Terminal Imaging Radar (TIR)

In order to confuse defence sensors, the Soviet Union would probably deploy an armada of decoys. The balloons, metallic chaff, and other light decoys which accompany the warheads through space in the mid-course phase would burn up upon re-entry into the atmosphere. However, additional weighted decoys could be deployed which mimic the characteristics of the warheads in the terminal phase. Scientists have developed a ground-based radar system which will take data from the 767s' airborne sensors, and refine the information even more. TIR would be able to distinguish terminal phase decoys from the falling warheads.

Mid-course Interception

ERIS (Exo-atmospheric Re-entry vehicle Interception System)

As part of the multi-layered defence umbrella, scientists have resurrected the idea of the ABM interceptor missile. Propelled by a two-stage rocket – each stage would burn just 15 seconds – ERIS is capable of phenomenal acceleration. The small "kill vehicle" weighing only 10 kilos, would be guided by an infrared sensing system as well as a homing laser. It must, in the current military jargon, "hit-to-kill" its target. As the term "exo-atmospheric" suggests, ERIS will engage its targets while they are outside the atmosphere, in the late mid-course phase. If the missile were based in Northern Canada, ERIS might be able to hit targets much earlier in the mid-course phase, thereby extending the range and effectiveness of these interceptors.

Braduskill (Exo-atmospheric Non-Nuclear Kill Technology.)

Braduskill is another system designed to hit warheads in the mid-course phase. However, unlike the ERIS, Braduskill will not hit targets head-on. Instead it would fly alongside the warheads, providing extra time to discriminate decoys from real targets. Once identified, the warheads would be destroyed by numerous small, self-propelled "kill vehicles," guided by infrared sensors or other homing devices.

"If I was the manager of this contract, I would be extremely disappointed if the contractors didn't look at Canada as the most likely base for these weapons," Pike says. "The missiles would have to be based as close to the Soviet Union as possible and that limits your base sites considerably. A land-based weapon placed somewhere on Baffin Island or Ellesmere Island would be just ideal."

ABM Laser Systems

More exotic than ERIS or Braduskill are the proposals for Anti-Ballistic Missile (ABM) laser weapons. Of the several types of laser weapons proposed, two could benefit from basing in Alaska or northern Canada.

The first is the Excalibur x-ray laser. This weapon was designed to use a pulse of x-rays to destroy missiles in the boost phase. These x-rays are generated by the detonation of a small nuclear device which destroys the Excalibur system a split second later.

Upon warning of an attack, Excalibur would be launched into space by a high velocity interceptor missile; this is referred to as the "pop-up" mode. To attack Soviet missiles before they leave the atmosphere, the Excalibur system would have to be situated very far north. Under current thinking, Excalibur could be launched from a submerged submarine but communications would obviously be simplified if this system were based in northern Canada.

The second type of laser weapon that could benefit from northern basing are the ground-based lasers. These would be very powerful (about 10 megawatts) excimer or free-electron lasers. The energy from these systems would be beamed to a ten-metre wide mirror in a high, geostationary orbit which would then relay the laser beams to smaller "mission mirrors" in lower orbits. These mission mirrors would, in turn, aim the laser beam at individual targets.

Basing the ground-based laser as far north as possible would reduce the number and size of space-based relay and mission mirrors.

Terminal Interception

HEDI (High-altitude Endo-atmospheric Defence Interceptor)

As a last line of defence for US (and Canadian) cities, current SDI thinking envisages a ground-based missile called HEDI. It would intercept incoming targets anywhere from fifteen to fifty kilometres above the ground. HEDI would receive its targeting information from the two tracking systems AOS and TIR described above and would probably be guided by infrared sensors. Once it got close to its target, the "kill vehicle" would explode showering the incoming warhead with shrapnel.

The USSR might deploy manoeuvrable re-entry vehicles in order to evade interception. In that case, another plan calls for HEDI to use an enhanced radiation warhead to ensure destruction of the incoming warhead.

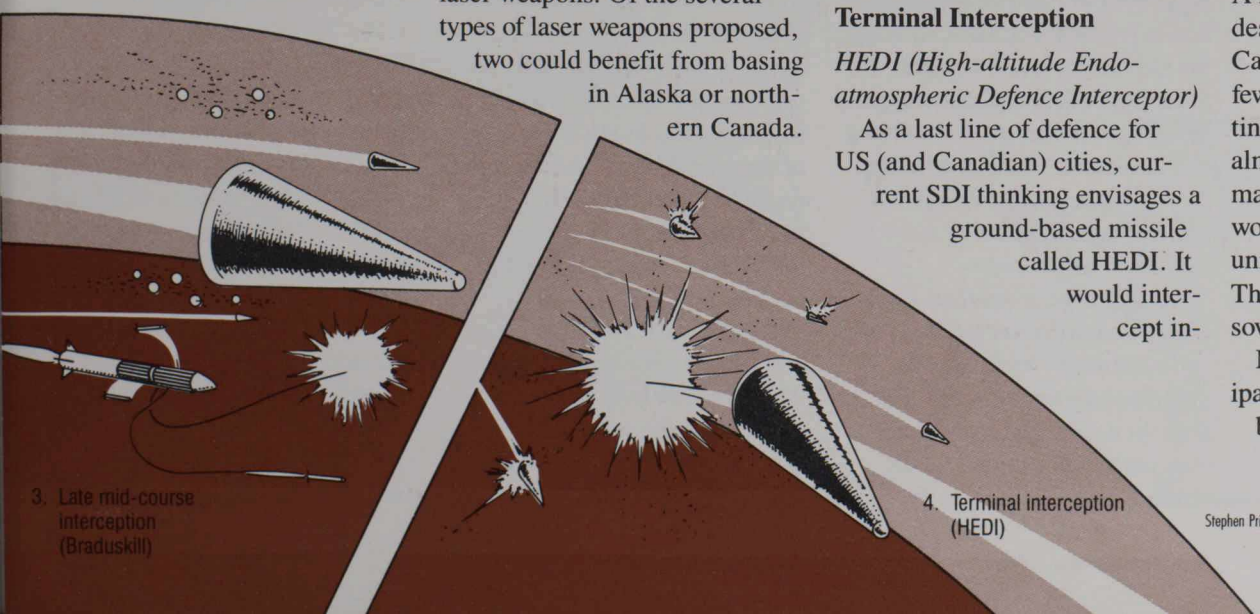
Since many of the target cities would be very close to the Canada/US border, one can easily see how Canada might well station these interceptors for greater effectiveness.

Political Choices

The recent integration of NORAD into the Space Command in Colorado has alarmed many Canadians. When External Affairs Minister Joe Clark was recently asked about the possible links between NORAD and SDI, he admitted there might be some "inadvertent consequences" for Canada. But he hastened to add "we can get out of them."

Certainly any Canadian participation in SDI would inherently involve an alliance among unequals. Canada couldn't and wouldn't expect to play any major role in decision-making. A review of the SDI elements described above reveals that Canada would be home to only a few cogs of a much larger continental war machine. Given the almost instantaneous decision-making required, SDI weaponry would of necessity be under unilateral American control. The implications for Canadian sovereignty are obvious.

Most importantly, by participating in SDI, Canada would become part of a major escalation in the arms race. □



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