

PART IV - THE SUITABILITY OF VARIOUS SENSORS AND PLATFORMS FOR SURVEILLANCE OF CANADA

Relevant Canadian Surveillance Activities Presently Active or Planned

Canada is currently involved with two space-based surveillance activities of interest to this paper. The first is primarily a civilian activity under the leadership of Spar Aerospace called RADARSAT. The second is a cooperative venture between the Canadian Forces and the United States Air Force to develop a space-based wide area surveillance system to provide the follow-on capability needed to meet NORAD requirements.

The RADARSAT⁴⁴ programme consists of an earth observation satellite employing synthetic aperture radar, to be launched in 1994, with the United States National Aeronautics and Space Administration participating in the project by providing the launch on a Delta 2 rocket. The United States is also providing the use of a ground station in Alaska in return for US access to the data to be gathered by the system.

The Canadian government initially approved RADARSAT in 1987, on a cost sharing basis with the provinces (\$59.2 million from Quebec, Ontario, Saskatchewan and B.C.), with the federal government paying \$330 million towards the project. The team is led by Spar Aerospace of Toronto under contract to the Canadian Space Agency, and consists of a consortium of Canadian and American companies. This consortium, called Radarsat International, will market data worldwide.

The satellite sensor is a synthetic aperture radar with a swath to the right of the spacecraft. The terrain swath to be imaged can be 500 km wide with a resolution of 100 m, or as narrow as 45 km with a resolution of 10 m. The orbital altitude will be 792 km (with a period of 101 minutes) at an inclination of 98.5° in a sun-synchronous orbit. The swaths on Figure 10 and one of the coverage curves on Figure 9 were chosen to match

⁴⁴ "Team of Canadian, U.S. Firms Begins Detailed Work on Radarsat," *Aviation Week & Space Technology*, 12 February 1990, p. 111.