKHWE REPEATER

The old Butterworth repeater was switched off several months ago, with promises that it would be overhauled and parts of the system replaced with new and moved to a new site at Ngqamakhwe. This has now taken place and it is back on the air on the frequency of 145.725 MHz . It is working well and is linked into the Coastal Repeater network. This means that we are almost on Durban's doorstep. The BRC and it's members wish to thank Jim ZS2JM and Chris ZS2AAW for their hard work and dedication in completing this project. If it were not for them, the installation would never have taken place. Well done.

**CHAIRMANS CHIRP**

Hi readers. Another month has come and gone, bringing us to March already.

At last month's General Meeting, Karl-Heinz (ZS2BC) gave us a slide-show and talk on his epic journey from East London overland to his hometown in Southern Germany. What a trip it must have been for him and I salute him to do the trip from Kenya northwards all alone at that. Well done Karl-Heinz. He says he now just has to go back and fetch the vehicle and do it all over again, in reverse!



Disappointingly, despite being right on our doorstep, it appears that attendance of the SARL AGM in April by BRC members will not be as high as I would have hoped.

Economics, especially in this day and time, coupled with a large majority of our membership consisting of Pensioners, it is understandable. Should you have changed your mind and wish to go, even for a day-trip, contact either Ivan or myself to see if we can arrange something.

At the time of writing this, I have just returned from a return trip by road between East London and Johannesburg, witnessing the most horrific accident I have ever seen anywhere, which brings me to plead with those of us who use SA's roads regularly, to be especially cautious of other road users to whom speed limits and road rules mean nothing.

Until next time.

ZS2BQ

**TNC COMMANDS** - continued from Part 13

MAXFRAME: Sets the upper limit on the number of unacknowledged packets the TNC can have outstanding at any time. (The outstanding packets are those that have been sent but have not been acknowledged.)

MAXFRAME also determines the maximum number of contiguous packets that can be sent during one transmission. The value can be set from 1 to 7. The best value to use depends on the frequency conditions. The better the conditions are, the higher the value you can use. If conditions are poor due to frequency congestion, noise, or other variables, (shown by lots of retries) MAXFRAME should be reduced to improve throughput. The best value of MAXFRAME is determined through experimentation. MAXFRAME of 1 should be used for best results on HF packet.

MFILTER: This command allows you to enter up to four ASCII character codes, 0 - \$7F, for the control characters that you want eliminated from your monitored packets. Codes may be entered in either Hex or Decimal. Here are the ASCII codes for some of the more troublesome control characters found in monitored packets:

HEX DEC FUNCTION POSSIBLE RESULT

\$07	07	Control G	Rings your bell or "beeps" your speaker.	\$0C	12	Control L	Form feed - could clear your screen
\$13	19	Control S	Can cause your screen to stop scrolling	\$1A	26	Control Z	Can clear your screen
\$1B	27	Escape	can cause your cursor to move to a random point on your screen and can raise havoc with printer control.				

AEA has added a new code, \$80, that will not allow ANY control characters to be displayed on the user's screen from monitored packets.

MHEARD: An immediate command that causes the TNC to display a list of stations that have been heard since the command MHCLEAR was given or the TNC was powered on. This command is useful for determining what stations can be worked from your QTH. Stations that are heard through digipeaters are marked with an * on most TNCs. On the AEA PK-232, the stations heard direct are marked with the *. (Check your TNC manual.) The maximum number of stations in the list is 18. If more stations are heard, earlier entries are discarded. Logging of stations heard is disabled when the PASSALL command is ON. (See below.) If the DAYTIME command has been used to set the date and time, entries in the MHEARD list will show the date and time the stations were heard.

PASSALL: Causes the TNC to display packets that have invalid checksums. The error-checking is disabled. If PASSALL is ON, packets are accepted for display, despite checksum errors, if they consist of an even multiple of eight bits and are up to 330 bytes. The TNC attempts to decode the address field and display the callsigns in standard format, followed by the text of the packet. PASSALL can be useful for testing marginal paths or for operation under unusual conditions. PASSALL is normally turned OFF.

PERSIST: Used in conjunction with the SLOTTIME command (see below) to provide less clutter on a busy packet frequency. As more and more TNCs are upgraded to include the PERSIST and SLOTTIME commands, fewer and fewer packet collisions will occur. If you have these commands available in your TNC, you should set DWAIT to 0 and set these commands for use. Note: On some TNCs, such as the PK-232, you have another command that determines whether you use DWAIT or PERSIST/SLOTTIME. It's the PPERSIST command (with 2 P's). Set it ON to use PERSIST/SLOTTIME; set it OFF to use DWAIT. I strongly recommend that you set PPERSIST to ON. PERSIST specifies a threshold value for a random-number attempt to transmit. The value ranges from 0 to 255. 0 signifies a 1/256th chance of transmitting every SLOTTIME; 255 allows the TNC to key the transmitter every SLOTTIME. Through experimentation, it has been determined that the best value for PERSIST is in the 60 to 70 range.

SLOTTIME: This command determines the time interval the TNC waits between generating random numbers to see if it can transmit. This random number generation and the value of PERSIST work together to provide smoother operation on a busy packet frequency. The SLOTTIME value may be set from 0 to 250. Through experimentation it has been determined that the best value for SLOTTIME is in the range of 10 to 20.

SCREENLN n: This parameter determines the length of a line of text on your computer screen. The value may be 0 to 255, and is usually set to 40 or 80 depending on the screen display you have. A carriage return and line feed (CR/LF) are sent to the terminal in Command and Converse modes when n characters have been displayed. A value of zero inhibits this action. If your computer automatically formats output lines, this feature should be disabled.

TRANS: This is an immediate command causing the TNC to change from Command mode to Transparent Mode. Transparent mode is used when you want to send data such as executable programs where characters in the data would conflict with the operation of the TNC. Characters such as "Control C", "Control R", "Control S", "carriage return", "linefeed", etc. all effect the operation of the TNC when in Converse Mode. In Transparent Mode none of the data characters affect the operation. All eight bits of each character are sent to the radio exactly as they are received by the TNC from the computer or keyboard. Packets are transmitted at regular intervals set by the PACTIME command or whenever a full packet of information is ready.

The receiving TNC must also be in Transparent mode and nodes and digipeaters cannot be used in the transmit path. Since the characters normally used for TNC operation have no affect in this mode, a special procedure is required to exit Transparent Mode and return to Command Mode. Refer to your TNC operating manual for details on how this procedure is performed on your particular TNC. You should also check your manual for information on the CMDTIME, PACTIME, START, STOP, TRFLOW, TXFLOW, XFLOW, XOFF and XON commands before using Transparent Mode.

TXDELAY n: This parameter tells the TNC how long to wait before sending data after it has keyed the transmitter. All transmitters need some start up time to put a signal on the air. Some need more, some need less. Synthesized radios and radios with mechanical relays need more time, while crystal controlled radios and radios with diode switching require less time. External amplifiers usually require additional delay. Experiment to determine the best value for your particular radio. TXDELAY can also be useful to compensate for slow AGC recovery or squelch release times at the distant station. There are many additional commands available to you. Spend some time reading the owner's operating manual that came with your TNC to discover some of the surprises the other commands offer. New versions of the TNC software have added several commands that you might find useful in your packet operating.

MINUTES OF THE MONTHLY MEETING OF THE BORDER RADIO CLUB – 19TH JANUARY 2010

WELCOME: The chairman, Anthony ZS2BQ welcomed all present, including the guest speaker Brian Sullivan, and Jim Miller. Ken Wood ZS2KW had turned 80 recently and was given a round of applause.



APOLOGIES: ZS2LEN, ZS2BW, ZS2NP, ZS2AAR, ZS2ABF.

MATTERS ARISING: Nil. **CORRESPONDENCE:** Out: FEEDBACK for December & January.

In: Radio ZS & 2008 Bank Statements.

FINANCIAL REPORT: Total R13527.00

REPEATERS: Queenstown repeater now part of the coastal net and the boxes have arrived for the (Nqamakwe) Repeater and work will start in the next 2 weeks. The Hospital 145.755Mhz is still faulty.

RADIO EQUIPMENT: The club has a Kenwood 120S, donated by Anthony ZS2BQ.

SARL FEEDBACK: The SARL letter to Radio clubs dated 2nd January was tabled and discussed. Please see: <http://www.sarl.org.za/public/clubtalk>. For Emails use secretary@sarl.org.za

Also tabled were the program and registration form for the SARL National Convention to be held in Port Elizabeth 23rd – 25th April 2010. Please nominate suitable candidates for SARL awards by 15th February 2010.

GENERAL: 1) **EMERGENCY COMMS:** A great vote of thanks to Jim ZS2JM, Chris ZS2AAW and Chris Billingham for their work on our repeater network.

2) The clubs internet contact addresses are: info@zs2br.co.za, news@zs2brc.co.za and feedback@zs2brc.co.za

3) The club asks that you lookout for a suitable venue for our social gatherings due to the refreshment rules here.

4) Please be warned that packet is to be moved to 144.800 Mhz in the near future.

(Editor: It will now not be moved, and will remain on 144.625 Mhz along with the APRS transmissions)

5) Membership stands at 29, but several fees are still outstanding. Please remit ASAP to remain a member.

(Note: The SARL fees are now R340.00 per annum. Membership cards will be issued in due course)

6) Chris ZS2CH has now stopped his Sunday morning “Digital & Satellite” report. We are looking for someone to continue this interesting topic. Any volunteers please?.

7) The purchase of a Hard Drive for the club has been postponed indefinitely.

8) The 145.625 Mhz repeater is not working 100% and needs attention. It will be checked.

9) SARL affiliation still needs answers.

10) The PEARS HF Radio raffle has been won by Anthony ZS2BQ of the BRC.

11) The club’s Life Membership category is still under discussion.

12) Kar-heinz ZS2BC will give a talk on his “Cape to Cairo-Germany” trip at the next monthly meeting on 16th February.

13) Renew your Ham licence before end of February.

14) A discussion took place about, whether to discontinue the Packet BBS or no due to low number of users of that mode.

15) Informed that the cost of a weekend away to attend the SARL AGM would cost ± R900 plus spending money.

16) A non-alcoholic “Cheese & whine” function using fruit juice would be arranged for the March meeting.

The next meeting will be held on Tuesday 16th February 2010.



SHACK OF THE MONTH

It is now regarded as old stuff, but in it's day it was top of the line.

I wouldn't mind that lot in my shack even today.

Contributions made by South Africa to the development of telecommunications

Page 6

DATED 1972

CONTINUED PART 2

A F Bennett

4 Lightning and the protection on open wire telephone lines

With the introduction of carrier telephone systems, the use of multi-channel voice frequency telegraph systems became most attractive. However, lightning played havoc with these systems, so much so that for many years and especially when the teleprinter with its relatively high signalling speed was introduced, the continued use of voice frequency systems hung in the balance. In his presidential address to this Institute in 1950, J A F Mitchell² said: 'Automatic switching (referring to an automatic telex system) requires a very extensive network of lines and would be practicable only where such a network exists and is very stable such as is obtained with underground cable systems. Any interruptions such as are inevitable at times on long open wire systems might be fatal to success. This problem is one of considerable magnitude and I doubt if we will ever succeed in entirely overcoming the effects of lightning on such circuits, but there are promising lines of investigation being pursued which will, I feel sure, give considerable relief'.

Mr Mitchell's 'promising lines of investigation' happened to be a team of determined telecommunication

engineers who set out to study the mechanism of lightning in relation to telecommunication circuits and to devise ways of limiting, if not eliminating, the effects. The results of the work of these three people, D P J Retief, C F Boyce and I C Ramsay, are recorded in a monograph³ issued by the SA Institute of Electrical Engineers in 1955 entitled 'The Protection of Open-Wire Communication Systems from lightning damage and interference with particular reference to South Africa', which finishes with the words 'an amplitude-modulated (voice frequency telegraph) system having suitable gain-time characteristics will be practically immune from lightning interference when operated over a 12 channel carrier telephone system'. Hundreds of copies of the monograph have been sold and are still being sold to engineers faced with similar problems all over the world.

While it would be unrealistic to say that lightning has been beaten, the South African Telex network is fully automatic, and the long distance circuits, provided they are properly equipped with the correct protective devices, are practically immune from lightning effects. No amount of protection can eliminate the effect of a direct strike or even a near strike and here we find the cable feeding ordinary subscribers on the fringes of built-up areas particularly susceptible. Further research has produced some solutions but as Dr Boyce says 'this will have to be endured until most of the distribution network is plastic insulated and sheathed'.

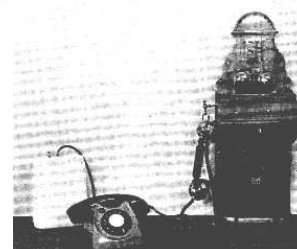
The work just described was carried out with the express purpose of assisting us to understand the effects of lightning on telephone systems and thus to develop protective devices to provide much needed immunity to communication channels.

Many years before the above-mentioned work was carried out Dr B Schonland and Dr Malan of the CSIR commenced a search for knowledge and understanding of lightning. The CSIR has never let up on this research and is still very active in this field. The work of D W Proctor relating to the study of lightning and the development of equipment for determining the position and incidence of lightning strikes and for their minute examination has stimulated world-wide interest. Whilst this work is not directly in the field of telecommunications, the results may well lead to solving the final problems of the protection of telecommunications circuits.

5 Automatic party-line telephones

The problem of providing an efficient and yet economical telephone service to the numerous small rural communities scattered on the surface of South Africa has for the last 50 years received the serious attention of a host of engineers and officials. However, this problem is not peculiar to South Africa. It exists everywhere where the population is sparse and the districts are large. In the early days the people to be served were mainly farmers whose mode of transport was the wagon and the transport of his product to the market was a slow process. The telephone was not so important from the business point of view and a system whereby 10 farms strung out over a distance of 50 or more miles were connected to a common iron wire route served to hold the community together and in contact with the nearest village. With the passage of time, however, and the increasing competition to get produce to favourable markets by means of speedier transport, the farmer began to feel the need of the same type of telephone service as that provided for city dwellers. As line plant is expensive and farms are far flung, the system to provide this service should still be one using only one pair of wires.

Many party line schemes had been evolved, but they were expensive and relied on rather delicate apparatus. As automation spread to rural areas, fully automatic operation became an added requirement. After trying many such systems with only partial success, the laboratory of the South African Post Office was entrusted with the task of devising a system that would meet the requirements. The team of engineers and technicians, led by L Zerbst, succeeded in their task and today when automatic exchanges are established in country areas the surrounding rural areas are provided with automatic party line telephones which have individual calling and metering. All conversations are private — much to the disgust of certain elements in the community — yet conversation between parties on the same line is possible. The facilities offered to the rural subscriber are the same as those enjoyed by his city brethren except that his operating procedure is different and he may have to wait for the line to become free before he can use it. The system has become so popular with subscribers that the length of each call is too long, consequently the number of subscribers per line has had to be reduced from 10 to 5 or even lower to give everyone a reasonable share of the common line. The effect of this is to increase the cost of the rural telephone service and it appears that there is a need for a type of carrier system similar in many ways to the rural carrier system referred to earlier. With the availability of integrated circuit modules it is possible that the designers will produce a single channel carrier terminal which can be included in the subscribers telephone.



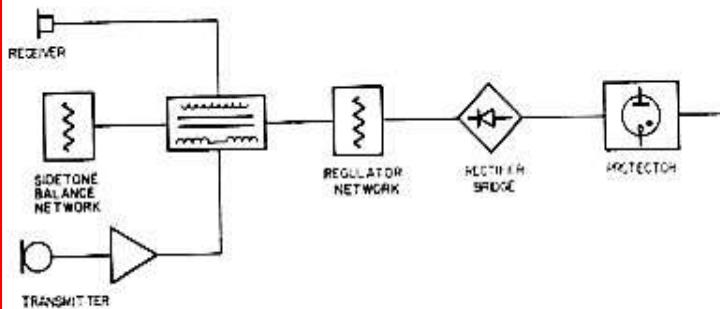


Fig 4 Block schematic of Protea telephone

6 Automatic telephones

From the days of Alexander Graham Bell, telephones did not vary much in basic design until the advent of the transistor with its low power consumption and low voltage requirements which made it possible to replace the highly efficient, but relatively fragile, carbon microphone by more robust and reliable transducers. The South African Post Office, recognising these possibilities, set out to develop a new telephone which would have optimum speech efficiency and require a minimum of maintenance. This latter requirement involved eliminating the two major trouble spots of the conventional telephone, namely, the carbon microphone, and the bell, as well as improving the cradle switch.

Thus it came about in 1960 that A Bredenkamp and L Zerbst commenced the design and development of the telephone we now know as the Mark VD Protea Telephone. The first Protea Telephone — Mark II — was a masterpiece of original design and went into production in 1967. This displayed some undesirable characteristics which were largely eliminated in the Mark III instrument while the laboratory team now joined by J A C Malherbe started on refinements and improvements which are now incorporated in the Mark VD.

The Protea telephone is basically a 2 to 4 wire repeater with automatic level control such that the transmit level measured in the exchange drops only 1 dB on a 1 000 m line. The receive level is 5 dB over the same distance.

The transmitting and receiving transducers are robust electro-mechanical devices. The transmit amplifier which derives its power from the line when the handset is off the cradle becomes an oscillator deriving its power from the ringing current when the handset is on the cradle. The ringing current is thus converted to a 2 600 Hz tone modulated at 17 Hz and is emitted by the transmit transducer. The cradle switch is made up of miniature micro-switches.

Thus a highly efficient low maintenance modern telephone was developed which was the first of its kind to go into production and become the standard telephone in a public telephone system. The Protea has evoked interest around the world. It was designed in South Africa, adapted for production in Britain, but is made exclusively in South Africa.

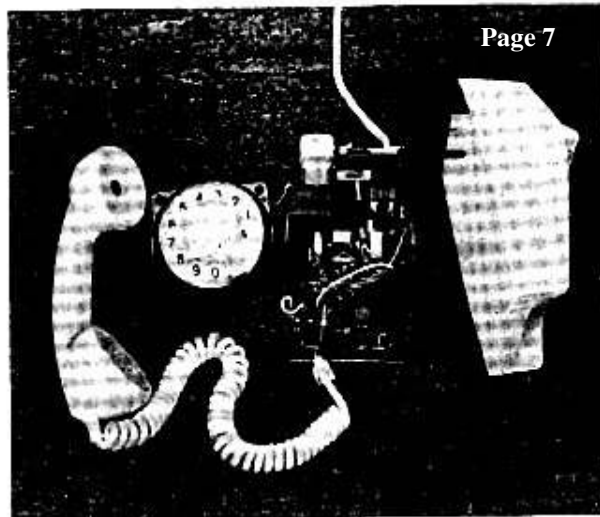


Fig 5 Protea telephone

7 An automatic long distance telephone switching system

As the number of telephone subscribers in South Africa grew, so the demand for more and more trunk circuits grew. By the middle 1950's it was clear that the old methods of manual trunk switching, even with numerous improvements and aids, were now intolerably slow and costly. Operating costs were high and circuit exploitation low. Thus three engineers were given the task of planning a country-wide automatic trunk switching system to provide subscriber to subscriber access without the intervention of manual operators. The work of Eggers, Malan and Herrmann is set out in two issues of the journal of this Institute and these three engineers received the highest award of the Institute, namely the Gold Medals, in recognition of the excellence of their work. This work has been read extensively overseas and has evoked a considerable amount of discussion and interest. The basic problems arising from the concept of allowing subscribers to set up trunk calls without the assistance of an operator are the same in all countries, but solutions differ depending upon local circumstances, physical layout, past practice and future policy of the administration concerned. The problems encountered and the solutions found are described in the publications referred to above. The authors have designed a system which, when fully implemented, will provide facilities whereby every subscriber connected to the network will be able to reach every other subscriber without the intervention of an operator with better than just acceptable transmission standards. The basic switching plan is as shown in Figure 6, but where the traffic justifies it, direct groups of trunks are provided by-passing conventional star or hierarchical routing. The trunk switching is carried out on three levels, i.e. primary, secondary and tertiary.

**TO BE CONTINUED
IN PART 3.**

(Sorry for the poor reproduction)



40 mts Tak-Tenna

By KA6KBC, bill *HOME BREWED*

Project Overview:

So I've been reading about this Small Space antenna that is being sold as the TAKTenna.

Really neat idea Has a 30 inch boom and Spiral Coils on the ends. See a picture at <http://www.taktenna.com/> Looks easy to build Right?

So I Built my version out of wood Mine is very ugly as compared to the store bought one (See Picture).



Materials and Tools • Parts:

1.) 3 Wooden sections 1 1/2 in X 1/2 in X 8 ft Cost 92 Cents each Home Depot

2.) 1 100'

Spool of Steel Guide/fence Wire Cost \$ 7 Home Depot. The purchased version uses some type of "Special" patented wire, but this seemed fine. I tried Copper, but it was not stiff enough to make the Spiral Coils. Again from quick test it did not seem critical From what I read larger gauge wire is better for improved band width.

3.) 1 25 foot RG8 coax with PL259 Radio Shack Close Out \$ 5

4.) 2 Packages Nuts/Bolts \$ 2 Home Depot

5.) 2 Alligator Clips Free from my junk Box.

6.) Few Feet of Electrical Tape Free from my junk Box.

Total Material Cost: \$16.76

The commercial version uses PVC and tie wraps, which would have been much easier.

Tools:

a.) Saw I just used a simple hand saw. b.) Drill with wood bits I just used a simple hand electric drill. c.)

Flat Screw Driver and Rubber Mallet. d.) Wire Cutters. e.) Gloves and Eye Protection.

Fab Time:

For my version was about 4 hours Drilling Lots of Holes and feeding the wire in to make t Spiral Coils was most of the work.

Testing:

However Test wise it isn't bad I got it tuned up on 40 meters at about 8 feet off the ground and it has an SWR 1:2 to 1:5 from 7.30 to 7.175 MHZ (Without a Transmatch). Also does ok on 15 meter Tune up wise.

Bad news the performance is not Great Signal pick up is several S units below my Dipole, but it does work. From what I have read the Antenna has problems in that most of the performance is based on feedline radiation (See the links below): <http://lists.conting.com/archives/html/Towertalk/200804/msg00339.html>

http://groups.google.ie/group/rec.radio.amateur.antenna/browse_thread/thread/167fb7a34305cf3e

Summary of Results:

I'm still testing and it was an interesting experiment. The Antenna fits into a small space 25 inch X 30 inch. Hey it works. If you have no space it might be worth \$20 and a few hours of your time or If you aren't a Homebrewer buy one. If you make your own one point I needed more wire than the 468/7.2 MHZ = 65 Feet Total or 32.5 Feet per side I had to add wire after the fact. So I would make it about 33.5 Feet per side.

Measurements:

One more added item Someone had a question about my dimensions: Boom = 30 inches meaning Cross Pieces are about 30 inches a part. Cross Pieces = 25 Inches Across or 12.5 Inches from center Hole.

Spacing from Center, but this did not seem critical, but I used: 12 in ,11 in, 10 in ,9 in, 8 in, 7 in, 6 in, 5 in ,4 in, 3in. Total Turns = 10

Tuning:

- a.) Put the antenna in the expected operating position (Mine was about 8 feet in the air).
- b.) Connect the Coax via the Alligator Clips about 2 inches from the end of the smallest inner Spiral Coils.
- c.) Measure SWR in the Center of the 40 Meter Band (SSB or CW) you intend to use most. If the SWR is too high move to Step d.
- d.) Move the Alligator Clips/Coax out evenly about 2 inches on each Spiral Coil.
- e.) Repeat Step c.

I was able to achieve acceptable SWR after about 3 cycles of adjustment without a Transmatch

Construction Steps:

- a.) Measure/Cut (1) 30 inch boom section.
- b.) Measure/Cut (4) Cross members 25 inches sections.
- c.) Measure/Notch @ about 12.5 Inches I just cut with a hand saw then tapped out with a Flat Screw Driver and Rubber Mallet.
- d.) Drill holes in Cross members as noted above Starting 3 inches from center then working out in 1 inch steps out to 12 inches. If you are careful you can save sometime by drilling two parts at a time.
- e.) Here is the Hard part Put the Notched Cross members together then start feeding the wire to create the Spiral Coils. I started from the biggest to the smallest. I would recommend Gloves and Eye Protection.
- f.) Once the Spiral Coils are completed bolt them to the Boom.
- g.) I then used the last section of wood for mast and bolted the Boom to this part.

Credit Where Credit is Due:

Very important work on this original Design was done first by: Bill Petlowany, K6NO

<http://www.qsl.net/wa2lqo/nlaug03.html>

Older Patent Info (Same Last Name, but no relation):

http://bvarc.freeshell.org/newsletter/BVARC_December_2007.pdf

<http://www.google.com/patents?>

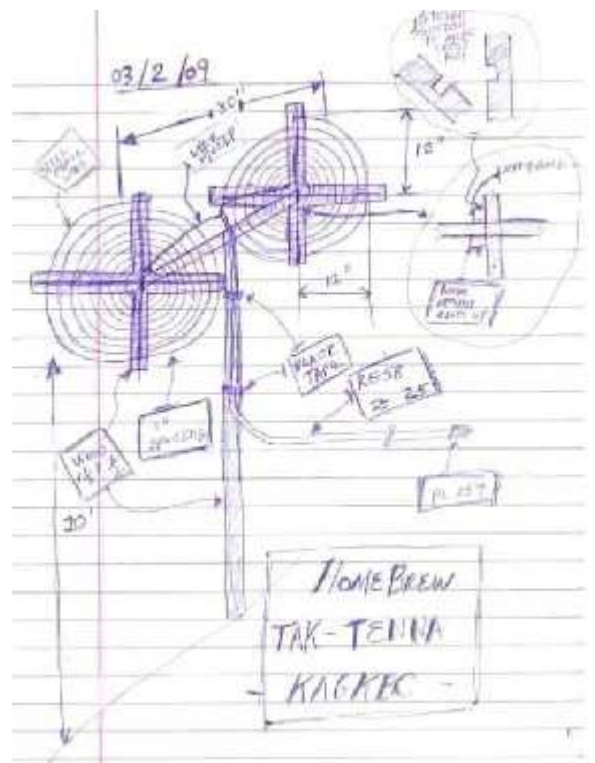
[id=aZluAAAAEBAJ&printsec=abstract&zoom=4&dq=3432858#PPA1,M1](http://www.google.com/patents?id=aZluAAAAEBAJ&printsec=abstract&zoom=4&dq=3432858#PPA1,M1)

Then Refined by: Steve WA2TAK <http://www.taktenna.com/>

Also some very interesting Recent work from WBillJohnson Looking at Boom Lengths and Coils

Spacing: <http://wbilljohnson.com/zmvantenna/zmvantenna.htm#intro>

My latest work/updates: <http://billbrwn.tripod.com/id3.html>

73 Bill KA6KBC

432 8 Element Quagi Antenna

**DAILY
EASY 2 MAKE**

8 Element 432 Mhz Beam

made from Basic materials



Element Lengths	
Reflector Loop	28"
Driven Loop	26 5/8"
Directors	11-3/4"
	to 11-7/16" in 1/16" steps
Element Spacing	
R - DE	7"
DE - D1	5.25"
D1 - D2	11"
D2 - D3	5.85"
D3 - D4	8.73"
D4 - D5	8.73"
D5 - D6	8.73"

13 DBI GAIN !!

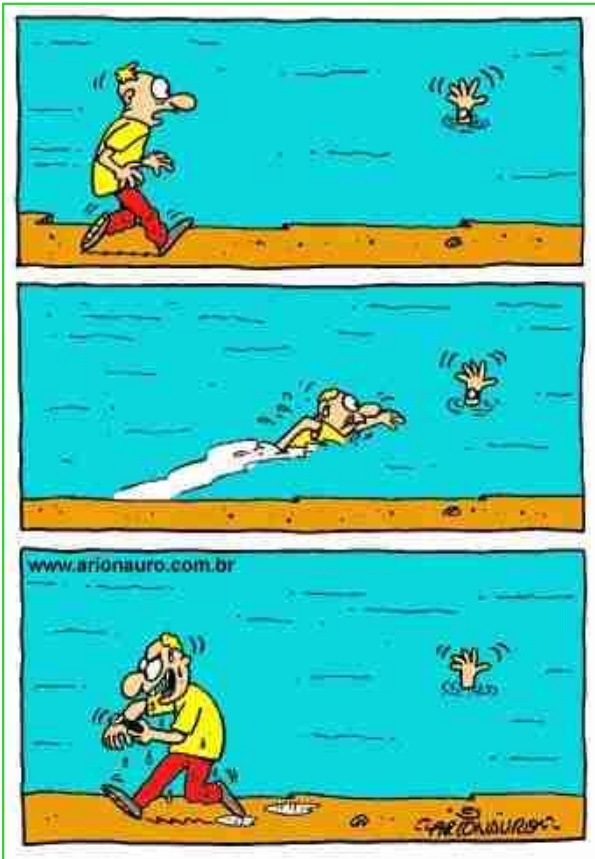
How to build a 432 Mhz Quagi

The boom is made from wood. *{Do not use any type of metal for this.}* This boom length is 61 inches and 1/2 inch thick. Mark the boom as to where the elements are to be spaced and drill a 1/8 inch hole in the center of the boom material. After you have done all this apply a few coats of stain. This will preserve the wood from the abuse of the weather. Use #12 wire to form the quad elements. Cut the wire to the correct lengths (*see chart below*). The quad elements are supported at the top and bottom of the element with a Plexiglas strip with a hole centered at both ends. The bottom of the quad being the feedpoint. Apply a little epoxy to where the wire passes through the support holes. This will secure the wire so it will not move around.

Next solder one end of the wire to the center of an type-N connector feed it through the holes in the Plexiglas and bend it into shape. Then finish the element by soldering the loop closed to the ground tab on the N connector. On the reflector just solder to two ends of the wire together.

The directors are mounted through the boom. Epoxy them as well. They can be made from any 1/8 inch metal rods. Cut them to the EXACT size

HA HA HA EAST LONDON DOWN AT THE BEACH

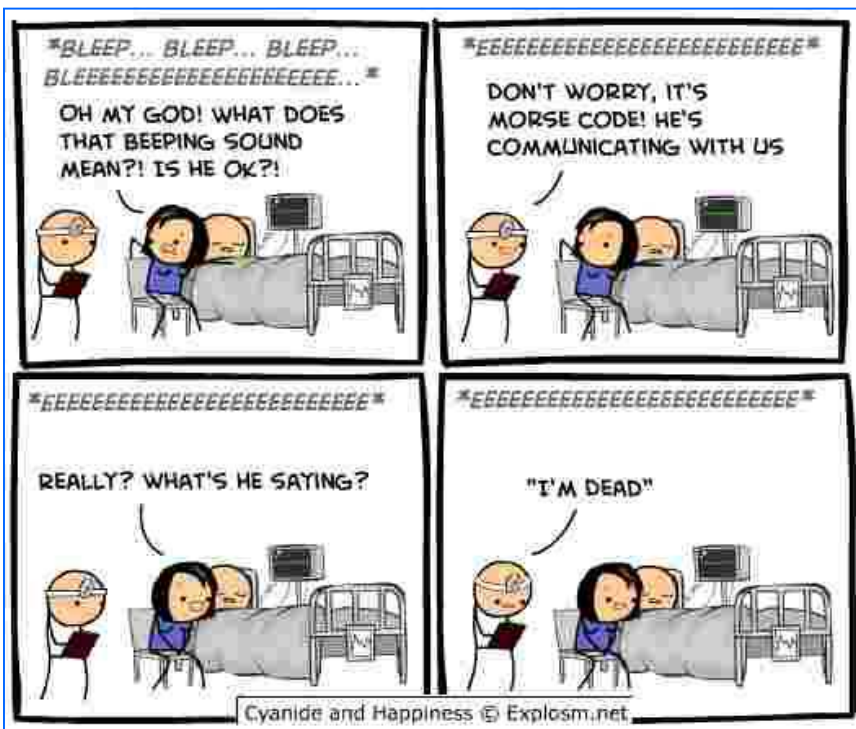


During the rush to the sea by the "Varlies" all types of occurrences happened. We have our fair share of Zambezi and Great Whites around, but watch out for the other types. They can be just as dangerous !



I suppose you ladies that are weight conscious after the Xmas binge, are also thinking of buying a "diet car" with your husbands credit card !

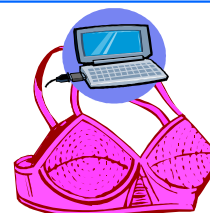
Our roads are getting busy these days and new models are to be seen on the roads.



It's great to go on a weekend Ham field day. Especially when your best friend brings his bottle of Brandy along to keep the vocal cords lubricated

Apple

Apple announced today that it has developed a breast implant that can store and play music. The iTit will cost from R499 to R699, depending on cup and speaker size. This is considered a major social breakthrough, because women are always complaining about men staring at their breasts and not listening to them



Experiment with high intensity (8000 - 11000 mCD) white LEDs for battery powered lighting. Hopefully, those old lamps can be finally retired.

A couple of LED lamps in action.

Both of these lamps sit directly on top of a 12 volt 2.7 amp-hour SLA battery.



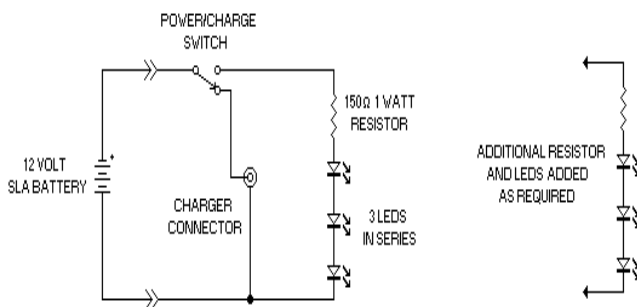
One lamp has two heads that can be set at various heights and positions; an old radio antenna provides the extendable support rod. This lamp works well on a dining room table or a picnic table. The other lamp makes a great reading light, with an adjustable head angle.

Each lamp head has it's own power switch. A connector for charging the battery is also included. The larger heads have 15 LEDs each, and the smaller head has 9.



The LEDs themselves are wired in series in groups of three, with each group having it's own current limiting resistor. The resistor is chosen to limit the LED current to 20 - 30 MA at maximum voltage. In this case, absolute maximum battery voltage is about 13 volts. This is not affected by any battery charger voltage, as the lamp switch is wired to disconnect the lamp when charging.

Battery life is almost as important a concern as lamp brightness, so I settled for close to a 20 MA draw at 13 volts. A 150 ohm resistor set this just about right. At this level brightness was quite acceptable, and battery life should be at least 14 hours for the dual head lamp, and a whopping 45 hours for the reading lamp!



These LED lamps are far brighter, safer, easier to use, and they produce a much nicer color of light. With the cost of high intensity LEDs dropping to bargain prices, it really is an easy decision!

I recently tried 21,000 mCD LEDs, and have found them to be even nicer yet. Here is a really handy, compact one-LED flashlight. It uses three AAA batteries and fits easily in a pocket or just

about anywhere. A 56 ohm resistor and small slide switch mounted on a small circuit board fastened to a battery holder with some small bolts is all it takes!

EMERGENCY LIGHTS



The editor would like to appeal to it's members and readers for more input to the magazine from you it's members.

I would like to receive more articles, photo's etc. of a more "Local" nature.

Therefore if you are making/building some Gadget or building an Aerial etc, please take some photo's of it and then write a couple of lines about it so that you can share your experiences with our members. I am sure that you retired folks are always fiddling in the workshop with Radios and circuits.

Please show us the results of your labour.

Unfortunately I cannot see what goes on in the dark depths of your cluttered workshops but I would like to know about it. Send your input to : feedbacknews@zs2brc.co.za

Many thanks, Peter ZS2ABF





Going to the other extreme, here is a lamp that was built using 39 LEDs! This was built using a ping-pong ball sliced in half, the LEDs mounted and glued with epoxy on top of one half, a resistor wired inside, and that glued and wired to a circuit board with a switch.

The whole assembly fits on to the connectors of a SLA rechargeable battery using female fast-on lugs soldered to the pcb. A small strap is wrapped around the battery in order to hang it from a hook in the ceiling (or a tree branch outside).

This lamp puts out plenty of light for a small room, plus it makes an excellent cordless table lamp as well!



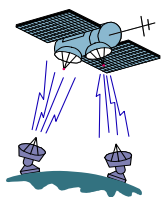
CAROL 2E0CJH AND STEVE MIERS OUTSIDE STEVE'S VAN. THEY TAKE A BREAK AT A LOCAL WEEKEND FESTIVAL.

THE CLUB ATTEND MANY FESTIVAL'S (flea markets) IN A SEARCH FOR NEW MEMBERS. THIS IS ONE WAY FOR PROSPECTIVE MEMBERS TO SEE AND HEAR WHAT HAM RADIO IS ALL ABOUT.

THE VAN MAKES IT EASY TO SET UP SHOP AND PACK AWAY.



STEVE



SO-67 SumbandilaSat Control Team Invites Coordination AMSAT News Service Bulletin 333.08

Jan-Albert, ZR1JAK, wrote on behalf of the SO-67 SumbandilaSat team, "Given that the SA-AMSAT payload on SO-67 is shared with the satellite's back-up TT&C transponder, there is unfortunately not a way to keep the payload switched on permanently, or even semi-permanently. For the lifetime of the satellite we will therefore have to do with active scheduling." In an effort to make this as painless as possible, ZR1AJK requests comments on the possible use of regional coordinators, which worked quite well for SO-35. Such coordinators would then be responsible for setting up schedules in advance for

their specific regions, taking into account obviously the pool of possible satellite passes, as well as local events / fairs etc. The SO-67 Command Station would then simply load the schedules on a weekly basis. The initial focus has been on Europe, RSA, South America, North America, Canada, Japan and Australia, and New Zealand.

ZR1JAK invites suggestions for amateur radio use of the payload over other regions as well. In regards to questions of possible activation at night he explained, "This is entirely possible, but would have to be planned and managed more actively, given the power limitations in eclipse. We have yet to experiment with this and see what the available capacity would be. Interested satellite operators are invited to e-mail responses to the AMSAT bulletin board, or if you prefer, to ZR1JAK's work address: jak @ sunspace.co.za

AMSAT News Service Bulletin 031.04

The Sumbandila Satellite Operations at SunSpace in South Africa said, that Amateur Radio Operations via SO-67 must be suspended temporarily due to system commissioning requirements of the main payload. The message said after handover of operations of the commissioned payloads the Satellite Applications Center plans return SO-67 back to scheduled Amateur Radio operation in the middle- **March** to early **April**, 2010 timeframe.

BIRTHDAY

MARCH



ANNIVERSARY

MARCH

7	ZS2CLI	Richard	Seddon
9	ZR2ACJ	Andy	Swannepoel
14	ZS2CH	Chris	Hundling
15		Marion	Whiting
25		Jean	Sörensen
4	ZS2CH	Chris & Jacqui	Hundling
16	ZR2LW	Richard & Dawn	Kumm
16	ZS2LEN	Len & Anita	Lotter
21	ZS1ZA/RSA	Richard & Jenni	Keet



(Phil ZS2NP)

DIARY OF EVENTS

- 5 March - Closing date for the Tinus Lange Awards.
- 31 March - SARL 80 m Club Contest with PSK and RTTY.
- 17 April - 2010 SA AMSAT Space Symposium.
- 23-25 April - SARL National Convention, Port Elizabeth.

SARL DIARY

SPY TRANSMITTER

This QRP transmitter I built in Rhodesia in 1970 from parts found in an old Supersonic car radio.

It only puts out a few milli watts output or less, and has a very short range (room to room).

Using the FM oscillator coil from an old radio and tuning the internal slug together with the 6-25pf ceramic trimmer it can be tuned to any part of the commercial FM radio band (88-108 MHz). (Do not upset the folks next door)

A crystal microphone gives the best results.

It has many uses: Spying - hide it and then listen to conversations by monitoring on a normal FM radio in the next room. Use it as a Baby monitor or the safety of children in general.

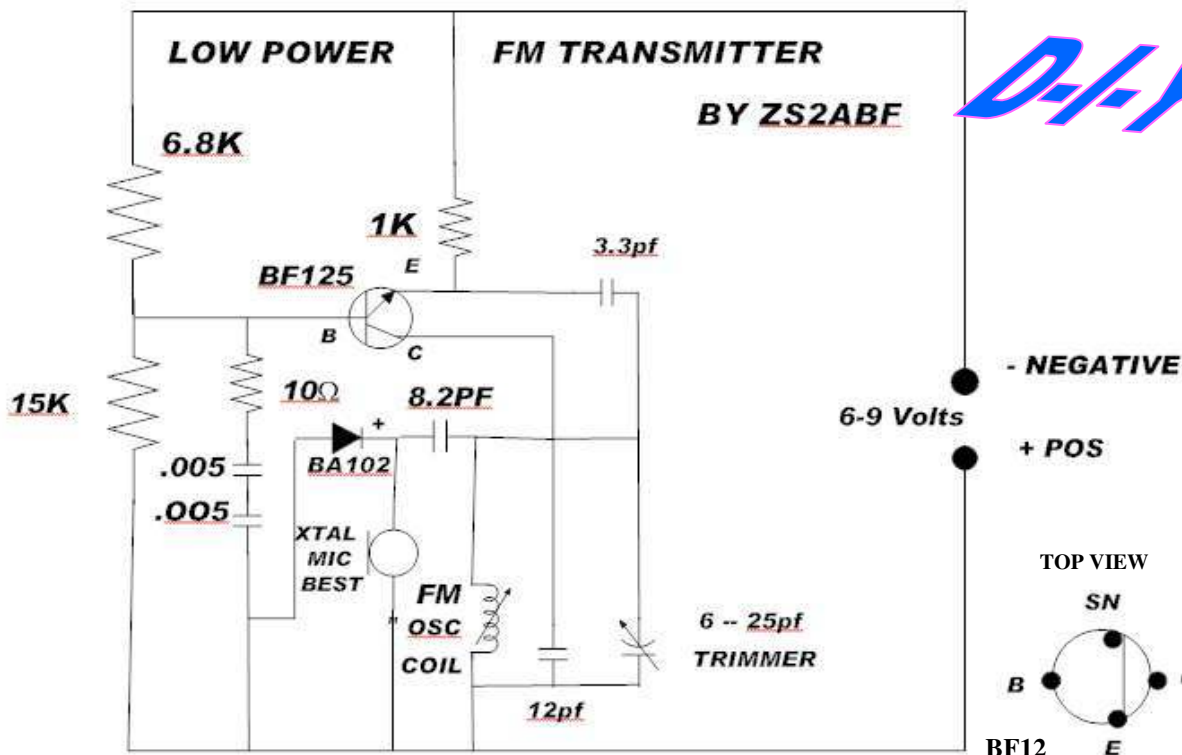
Have fun , you can transmit a message to the FM radio in the next room. You should see peoples ears pop up and their eyes open wide when they hear their name come over the FM radio. Tune that it to a vacant spot on the dial to correspond with that of your Tx frequency.

DO NOT TRY TO INCREASE THE POWER (For internal use only)

Cheers have fun , Peter ZS2ABF



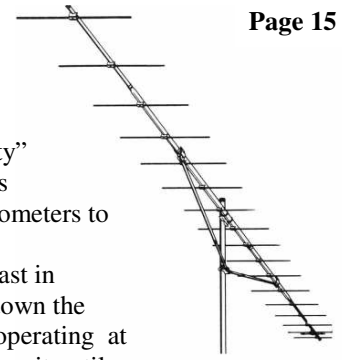
The club do not accept responsibility for or Condon out of band transmissions



D-I-Y

VHF/UHF TROPO

Now that summer is here the VHF bands are opening up and quite a few SA hams can be heard operating long distances up and down the coast of South Africa during periods when inversion takes place and the signals are ducted along this narrow "strip of opportunity"



along the costal regions. During the evening of 8th and 9th of February very good openings occurred and stations were heard from Port Elizabeth through to Durban and for several kilometers to the west in the Pinetown area.

Not all operators could hear all of the stations calling. I was lucky, being midway up the coast in East London. I heard to the North East from the direction my beam was pointing and also down the coast off the back of my beam. The signals were very strong most of the time that we were operating at around 20:00 CAT. Normally a lot of QSB and fading occurs, so you have to be patient and wait until you are both on the top of the wave. On these two nights it was exceptional strong.

I use an 8 element beam in the horizontal position. The rig is an old Icom 290D all mode, putting 20 Watts into a linear giving out 180 watts. We use USB mainly for long distance communication on the frequency of 144.200 Mhz.

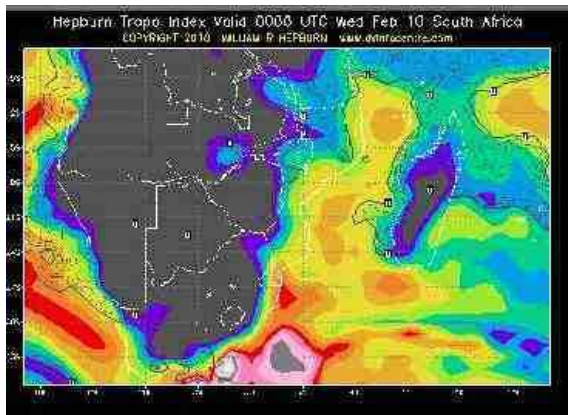
FM is normally heard on 144.400 Mhz. Digital modes are also used with JT65 being popular.

On the two dates mentioned the following stations were heard and worked: ZS5LEE, ZS5LA, ZS5Y, ZS5DJ, ZS2GK, ZS2AH, ZS2ACP, ZS2FM, and myself ZS2ABF. That's a distance of 460 Km and 300Km respectively to my QTH. During this time on the 9th February the VHF beacon on Reunion Island was again heard and ZS2GK and ZS5DJ QSY'd and made contact. Glen ZS2GK already had a record breaking contact with Reunion. ZS5Y even made contact with FR5DN on Reunion Island during the same week, on 70 Cm making it a new SA record a distance of 2655Km. ZS5LEE & ZS2ACP also made contact this meant that, records were made and then broken in the same period. Watch out for more records.

To have some idea when to call, you can go onto the internet and look for "The Hepburn Charts" on the DX Info web site. The charts were made by William Hepburn an ex Meteorologist, and Ham for many years. They show (Predict) the tropo taking place in various parts around the world. Just type in your location, which for us would be South Africa or Indian Ocean and "hey presto" up comes a map in vivid multi colours showing our part of the world. The various colours shown are the different strengths that the signals will probably be heard, believe me these predictions are very accurate (Many thanks William they are a great help). Therefore if it says "Low" then don't waste your time yelling your lungs out, as no one will probably hear you.

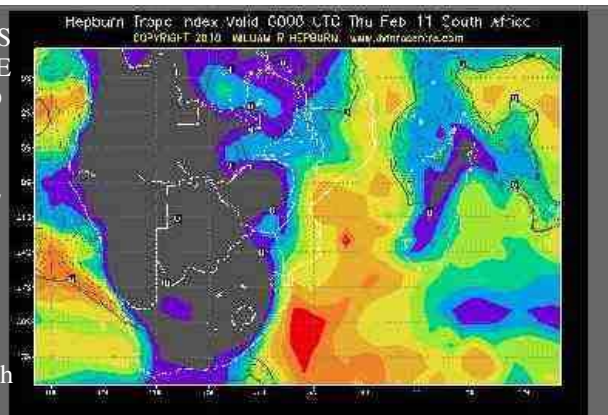
If you do not have the Internet backing, then go onto 144.200 MHz at 20:00 CAT and give a SSB CQ call pointing your beam up or down the coast.. You may be surprised at what you hear, if you have your aerial in the Horizontal position. Don't bother if you only have one in the vertical plane.

CU on VHF ? de ZS2ABF

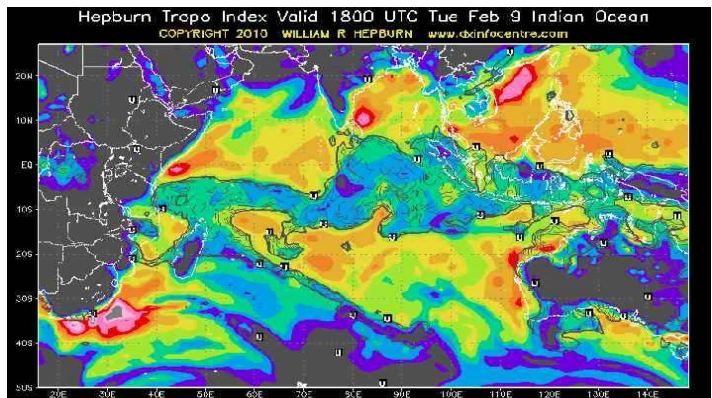
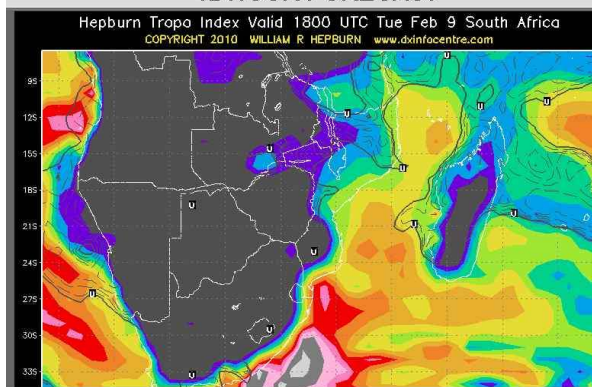


CONDITIONS DURING THE TWO GOOD OPENINGS.

ORIGINAL SOURCE FROM WILLIAM HEPBURN CHARTS (published with William's



42 HOUR FORECAST



Low	1.4	2	3	4	5	6	7	8	9	10+
NIL	MRGNL	FAIR	MDT	GOOD	STRONG	VRY STG	INTENSE	VRY INT	EXTREME	EXTREME

BORDER RADIO CLUB COMMITTEE

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VHF

UHF

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The Border Radio Club holds monthly General Meetings every third Tuesday of the month at The Gatehouse, Eskom's Sunilaws Office Park, Quenera Drive, Beacon Bay 19:30 for 19:45.

Anyone and everyone is welcome to attend. The Club can be contacted via e-mail at:

info@zs2brc.co.za or news@zs2brc.co.za or feedbacknews@zs2brc.co.za

Visit our Border Radio Club Website at address, <http://www.zs2brc.co.za/> (do not use a search engine)

Listen to our Sunday bulletin at 07:45 on 145.650 Mhz. FM Local, and relays on 145.675 Mhz. FM, 3.575 Mhz. FM, 7.074 Mhz LSB, and 3.615 Mhz LSB.

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