

BODRER RADIO CLUB

CHRISTMAS SPECIAL



LION PARK
CHRISTMAS BRAAI

AFFILIATED TO THE



Christmas comes but once a year but
when it comes it brings Good Cheer (and DX we hope)



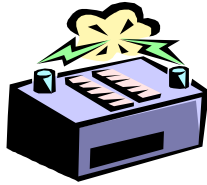
CQ CQ CQ
MERRY XMAS



FEEDBACK



Charging lithium-ion Batteries (BU12)



There is only one way to charge lithium-based batteries. The so-called 'miracle chargers', which claim to restore and prolong batteries, do not exist for lithium chemistries. Neither does super-fast charging apply.

Manufacturers of lithium-ion cells have very strict guidelines in charge procedures and the pack should be charged as per the manufacturers "typical" charge technique.

Lithium-ion is a very clean system and does not need priming as nickel-based batteries do. The 1st charge is no different to the 5th or the 50th charge. Stickers instructing to charge the battery for 8 hours or more for the first time may be a leftover from the nickel battery days.

Most cells are charged to 4.20 volts with a tolerance of $\pm 0.05\text{V}/\text{cell}$. Charging only to 4.10V reduced the capacity by 10% but provides a longer service life. Newer cells are capable of delivering a good cycle count with a charge to 4.20 volts per cell. The charge time of most chargers is about 3 hours. Smaller batteries used for Cell phones can be charged at 1C; the larger 18650 cells used for laptops should be charged at 0.8C or less. The charge efficiency is 99.9% and the battery remains cool during charge. Full charge is attained after the voltage threshold has been reached and the current has dropped to 3% of the rated current or has leveled off.

Increasing the charge current does not shorten the charge time by much. Although the voltage peak is reached quicker with higher charge current, the topping charge will take longer.

Some chargers claim to fast-charge a

lithium-ion battery in one hour or less. Such a charger eliminates stage 2 and goes directly to 'ready' once the voltage threshold is reached at the end of stage 1. The charge level at this point is about 70%. The topping charge typically takes twice as long as the initial charge.

No trickle charge is applied because lithium-ion is unable to absorb over-charge. A continuous trickle charge above 4.05V/cell would cause plating of metallic lithium that could lead to instabilities and compromise safety. Instead, a brief topping charge is provided to compensate for the small self-discharge the battery and its protective circuit consume. Depending on the battery, a topping charge may be repeated once every 20 days. Typically, the charge kicks in when the open terminal voltage drops to 4.05V/cell and turns off at a high 4.20V/cell.

What happens if a battery is inadvertently overcharged? Lithium-ion is designed to operate safely within their normal operating voltage but become unstable if charged to higher voltages. When charging above 4.30V, the cell causes plating of metallic lithium on the anode; the cathode material becomes an oxidizing agent, loses stability and releases oxygen. Overcharging causes the cell to heat up. If left unattended, the cell could vent with flame.

Much attention is focused to avoid over-charging and over-discharging. Commercial lithium ion packs contain a protection circuit that limit the charge voltage to 4.30V/cell, 0.10 volts higher than the voltage threshold of the charger. Temperature sensing disconnects the charge if the cell temperature approaches 90C (194F), and a mechanical pressure switch on many cells permanently interrupt the current path if a safe pressure threshold is exceeded. Exceptions are made on some spinel (manganese) packs containing one or two small cells.

Extreme low voltage must also be prevented. The safety circuit is designed to

cut off the current path if the battery is inadvertently discharged below

2.50V/cell. At this voltage, most circuits render the battery unserviceable and a recharge on a regular charger is not possible.

There are several safeguards to prevent excessive discharge. The equipment protects the battery by cutting off when the cell reaches 2.7 to 3.0V/cell.

Battery manufacturers ship the batteries with a 40% charge to allow some self-discharge, during storage. Advanced batteries contain a wake-up feature in which the protection circuit only starts to draw current after the battery has been activated with a brief charge. This allows prolonged storage.

In spite of these preventive measures, over-discharge does occur. Advanced battery analyzers (Cadex C7000 series) feature a 'boost' function that provides a gentle charge current to activate the safety circuit and re-energize the cells if discharged too deeply. A full charge and analysis follows.

If the cells have dwelled at 1.5V/cell and lower for a few days, however, a recharge should be avoided. Copper shunts may have formed inside the cells, leading a partial or total electrical short. The cell becomes unstable.

Charging such a battery would cause excessive heat and safety could not be assured. Charging such a battery would cause excessive heat and safety could not be assured.

Battery experts agree that charging lithium-ion batteries is simpler and more straight forward than the nickel-based cousins. Besides meeting the tight voltage tolerances, the charge circuit can be designed with fewer variables to consider. Full-charge detection by applying voltage limits and observing the current saturations on full charge is simpler than analyzing many complex signatures, which nickel-metal-hydride

produces. Charge currents are less critical and can vary. A low current still permits proper full charge detection. The battery simply takes longer to charge. The absence of topping and trickle charge also helps in simplifying the charger. Best of all, there is no memory but aging issues are the drawback.

The charge process of a lithium-ion-polymer is similar to lithium-ion. These batteries use a gelled electrolyte to improve conductivity. In most cases, lithium-ion and lithium-ion and lithium-ion-polymer share the same charger.

Preparing new lithium-ion for use

Unlike nickel and lead-based batteries, a new lithium-ion pack does not need cycling through charging and discharging. Priming will make little difference because the maximum capacity of lithium-ion is available right from the beginning. Neither does a full discharge improve the capacity of a faded pack. However, a full discharge/charge will reset the digital circuit of a 'smart' battery to improve the state-of-charge estimation.

State-of-charge reading based on terminal voltage

The open circuit voltage can be used to estimate the Battery state-of-charge of lithium, alkaline and lead-based batteries. Unfortunately, this method cannot be used for nickel-based packs.

On a lithium-ion cell, 3.8V/cell indicates a state-of-charge of about 50%. It must be noted that utilizing voltage as a fuel gauge function is inaccurate because cells made by different manufacturers produce a slight difference because cells made by different manufacturers produce a slightly different voltage profile. This is due to the electrochemistry of the electrodes and electrolyte. Temperature also affects the voltage. The higher the temperature, the lower the voltage will be.

Hints to long battery life

* Limit the time at which the battery stays at 4.20/cell. Prolonged high voltage promotes corrosion, especially at elevated temperatures. (Spinel is less sensitive to high

voltage than cobalt-based systems).

* 3.92V/cell is the best upper voltage threshold for cobalt-based lithium-ion. Charging batteries to this voltage level has been shown to double cycle life. Lithium-ion systems for defense applications make use of the lower voltage threshold. The negative is reduced capacity.

* The charge current of Li-ion should be moderate (0.5C for cobalt-based lithium-ion). The lower charge current reduces the time in which the cell resides at 4.20V. It should be noted that a 0.5C charge only adds marginally to the charge time over 1C because the topping charge will be shorter. A high current charge tends to push the voltage up and forces it into the voltage limit prematurely.



It looks as if ZS2CLI's wife is about to loose a finger or two !!!

A funeral service is being held for a woman who Has just passed away. At the end of the service, the pall bearers are carrying the casket out When they accidentally bump into a wall, jarring the casket. They hear a faint moan. They open the casket and find that the woman is actually alive! She lives for ten more years, and then dies. Once again, a ceremony is held, and at the end of it, the pall bearers are again carrying out the casket. As they carry the casket towards the door, the husband cries out, 'Watch that wall!'

THE SENILITY PRAYER

Gant me the senility to forget the people I never liked anyway, the good fortune to run into the ones I do, and the eyesight to tell the difference.

Now, I think you're supposed to send this to 5 or 6, maybe 10. Oh for heaven sake, send it to a bunch of your friends if you can remember who they are. Then something is supposed to happen . . . I think.

DV Dongle - (Get onto Dstar)

BODRER RADIO CLUB

A DV Dongle is connected to a PC or Mac and used with DVTool software, an amateur radio operator can connect to the international D-Star gateway network and receive/transmit just like a D-Star radio user. There is no fee, but users must be licensed and registered in the gateway system. The DV Dongle uses three chips, oscillator, led's, and discrete logic to implement it's functionality. The chips are the FTDI FT232RL serial to USB converter, the Atmel T91SAM7S256 ARM7 based CPU, and the DVSI AMBE2000 vocoder. Each D-Star radio includes an AMBE2020 voice compression chip provided by Digital Voice Systems, Inc (DVSI). The DV Dongle includes an AMBE chip and logic to connect it to a USB port on a PC or Mac. This allows the computer to "speak" the same voice protocol as D-Star. The DVTool software connects to participating gateways and encodes/decodes the voice using the DV Dongle. The DV Dongle has four LED's which indicate the current operating status:

- The blue LED shows data is being transmitted from the PC/Mac to the device.
- The yellow LED shows data is being transmitted from the device to the PC/Mac.
- The green LED shows the mode of operation, slow pulsing indicates idle and fast blinking indicates running.
- The red LED shows overruns or under runs between the PC/Mac and the device and should normally be off. Frequent red LED activity indicates your PC/Mac may not be sufficiently fast to operate with the device or you may have other programs running that are taking CPU cycles away from the DVTool application.

DV Dongle System Requirements:

- PC or Mac with 2.0GHz CPU .
- 512 MB or RAM (or more)
- High Speed Internet connection (DSL, Cable, 3G)
- Microsoft Windows XP/Vista, Mac OS X10.5 (Leopard), or Linux (most distributions)
- PC Microphone and speaker/s (headset preferred)

The DV Dongle is a high speed, real time device. It communicates with the PC/Mac at 230Kbps and needs adequate CPU speed and time to operate properly. Many operations on the PC/Mac can interfere with normal operations. These include screen savers, web browsers, instant messengers, etc. For best operation, avoid running CPU intensive applications when operating the DV Dongle.

Year-end Message from The Chairman – ZS2BQ

Greetings to all members and recipients of our newsletter, FEEDBACK. Here we are at the closing of another year and as I look back, I can't say that I have achieved all that I had intended. When the new Committee sat for their first meeting, our serious priority was to get the Nqamakwe repeater up and running again before the Festive Season, well this will not happen, mainly because of us having to rely on Eskom for permission to use their tower for our antennae. Another disappointment has been the absence of guest speakers at our meetings. Please folks, let's start the New Year off on the right footing and I appeal to you to come forward with any ideas or persons that can give a suitable talk at our monthly meetings. Remember that it doesn't have to be technical in nature, as long as it will be interesting to the members. My thanks to those who have unselfishly given of their time to assist at our Club outings such as Lighthouse and JOTA, as well as the early-birds who relay the bulletin each Sunday – not too bad at this time of the year, but Winter is a bit of a drag.

In closing, your Committee and I wish you all that you wish yourselves for a Joyous Festive Season. To those traveling, please be careful on our roads at this time of the year. Your families want you back home safe and sound. May you have a Blessed Christmas and a happy and prosperous 2009.

Yours in radio – Anthony – ZS2BQ.



**The 12 week old Lion Cub
that several members played with
In the children's play pen**

A BRC DAY AT THE LION PARK

5



This Year the BRC Christmas Braai was held at the Lion Park which is 5.9 Km. Out of East London on the Stutterheim Road.

25 Members and their XYL's arrived and were booked into a "Party Venue" complete with fire-place and a Thorn wood fire ready for lighting.

The weather was perfect and everyone enjoyed a pleasant day together.



Members later drifted off to explore the Lion Park and saw many varieties of Wild animals.

These included, Buck, Giraffes, many White lions, Wild dogs, Crocodile, Siberian tigers, Cheaters, Giant tortoises, Goat, Rabbits, Peacocks, Pony, Deer and ,even little baby chickens,

Chris ZS2CH was very happy to be allowed to play with the 12 week old white lion cub that was being hand raised by the owners mother Joan, as it had been abandoned by it's mother. This seems to be a common occurrence with female lions. Joan has raised several over the years and had many sleepless nights making up bottles to feed the cubs ,Hi.

A good day was had by all.

- The Final Courtesy eQSL -

The world's first and only eQSL exchange center, www.QSL.cc, started in the year 2001, with a bang. Only a few weeks earlier, on the first of December, it had blown through the 1 million card mark, and now 2 million cards were in the central database. But instead of slowing down, the rate increased as thousands of eQSL cards were uploaded every hour. The eQSL.cc site was launched in April of 2000, and included about 500 hams who had been part of an earlier experiment in an electronic QSL card exchange.

The "big" idea was that eQSLs should not be sent around from person to person via e-mail, but should be available at any time through a web-based exchange system and a central database. Other concepts using e-mail or by posting one stock QSL card on a web page and calling it an eQSL were not satisfactory, because security could not be guaranteed, e-mail addresses had to be looked up, and the sender had to laboriously design his QSL card using graphic design software. So, we used our 25 years of software development and database design experience to develop a site where each user could guarantee his identity with a scanned image of his ham license, could lay out an eQSL card design using simple point-and-click forms, and could upload logbooks either one-at-a-time, or by uploading an entire ADIF format log file at once. The concept is such a breakthrough, we have patents pending on its technology.

To retrieve one of these eQSL cards, the recipient only need enter the call sign, date, and band of the QSO he wants to retrieve, and if the other ham has entered that QSO into the system, up pops The complete eQSL card, ready for printing on a local printer. Furthermore, if the recipient registers his call sign with us, he can get a listing of all incoming eQSLs, and can just point and click to print each card received. Sending a reciprocal card back is a matter of clicking a button! Apparently, most everyone else thinks this is the right way to do it, too. Another six weeks after hitting the 2 million card mark, it appears the number of cards will double again to 4 million. Many of the members of the eQSL.cc site are using stock images for their eQSL card designs. But since it is possible to upload a graphic image to use on one's card, there are many custom cards online as well. Users are signing up from over 180 countries all over the world. In many places, a stack of 500 traditional QSL cards might well cost the average ham operator and entire month's salary. On eQSL.cc, 500 beautiful full-color cards can be sent for free! In an era when "dot coms" are failing left and right, it is noteworthy that the eQSL.cc site, which is supported almost entirely through voluntary donations, has been operating in the black since Day One.

Since the site runs virtually without any human intervention, the only ongoing expenses are for development of new features, and for continually increasing disk space, processor power, and bandwidth. A small amount goes to answering the questions and suggestions that come into the webmaster's office by e-mail. In most cases, replies are returned within the same day. Not everyone agrees that eQSL'ing is the way to go. Some people like to get their hands on that stiff cardboard with the exotic stamps that spent months in transit from the jungles of some island that is only above water for 3 weeks out of the year.

Others are bothered that some amateur organizations still have "no electronic transmission" in the rule books for their awards. Others still are spooked by the privacy issues that this interconnected new world brings up. But it's very difficult to argue - as the saying goes - with success. And 4 million cards is success by anyone's measure. At the present growth rate (with the number of eQSLs doubling every month), eQSL.cc could be home to virtually all of the world's amateur radio operators within a couple of years. Contest "big guns" will be able to "QSL 100%" within a matter of minutes, saving hundreds of hours of time and thousands of dollars in the process. DXpeditions will be able to "QSL 100%" on the spot, whether it be from that desert island with a dial-up Internet connection, or when the crew gets back to "civilization". It's just a quick log file upload, and they are done! And eQSLs, unlike their traditional cardboard counterparts, can be verified through automated computer interfaces by amateur organizations wanting to validate award and contest submissions.

The presence of a scanned license image on file for each user goes way beyond the simplistic checking that is possible using the older traditional QSL cards.

And now eQSL.cc is also a favorite site for SWLs, because users can identify themselves as either licensed amateur operator, or SWL. The eQSL cards between SWLs and hams are automatically configured to contain proper SWL phrasing, making their lives easier and saving them tons of money.

Complex systems shouldn't be designed in a vacuum, so we have assembled a capable group of hams and SWLs into an Advisory Board. Among these advisors are users with satellite and DX experience, contesting backgrounds, and international origins, as well as technology gurus and people with long-term operating histories. This group discusses current issues and future development plans for the site on a daily basis. Just another feature of the interconnected world we have entered as the 21st Century dawns. There were nay-sayers when SSB first began to push CW aside. There were those who thought packet radio was just a short-lived fad. Others thought we shouldn't be wasting money on amateur satellites. And some people think eQSLs are "not natural". But for tens of thousands of hams and SWLs who upload their entire logbooks nightly in an effort to live up to the "100% QSL" promise of amateur radio, **the final courtesy of a QSO is an eQSL.**

The above facility is available fro FREE on the Internet.



Nico ZS2NC —The learner Fireman



We even had Zebra join in the fun !



I wonder what these XYL's are giving their OM's for Christmas. (We hope it's a Radio)



ISS VOICE & SSTV HEARD OVER EAST LONDON

Richard Garriott (W5KWQ) was on the ISS as of October 14 and returned to earth 24th. With the call of NA1SS Richard commenced amateur radio activity from the ISS using FM, phone, Slow-Scan Television (SSTV), and packet operations. The ARISS team encouraged hams to upload their ISS SSTV pictures on the ARISS SSTV Gallery. In addition, they posted late breaking information and pictures on the ARISS SSTV blog.

The blog is at:
<http://www.ariss-sstv.blogspot.com/>
 And the gallery is at:
http://www.amsat.com/ARISS_SSTV/
 There are links at the Gallery site to submit your SSTV pictures. Also included are helpful hints for SSTV operations during Richard Garriott's flight. ARISS appreciates your SSTV picture submissions to the gallery. Amateur stations around the world have reported hearing FM voice and SSTV operation while the ISS crew is

awake. Packet operations were planned for operation during the crew sleep period (20:30-05:00 UTC).

FM: Worldwide downlink: 145.800 MHz FM.

Both Chris ZS2CH and Peter ZS2ABF have both been active receiving pictures from Richard aboard the ISS. Chris even had a brief chat with Richard using Voice.

Reg ZR2REG also joined in the fun.

Flight Path

Unfortunately the ISS passes over East London were mainly during darkness. Here are some of the SSTV pictures that were received.

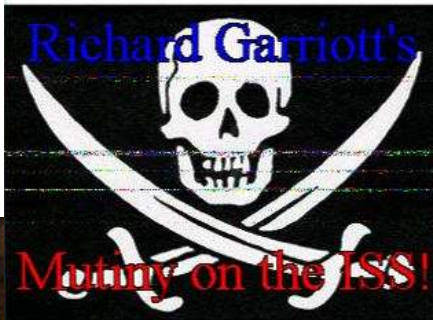


Taken by Flash With Pothole reflections

Received at 18:02 on 20/10/2008

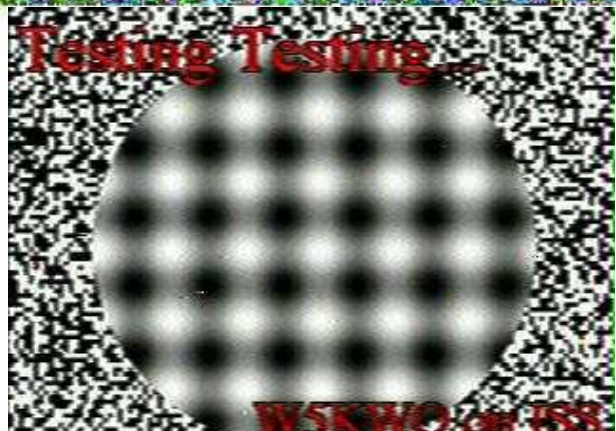


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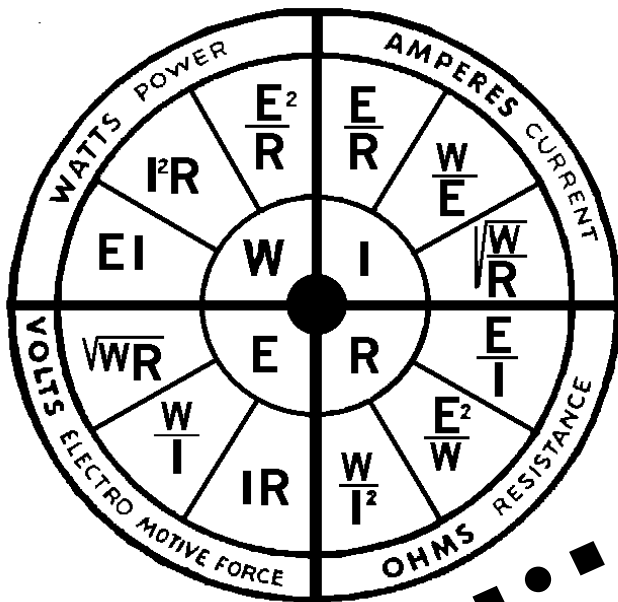


Received at 19:17 on 19/10/2008

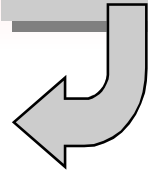
The ISS International Space Station's Slow Scan Pictures (SSTV)



Actual pictures as received by ZS2CH & ZS2ABF



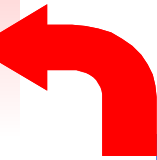
*Forgot how to work out your Electrical problems ?
This calculator may refresh your memory*



Use a Safety Harness



The Aerial "Safety" Factor



PUTTING UP SIMPLE WIRE AERIAL'S No matter what type of aerial you are putting up you should remember to think about "SAFETY" if you are using a slingshot or bow and arrow to get a line over a tree, make sure you keep everyone away from the "downrange" area. Hitting one of your helpers (Hi) with a rock or fishing sinker is considered not nice, and could end up causing a serious injury.

Make sure the ends of the antenna are high enough to be out of reach of passers-by. Even when you are transmitting with low power there may be enough voltage at the ends of your antenna to give someone nasty "RF burns." If you have a vertical antenna with its base at ground level, build a wooden safety fence around it at least a meter away from it. Do not use metal fence, as this will interfere with the proper operation of the antenna. Be especially certain that your antenna is not close to any power wires. That is the only way you can be sure it won't come in contact with them!

Antenna work often requires that one person climb up on a tower, into a tree or onto the roof of a house. Never work alone! Work slowly, thinking out each move before you make it. The person on the ladder, tower, tree or rooftop should wear a safety belt, and keep it securely anchored. It is helpful (and safe!) to tie strings or light-weight ropes to all tools. If your tools are tied on, you'll save time getting them back if you drop them, and you'll greatly reduce the risk of injuring a helper on the ground.



ZS2NP - ZS2ILN - ZS2BQ
Erecting an Aerial
At the JOTA field station

Many of you have heard of a sort of clandestine antenna. The vertical flagpole, the invisible (Thin) wire and the camouflaged antenna - namely the clothesline antenna. In principle the clothesline antenna is just what it says. A clothesline. Used as such, deferred and mutilated but the wire in the core will carry your Ham-conversation around the globe. Thru any and every long john or other wet underwear possible. Over the years many such contraptions have been tested, challenged or bettered. Sure it might have all started with the 80 or 40 meters long-wire antennae. Capable of being draped with everything the tumble drier refuses. Long johns big size bikini and even ham-Dx style snort kerchiefs. 20 meters proved more of a challenge, followed by 15 and 10 meters. Surely just something for the small family or the lone Ham.

The 6 and up meters bands prove only successful if you use a ground plane with elevated radials - sort of windmill clothes drying spider or thereabouts. Like 70 cms are more something for pretty YL Hams for hers hmm bikini or for the occasional dwarf. Ham or not. But its not only size e.g. wave length that count. Apparently - the last years testing proved it, that mode and other operational idiosyncrasies show up in the, well somewhat unexpected results.

Namely: The Am mode has shown that garments rarely dried fully in the center. SSB was given only good results when all, say about 20 minutes the sideband was switched. Otherwise one side of the trousers always stayed wet. CW worked best on Polka-Dots items, while Rtty tended to loosen the seams of delicate underwear. Packed likewise seems to take ages on Short-wave but on two meters and above it introduces mold. Very commonly seen nowadays. FM, most used on 2 and above works best, also only on smaller loads, but coughing into the mike makes the clothes pegs fly off. So by now one would assume that the Moon bouncer - with its microwave equipment might have the advantage. Not so. When an Yagi antenna array is used for drying synthetics, perlon and other artificial fibers tend to become stuck on the aluminum feeders. Not only very unsightly but no boon for the boom. On the other hand when garments are laid out on microwave dish antennas there it has to be shown, that especially drip dry socks are catching fire spontaneously under full power. (But no detrimental defect on the transmission was ever detected.) - Thanks to Sten ZS6CFC.

Looks like some people I know !



Honorary Life Members

ZS2BV Trevor Foxcroft
ZS2KW Ken Wood

Your Committee

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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 at 19:30 for 19:45. Anyone is welcome to attend. The Club can be contacted via e-mail to ivan3@telkomsa.net. Listen to our Sunday bulletins at 07:45 on 145.650 MHz. Visit our website at www.sa-eastcape.co.za/brc. The South African Radio League's website can be found at www.sarl.org.za.

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