

## Chapter Nine

### Canada and Ground-Based Systems for Space Verification

At this moment, there is one electro-optical satellite tracking station in Canada, namely the St. Margaret's site in New Brunswick. Although not a true GEODSS site, it has many of the GEODSS functions, and its data are used to update the NORAD satellite catalog. While there are several GEODSS stations around the world, the ability of some satellites to change orbits rapidly for offensive manoeuvres might suggest that additional stations could be welcomed to provide accurate, real-time tracking. At least one additional GEODSS or GEODSS-clone station might be installed in Canada. The location would be dependent on the preference for a maximized number of hours of clear skies to facilitate optical tracking. The areas in the country with the highest average number of hours of clear skies yearly are the Prairies, particularly the southernmost parts of Alberta, Saskatchewan and Manitoba. Those areas have as much as 25% more hours of clear skies than New Brunswick. Perhaps the Cold Lake site could be upgraded, though a more southerly location might be better. Another alternative, given the possibility of over-the-pole activities, is a location in the Northwest Territories. Considering, however, that many satellites have orbits taking them over the Eastern Seaboard, an additional eastern location could be proposed, although the St. Margaret's site could easily handle the traffic if upgraded. In any instance, if additional GEODSS systems are installed the burden on existing sites would be eased and the accuracy of the data received would be increased.

Satellite verification proposals might be expanded to include GEODSS, radar, lidar and other tracking systems. Soon, one satellite system may be able to detect individual aircraft from space. Its ability to locate airborne ASAT flights would certainly further stabilize the space-based arms control situation. Such information would be invaluable to verification systems as well.

Arms control verification goes to the heart of any ACD agreement because it addresses both compliance and confidence. In terms of the outer space issue it is clear that new types of multi-lateral verification should be critically exam-

ined. This study recognizes that the application of ground-based remote sensing techniques to the problem of arms control verification in space does not constitute a viable system in and of itself. It will be an effective component, however, of an integrated system. Canada appears to be well positioned to make significant contributions to discussions on verification in outer space. It has the technical means and expertise to design and operate a space-based verification system. It has, as well, a considerable capacity to contribute to ground-based verification studies on an international scale and possesses the necessary technical means, manpower and facilities to remain in such a position for long-term goals. Astronomy is one of Canada's prized scientific strengths. It could be mobilized to contribute both conceptually and practically to verification research associated with outer space. Much will depend upon the likelihood of significant outer space treaties agreed to by nations having considerable assets in space and a determination of how far Canada should proceed with others in developing a verification capability given the rapid evolution of space utilization.

