such systems as the DEW Line across Alaska, Canada and Greenland, and the Ballistic Missile Early Warning System (BMEWS) located in Alaska, Greenland and Britain, with some communications access across Canada. These data are stored in a computer complex, which can be used for displays on a closed-circuit television network. This network would show the tracks of enemy air activity, paths of orbiting satellites, available data on foreign military and intelligence ships, and the status of interceptor and missile weapons available to NORAD. There is a "hot line" communication system connecting the COC with such points as the Canadian Armed Forces headquarters in Ottawa, the White House, the Pentagon, control posts overseas, and so on.

To summarize NORAD's activities, it operates radar posts that scan both the sky and space, squadrons of interceptors, ground-to-air missile batteries, and command posts that would direct the defensive battle. More specifically (and at the risk of oversimplification), the NORAD mission can be divided into the functions of detection, determination of intent, and, in the case of attacking aircraft, destruction.

The *detection* function is carried out by means of three surveillance systems. The first, manned-bomber surveillance, consists of a massive network of radars over populated areas. North of this coverage is the DEW Line extending from the western Aleutian Islands across the top of the continent to Greenland. The second method of detection is the Ballistic Missile Early Warning System, consisting of the BMEWS with sites in Greenland, Alaska and England. The third detection system is concerned with satellite detection. This is the Satellite Detection and Tracking System, a network of radar, radio and optical sensors located in the northern hemisphere. Data from all three surveillance systems are fed to the Combat Operations Center in Cheyenne Mountain.

Canada's role

The *determination-of-intent* function of NORAD is to obtain rapid and accurate identification. The principal method of identification is based on flight-plan correlations, with North American air-space divided into air-defence identification zones. Finally, the *destruction* function of NORAD in the event of attack would be to hit an invading force with continuous attack from as far out as possible as it approached a target area. This is what is known as "defence in depth". For example, an enemy bomber would first be met by long-range manned interceptors, and then by *Nike/Hercules* and *Hawk* missiles.

'Defence in depth' concept applied after use of zones for identification

The case can be made that Canada's decision-making role in NORAD is largely perfunctory, given the disproportionate Canadian-U.S. power capabilities and the respective Canadian and U.S. contributions to NORAD. However, the opposite case can also be made — that Canada plays an integral decision-making role in NORAD. Structurally, the Deputy Commander of NORAD is a Canadian, who is in charge when the Commander is absent. In fact, three of the ten generals currently assigned to the Commander's staff are Canadians, giving Canada a higher general-officer ratio that its actual force contribution would warrant. In addition, the deputy commanders of the four NORAD regions

In the defence of North America, Canada is inevitably closely associated with the United States . . . .

The Government concluded in its defence review that co-operation with the United States in North American defence will remain essential so long as our joint security depends on stability in the strategic military balance. Canada's objective is to make, within the limits of our resources, an effective contribution to continued stability by assisting in the surveillance and warning systems, and in the protection of the U.S. retaliatory capability as necessary. Co-operation between Canada and the United States in the joint defence of North America is vital for sovereignty and security . . . .

. . . To provide effective deterrence, at the present time there is a continuing need for the integrated control over forces made available for the air defence of Canada and the United States as provided by the NORAD agreement. . . . The agreement does not specify any level of forces, equipment or facilities, so the nature of Canada's contribution continues to be a matter for decision by the Canadian Government. The NORAD agreement will be up for renewal in 1973. The policy of the Government at that time with respect to the agreement and the interceptor force posture required will depend upon the strategic situation extant, including progress in SALT . . . .

(Excerpts from Government White Paper, Defence in the 70s, *August, 1971).*