

## 9.3 Delaying a Handoff

### 9.3.1 Two-handoff-level algorithm

In many cases, a two-handoff-level algorithm is used. The purpose of creating two request handoff levels is to provide more opportunity for a successful handoff. A handoff could be delayed if no available cell could take the call.

A plot of signal strength with two request handoff levels and a threshold level is shown in Fig. 9.4. The plot of average signal strength is recorded on the channel received signal-strength indicator (RSSI) which is installed at each channel receiver at the cell site. When the signal strength drops below the first handoff level, a handoff request is initiated. If for some reason the mobile unit is in a hole (a weak spot in a cell) or a neighboring cell is busy, the handoff will be requested periodically every 5 s. At the first handoff level, the handoff takes place if the new signal is stronger (see case I in Fig. 9.4). However, when the second handoff level is reached, the call will be handed off with no condition (see case II in Fig. 9.4).

The MTSO always handles the handoff call first and the originating calls second. If no neighboring cells are available after the second handoff level is reached, the call continues until the signal strength drops below the threshold level; then the call is dropped. If the super-

- At cell site
- Each channel receiver has a RSSI (received signal strength indicator).
  - Two-level handoff algorithm

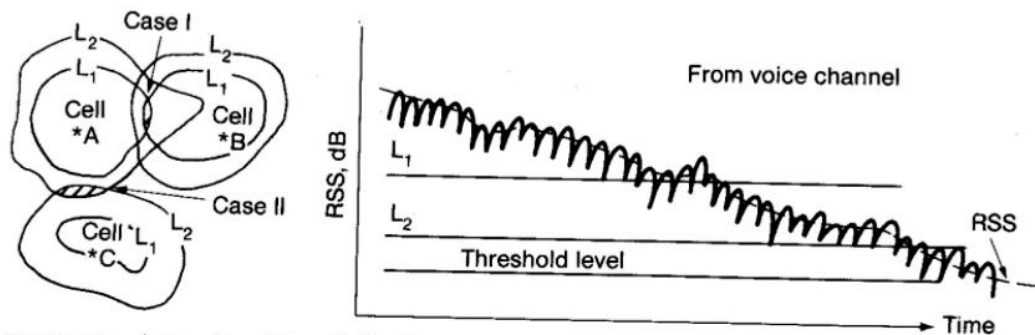


Figure 9.4 A two-level handoff scheme.

visory audio tone (SAT) is not sent back to the cell site by the mobile unit within 5 s, the cell site turns off the transmitter.

## 9.7 Cell-Site Handoff Only

This scheme can be used in a noncellular system. The mobile unit has been assigned a frequency and talks to its home cell site while it travels. When the mobile unit leaves its home cell and enters a new cell, its frequency does not change; rather, the new cell must tune into the frequency of the mobile unit (see Fig. 9.9). In this case only the cell sites need the frequency information of the mobile unit. Then the as-

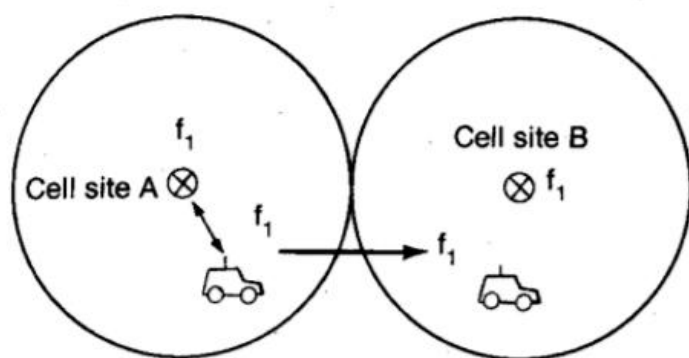


Figure 9.9 Cell-site handoff-only scheme.

pects of mobile unit control can be greatly simplified, and there will be no need to provide handoff capability at the mobile unit. The cost will also be lower.

This scheme can be recommended only in areas of very low traffic. When the traffic is dense, frequency coordination is necessary for the cellular system. Then if a mobile unit does not change frequency on travel from cell to cell, other mobile units then must change frequency to avoid interference.

Therefore, if a system handles only low volumes of traffic, that is, if the channels assigned to one cell will not reuse frequency in other cells, then it is possible to implement the cell-site handoff feature as it is applied in military systems.