Basic Operating Procedures

The following procedures should be used when operating VHF radios. They are purposely kept as simple as possible, and assume that the user already has a healthy dose of common sense (for example, doesn't need to be told to listen for other traffic before transmitting). These procedures will help users get the best performance out of the radio system.

Communication Range

Communication range for VHF radios is largely dependant on having a line-of-sight or near line-of-sight path between your antenna and the antenna of the station you want to talk to. If you are having trouble with weak signals, try some of these tricks:

- Hold the radio over your head (antenna is higher).
- Climb to a location that is higher, or that has fewer obstructions between you the station you are talking to.
- Move the radio around the immediate area. It is common for a spot just a few feet away to work much better (or sometimes worse).
- Ask any other station that hears you to try to relay your call to the Search Base.

Squelch Setting

The squelch control is usually a knob on the top of most FM handheld radio's (like the Bendix King or Icom F-3's that Cal-ESAR uses). This control quiets the background noise when there is no signal to receive. It should be adjusted to the point where the noise just quiets. If the control is turned beyond this point, it will actually reduce the sensitivity of the radio. Many newer radios (like the MT1000's used by Cal-ESAR) do not have a user controlled squelch control. This style of radio will have a MONITOR pushbutton on the side of the radio to unsquelch the radio for test purposes (to set volume level for example).

Battery Life

Battery life for hand held radios depends on how many minutes the radio is used in the transmit mode. A typical radio using a high capacity (larger, heavier) battery will usually be specified by the manufacturer to operate on a 5-5-90 duty cycle for an 8 hour day (5% transmit time, 5% receive time, 90% standby time). A standard capacity battery (smaller, lighter) is usually rated for a 4-hour day. To maximize battery life, minimize transmit time. Consider these examples:

- 5% of an 8-hour day is 24 minutes of transmit time.
- If the radio transmits for only 12 minutes, the battery "day" becomes 16 to 20 hours.
- If the radio transmits for 30 minutes, the battery "day" becomes only 4 hours.
- Keep radio transmissions brief. Let the base station do the talking.

Radio Checks

When you are issued a radio, you will be assigned a channel to use. As you leave base camp, but before you get too far away, make a test call to the dispatcher. "Rescue Base, this is Esar 162 on MRA". This test will help ensure that you have:

- the correct channel,
- volume set properly
- squelch set properly
- working radio.

If you hike into the field, it also is a good idea to make a second test call once you are 1/4 to 1/2 mile away from base. Some radio faults (bad antenna connection, weak battery) will not be evident when tested close to the base station.

Channel Designations

Between Cal-Esar, NSP, and Sheriffs, and State Parks, there are at least six different kinds of VHF hand held radios in use. They can each use a different channel plan. Radios from the same team can have different radios, with different channel plans! Their acronym, rather than their channel number should be used when referring to a channel. Just imagine the confusion if someone gets on the main dispatch channel and requests everybody to switch to channel 13, and there are three different channel plans being used in the field. Be sure you have a listing of the frequencies and acronyms for your radio's channels! Cal-Esar radios will have the channel plan attached to the radio batteries! Return to the original channel if no contact is established on the new channel!

Federal Communication Commission (FCC) Licenses

Cal-Esar transmitters are licensed by the FCC and given a call sign that is supposed to be used at the end of each series of transmissions. Cal-Esar also operates on channels belonging to other agencies (YOSAR, Nordic Ski Patrol, State Parks, etc) and on which we do not hold a license, but for which we have received permission from the licensee to operate. Do not worry about using call signs. You couldn't remember them all anyway. Let the base station operator use the appropriate call sign, <u>if he remembers it</u>.

Scheduled Calls

A seldom used but important technique for extending battery life in certain situations is the SCHEDULED CALL.

- Leave the radio OFF most of the time. By prior arrangement with the IC staff, turn it on every hour and monitor for five minutes for a call.
- Do not place a call to the IC if you are not called (transmitting uses 50 to 100 times as much battery power as monitoring).
- Be Kind To Your Rechargeable Battery Rechargeable batteries are damaged each time they are left on to the point where the battery is fully discharged.
- Check, then double-check that your radio if OFF when you are done with it. Check your buddies' radio. Have him check yours.
- Always check out a spare battery pack (AA alkaline preferred) when you are issued a radio for the field!