Three Surveillance Systems

A. *The North Warning System*

The North Warning System was designed for the following reasons:

- to provide an improved capability as compared to the DEW line against aircraft penetrating North American airspace across polar routes, and to eliminate gaps in radar coverage;
- to permit the engagement of cruise missile carrying bombers before they release their missiles, and to provide an ability to detect and track the cruise missile itself; and
- from the Canadian point of view, to provide general surveillance of the approaches to Northern Canada, and to ensure a co-operative approach such that the Canadian requirement for national surveillance is compatible with the US need for warning against bomber attack

In this list of objectives, US and Canadian interests overlap to some extent but not completely. For the United States, the NWS is an interim solution. Recognizing the limitations of continental surveillance at the end of the 1970s, and aware of the increasing potential of the cruise missile, the USAF was unwilling to wait for the superior technologies promised by airborne and space-based radar (SBR), the cost effectiveness of which were in any case uncertain. In response to Congressional enquiry, USAF spokesmen have made it clear that these new systems were considered too expensive, too problematic, and too distant to be a response to the practical needs of NORAD in the 1980s and early 1990s. It was said, for example, that a ground-based demonstration of SBR could not be provided before 1992. By contrast, and partly because of the savings achieved in the reduced requirements for manning, the NWS was considered an inexpensive interim solution, particularly when shared with the Canadians.

It is presumably because it anticipates these future developments that the United States is prepared to overlook the deficiencies of the system. First, although the NWS may be able to detect cruise missiles, its tracking capabilities are limited. At its maximum range of approximately 200 miles, the NWS can identify an aircraft at approximately 12,000 feet, while at 10,000 feet the aircraft could approach to within 120 miles of the system prior to detection. Moreover, low flying aircraft will pass through the radar envelope in such a short time that the opportunity to vector fighter aircraft to the point of interception will be very limited indeed. Once through the NWS, there is only sporadic ground-based capability to identify and track non-responding aircraft until they approach the present Pinetree Line, which itself is scheduled to be dismantled. Second, assuming a range of 3,000 kms, certain strategic military targets in the northern parts of the United States can be reached by AS-15 cruise missiles launched outside the envelope of the NWS, particularly from the direction of the Beaufort Sea, and they, of course, would be even more