

If the main purpose of the satellite system is to provide tough trunking links to the Defense Communications System for unique and vital traffic, then the narrow beams are a poor buy. In the Pacific theater, for example, we have to interconnect Alaska, the continental United States, Hawaii, Guam, Japan, Southeast Asia and Australia, so the value of a narrow beam is small. Its addition increases the system cost, delays initial launch, and reduces satellite reliability.

However, since the main purpose includes requirement to provide rapid communications into and within contingency areas, then the addition of the narrow beam is well worth the cost, delay, and difficulty.

Next I will discuss our progress in research and development in the tactical applications of satellite communications. As we indicated last year our objective is to determine how the technology of satellite communications can best be used to meet some of the important needs of the highly mobile, lower echelon, land forces within the field army and analogous air and sea operations.

As you know, the MIT-Lincoln Laboratory experimental ultra-high-frequency satellite (LES-5) was successfully launched last July into a subsynchronous, equatorial orbit. Since that time, joint test operations have been conducted by the military departments using "off-the-shelf" terminals. In March of this year, the satellite experienced some degradation due to a transistor failure in a preamplifier of the receiving circuit which has limited testing between the smallest terminals. The larger terminals including those of the six NATO countries can still access the satellite and are collecting useful test data.

Another Lincoln Laboratory experimental satellite, the LES-6 satellite, is now in its final stages of checkout. It is scheduled for launch later this summer. This satellite, of much greater effective radiated power than the LES-5, will permit limited multiple access testing, an important feature for a tactical satellite communications system.

The largest experimental satellite in this program, known as TacSatCom No. 1, continues under test and delivery is expected in the latter part of this year. This will permit launch early next year, within a few months of the target date previously reported. In the meantime, the development of the experimental ground, sea, and airborne terminals will be completed under separate contracts and the delivery schedules provide for suitable deployment prior to launch of the satellite. A joint test plan, which will be completed within the next 12 months, will provide for testing with TacSatCom No. 1 in a variety of networks and configurations, including terminals installed in tactical vehicles, submarines, small and large ships, and operational aircraft of the three military departments. These joint tests will allow the testing of the experimental space and surface satellite communications hardware.

They will, furthermore, provide for tests of operational concepts to determine how best to provide required communications between many diverse terminals of varying size and capability. Many of those tests will take place in simulated tactical environments during the first half of 1969.