

# SHACKNEWS

## HIGHVELD AMATEUR RADIO CLUB

PO Box 1111, Bedfordview, 2008

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Sunday morning BULLETINS - 145.7875 MHz &  Hz @ ±08h45.

### COMMUNICATION IS THE NAME OF THE GAME

**Meeting.** At this meeting a number of old and not so common “steam” radios were bought along and demonstrated. A lot of discussion covered the art of SWL, which was most interesting. A site to look for on the WEB, which covers a lot of aspects of SWL with many interesting links, is [www.wunclub.com](http://www.wunclub.com) An example of many of the files found on the site.

Frequency/Range	User	Mode	Remarks
4000 - 4063	SHIP	USB	INTERSHIP SIMPLEX / CROSS BAND WITH 8 MHZ DUPLEX WITH COAST ON 4438 - 4650 / SUPPL. FOR DUPLEX ON USB CH. 401-429
4063.3 - 4064.8	SHIP	DATA	6 SHIP OR BUOY CHANNELS (0.3 KHZ) FOR OCEANOGRAPHIC DATA TRANSMISSIONS
4065 - 4143	SHIP	USB	SHIP CH. 401 - 427 DUPLEX WITH COAST STATIONS ON 4357 - 4435
4125	BOTH	USB	CHANNEL 421 - SIMPLEX. SUPPLEMENTS 2182 FOR DISTRESS AND SAFETY

**SSC** The meeting was held at the QTH of Norman, ZR6AJD. A short meeting was held then all adjourned to the shack to see it in operation. Thanks to all those who provided the eats and a special thanks to Norman and family for their hospitality. Next meeting of SSC will be at the QTH of Rex, ZS6REX. By now everyone knows where it is hi.

---oooOOOooo---

## Safety circuits for modern batteries

A modern battery is a delicate storage device that requires protection to safeguard against damage. The most basic protection is a fuse that opens on excess current. Some fuses disengage permanently and render the battery useless once the filament is broken; other safety devices are resettable. The Polyswitch™ is such a resettable fuse. Connected into the battery's current path, this device creates a high resistance on excess current. The Polyswitch™ reverts to the low ON position when the condition normalizes, allowing operation to resume.

Batteries used in hazardous areas must be intrinsically safe. Hazardous areas include oil refineries, mines, grain elevators and fuel handling at airports. These areas are typically serviced with two-way radios and computing devices. Intrinsically safe batteries prevent high heat and electric spark on equipment failure. Because of tight approval standards, intrinsically safe batteries carry twice to three-times the price tag of regular packs.

Another battery that contains high-level protection is lithium-ion. This is done to assure safety under all circumstances while in the hands of the public. Typically, a Field Effect Transistor (FET) opens if the charge voltage of any cell reaches 4.30V. A separate fuse opens if the cell temperature approaches 90°C (194°F). In addition, a disconnect switch in each cell permanently interrupts the charge current if a safe pressure threshold of about 10 Bar (150 psi) is exceeded. To prevent the battery from over-discharging, the control circuit cuts off the current path at about 2.50V/cell. Prolonged storage at voltages of 1.5V/cell and lower damages the lithium-ion, causing safety problems if attempted to recharge.

Each parallel string of cells in a lithium-ion pack needs independent voltage monitoring. In addition, each cell in series must be monitored for voltage. The more cells that are connected in series, the more complex the protection circuit becomes. Four cells in series is the practical limit for commercial applications.

The internal protection circuit must be designed to add as little resistance as possible to the current path. The circuit of a cell phone battery often consists of two FET switches connected in series. One FET is responsible for high, the other for low voltage cut-off. The combined resistance of the FETs in the ON position is 50-100milli Ohms (mW). This virtually doubles the internal resistance of a battery pack.

A major concern arises if static electricity or a faulty charger destroys the battery's protection circuit. This may result in permanently fusing the solid-state switches in an ON position without the user's knowledge. A battery with a faulty protection circuit may function normally but will not provide protection. If charged over a safe limit with a defective charger, venting with flame could occur. Such a situation must be avoided at all cost. Shorting such a battery could also be hazardous.

Small lithium-ion packs with spinel (manganese) chemistry containing one or two cells may only include a fuse as protection. Spinel is more tolerant to abuse than cobalt and the cells are deemed safe if below a certain size.

Although less expensive, the absence of a protection circuit introduces a new problem. Cell phone users have access to low-cost chargers that may rely on the battery's protection circuit to terminate charge. Without the protection circuit, the cell voltage rises too high and damages the battery. Excess heat, even bulging can result. Discontinue using the battery and charger if a lithium-ion battery gets hot.

To maintain safe operation, manufacturers do not sell the lithium-ion cells by themselves but make them available in a battery pack, complete with protection circuit. The circuit is often subject to exact scrutiny before the manufacturers release cells to the pack assemblers. Although there are a few reported incidents of venting with flame, the lithium-ion battery is safe.

---oooOOOooo---

## Another blonde joke

A Russian, an American, and a Blonde were talking one day.  
The Russian said, "We were the first in space!"  
The American said, "We were the first on the moon!"  
The Blonde said, "So what? We're going to be the first on the sun!"  
The Russian and the American looked at each other and shook their heads. "You can't land on the sun, you idiot! You'll burn up!" said the Russian.  
To which the Blonde replied, "We're not stupid, you know. We're going at night!"

---oooOOOooo---

## Can you relate?

My forgetter's getting better,  
but my rememberer is broke  
To you that may seem funny  
But to me, that is no joke

For when I'm "here" I'm wondering  
If I really should be "there"  
And, when I try to think it through,  
I haven't got a prayer!

Oft times I walk into a room,  
Say "what am I here for?"  
I wrack my brain, but all in vain!  
A zero, is my score.

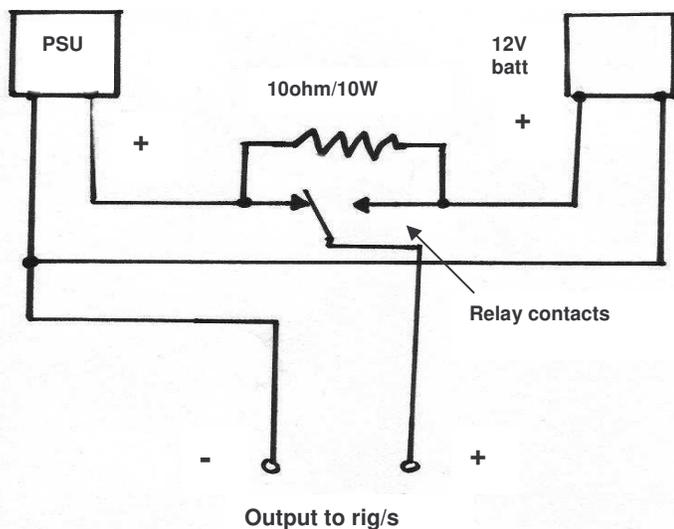
At times I put something away  
Where it is safe, but, Gee!  
The person it is safest from  
Is, generally, me!

When shopping I may see someone, Say!  
"Hi" and have a chat,  
Then, when the person walks away  
I ask myself, "who was that?"

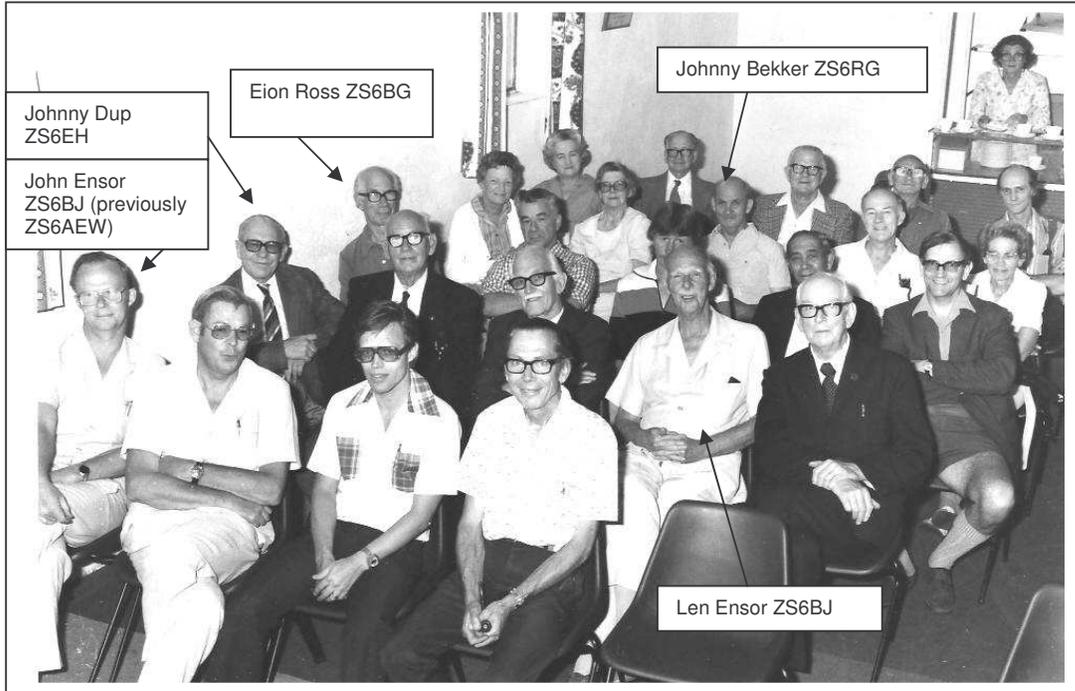
Yes, my forgetter's getting better  
While my rememberer is broke,  
And it's driving me plumb crazy  
And that isn't any joke.

---ooooOOOoooo---

## Emergency standby switchover



The relay can either be mains or 12volt operated- from the psu side. The contacts must also be able to carry the maximum load. The resistor is used to charge the battery. Relay shown in the energized condition



This picture was taken at a SSC meeting many years ago. What SSC would like to know is who is who. The person sitting at the back wearing glasses on the right is not Johnny Bekker (looks like him). This is confirmed by looking through a very large magnifying glass.

Can anyone assist with name and callsigns?

73

Berridge