

HCARES MEETING NOTES - 11/1/97

- Andy, N9WCN opened the meeting at 9:15 AM.
- Larry Falbush Awards committee needs to be formed and nominees available by next meeting.
- Need officer election nominees for next year.
- Next meeting will be at the Red Cross.
- Steve, W9SH, nominated Matt Hienze for President, Jane Wasmuth was nominated for Secretary and Ron Sans was nominated for Secretary. Fred Overmyer, N9HJW, was nominated for Vice President.
- Don Cleveland, K9MWU has some gear to sell:
 - ICOOM 229H - \$ 175
 - MFJ 921 Tuner for 144- 220 at \$ 35.00
 - KPC3 – TNC at \$ 75
 - Ringo Ranger 2 plus 20 ft mast at % 50.
- Paul Dobosz, K8PD has some gear to sell
 - Yaesu FT-811R Synthesized 440 MHz handheld at \$145.00
 - Standard C558A Synthesized Dual Band Hand held will all bells and whistles. - \$ 295.00
 - Heathkit HD15 Phone Patch like new - \$ 35.00
 - Heathkit AT-130 Antenna Tuner Handles up to 300 watts. - \$ 125.00
- Ritron is still having trouble with the jamming as discussed in previous News Letters
- November 22 Food Giveaway – volunteers needed at the Red Cross at 8:00

Battery Talk – Steve Henke, W9LS

- Nicads are most popular rechargeable battery
- Nickel Hydride is also popular
- Nicad is better for Radio's
 - Cheap
 - Lots of experience
 - Typical nominal volts per cell is 1.2 v per cell
 - Batteries are normally a number of these cells connected in series.
 - Quality varies between manufacturers. The amount of mha (milli amps per hour) varies.
 - The internal contents contain an electrolyte chemical and uses a reversible chemical process that moves ions in the battery and electrons in the circuit.
 - To increase capacity inside cell they need to add more electrolyte inside the battery. They can make the walls thinner but it becomes mechanically more fragile. There is a separator (permeable membrane) inside the battery that can be varied. The separator material uses a woven insulator of some sort of plastic or nylon. To get more energy want to decrease the size of the separator. This improves battery internal resistance and lowers it which is good, but makes it more fragile if you drop it. The separate tends to head when the battery is charged or when the battery draws current. Then the heat can destroy the membrane and kill the battery performance if the separator gets to small. Thus as the capacity increases in a battery the time between failure drops.
 - The electrons actually move in the opposite direction that the current travels in a circuit. In a real battery there is a little series resistance inside the battery. The inside resistance is normally developed by the separator, plate on the two electrodes, and the wires coming off the battery. This resistance causes a voltage drop across the circuit. Thus one tries to minimize the series resistance of the battery. Thus as a battery ages the series resistance goes up in the battery. Usually Nicads maintain their voltage as it ages, but the resistance goes up and when under load the voltage will drop more than it did in the beginning.
 - If you overcharge a nicad, gases are released. Thus if you overcharge a nicad pack, first boiling off other molecules (hydrogen) and the head burns the separator. There is a venting system that ruptures to release the hydrogen gas.
- Alternatives to Nicads
 - Nickel Metal Hydride
 - The series resistance is higher than the Nicad's thus more voltage loss
 - When it gets cold its series resistance goes up more than Nicad's.
 - Self discharge is higher in the Nickel Metal Hydride

- Life Time is less especially if you fast charge it
- Lithium Ion Battery
 - Gets hot when it is charged and discharge
 - Energy density is for size of cell about twice as much energy as nicads.
 - Nominal voltage is 3.6 volts
 - The normal internal resistance is high as compared to nicads.
 - They do not work well in transmitting radios.
 - Also very expensive, about 3 times as much.
 - Self discharge is very good and is better than most. Shelf battery is very good.
- Battery Tester Fixture was created
 - Unit talks to a PC through the serial port
 - Checks the voltages of the battery tester and sends them to the computer.
 - They use programmable current sources so that the computer can tell the unit to send so many milliamps to the battery. They can also program the load for each of the batteries terminal that is is checking.
- Battery Charging
 - When charging a nicad the voltage increase rapidly. Then slows down and one gets a small increase called a dv/dt voltage which is about 90% of the charge at the beginning of the peak dv/dt . The start of the dv/dt is 88% charged, the peak is at 90% and the end of the dv/dt peak is at 95% charged. Various charges detect either the +, peak or - dv/dt spots to shut down the charges.
 - The batteries charge at various rates, rating is based on capacity of the battery where the capacity is the charging rate.
 - Charging Methods
 - Multi-Mode – Fast Charges. Can pulse the higher current to the battery at higher than rating but actual coulomb values are the same because of the pulsing rate. The high current pulsing removes the bubbles on the plates.
 - Some battery packs have thermistors built into the battery for checking charging rates.
 - Sometimes there is a thermal fuse in the battery. There is sometimes a poly-switch inside some of the batteries. This poly-switch protects against shorting of the battery. This poly-witch is a chemical device. These can be reset if the load is removed from the battery. This may take a few seconds to reset.
 - Some manufacture's put a diode in series with the battery to protect with a resistor across the diode so that the charger can detect the voltage on the battery.
 - Burping Method - Pulsing the battery and then discharging the battery is one of the newer methods. Then they put a small rest and then continue the charge. This method claims that it reduces the memory effect.
 - Memory Effect of Nicads
 - Duty cycle 95% sits 5% radio it runs. Thus batteries may not be completely discharged in 8 hours of normal use. Thus batteries were being recharged short of the normal discharge. Now radio will not last 8 hours. This is the memory effect.
 - The batteries need to be discharged every so often.
 - When the memory effect takes place, the batteries do not accept much charge. This is due to the internal resistance increasing and the charger detects this.
 - Sometimes recycling the battery can at a C/5 or C/10 rate (slow rate) will fix this effect. Once a month discharge seems to work.
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- Jeff Hendricks – Presentation on the Weather Radio
 - Showed the new radio that the weather serves sends data to.
 - The display shows what the weather statement is.
 - Various levels of warning are available with the system. The warnings can be set by county. Watches will display a yellow light. Warnings will display a red light on the display during the warning.
 - This radio has a volume knob for the siren on it.
 - There are multiple modes, like various counties and then maybe all state mode.
 - The device retails for about \$ 80. It should go in sale during the Christmas holidays.

- We do not know how much the Indianapolis Weather service is in compliance. They seem to be doing at least some of it.
- Has external port for an antenna. Also has light flashers for the deaf.
- Can be purchased at Radio Shack.
- This has all 7 Weather radio frequencies.
- Can decode about 30 messages.
- There are several high end models that are used in radio stations, EOC's. etc.

Notes from R. Sans, WA4EZF- Secretary HCARES