

## Appendix D

# Implementing Electronic Counter-Countermeasures for Radio Systems

### D-1. Background

a. It is assumed that your system has the proper received signal level and that you and the other station are using low power; your sites are masked from the enemy when possible by using terrain obstacles.

b. Systems that are parallel to the front lines are less open to ECM than systems that are perpendicular. Division systems are more prone to ECM than corps systems because of the proximity to front lines.

c. Multichannel systems should be separated from HF radios because of the high power and resulting spontaneous and harmonic radiation. FM radios should not be collocated with multichannel sets for the same reasons. Collocated multichannel antennas should be either back to back or on-line to reduce mutual interference. Antennas should never be in line with one another.

d. The need for dispersion and the need for high mobility always clash. To mask a unit's location, all radios including multichannel should be separated from the command post by at least 2 kilometers (1.2 miles). Cables should not be used to interconnect radios and the command post because cable recovery is too time consuming. A radio link should be used when available.

e. In most cases, the enemy prefers to monitor our systems even though they are denied clear reception of our signals because of encryption. An electronic signature of our unit's location is of better intelligence than jamming. Multichannel systems indicate headquarters' locations. Their presence indicates a stable nonmobile situation. We give the enemy valuable signal intelligence when stations go off the air and then reappear elsewhere. We are telling the enemy our situation is changing.

f. Determining if ECM is being used against your system is not easy since most interference is from our own emitters.

g. Proper and diligent frequency management is imperative. When interference occurs, submit the MIJI report. Do not change the frequency up or down to get away from interference. This creates additional problems for other users. Use tactical satellite instead of terrestrial line of sight when possible.

**D-2. Procedures**

a. The following may indicate that your systems are being interfered with either intentionally or unintentionally:

- Subscribers report that trunks are noisy, or that the speech of the other party is fuzzy or unintelligible.
- Subscribers and switchboard operators report no contact with a particular unit(s).
- You are unable to make contact with the distant end on the orderwire.

b. The following steps reduce or eliminate the effects of ECM or mutual interference:

- Checking equipment for proper alignment and frequency.
- Increasing power if possible.
- Checking antenna for correct azimuth and polarization.
- Varying antenna height or relocating antenna.
- Requesting a new frequency if the above fails to work.
- Initiating a MIJI report.