By 1962, and probably even earlier, the USA had detailed information on the number and location of Russian strategic missiles. In 1967 President Johnson stated that satellite reconnaissance was worth ten times the money the USA had spent in space. He suggested that this knowledge had prevented the country from harboring fears that otherwise may have arisen. From the late 1960s to the present the Department of Defense has regularly published information on the level of Russian ICBM, SLBM and ABM deployment.

The major task of reconnaissance and surveillance systems is to monitor the quantitative and qualitative features of the opponent's offensive forces. This is a task for which observation satellites are well suited. From satellite photographs intelligence analysts are able to monitor silo construction and the transport of missiles to their deployment silos. With multispectral and infrared photography they can detect or penetrate camouflage and monitor nighttime activity. Submarine shipyards are observed on a routine basis to monitor new construction. Similarly, ABM launchers and radar deployments can be observed. There seems to be no doubt that such activities can be verified with a high degree of confidence.

The more important question, however, is whether the Russians can find ways clandestinely to circumvent or nullify these observations and thereby achieve a military or political advantage over the USA. The continuous monitoring of Russian transportation networks, power generation plants and manufacturing facilities by observation satellites would make it unlikely that the USA could not detect such clandestine activity in time to react in some way. The decrease in delay time provided by the most recent U.S. satellites between the first indication of suspicious activity in an area surveillance photograph and further photography with a high resolution camera will certainly reduce the uncertainties involved. Although photography cannot penetrate buildings, infrared and
multispectral techniques can often reveal a great deal about activities inside, particularly since activities of special interest may be indicated by changes in standard operating procedures.

Cloud cover remains an impediment to observational activities, but with longer orbital lifetimes and the capability of changing orbit the newer satellites are less constrained by their predecessors. The clarification of ambiguities in the observations depends primarily on the use of the unilateral techniques of electronic and communications intelligence, although any bilateral apparatus resulting from the SALT treaties may also be useful. To summarize, the very size and complexity of construction and industrial activity required to build and deploy modern strategic weapons, combined with the breadth of coverage, resolution and multispectral aspects of observation satellites guarantee that much can be verified unilaterally with high confidence. It can be assumed therefore that the forthcoming SALT III agreements, like the SALT I and II agreements, will cover areas wherein both opponents already have obtained a high-confidence unilateral capability. Thus while the quantitative deployments of an opponent’s offensive force can be readily observed, it is with respect to qualitative improvements that the unilateral capability of each side falls short. In any case, the cost of hardware and manpower for photo-interpretation will remain high.

If a future agreement in SALT were to impose qualitative restrictions on strategic systems, the USA would have to rely on other verification techniques to augment the observation satellites. The usefulness in this regard of systems that monitor missile tests is indicated. Observation satellites would also, however, have a role to play in monitoring such agreements. Any qualitative improvement in missile weaponry, for new guidance systems, multiple warheads, improved ABM radar, new SLBMs etc., must be manufactured and any new hardware must be delivered to an operational site installed and tested. These activities can be monitored by satellites.

7.1. Advanced Surveillance

References 1–4, 40–52

The present horizon-limited radar provides about ten to fifteen minutes warning of long-range missile attacks. Three other surveillance techniques are possible to increase this time even