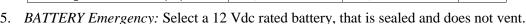
Ham 61 - Battery, Maintainer, Solar

Dr. Marc & Rosemary © 220821

- 1. You are following the ham advice of Be Prepared: Get licensed, Get a real-radio, Get radio-active.
- 2. What is the number one stated purpose for why most people get their ham license? Be prepared for emergency operations. That covers a lot of options from power outage, to cell outage, to weather, to other disturbances.
- 3. Too many get their license, but are not radio-active, so the radio is unusable when wanted.
 - a. Ham is not like CB; there is no Channel 19 to call your local trucker, when you want to know the road ahead.
 - b. If you are not radio-active on a Net, there is no one to talk to in an emergency.
 - c. A Net comprises three crucial things.
 - i. Who: The people with whom you can talk.
 - ii. Where: The frequency on which you talk.
 - iii. When: The time that someone will be there.
- 4. To be radio-active, there must be a real-radio, that is working. So, back-up power becomes necessary regardless of the infrastructure.

Radio Specs	Receive	Transmit	Total
Current, 12V full charge	1.4 A	10 A	
Current, 7.4V drained	1.7 A	13 A	
Typical operating day	8 hr	20%	
Amp-hours battery capacity for day	1.4A * 8h = 11.2 Ah	10A * 1.6h = 16 Ah	27 Ah
Watt-hours = Ah * 12V	136 Wh	192 Wh	328 Wh
How long will 7 Ah battery operate	7Ah / 1.4A = 5 h	7Ah / 10A = 0.7 h	



- a. Gel-cell used for alarms is a good choice. Deep cycle is a necessary idea.
- b. LiFePO4 (Lithium Iron Phosphate) is smaller with greater energy density and greater cost.
- c. Radio power demand stays constant, so as battery voltage runs down, the current draw by the radio goes up.
- d. The battery size is determined by how long you intend to operate and other added devices.
- 6. BATTERY Size: Size is total Amp-hour (Ah). How big do you need _____? 35 Ah ~\$80.
- 7. MAINTAINER Wall-wart: A maintainer is just to keep an unused battery charged.
 - a. The maintainer MUST be rated for the chemical type battery you are using, whether lead-acid or LiFePO4 (lithium-ion). The battery charging is very different. Wrong charger will cause a fire.
 - b. Two quality devices stand out as acceptable. Larger versions of both are available.
 - c. *Noco Genius* is preferred choice. It is suitable for <u>lead-acid & LiFePO4</u>. It has top safety features. Genius1= 1 A, 15W, up to 30Ah battery. Genius2= 40Ah, Genius5= 120Ah. Genius1= \$30.
 - d. *Deltran Battery Tender Jr*' is for <u>lead-acid only</u>. ~\$39.
- 8. *MAINTAINER Solar:* A small solar system controller is a viable alternative.
 - a. Suner Power BC-6W delivers 6W, ~\$40.
- 9. SOLAR Background: Continuous operation without infrastructure requires much larger solar & battery.
 - a. Size in Watts * peak sun hours = daily Watt-hour energy available.
 - b. Ratings at max (peak sun) include power (Pmx), current (Ipm), and voltage (Vpm) ~ 17V.
 - c. Voltage and resulting power vary with sun level, so a controller is required.
 - d. Average peak OK sun is 4.5 hours / day, with more in summer and less in winter.
- 10. SOLAR Panel: Select panel size (Watts) to supply the current (A) desired.
 - a. 100-Watt panel typically delivers about 5 A at maximum sun.
 - b. 8 hours of summer sun yields (5A * 8hr) = 40 Ah. Winter is one-half that.
 - c. In summer, this panel restores all power used. In winter, you need two panels for full power.
 - d. Renogy 100 W solar panel is adequate, depending on sun. ~\$100.
 - e. *Dokio* portable units are foldable and come with a controller. Same price range.
- 11. SOLAR Controller: Controller manages battery charging.
 - a. PWM is inexpensive. Pricey MPPT (maximum power point) optimizes voltage.
 - b. The controller size is the current put in the battery.
 - c. Renogy Wanderer 10 Amp, 12V, PWM is adequate, ~\$20.
- 12. Life is good. Enjoy!









