

Civilian and Military Applications

Space-based remote sensors have become an indispensable tool of modern society for both civilian and military purposes. Many of the same types of equipment are used for both. Generally, however, military remote sensors have been designed for much higher resolutions than their civilian counterparts. Resolution is related to the size of the smallest object a sensor can distinguish and it is determined by the focal length of the sensor, its distance from the object being viewed, and the size of the "picture element" or pixel of the sensor's recording medium.

Some reports claim that the most advanced military space surveillance systems have a ground resolution in the order of 10 cm. In contrast, the best ground resolution of current commercial satellites is about 10 m. For some arms control verification tasks, it may be sufficient to merely *detect* an object or activity, while other tasks may require *identification*, which is more demanding in terms of resolution. As an example of the resolution that may be required for verification purposes, studies have indicated that a ground resolution of 4.5 m is necessary to detect an aircraft using optical sensors, while .9 m is needed to identify it.

The Need for Military Sensors in Space

Military surveillance from space has been clearly beneficial in its application to arms control verification. Even when used exclusively for military purposes these systems have contributed directly to international peace and security through the maintenance of effective deterrence. Without them, the fear of surprise attack — especially during periods of political crisis — would have necessitated defence postures and military deployments which would have been much less safe than those of today. As a result, it is reasonable to conclude that military space-based surveillance systems have contributed to the maintenance of peace for the past two decades. To interfere with their effective functioning would have been counter-productive in terms of global security.

Military space-based surveillance systems are, and will probably continue to be, essential to the verification of significant arms control and disarmament agreements. The PAXSAT concept in no way impinges upon the critical role played by these systems.