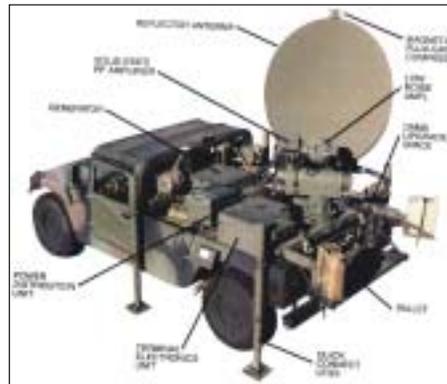


Error Correction for Satellite Communications



When information is transmitted over a communications channel, some of the information bits may be lost or corrupted due to noise. Xenotran's error correction system utilizes a technique commonly referred to as "turbo coding." Turbo coding involves coding the transmitted signal in such a way that if bits are lost from the message during communication, they can be recovered with a high degree of certainty.



Many coding techniques have been developed, but the merit of any one is measured by its efficiency. A simple low efficiency scheme would be to repeatedly send the same message and vote on the correct version. This consumes too much time and bandwidth. The trick is to use a coding scheme that maintains a high probability that the message is correct, but uses the minimum of time and bandwidth. In 1948, Claude Shannon at Bell Telephone Laboratories derived a theoretical limit for the amount of information that could be sent over a channel and the merit of communications schemes are now measured against this limit. The Xenotran implementation is the closest yet and comes within less than a decibel of the Shannon limit for a coded signal. The turbo coder will allow twice as much information to be sent over a communication channel compared with the earlier coding schemes.

PHASE III IMPACT

- 2 units sold to date, generating over \$78,000 in sales.
- Received a subcontract from Raytheon for development of the SMART-T satellite equipment for the Army.
- Received \$373,659 from Raytheon to develop its Turbo Coder Technology.
- The U.S. Army has committed to use the Xenotran turbo coder in future Advanced Extremely High Frequency satellite communications equipment.

