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ACIS Army Satcom-on-the-Move Demonstration

Brian S. Abbe
AMT+ experiments Manager
NASA/Jet Propulsion Laboratory

The U.S. Army has an ever increasing need for improved, higher capacity, mobile communication capabilities. To this end, the U.S. Army has been heavily involved with the Advanced Communications -1 technologySatellite (AC1S) Program. In addition to their ongoing exercises with the T1 VSA1 terminals, the U.S. Army, through the Jet Propulsion Laboratory (JPL), has conducted a series of field demonstrations and experiments of mobile satellite communications (satcom) via AC1S and the ACIS Mobile + terminal (AM+). "11)137 tests, aptly named the AC1S Satcom-on-the-Move exercise, demonstrated a variety of advanced, high risk, mobile satcom technologies.

Throughout the two months (June, July 1994) that these tests were conducted, seven different test sites were visited. These sites were JPL, Lori Huchuca, Lori Hood, Lori Gordon, Lori Monroe, the Pentagon, and Lori Monroe. One of the main advantages of using AC1S and the AM1 for mobile satcom is the higher capacity throughput of the system as compared to current military and commercial mobile satcom systems. This setup was capable of providing a full-duplex communications link from 2.4 to 128 kbps. Such a system is an order of magnitude improvement over current mobile satcom, and the current terrestial communication systems (SINCGARS) that the U.S. Army utilizes.

Through this tour, several new and exciting military applications for mobile satcom were accomplished. Most notably, compressed video was demonstrated at both 64 and 128 kbps. This video was used for such applications as mobile video teleconferencing (MV16) and advanced image scouting. Three other lower rate configurations of the AM1 were also utilized. They included the baseline AM1 mode (2.4/4.8/9.6 kbps full-duplex voice and data communications), an Army AM1 mode (aggregate 9.6 kbps full-duplex communications comprised of two signals, 4.8 kbps voice and 4.8 kbps GPS data sources multiplexed together), and an Army mode of operation (analog 1M SINCGARS radio voice communications translated in frequency up to Ka-band for satellite communications).

Several hundreds of interested military personnel viewed the operation of this equipment, and were duly impressed. As the AC1S1 experiments Program proceeds, and more technological improvements in the AM1 design are accomplished, even higher data rates (potentially up to 512 kbps full-duplex communications) will be possible. This will open up the AC1S Program, and
specifically the AM1, to an even wider range of military applications for evaluation.