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Interceptor missile guidance system.

## NORAD AND NATIONAL MISSILE DEFENCE: A PERSPECTIVE OF THE DEPUTY COMMANDER-IN-CHIEF

For more than 40 years, the North American Aerospace Defence Command (NORAD) has had the responsibility for warning of aerospace attack on North America and providing the necessary defence. However, contrary to common perception, we have no defence against one of the traditional threats – ballistic missiles. Although the concept of a territorial ballistic missile defence system is not new, an operational system has never been deployed, other than the point defence system fielded by the Russians for the defence of Moscow. Similar United States systems designed to defend intercontinental ballistic missile fields were cancelled before they attained full operational capability. In the mid-1980s, President Reagan envisioned an anti-missile protective ‘umbrella’ that would cover the entire United States, a concept that led to the Strategic Defence Initiative (SDI), often referred to as the ‘Star Wars’ initiative. The intent of this ambitious project was to defend the US against a massive nuclear attack from the former Soviet Union.

SDI would have given the US a unique capability, albeit at great expense.

Today, ambitions are far more modest and responsive to a much reduced threat; the US and Canada no longer consider a massive nuclear attack to be likely. It is possible, however, that a ‘rogue’ country or organization could pose a serious threat with even a rudimentary ballistic missile capability. Additionally, although not likely, an accidental or an unauthorized launch of one or a few missiles remains a possibility. At present, ballistic missile proliferation has been generally limited to the short-range variety, but a few nations, most notably North Korea, could be on the verge of attaining truly strategic reach. Even without the benefit of a large warhead or state-of-the-art accuracy, such a system still represents a potential threat to North America. To

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respond to this perceived threat, the US initiated the National Missile Defense program (NMD) to provide a limited defence against ballistic missile threats. The US Administration's decision whether or not to deploy NMD may be imminent, and could have a profound effect on the future of NORAD.

As a binational military command, NORAD will certainly be affected by the approach the Government of Canada ultimately takes to what is currently a 'US only' initiative. If a decision to deploy the system is made, and the governments of Canada and the US agree to address this threat together as NORAD partners, we can expect a renewed emphasis on our alliance, gained through the validation of its continued relevance and value to both countries. On the other hand, if a 'continental approach' is not taken in addressing this threat, NORAD could be relegated to responsibility for only limited and 'compartmentalized' areas of aerospace defence, which would result in a change to its overall focus and scope. Indeed, the Command could begin to atrophy over the next several years. Clearly, the significance of this issue cannot be overstated. The report of the 1998 Ballistic Missile Defence Forum, held in Merrickville, Ontario acknowledged that there is little doubt that the issue is one of great strategic interest to Canada – "in terms of the decision's implications for Canada's strategic relationship with the US in general and the future of NORAD in particular."<sup>1</sup>

This article will address the various issues concerning NMD, from a perspective that will seek to be logical and understandable

to those who have little or no knowledge of the subject. While the outcome of the US program has yet to be determined, it is important that Canadians understand the consequences of deployment and the implications for our defence partnership. Only through a good understanding of the issues can an informed decision on our approach to NMD be possible – and one that reflects our national interests.

## NORAD – A SUCCESS STORY

Defence cooperation between Canada and the US had its genesis in a series of discussions from 1936 to 1939 between Prime Minister Mackenzie King and President Franklin Delano Roosevelt. In August 1940, they formalized their agreement in the Ogdensburg Declaration, which established the Canada-US Permanent Joint Board on Defence (PJBD). The PJBD was mandated to address defence issues of mutual concern and is still active today, along with a subsidiary body, the Military Cooperation Committee<sup>2</sup>. Early PJBD collaboration led to the establishment of NORAD on 12 May 1958, with its headquarters in Colorado Springs, Colorado.

The initial NORAD Agreement has been renewed or extended eight times since it was originally negotiated, and continues to serve as a cornerstone of continental security cooperation and the foundation of our bilateral aerospace defence relationship.

To be sure, NORAD has evolved significantly over the years. Initially, the predominant threat to North America was the manned bomber, with its nuclear weapons payload. The maintenance of extensive radar surveillance

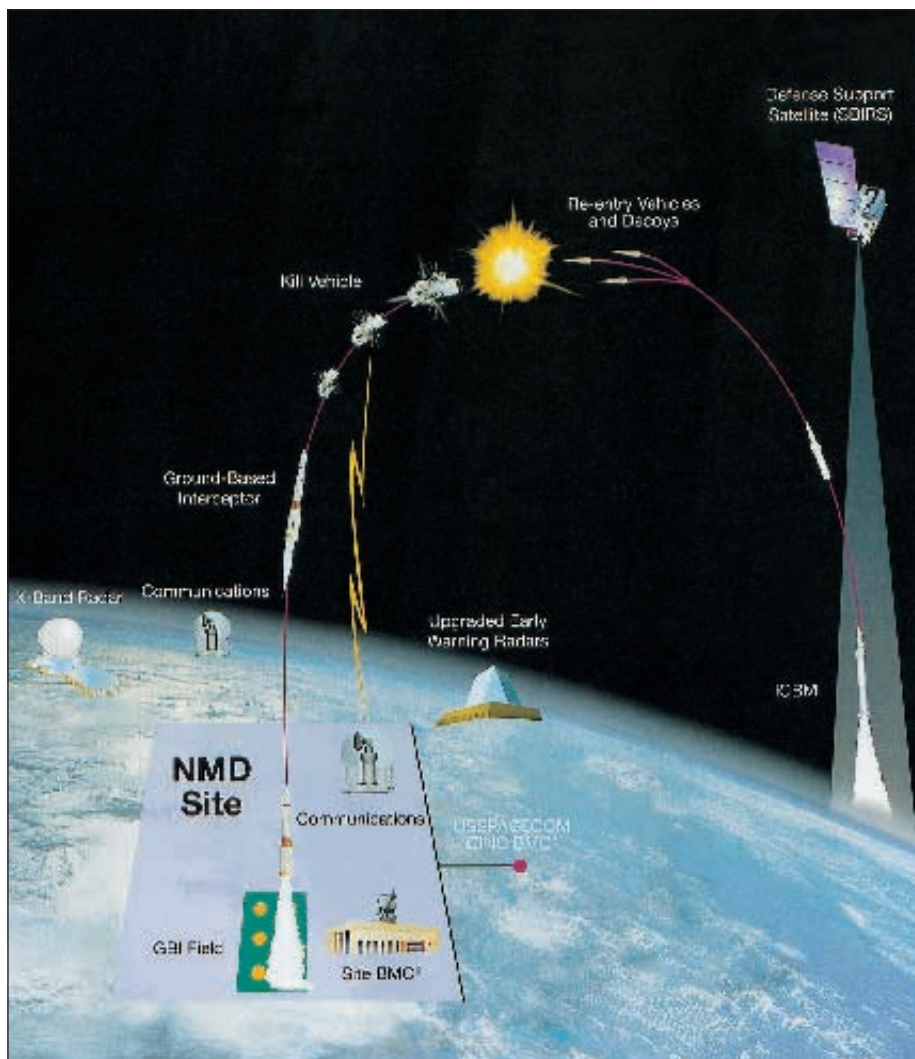


Diagram depicting the National Missile Defence (NMD) operational concept.

capabilities, such as Canada's Distant Early Warning Line, Mid-Canada Line and the CADIN-Pinetree Line, was imperative to addressing this threat. Canadian airspace was accepted as a potential battlefield during a bomber attack, and the need for close cooperation was not questioned. Canada has benefited greatly by leveraging a relatively small national contribution into an effective defence for the country, with the US providing the lion's share of resources. Theoretically, the potential of a bomber attack still exists, but it is far less likely than during the height of the Cold War. While the Russian Federation still possesses a sizeable strategic *capability*, its *intent* is clearly significantly different than that of the Soviet Union during the Cold War.

The evolution of the ballistic missile threat has been similar. The Soviet deployment of Intercontinental Ballistic Missiles (ICBMs) in the 1960s was a major threat to the West, but Russia's global outlook and aspirations are now very different and the threat is much reduced. Because of our NORAD partnership, Canada's contribution to address the changing threat has remained modest, but in return we have benefited from US efforts and capabilities to warn against a ballistic missile attack. Today there are literally thousands of Russian warheads on ICBMs and on Submarine-Launched Ballistic Missiles (SLBMs). Efforts to reduce these numbers through the Strategic Arms Reduction Treaty I (START I, and hopefully START II, which was recently ratified by the Russian Duma) should continue, but a potent nuclear arsenal will almost certainly remain. An unauthorized or accidental launch that could threaten North America thus remains a possibility.

NORAD has recognized the realities of the geopolitical changes that have occurred as a result of the collapse of the Soviet Union. The level of resources and readiness throughout NORAD have been scaled back to appropriately reflect a suitable balance between the risk posed by the threat, and the level of effort we apply to address it. Having said this, it remains NORAD's responsibility to provide an adequate capability against aerospace threats, and warning against ballistic missiles, even if the likelihood of an attack is minimal. We all hope that diplomacy and arms control arrangements will be effective in promoting overall stability. Ultimately, however, protection of its sovereign territory remains the primary defensive mission of any nation. It would surely be unacceptable to any citizen of Canada or the US if a nuclear, biological or chemical warhead were detonated anywhere on our territory, particularly if something could have been done to prevent it. This is the context of NMD for the US. While the probability of a ballistic missile attack is highly unlikely, the consequences of such an event could be catastrophic. The US has therefore undertak-



IFT Launch 2 Boeing

Test launch of an interceptor missile.

en to develop technology capable of addressing this limited threat from those so-called rogue actors, and against unauthorized or accidental launches. This brings us to the threat.

## THE BALLISTIC MISSILE THREAT

There are few issues more contentious than attempting to quantify the ballistic missile threat to North America. There are, however, some immutable facts that paint a picture that is worrisome to many who analyse this area.

The US draws a close parallel between potential capabilities and potential threats. The US Government predicts "that during the next 15 years the US most likely will face ICBM threats from Russia, China, and North Korea, probably from Iran, and possibly from Iraq."<sup>3</sup> This assessment stems from long-term, detailed analysis by the National Intelligence Council of the US Central Intelligence Agency:

Using intelligence information and expertise from inside and outside the Intelligence

Community, we examined scenarios by which a country *could* acquire an ICBM by 2015, including the purchase, and assessed the *likelihood* of various scenarios . . . we analyzed the level of success and the pace countries have experienced in their development efforts, international technology transfers, political motives, military incentives, and economic resources.<sup>4</sup>

The conclusions drawn from this analysis identify North Korea, Iran and Iraq to be countries that “view their ICBMs more as strategic weapons of deterrence and coercive diplomacy, than as weapons of war.”<sup>5</sup> It is acknowledged that there are means other than ballistic missiles to deliver weapons of mass destruction, many of which would be easier and more reliable than ICBMs. These means do not, however, provide a nation the same prestige, deterrence and international profile that are accorded ballistic missiles. Whether we in Canada accept this rationale or not, the reality is that the proliferation of ballistic missile technology has expanded to encompass weapons programs in many countries that could be considered unfriendly to the US, and possibly Canada. This technology and assistance comes principally from Russian and Chinese sources, although North Korea has actively marketed its second-hand capabilities and missile components to many countries.

Active proliferation and transfer of technology causes particular concern because it accelerates the time frame

within which a threat might materialize. While the US and Russia have spent decades developing and testing systems, the direct acquisition of missiles and the means to employ them – even without a significant testing program – enables so-called rogue nations to acquire such a capability quickly and covertly. Moreover, the possibility of launching a missile from a sea-based platform, albeit with decreased accuracy, introduces another layer of uncertainty. We cannot simply assume that a strategic, long-range capability is needed to threaten North America. The hard facts are that several countries possess a ballistic missile capability, some with unclear or unfriendly intentions towards the US and its allies.

Can the world’s remaining superpower risk the possibility of being held hostage to a ballistic missile threat? Or, more importantly, can Canada disassociate itself from this possibility? Many Canadians might argue that the threat is not likely to be realized, or at least that there is no clearly hostile intent towards Canada. One certainly hopes this to be the case, but the *possibility* of a ballistic missile attack (intentional or otherwise) does exist and is something we cannot totally ignore. After all, the accuracy of some of these rudimentary systems is such that Canadian territory could become the unintended point of impact of an errant missile targeted at the US. Moreover, population centres could well be affected by the nuclear fallout or biological/chemical effects even if a warhead impacted deep within the US. We are not immune to the threat, however small.

## THE NATIONAL MISSILE DEFENCE PROGRAM

Recognizing the potential of this threat, the US Government introduced the NMD Program in 1996. The broader defensive concept of the Strategic Defence Initiative of the 1980s evolved and was refined to defence against limited attack. NMD will not, therefore, be a strategic shield for the defeat of a massive attack, but rather a capability commensurate with the possible threat of a few missiles. Such a capability would present a paradigm shift in the US approach to nuclear stability: it would provide the US with a viable alternative to the only options currently available – pre-emption, absorbing an attack and taking no action, or employing the final recourse of retaliation. An NMD alternative would allow time to assess the situation, enabling consideration of other military and diplomatic responses.

In 1996, the US Administration established a deadline of three years for the development of the NMD system that would provide a

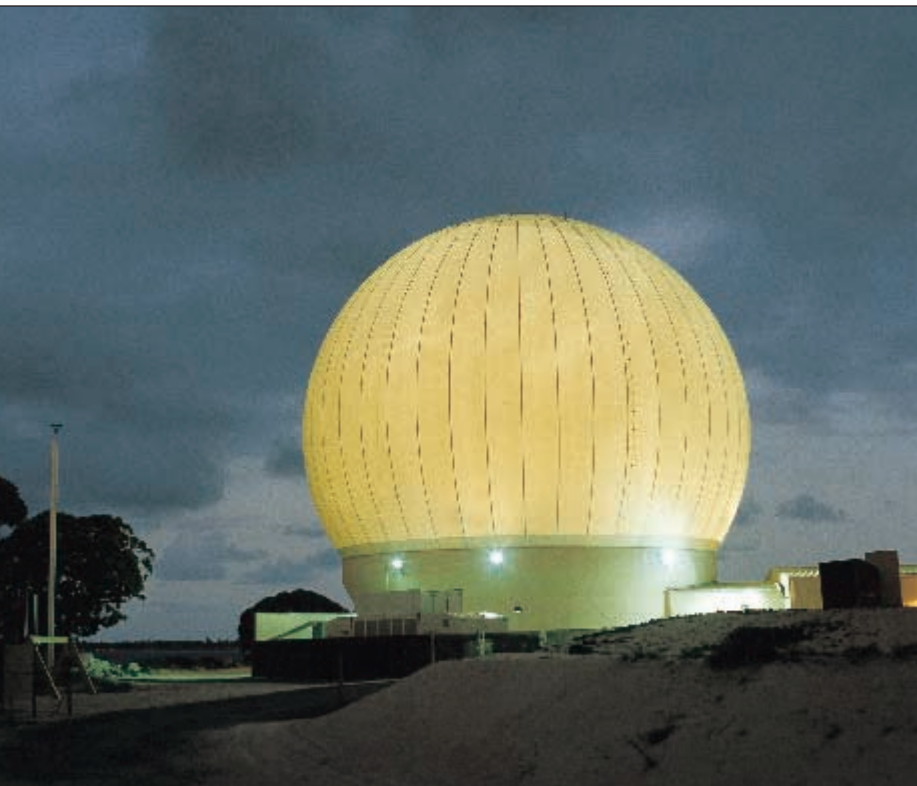


Photo courtesy of Raytheon 98-1002R45

US ground-based X-band radar prototype, designed to track ballistic missiles in flight, located on Kwajalein Atoll, Marshall Island.

very high degree of protection to US territory, including Alaska and Hawaii. The subsequent deployment period is anticipated to be five years, to provide time to ensure success of the NMD development and testing program. Plans now call for a formal review of the NMD program in July or August of this year to ascertain whether or not it is ready for deployment. A Presidential decision – to deploy the system, not to deploy, or to delay – is expected shortly thereafter.

It will come as no surprise that technology has been a critical factor in this initiative. The successful detection, tracking and engagement of a re-entering ballistic missile warhead, travelling at seven or more kilometres per second, presents a formidable challenge. While much of the earlier SDI work has been exploited, a number of new areas have had to be developed. For example, rather than employing a directed energy weapon based in space, or disabling an incoming warhead through an intercept detonation, the US has adopted a technically challenging kinetic kill methodology – that is, ‘hitting a bullet with a bullet’. Ground-based interceptors, themselves resembling ballistic missiles, will carry an exoatmospheric (outside the atmosphere) kill vehicle to physically impact the target without any explosive or nuclear effects from the interceptor. With a potential closure rate in excess of 26,000 kilometres per hour, the result would be the complete disintegration of both ‘bullets’ and the burn-up on re-entry of most, if not all, of the remnants.

While this may sound incredible, the coordination of the various sensors, communications, and command and control functions to achieve an intercept is even more difficult. The criticality of time, coupled with the exacting parameters to which the system is mandated to perform, make the NMD ‘automated battle manager’ the most complex component of the entire system. The need to receive, process and pass information reliably and effectively is essential. Even the time needed to transmit the information is critical, given the speed of events.

Having accepted their intelligence and threat assessments, the US formalized the *National Missile Defense Act* on 23 July 1999, stating its intention to deploy NMD “as soon as technologically possible.”<sup>6</sup> Determination of this feasibility will be the focus of

the Deployment Readiness Review (DRR) to be held this summer. The DRR will assess the status of the technological feasibility and the operational effectiveness of the system, along with the readiness to



X-brand radar prototype under construction in the Marshall Islands.

deploy the system and the concomitant cost. If the results are positive, a recommendation will likely be made by the Secretary of Defense to the President to proceed with deployment. Should this be the case, a favourable Presidential Decision Directive could result in an initial operational capability being achieved by 2005.

A series of Integrated Flight Tests (IFTs), have been conducted as part of the NMD program’s advanced capability demonstration and pre-deployment phases. Despite one successful and one unsuccessful intercept, the program’s many technical objectives have been largely achieved to date. The last integrated flight test before the DRR (IFT 5) will be a ‘full systems evaluation’, including the engagement of a representative target by an interceptor. The outcome of this test will provide important parameters to the impending formal decision on deployment. While many have been critical of an apparent ‘rush to failure’ of the NMD program, these early flight tests are only the front end of an extensive series of tests which would be conducted throughout implementation of the program. There is no doubt that this effort represents a high technological risk, but

every effort is being made to limit those risks to achieve the ambitious goal of near-perfection in all facets of the intercept process.

## THE ANTI-BALLISTIC MISSILE TREATY

Another factor which will affect the DRR is the potential impact of NMD on global nuclear stability and the regime of related agreements, a cornerstone of which is the 1972 Anti-Ballistic Missile (ABM) Treaty. As the principal signatories to this treaty, the US and Russia have agreed to restrictions concerning the deployment of an ABM capability. While *development* of the NMD system does not violate the terms of the treaty, deployment would be a violation, even for those who interpret the terms liberally. The ABM Treaty explicitly prohibits either signatory from providing a defensive system that would cover its entire landmass, as the NMD program is intended to do. Rather, as modified in 1974, the treaty allows only the national capital *or* a selected ballistic missile field to be protected. Russia chose to protect Moscow and still maintains a system purported to do that. The US fielded the *Safeguard* system in late 1974, but decommissioned it in February 1975 because of its questionable operational effectiveness.<sup>7</sup>

Russia has vehemently opposed any changes to the ABM Treaty. Moscow says a missile defence system in the US would upset the current strategic balance, and

umbrella, as envisioned by President Reagan with the SDI, thus negating the Russian ballistic missile capability. The US dismisses this possibility, insisting that NMD really is a limited system, and that it would be prohibitively expensive and practically impossible to expand it to counter all threats.<sup>9</sup>

Over the last three decades, the ABM Treaty has been seen as the foundation for negotiations and treaties aimed at promoting nuclear stability and restraint. Senator Douglas Roche, former Canadian Ambassador for Disarmament states:

The missile system project cannot be divorced from the other pillar of the international arms control structure – the Non-Proliferation Treaty (NPT) currently under review by the international community. Should the US proceed with BMD [a ballistic missile defence system], and Russia and China respond with their own buildups, non-nuclear weapons states who are signatories of the Non-Proliferation Treaty will see this as a further violation of the Nuclear Weapons States' obligation under the treaty to negotiate towards eliminating nuclear weapons. The Non-Proliferation Treaty, which Canada has always championed, will be in ruins.<sup>10</sup>

Indeed, it would appear that one of the major Canadian concerns regarding the potential fielding of an NMD system is the impact it might have on the ABM Treaty and the principles it upholds. While there are legal means for the US to terminate the treaty and proceed unilaterally to build a BMD system, it is in everyone's interest that there be a mutually agreed upon resolution to any differences that exist. In the interest of nuclear stability, Canada and other countries have taken the position that the deployment of NMD should be in harmony with the current ABM Treaty, a revised treaty, or a successor arrangement negotiated between Russia and the US. The preservation of the treaty or its successor should

encourage continued efforts in other areas of international stability, such as the reduction or elimination of nuclear arsenals. Discussions between the two principal signatories to the treaty are ongoing, and, it is hoped, will yield a mutually satisfactory arrangement.



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Interceptor missile guidance system.

launch a new arms race.<sup>8</sup> Their main objection hinges on the issue of 'breakout' by the US. Russians fear that accepting deployment of a comprehensive NMD capability would simply be the first step toward a wider system which could eventually provide a protective

## WHITHER NORAD AND NMD?

Where does NORAD fit into the NMD equation? At this time the primary missions of NORAD are aerospace warning and aerospace control for North America. Aerospace warning includes the detection, validation and warning of attack against North America, whether by aircraft, missiles or space vehicles. Aerospace control includes providing surveillance and control of the airspace – that is, protection of airspace sovereignty and actual defence against an air attack.<sup>11</sup> The distinction in wording here is that NORAD provides warning of any *aerospace* threat, but can only provide defence against an air-breathing threat, such as that posed by a manned aircraft or a cruise missile. Under its aerospace control mandate, NORAD has the responsibility for the detection, tracking, identification and ultimate destruction of an air-breathing threat, if necessary. For other aerospace threats, such as an inbound ballistic missile, NORAD can provide only part of the full spectrum (i.e. warning/detection and tracking), having no capability to actually defeat a threat of this type. If an NMD system is fielded, many would argue that it should become a NORAD mission as it represents a logical extension of the currently mandated ballistic missile warning mission. Indeed, it seems reasonable that NORAD should assume the full spectrum of responsibility in the event of a ballistic missile attack. This would parallel our existing role with air defence.

The deployment plan for NMD includes locating the principal command and control node inside Cheyenne Mountain, in Colorado Springs, where the NORAD/US Space Command Operations Center is located. Because surveillance, detection, warning and defence are all parts of the continuum of a ballistic missile ‘event’, the same systems would be used to provide uniform and coherent support to the operational commander, throughout an event from detection to destruction. Given the requirement to fuse existing and required warning and defence systems, combined with the fact that the current warning and attack assessment mission is already performed by NORAD in Cheyenne Mountain, it makes sense to simply evolve the existing capabilities to include ballistic missile defence. The alternative – an artificially forced compartmentalization of the warning and defence functions – would be neither operationally effective nor efficient, as it would fragment the command and control process. While the US and Canada have yet to make a decision about NMD, or possible NORAD involvement in it, there are nevertheless compelling reasons for this capability, if deployed, to be integrated into the procedures and functionalities which already exist and are operated by NORAD personnel for the existing ballistic missile warning mission.

## THE PRICE OF PARTICIPATION

There is no doubt that the NMD program is expensive, by any standard. By most counts, at least US \$40 billion dollars have been spent over the years, going back to SDI, in developing the technology for the proposed system. Actual deployment of the initial phase of the system is projected to total US \$13 billion between 1999 and 2005.<sup>12</sup> However, deployment appears to be affordable for the US government, and there is no reason to believe that cost would be a major obstacle to proceeding if the technological and political concerns are resolved satisfactorily.

US authorities have not yet asked Canada to participate in NMD, and there is no projected event in the current process that would compel them to approach us. It is generally assumed, however, that any positive indication by Canada would precipitate a US proposal for bilateral cooperation in the NMD mission,<sup>13</sup> and presumably some sharing of the responsibility to make it a reality. Thus far, Canada’s concern about the ABM Treaty has been one of the principal drawbacks to any substantive discussion or negotiation on this matter. If the US decides to go ahead and field the system, Canada will have to carefully consider the implications this will have for our mutual defence interests and our bilateral alliance. Without prejudice to an eventual decision, we need to enter into discussions with the US to learn more about the developing system and to determine our full range of options regarding participation. We may find that it is undesirable, or that it is simply too late, to participate directly in the deployment of the system. It may be better for us to consider other options, such as a *quid pro quo* (or asymmetric) contribution we could make to the alliance. There are some other growing NORAD mission areas to which we could become greater participants. One of these might be reinforcing our contribution to the surveillance of man-made objects in space – a traditional NORAD responsibility. With the continuing dramatic growth in space activity and the need for greater accuracy in tracking space objects, it becomes increasingly important to ensure that we in NORAD can discriminate those objects or satellites which might pose a threat to North America or North American interests.

Ultimately, participation in NMD, or Ballistic Missile Defence for North America, may not demand a large commitment of Canadian resources. Canada and the US need to broach the various issues to determine what arrangements might be appropriate. We need to establish the ‘price of participation’, should Canada choose to sign up.

## THE WAY AHEAD

Above all, Canadians need to be informed of the advantages and disadvantages of a limited ballistic missile defence capability. We need to understand the capabilities and limitations of the proposed system and the protection that it will afford. We need to appreciate the implications of the system for the ABM Treaty and other similar arrangements that promote global nuclear stability. Without a full understanding of the issues and an informed debate on the pros and cons, we could compromise our ability to objectively assess the options available to us. For something that could have such a profound impact on our relationship with our closest ally, we need to ensure that Canada is on solid ground before making a decision on participation.

It is important that the implications of both missile defence and Canada's (non-)participation be fairly and soberly assessed. The public's

understanding of the issue will not be enhanced if hypothetical scenarios are founded on hyperbole. Canadians need a complete picture of what is at stake – both domestically and internationally – before they decide how to respond to American overtures.<sup>14</sup>

Through personal experience, those of us who work in NORAD feel that it is important to maintain a consistent, collective approach in addressing evolving threats to North America – something we have done successfully for over four decades. Whatever the outcome for NMD, it remains critical that Canada takes a careful, objective approach to a decision that will ultimately have a great impact upon the safety and security of Canadians. An important pillar of our national security is at stake.



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