

2.2 Space-to-Space Weapons Situation (Continued)

attack by an ASAT, solar arrays of the future may need to be designed for repeated deployment and retraction to assure survival of a satellite's primary power source.

Communications satellites are susceptible to jamming and temporary loss of function. Although anti-jamming technology is reaching ever increasing levels of sophistication, the threat is also becoming more adaptive and more sophisticated.

From the point of view of orbits, a satellite in a low earth orbit is at a high risk for the simple reasons that:

- (a) It is easier to place a heavy weapon in low orbits
- (b) A weapon in low earth orbit has a much higher selection of potential targets, is more effective in terms of the number of potential kills and is therefore, more likely to be found there.

Since the current population of satellites reflects an optimization for effectiveness assuming no threat, it must be presumed that at some future time under the threat of attack by ASAT's on satellites, the optimum deployment of application satellites, will see the gradual introduction of hardening, redundancy and unconventional orbits as a defence against complete loss of function or service. The nature and timing of this new optimization will be driven by the pace of events in the weapons arena: an arena affected in turn by the changing nature of the target.

In an early report [1], optional generic forms of ASAT's were reviewed in some detail. Drafting from that report, a weapon in space whose prime function is to destroy or permanently damage another satellite can accomplish its objective in one of six ways. It can:

- (a) Collide - possibly many times
- (b) Explode - with a conventional fragmentation or pellet warhead
- (c) Explode - with a nuclear warhead