



CANADA AND BALLISTIC MISSILE DEFENCE: Responding to the evolving threat

Standing Senate Committee on National Security and Defence

The Honourable Daniel Lang, Chair

The Honourable Roméo A. Dallaire, Deputy Chair

June 2014

Ce document est disponible en français

This report and the committee's proceedings are available online at:
www.senate-senat.ca/secd.asp

Hard copies of this document are available by contacting:
The Senate Committees Directorate at (613) 990-0088 or by email at
SECD@sen.parl.gc.ca

TABLE OF CONTENTS

MEMBERS OF THE COMMITTEE	III
ORDER OF REFERENCE.....	IV
EXECUTIVE SUMMARY	V
INTRODUCTION.....	1
A. Canada U.S. Continental Defence: Origins and Evolution	1
B. Ballistic Missile Defence 2001-2014 / Impact of 9/11 on NORAD	2
C. Canada's 2005 Decision on Ballistic Missile Defence: Context and Possible Factors.....	4
2014 AND BEYOND: CHANGING LANDSCAPE AND THREAT ANALYSIS	5
A. North Korea	6
B. Iran.....	8
THE CURRENT STATE OF U.S. BMD	9
A. Aegis BMD.....	9
B. U.S. Homeland BMD	10
C. Europe and Ballistic Missile Defence	10
D. European Phased Adaptive Approach.....	11
TECHNICAL FEASIBILITY OF BMD: WHAT THE EXPERTS TOLD THE COMMITTEE	12
WHAT THE POLICY EXPERTS SAID.....	14
PRESERVING CANADA'S SOVEREIGNTY AND SECURITY.....	17
POTENTIAL FUTURE OPPORTUNITIES FOR CANADA TO PARTICIPATE IN U.S. BALLISTIC MISSILE DEFENCE.....	18
RECOMMENDATION	21
APPENDIX 1 – WITNESSES.....	A
APPENDIX 2 –FACT-FINDING MISSION.....	C

MEMBERS OF THE COMMITTEE

The Honourable Daniel Lang, *Chair*
The Honourable Roméo A. Dallaire, *Deputy Chair*

and

The Honourable Senators:

Lynn Beyak
*Carignan, P.C. (or Martin)
*Cowan (or Fraser)
Jean-Guy Dagenais
Joseph A. Day
Grant Mitchell
David M. Wells
Vernon White

Other Senators who participated in the work of the Committee:

The Honourable Senators Campbell, McIntyre, Ngo, Nolin, Oh, Ringuette, Segal**, and Tkachuk.

(*Ex officio members)

(** retired Senator)

Committee Staff:

Maritza Jean-Pierre, Administrative Assistant
Wolfgang Koerner, Analyst, Library of Parliament
Holly Porteous, Analyst, Library of Parliament
Francine Pressault, Communications Officer
Josée Thérien, Clerk of the Committee

ORDER OF REFERENCE

Extract from the *Journals of the Senate* of Thursday, December 12, 2013:

The Honourable Senator Lang moved, seconded by the Honourable Senator Housakos:

That the Senate Standing Committee on National Security and Defence be authorized to examine and report on the status of Canada's international security and defence relations, including but not limited to, relations with the United States, NATO, and NORAD; and

That the Committee report to the Senate no later than December 31, 2014, and that it retain all powers necessary to publicize its findings until 90 days after the tabling of the final report.

After debate,

The question being put on the motion, it was adopted.

Clerk of the Senate

Gary W. O'Brien

EXECUTIVE SUMMARY

In 2004, the Government of Canada indicated an interest in participating in ballistic missile defence (BMD) through correspondence to the United States government and agreed to be a de facto participant through its agreement that warning information collected under the auspices of the North American Aerospace Defence Command (NORAD) could be used in BMD.

On 24 February 2005, the government announced in the House of Commons that it would not participate in the United States' BMD program. To better assess the impact of this policy decision and whether maintaining this position today serves Canada's security and foreign policy interests, the committee sought out expert advice on how the threat environment has evolved since 2005: the current state of the U.S. BMD effort today; how Canada's BMD policy aligns with its North Atlantic Treaty Organization (NATO) commitments and its broader defence and security partnership with the United States; and potential opportunities for Canada should it decide to participate more fully in BMD.

In respect of the threat environment, the committee heard worrying testimony about the ongoing efforts of North Korea and Iran to acquire capabilities to deliver long-range, nuclear-armed ballistic missiles so as to threaten neighbouring countries, NATO allies and North America. These efforts – carried out in defiance of United Nations Security Council resolutions – have brought these two rogue nations, North Korea in particular, to the point where a threat has become a practical reality.

NATO has embraced BMD as part of its New Strategic Concept and allies such as Australia, South Korea, and Japan are also participating in what will become a global network of regional BMD systems. In rejecting full participation in U.S. BMD, Canada has excluded itself from this large collection of nations. Indeed, more than one policy expert highlighted the contradictory nature of Canada's explicit support for NATO allies to be protected by BMD, but not Canada itself.

The Committee learned from the Deputy Commander of NORAD, Canada cannot simply assume that all of its territory will be protected by default under the existing U.S. BMD system. Because Canada is not a BMD participant, decisions on when, where and whether to intercept an incoming ballistic missile would be made not under the auspices of the binational NORAD structure but, rather, by the U.S. alone under its domestic defence command, United States Northern Command (USNORTHCOM).

In an attack on North America using a plane, a fighter jet or a cruise missile, the committee was told that Canada is a full and equal partner in a seamless command structure within NORAD to defend our region. If that attack was from a ballistic missile, Canada is not a participant.

The committee is concerned that our military officials at NORAD will be asked to *"leave the room"* when it comes to determining how to deal with a ballistic missile attack that threatens Canada or North America.

A disjointed command structure raises operational issues, breaking down an otherwise seamless defence partnership and forcing U.S. military personnel to make decisions under the USNORTHCOM structure, which excludes Canada.

The U.S. BMD program is not without its critics. The committee heard concerns voiced about the potential for the BMD system to undermine strategic deterrence, militarize space or trigger an arms race. However, it heard equally evidence to suggest otherwise.

Even some of the system's harshest critics acknowledged that it would be in Canada's interest to participate in the U.S. effort. They argued that Canada's contribution could take on many different forms, including research and development directed towards solving some of the BMD system's ongoing challenges or enhancing NORAD's ability to defend against emerging threats, such as offshore attack using cruise missiles or short-range ballistic missiles. The possibilities are many but clearly these choices can only be made after the Government of Canada has assessed the risks posed to its territory and considered issues of sovereignty and security.

The committee is unanimous in recommending that the Government of Canada enter into an agreement with the United States to participate as a partner in ballistic missile defence.

INTRODUCTION

In 2004, then Minister of National Defence, the Honourable David Pratt, wrote to the United States Secretary of Defence to indicate Canada's interest in joining ballistic missile defence (BMD). The letter stated:

It is our intent to negotiate in the coming months a missile defence framework memorandum of understanding (MOU) with the United States with the objective of including Canada as a participant in the current U.S. missile defence program and expanding and enhancing information exchange. We believe this should provide a mutually beneficial framework to ensure the closest possible involvement and insight for Canada, both government and industry, in the U.S. missile defence program. Such an MOU could also help pave the way for increased government to government and industry to industry cooperation on missile defence that we should seek to foster between our two countries.¹

In February 2005, the government announced in the House of Commons that Canada will not join BMD.²

Canada, at that time, ruled out participation in the United States missile defence effort, despite agreeing to share aerospace warning information with the North American Aerospace Defense Command (NORAD).

The committee sought to better understand ballistic missile defence, the reasons for the decision in 2005, the current threat environment and a path forward which would protect Canada's sovereignty and security, while strengthening our NORAD partnership.

A. Canada U.S. Continental Defence: Origins and Evolution

Canada's partnership with the United States in defending continental North America against a range of threats is predicated on the principle: *shared danger demands shared defence*.

Before the end of the Second World War, the leaders of both Canada and the United States understood the pending threat posed by Soviet long-range bombers coming from the north. It was against this backdrop that the two nations worked together to construct a series of early warning radar networks across Canada – the Mid-Canada Line, the Pinetree Line and the Distant Early Warning (DEW) Line in the mid-1950s.

The organizational centrepiece of this binational cooperation between Canada and the United States of America is NORAD. NORAD was formed on 12 September 1957 and formalized on 12 May 1958 when Canada and the United States signed the NORAD Agreement. Coming less than a month after NORAD Command was established, the Soviet Union's 4 October 1957 launch of Sputnik 1, using its new R7 series missiles, radically changed the threat landscape and set the

¹ Senate Standing Committee on National Security and Defence, Evidence (David Pratt), 41st Parliament, 2nd Session, 26 May 2014.

² House of Commons, [Debates](#), 38th Parliament, 1st Session, 24 February 2005, p. 3910.

course for eventual transition of the NORAD mission from continental air defence to *aerospace* defence. If the Soviets were capable of launching a satellite into orbit, then they could most certainly build a nuclear-tipped ballistic missile capable of striking population centres in North America.

A ballistic missile differs from an “air-breathing” platform like a strategic bomber or a cruise missile in several ways. A ballistic missile is only powered in the initial phase of its trajectory – the “boost phase.” The rocket that powers it does not need an external source of oxygen. This means a ballistic missile can be rocketed at great speeds to exoatmospheric heights, returning back to Earth after the rocket’s propellant has run out and the forces of gravity take over. A bomber or a cruise missile, by contrast, is powered throughout its flight to a target by an engine that requires oxygen to function. An air-breathing platform, therefore, cannot leave the earth’s atmosphere.

Deliverable from land or sea-based platforms, intercontinental ballistic missiles (ICBMs) presented a far more worrisome threat to Ottawa and Washington than air-breathing strategic bombers largely because this new technology shrunk the timeframe between launch detection and reactive response to mere minutes. ICBMs also evaded NORAD’s defensive “wall” of radars and fighter aircraft. Writing as Deputy Commander of NORAD in 2012, Canada’s current Chief of Defence Staff, Lieutenant-General Thomas Lawson, described ICBMs as a threat that “could literally ‘jump’ over the air defence network.”³

As threats changed through the years, NORAD has evolved.

B. Ballistic Missile Defence 2001-2014 / Impact of 9/11 on NORAD

In the fifty-six years that have passed since its creation, the NORAD Agreement has undergone many successive renewals, each intended to preserve the command’s capacity to detect and respond to threats against North America. The events of 9/11 stripped away any remaining belief that geography continued to provide North America with a bulwark against foreign threats. Having focused exclusively on external threats arriving from great distances offshore or over the North Pole, NORAD had been ill-prepared⁴

Responding to this new reality, NORAD immediately commenced Operation Noble Eagle with air patrols to enforce an air defence identification zone over the U.S. national capital region. It engages more than just Canadian and U.S. air force assets. It is a multi-partner activity requiring the coordinated participation of NAV Canada, Transport Canada, the Royal Canadian Mounted Police, the U.S. Federal Aviation Administration, Transportation Security Agency, and Department of Homeland Security. Together, they monitor and intercept flights of interest over the U.S. national capital region and large-scale international events such as the 2010 Vancouver Winter Olympics and the 2010 G8 and G20 summits in Toronto.

Noble Eagle is part of a broader application of another 9/11 lesson learned. It is now understood that continental security is a whole of government mission in which the Canadian and U.S. militaries must be prepared to work together and to lead or assist others in responding to a broad spectrum of threats.

³ Lieutenant-General Tom Lawson (with Captain Michael Sawler), “[NORAD in 2012 – Ever Evolving, Forever Relevant](#),” Canadian Military Journal, Vol.12, No. 3, p.7.

⁴ Senate Standing Committee on National Security and Defence, [Evidence](#) (Lieutenant-General J.A.J. Parent), 41 Parliament, 2nd Session, 2 June 2014.

Accordingly, the United States created a new joint service command in October 2002, United States Northern Command (USNORTHCOM), to provide command and control of the Department of Defense's homeland defence efforts and to coordinate military support to civil authorities.⁵ Given that NORAD already executes the North American air defence mission, the decision was taken to co-locate USNORTHCOM at NORAD headquarters in Colorado Springs, Colorado and to “double-hat” the NORAD commander – who is always an American – with command of USNORTHCOM. Today, USNORTHCOM's homeland defence mission extends across all domains – air, land, maritime, space and cyberspace.

In 2006 the NORAD Agreement's previous five-year renewal cycle was replaced by renewal “in perpetuity.”⁶ This renewal was of particular significance because it was the first to take place after the 9/11 terrorist attacks. This agreement refers to a significant development that had taken place two years earlier, through the exchange of diplomatic notes.⁷ On 5 August 2004, the NORAD Agreement was amended to redefine “aerospace warning” as follows:

“Aerospace warning” consists of processing, assessing, and disseminating intelligence and information related to man-made objects in the aerospace domain and the detection, validation, and warning of attack against North America whether by aircraft, missiles or space vehicles, utilizing mutual support arrangements with other commands and agencies. An integral part of aerospace warning shall continue to entail monitoring of global aerospace activities and related developments. NORAD's aerospace warning mission for North America shall include aerospace warning, as defined in this paragraph, *in support of United States national commands responsible for missile defence*. [emphasis added]⁸

As the last sub clause makes clear, for the past decade, Canada has been sharing aerospace warning information with NORAD, which is then passed on to USNORTHCOM.

The text of the 2006 NORAD renewal agreement itself – formally referred to as the [Agreement Between the Government of Canada and the Government of the United States of America on the North American Aerospace Defense Command](#) – articulates the shared sense of a fundamental shift in the threat environment. Despite non-proliferation and counter proliferation efforts, the document states, weapons of mass destruction and their means of delivery “pose a major security concern.” Threats to space-based assets are highlighted with the observation that “a growing number of nations have acquired or have ready access to space services that could be used for strategic and tactical purposes against the interests of Canada and the United States.”

Another indication, post 9/11, of the value Canada and the United States place on an integrated approach to homeland defence was their decision to incorporate maritime early warning into the 2006 NORAD agreement.

⁵ See U.S. Department of Defense, “Homeland Defense,” Joint Publication 3-26, 2 August 2005. This doctrinal manual was updated in 2007 and is now cited as U.S. Department of Defense, “Homeland Defense,” Joint Publication 3-27, 12 July 2007. Among the changes JP 3-27 introduced is the addition of cyberspace as a domain where homeland defence operations could occur.

⁶ While the NORAD agreement now stands in perpetuity, the agreement still requires the two parties to review it at least every four years or at the request of either party. See Canada Treaty Information, “Article III – Review and Amendment,” [Agreement Between the Government of Canada and the Government of the United States of America on the North American Aerospace Defense Command](#), 28 April 2006.

⁷ See United States Department of State, [Diplomatic Note No. 04-352](#) and Canadian Department of Foreign Affairs and International Trade, [Diplomatic Note No. JLAB-0095](#), both dated 5 August 2004.

⁸ See “Article 1– NORAD Missions,” sec. 2(a), [Agreement Between the Government of Canada and the Government of the United States of America on the North American Aerospace Defense Command](#), signed 28 April 2006.

Given the potential ability to launch cruise missiles or short-range ballistic missiles from a container ship, maritime concerns can quickly become aerospace warning and defence issues. Such a scenario demands integration between warning and control functions. For example, the flattened trajectory, unexpected origin and extremely short warning times associated with a short-range ballistic missile could result in confusion as NORAD and USNORTHCOM struggle to rapidly transition between their respective roles. As Lieutenant-General J.A.J. Parent, Deputy Commander, North American Aerospace Defence Command, explained,

[I]f it comes from the sea off our coast and it's a short range ballistic missile, at this time, if it happens tomorrow morning, it would probably be a USNORTHCOM mission, but you can see the confusion in how seamless one domain goes into another and how complicated it gets.⁹

In February 2006, Canada created a counterpart to USNORTHCOM, Canada Command, to conduct domestic and continental operations. Six years later, Canada Command was combined with Canadian Expeditionary Forces Command and Canadian Operational Support Command to become Canadian Joint Operational Command (CJOC). Like USNORTHCOM, CJOC is intended to cover all operational domains.

Further integrating continental defence and security, Canada and the United States signed a Civil Assistance Plan (CAP) in February 2008, "to facilitate the support of military members from one nation to the armed forces of the other nation in support of civilian authorities during an emergency such as a natural disaster."¹⁰ The CAP was renewed in January 2012.

Despite *de facto* participation through sharing of warning information, the 2006 renewal of the NORAD Agreement does not refer to Canada's participation in U.S. efforts to develop and deploy a BMD system. Such a system, should Canada sign onto it, could be operated under NORAD.

C. Canada's 2005 Decision on Ballistic Missile Defence: Context and Possible Factors

The year prior to the final NORAD renewal, on 24 February 2005, the Canadian government ruled out participation in the U.S. missile defence effort through an announcement in the House of Commons.¹¹ Two former Ministers of National Defence of that era, the Honourable David Pratt and the Honourable Bill Graham confirmed to the committee that the government was motivated primarily by political considerations and perceived negative public opinion.¹²

This decision was surprising given Canada's willingness to share warning information.¹³ Did it make sense for Canada to provide information through NORAD that would alert the U.S. BMD system to a ballistic missile attack in progress, only to step out of the room, literally, when USNORTHCOM would make decisions about how to use the system to respond?

⁹ Senate Standing Committee on National Security and Defence, [Evidence](#) (Lieutenant-General J.A.J. Parent), 41 Parliament, 2nd Session, 2 June 2014.

¹⁰ Department of National Defence, "[The Canada-U.S. Defence Relationship](#)," *Backgrounder*, 22 November 2013.

¹¹ House of Commons, [Debates](#), 38th Parliament, 1st Session, 24 February 2005, p. 3910.

¹² Senate Standing Committee on National Security and Defence, [Evidence](#) (David Pratt and Bill Graham), 41st Parliament, 2nd Session, 26 May 2014.

¹³ See, for example, Carl Ek *et al*, [Canada-U.S. Relations](#), Congressional Research Service, 12 May 2008, p. 11.

During the 1980s, Canada had concerns that the U.S. Administration's Strategic Defense Initiative (SDI) would raise the possibility of the placement of weapons in space¹⁴.

Mr. Graham noted that:

There are many who argued that BMD was akin to the Reagan administration's Star Wars program and the weaponization of space, which by the way it is not my view any more than ballistic missiles themselves are weaponization of space. It is a land based system, not a space-based system.¹⁵

Other witnesses agreed with Mr. Graham's assessment of the current U.S. BMD program. As Lieutenant-General Parent put it,

[I]t is not Star Wars. No weapons are being put in space. Everything is by ground based interceptor.¹⁶

2014 AND BEYOND: CHANGING LANDSCAPE AND THREAT ANALYSIS

Based on evidence taken from a wide range of U.S. and Canadian witnesses during its study, the committee believes that the Government should now review its position on BMD and consider how Canada can become a partner in this essential dimension of North American aerospace defence.

The committee heard how the threat environment has changed since 2005; how the U.S.'s BMD program addresses this evolved threat, particularly with respect to its efforts towards homeland defence; what progress has been made; and what leading experts have to say about potential costs and benefits of Canada's involvement in this effort.

For Canada and the United States, the threat landscape has changed significantly since the government decision of 2005 not to participate in BMD as part of NORAD. As Lieutenant-General Parent told the committee:

North America is increasingly vulnerable to an array of evolving threats – state or non-state, traditional or asymmetric – across all the domains of air, land, sea, space and cyberspace [...] Over the past 18 months, NORAD has been tracking a variety of changes from both state and non-state actors that could challenge the concepts and constructs of defence that were put in place, for the most part, in the last century.¹⁷

¹⁴ Canada was also concerned that SDI would undermine strategic nuclear deterrence by breaking with the 1972 *Anti-Ballistic Missile (ABM) Treaty*. The ABM Treaty enshrined nuclear deterrence by imposing constraints on U.S. and Soviet missile defence systems, limiting each nation to only two BMD deployment areas and ensuring that these deployments could not be developed in a manner that threatened the penetration capability of the other nation's retaliatory missile force

¹⁵ Senate Standing Committee on National Security and Defence, [Evidence](#) (Bill Graham), 41st Parliament, 2nd Session, 26 May 2014.

¹⁶ Senate Standing Committee on National Security and Defence, [Evidence](#) (Lieutenant-General J.A.J. Parent), 41st Parliament, 2nd Session, 2 June 2014.

¹⁷ Senate Standing Committee on National Security and Defence, [Evidence](#) (Lieutenant-General J.A.J. Parent), 41st Parliament, 2nd Session, 2 June 2014.

A. North Korea

Two rogue states were uppermost in mind of the U.S. administration when it conceived the BMD program: North Korea and Iran. North Korea was of particular concern because its nuclear and missile programs were more advanced and it had positioned itself as a supplier state to other states interested in obtaining these technologies.

The 1998 *Report of the Commission to Assess the Ballistic Missile Threat to the United States*¹⁸ was influential in drawing attention to the emerging threat posed by North Korea's nuclear and ballistic missile development program. Highlighting the U.S. government's failure to detect North Korea's operational deployment of its No Dong missiles, the commission warned of the potential for strategic surprise in relation to the long-range Taepo Dong-2 ballistic missile.¹⁹

In 1998, the CIA had assessed that North Korea's Taepo Dong-1 ICBM could deliver small payloads to parts of Alaska and Hawaii. With the addition of a third stage, the CIA assessed, the Taepo Dong-2 would be able to deliver large payloads to the continental United States, though with poor accuracy.²⁰ Use of the descriptor, "large payload" is significant, as it implies an ability to deliver a nuclear warhead.

Certainly, by 2005, the U.S. BMD program could not have been characterized as threatening the *Anti-Ballistic Missile Treaty*. The U.S. government had already withdrawn its support for this treaty in December 2001, thus freeing the United States to pursue a more sophisticated missile defence system with additional interceptor sites. Witnesses confirmed that the BMD program could not be considered anything other than defence against a rogue state. It was not, and still is not, a threat to the strategic nuclear deterrence that exists among the United States, Russia and China.

North Korea's sudden January 2003 withdrawal from the *Nuclear Non-Proliferation Treaty*, its April 2003 claim that it possessed nuclear weapons, and its determined efforts to export restricted technology and know-how to other rogue states, such as Iran, created a sense of urgency behind BMD. Diplomatic efforts needed to be backed up by a defensive system that would protect regional allies and neutralize the threat posed by North Korea's nuclear weapons program.

To learn more about where North Korea and Iran are in 2014, the committee sought an assessment from the then Commander of the Canadian Forces Intelligence Command, Major-General Christian Rousseau. Major-General Rousseau told the committee that "proliferation and potential use of weapons of mass destruction and ballistic missiles against the North American continent is very worrisome."²¹ North Korea and Iran are of particular concern, he said, adding that he expected these two countries to continue their efforts to acquire, develop, and improve nuclear weapons and ballistic missile capabilities.

¹⁸ Rumsfeld was, at the time, working in the private sector.

¹⁹ The Honorable Donald H. Rumsfeld, Chairman, *et al*, [*Report of the Commission to Assess the Ballistic Missile Threat to the United States*](#), 15 July 1998 (posted online by the Federation of American Scientists).

²⁰ [*"Statement for the Record to the Senate Foreign Relations Committee on Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015 by Robert D. Walpole, National Intelligence Officer for Strategic and Nuclear Programs"*](#), Central Intelligence Agency, 16 September 1999.

²¹ Senate Standing Committee on National Security and Defence, [*Evidence*](#) (Major-General Christian Rousseau), 41st Parliament, 2nd Session, 3 March 2014.

Major-General Rousseau also highlighted that “North Korea has expressly indicated that it wants to be able to target North America with its nuclear-armed missiles.”²²

On December 12, 2012, North Korea launched a three-stage rocket, the Unha-3, to place a satellite in space. United Nations Secretary General Ban Ki-moon stated that the launch of the Unha-3 defied international warnings and was a “clear violation” of UN Security Council resolution 1874 (2009), which prohibits any launch using ballistic missile technology.²³

What concerned NORAD, which tracked and confirmed the launch, was that North Korea achieved its objective of placing a satellite in orbit and demonstrated a capability to deliver a payload over an intercontinental distance. Echoing this assessment, other experts estimate that the Unha-3 can carry a 700 kilogram payload over 8,000 kilometers, thus placing continental North America within its striking range.²⁴

Lieutenant-General-Parent explained the significance of the launch to the committee, saying:

If you have the range to put an object in space and the power to do this multi-stage technology, you also have the capacity to reach the extended range all the way to whole of North America. That was when the threat went from a theory that they were working on developing to a practical threat. We know that they have the reach in terms of distance to cover the continent.²⁵

North Korea's efforts to develop long-range ballistic missile technology are matched by its efforts to miniaturize its nuclear weapons. The smaller the nuclear weapons payload is, the greater the distance it can be delivered. This makes all the more worrying North Korea's recent threats to conduct a new type of nuclear test that some believe will bring the rogue state one step closer to achieving the warhead miniaturization necessary for long-range delivery.²⁶

Of further concern to NORAD are North Korea's aggressive actions in the region. On 26 March 2010, for example, a North Korean submarine launched a torpedo that sank a South Korean navy ship, causing the deaths of 46 sailors. Investigators confirmed they had discovered part of the torpedo on the sea floor and it carried lettering that matched a North Korean design.²⁷

From the threat perspective, North Korea has demonstrated a willingness to defy UN Security Council resolutions, to attack its neighbours, to threaten to attack North America, and to develop a means to make good on its threats using nuclear-armed ballistic missiles.

²² Senate Standing Committee on National Security and Defence, [Evidence](#) (Major-General Christian Rousseau), 41st Parliament, 2nd Session, 3 March 2014.

²³ United Nations, [Statement Attributable to the Spokesperson for the Secretary-General on rocket launch by the DPRK](#), New York, 12 December 2012.

²⁴ See, for example, Markus Schiller, [The Unha-3: Assessing the Successful North Korean Satellite Launch](#), Federation of American Scientists (blog), 20 February 2013.

²⁵ Senate Standing Committee on National Security and Defence, [Evidence](#) (Major-General Christian Rousseau), 41st Parliament, 2nd Session, 3 March 2014.

²⁶ See, for example, “[EU says concerned North Korea increasing nuclear warhead ability](#),” *Reuters*, 4 June 2014.

²⁷ Duyeon Kim, [Joint Investigation Report On the Attack Against ROK Ship Cheonan](#), (blog) The Center for Arms Control and Non-Proliferation.

B. Iran

As repeated reporting by the International Atomic Energy Authority (IAEA) – the UN agency responsible for monitoring Iran's compliance with UN Security Council Resolutions – indicates, Iran continues to play a “cat and mouse” game with its nuclear program. While there are apparent signs of cooperation as Iran continues to eliminate its stock of 20% low enriched uranium hexafluoride, there are just as many worrying indications that this country is hiding a nuclear weapons development program. Ongoing signs of activity and modifications at the Parchin nuclear complex demand explanation, note some observers, and Iran continues to deny IAEA inspectors answers and full access.²⁸

North Korea is more advanced than Iran in its efforts to develop a capability to deliver nuclear weapons over long ranges, said Major-General Rousseau. Iran may possess “the largest and most diverse ballistic missile force in the Middle East,” he said, but “[i]ts current missile arsenal lacks the range and complexity to strike at targets within North America.” Nonetheless, he assessed that Iran’s ballistic missile delivery systems “are likely to improve and grow more complex over the next decade.”²⁹

However, intent, as Major-General Rousseau put it, can turn on a car accident or a regime change. Iran may, at present, have neither the capability nor the intention to strike North America, but it continues to develop a means to this end. Should Iran’s intentions change over the next decade, therefore, it will likely have the capability to act and pose a serious threat to North America.

While some witnesses expressed their opinion that North Korea and Iran would be “suicidal” to attack North America or our allies, the committee does not accept the notion that Iran and North Korea, armed with nuclear weapons and delivery vehicles, will always behave rationally or within the scope of international law and norms.

Moreover, neither Canada nor its allies have any basis for confidence that these two nations’ nuclear-capable missiles are, or will be, well secured against accidental or unauthorized launch.

According to Lieutenant-General Parent:

[B]oth North Korea and Iran continue to invest in ballistic missile, nuclear, cyber and other advanced weapons technologies. The advent of North Korea's successful space launch and previous nuclear tests have led General Jacoby [Commander, USNORTHCOM and NORAD] to say that he is concerned that North Korean ballistic missiles have evolved from a theoretical to a practical threat, one that must be defended against.³⁰

Therefore, in the case of North Korea and, possibly, Iran, the committee is convinced that capability and intent are combining to form a threat to Canada and the United States that today cannot be as readily dismissed as in 2005.

²⁸ See David Albright et al., [ISIS Analysis of IAEA Iran Safeguards Report](#), Institute for Science and International Security, 23 May 2014.

²⁹ Senate Standing Committee on National Security and Defence, [Evidence](#) (Major-General Christian Rousseau), 41st Parliament, 2nd Session, 3 March 2014.

³⁰ Senate Standing Committee on National Security and Defence, [Evidence](#) (Lieutenant-General J.A.J. Parent), 41st Parliament, 2nd Session, 2 June 2014.

THE CURRENT STATE OF U.S. BMD

In February 2010, in keeping with its congressional reporting requirements, the United States articulated its vision for BMD in the *Ballistic Missile Defense Review Report*. Highlighting the threat posed to the United States homeland, to allies and partners, and to deployed U.S. troops by the proliferation of ballistic missile technologies, the report asserts the necessity of a global BMD architecture to provide both regional and a limited homeland defence. The current and projected threat environment is described as follows:

The ballistic missile threat is increasing both quantitatively and qualitatively, and is likely to continue to do so over the next decade. Current global trends indicate that ballistic missile systems are becoming more flexible, mobile, survivable, reliable, and accurate, while also increasing in range. A number of states are also working to increase the protection of their ballistic missiles from pre-launch attack and to increase their effectiveness in penetrating missile defenses. Several states are also developing nuclear, chemical, and/or biological warheads for their missiles. Such capabilities could be significant sources of military advantage during a conflict. But they may be equally significant in times of relative peace, when they undergird efforts to coerce states near and far. Regional actors such as North Korea and Iran continue to develop long-range missiles that will be threatening to the United States. There is some uncertainty about when and how this type of intercontinental ballistic missile (ICBM) threat to the U.S. homeland will mature, but there is no uncertainty about the existence of regional threats. They are clear and present. The threat from short-range, medium-range, and intermediate-range ballistic missiles (SRBMs, MRBMs, and IRBMs) in regions where the United States deploys forces and maintains security relationships is growing at a particularly rapid pace.³¹

In other words, the United States is concerned that the global trend towards development and hardened deployment of advanced ballistic missiles that can be armed with weapons of mass destruction (WMD) threatens U.S. homeland security.

As a means to manage risk – both the risk of not possessing sufficient capabilities to deal with imminent and short-term ballistic missile threats and the risk of wasting limited resources on developing overly ambitious solutions to long-term threats – the U.S. BMD program consists of prioritized components.

A. Aegis BMD

An example of this is the U.S. Aegis BMD initiative. Managed by the U.S. Department of Defense's Missile Defense Agency, this initiative will enable BMD-capable Aegis warships to detect ballistic missile launches using off-board sensors such as the Space Tracking and Surveillance System. When deployed for regional defence, such as for the defence of Europe against attack by Iran or for the defence of Japan against attack by North Korea, Aegis BMD ships will exploit their proximity and use on-board interceptor missiles to shoot down short – and intermediate – range ballistic

³¹ United States Department of Defense, [Ballistic Missile Defense Review Report](#), February 2010, p. iii.

missiles. As enhancements are made to existing Aegis BMD system interceptor missiles – currently, the Standard Missile-2 and Standard Missile-3 – the hope is that they will become capable of bringing down ICBMs, thus moving beyond their current “track only” contribution to homeland BMD.

To further increase the potential coverage afforded by sea-based BMD, the U.S. Navy plans to deploy Aegis BMD capabilities to all destroyers and some cruisers of the Aegis fleet as well as on allied naval platforms.

B. U.S. Homeland BMD

The homeland component of the U.S. BMD program is referred to as the Ground-Based Mid-Course Defense (GMD) program. As currently envisioned, GMD is intended to protect the United States (to include Canada-U.S. Border regions and off-shore U.S. territory such as Hawaii and Guam) from threats posed by medium and long-range ballistic missiles. It will do so by intercepting incoming missiles, during the mid-course phase of their trajectory.

While the 2010 BMD review report indicated that the United States Government only planned to pursue operational capabilities at Fort Greely, Alaska and Vandenberg Air Force Base in California, a 2012 National Academy of Sciences study commissioned by U.S. Congress recommended the creation of an East Coast missile defence site, perhaps at Fort Drum, New York and a possible fourth site at Grand Forks, North Dakota. The study, *Making Sense of Ballistic Missile Defense*, said an East Coast site would provide additional opportunity for missile shoot-down beyond that provided by the Fort Greely site. According to the study, the existing Fort Greely and Vandenberg sites can only be considered as having potential to respond to limited attack from North Korea and no significant ability to protect the U.S. homeland against missile threats from Iran and others.

The U.S. House of Representatives adopted the House Armed Services Committee's provision for an East Coast site in its 2013 Defense Authorization bill. However, this provision did not form part of the U.S. Senate's version. The 2014 appropriations bill signed into law on 17 January 2014, recommended the addition of \$20 million to GMD to cover continued site evaluation and planning for an additional homeland missile defence interceptor site.

C. Europe and Ballistic Missile Defence

While Iranian nuclear missiles do not pose an imminent threat to North America, this is certainly not the case for our NATO allies in Europe. The committee heard testimony indicating that Iran currently has the capability to strike a number of cities in Europe.³²

Responding to this ballistic missile threat and the attendant possibility that Alliance cohesion might fall apart under nuclear blackmail, NATO updated its Strategic Concept in 2010 to endorse the development of ballistic missile defence capabilities. Specifically, *Active Engagement, Modern Defence: Strategic Concept for the Defence and Security of the Members of the North Atlantic Treaty Organization* said the allies would “develop the capability to defend our populations and

³² Senate Standing Committee on National Security and Defence, [Evidence](#) (Major-General Christian Rousseau), 41st Parliament, 2nd Session, 3 March 2014.

territories against ballistic missile attack as a core element of our collective defence, which contributes to the indivisible security of the Alliance.”³³

Canada has endorsed the idea of protecting Europe from ballistic missile attack by rogue states. Yet it fails to apply this same logic in respect of its own security.

Dalhousie University Professor of International Relations, Frank Harvey, noted that NATO's 2012 “defence posture review made the same commitment to ballistic defence.” He said,

[A]s a NATO member, there is no question any longer that Canada officially endorses the logic, strategic utility and security imperatives underpinning BMD. In essence, the Government of Canada now fully embraces the merits of multinational cooperation on missile defence as part of Canada's treaty obligations and alliance commitments.³⁴

More than one witness found this to be a contradiction. To make this point, Colin Robertson, a Fellow of the Canadian Defence and Foreign Affairs Institute, posed a series of rhetorical questions:

Shouldn't Canada have a say in the development of the North American BMD architecture in advance of the actual emergence of a combined ICBM or nuclear threat? Moreover, is it logical to have a say in the establishment of that architecture in Europe but to exclude ourselves from having that say in North America? At what point is the Canadian national interest put in jeopardy by not having a say?

Through NORAD, we currently share information and early warning and attack assessment with the U.S. But when it comes time to make critical launch decisions, our officials literally have to leave the room. The algorithms that U.S. Northern Command has developed to protect the U.S. homeland do not include Canadian cities like Calgary, Edmonton, Toronto or Montreal. Membership brings the privilege of being in the room and being part of the conversation on how to protect Canadians.³⁵

D. European Phased Adaptive Approach

The European component of the U.S. BMD program, which is being implemented within a NATO context, is referred to as the European Phased Adaptive Approach (EPAA). The term “phased adaptive” conveys that the U.S. will undertake deployment of defensive systems in progressive

³³ North Atlantic Treaty Organization, [*Active Engagement, Modern Defence: Strategic Concept for the Defence and Security of the Members of the North Atlantic Treaty Organization*](#), adopted by Heads of State and Government at the NATO Summit in Lisbon, 19-20 November 2010, p. 16.

³⁴ Senate Standing Committee on National Security and Defence, [*Evidence*](#) (Frank Harvey), 41st Parliament, 2nd Session, 24 February 2014.

³⁵ Senate Standing Committee on National Security and Defence, [*Evidence*](#) (Colin Robertson), 41st Parliament, 2nd Session, 10 February 2014.

steps and tailor its approach to regional BMD according to the local threat environment. Two interceptor sites are envisioned for Europe.³⁶

Phase 1 is primarily a sea-based approach, with, for example, an Aegis BMD ship, the *USS Monterey*, having been deployed to the Mediterranean Sea. Standard Missile interceptors aboard Aegis BMD ships are being upgraded over time.

In 2015, under Phase 2, the plan is to deploy a land-based version of the Aegis BMD, “Aegis Ashore,” in Romania.

Phase 3, will see a second deployment of the Aegis Ashore in Poland by late 2018. This Aegis Ashore system and the system already deployed in Romania will be equipped with an even faster interceptor missile.

In addition, NATO members are contributing to EPAA through research, hosting of BMD-capable ships and AN/TPY-2 radar, acquisition of Patriot missile defence systems (PAC-3), and cooperative efforts to upgrade existing early warning radar systems, such as those located in the United Kingdom and Greenland.³⁷

The U.S. administration cancelled plans in March 2013 to deploy the fourth phase of EPAA, which would have seen the deployment of higher-speed interceptors in Poland after 2022.

The objective of EPAA Phase 4, which the National Academy of Science study deemed to be too technically demanding to achieve within the projected 2020 timeframe, was to enable Europe to defend itself against long-range ballistic missiles from Iran. Some, including the authors of *Making Sense of Ballistic Missile Defense*, view the creation of an East Coast missile defence site equipped with two-stage rather than slower three-stage interceptors in the United States as a means to partially compensate for this cancellation.

TECHNICAL FEASIBILITY OF BMD: WHAT THE EXPERTS TOLD THE COMMITTEE

The committee invited one of the authors of *Making Sense of Ballistic Missile Defense*, Dean Wilkening, to discuss the report’s findings. Dr. Wilkening, a physicist at Lawrence Livermore National Laboratory, told the committee that the scientists that Congress directed to conduct this study concluded that, though it currently faces some challenges, GMD is worth pursuing. “We concluded that the technology is feasible, certainly for dealing with threats from North Korea and countries like Iran,” he said, later indicating that the system “should be adequate or could be adequate for defending against a small number of – a handful or a few tens of – ballistic missile warheads from a country like North Korea.”³⁸

³⁶ For a description of the EPAA, see U.S. Senate Armed Services Committee Subcommittee on Strategic Forces, “[Unclassified Statement of Vice Admiral J. D. Syring Director, Missile Defense Agency](#),” 2 April 2014.

³⁷ See United States Missile Defense Agency, [International Cooperation](#).

³⁸ Senate Standing Committee on National Security and Defence, [Evidence](#) (Dean Wilkening), 41st Parliament, 2nd Session, 3 March 2014.

Addressing current technical challenges of the overall BMD effort, Dr. Wilkening stated:

The homeland missile defense system [GMD] is the one that appears to have larger problems. First the sensor architecture is not as robust as one would like, and so the committee recommended deploying what I will call discriminating radar. It's X-band radar. X-band refers to the frequency domain. It's high-frequency radar that gets very precise track information and can do discrimination as well at various sites around North America.

That was one recommendation of the committee. The other recommendation was that we have to redesign the ground-based interceptor, not so much the rocket motors but the payload, the kill vehicle, the so-called kinetic kill vehicle, or in this case it's called the Exoatmospheric Kill Vehicle, EKV. That's the payload. That little device hones in on incoming warheads and collides with them at extremely high speeds.

The current Exoatmospheric Kill Vehicle has not performed well on the test range, largely because it is a prototype design. It was rushed into the field in 2004 by President Bush to meet a campaign pledge. The system was not fully tested at the time, and we've seen some test problems with it over the last decade, so the second recommendation with respect to homeland defence was to redesign the kill vehicle.³⁹

Dr. Wilkening's positive assessment of the future prospects for GMD stands in stark contrast to critics of the system who have raised concerns about its ability to discriminate. Philip Coyle and his colleague, Lieutenant-General (U.S. Army, Retired) Robert G. Gard Jr., Chairman of the Center for Arms Control & Non-Proliferation believe the system faces significant technical challenges and may require a complete overhaul, as well as significant investments in R&D.

To back his claim, Mr. Coyle cited the flight testing record, stating that,

Since 1999, there have been 16 or 17 — depending how you count — attempted targeted intercept tests and only eight of those produced hits, but it gets worse. Since post-2002, there have been nine attempts but only three hits, and since early December 2008 there have been four attempts with only one successful hit, so that's 25 per cent.

[...]

The last partially successful flight intercept test on December 5, 2008 did hit its target despite an interceptor malfunction, but the planned decoys did not deploy so there was no opportunity, as General Gard has pointed out, to look at how you would deal with decoys. An attempt on January 31, 2010 failed, as did an attempt on December 15, 2010. The most recent attempt on July 5, 2013 also failed, and the next test is not now expected until this summer, perhaps next month. If

³⁹ Senate Standing Committee on National Security and Defence, [Evidence](#) (Dean Wilkening), 41st Parliament, 2nd Session, 3 March 2014.

successful, by then the program will not have had a successful flight intercept test in five and a half years.⁴⁰

For his part, Lieutenant-General Gard was more concerned about the GMD system's inability to discriminate an incoming warhead from debris created by a partial interception or from adversary counter-measures, such as chaff or decoys.⁴¹ "Radar and infrared are simply incapable" of this level of discrimination, said Lieutenant-General Gard.⁴² Without this discrimination capability, he said, the system will never offer reliable protection, regardless of the number of interceptor missiles on hand.

The committee heard conflicting testimony on performance metrics. It concludes that some of these metrics are the result of a selective framing of statistics. If one does a simple count of overall GMD interceptor flight test results from 1999, they can assert a 50% success rate. However, as Mr. Coyle points out, this count obscures the recent and dramatic downward trend in flight test successes as the test parameters progress towards more realistic conditions.

In addition, the committee is sensitive to the dangers of conflating test results for different types of BMD systems. For example, and as highlighted by Dr. Wilkening and others in their testimonies, regional BMD systems such as Patriot Advanced Capability-3, Theatre High Altitude Area Defense, and the Aegis missile defence system have all performed well in testing. However, these test results reflect a less challenging set of requirements relative to GMD.

WHAT THE POLICY EXPERTS SAID

Policy experts appearing before the committee who supported Canada's full participation in BMD highlighted the number of nations that have already preceded it in choosing this course. There were some witnesses who predicted negative consequences if Canada signs on to BMD. They argued that these potential negative consequences include:

- wasting resources better used to address more pressing societal risks, or to engage proliferating nations through diplomacy;
- investing in a losing technological proposition;
- failing to gain additional access to and influence in the BMD decision-making process;
- increasing the likelihood of Canada being targeted; and,
- upsetting the existing deterrent balance and triggering an arms race.

Mr. Coyle poised a set of questions highlighting the potential for Canada to become an early target should it accept radar installations on its territory. He asked:

⁴¹ To read more about counter-measures technologies and efforts to curb their proliferation, see Richard H. Speier, K. Scott McMahon and George Nacouzi, [*PENAIID Proliferation: Hindering the Spread of Countermeasures Against Ballistic Missile Defenses*](#), Rand National Defense Research Institute, 28 February 2014.

⁴² Missile warning is developed from a global network of radars, optical sensors, space-based sensors and ground stations. Launches are typically detected by the U.S. Space Based Infrared System (SBIRS) and then verified through another radar system. During the mid-course phase, a Sea-Sased X-band radar as well as a number of transportable X-band radars (Army Navy/Transportable Radar Surveillance, AN/TPY-2) are supposed to interact with SBIRS to provide fire control (including discrimination) to GMD interceptors. See Missile Defense Agency, [*Elements: Sensors*](#).

If Canada permitted the deployment of U.S. missile defence assets, such as radars or interceptors on its territory, would that change the equation? Would those assets now become targets that an enemy would need to strike first to blind or cripple the overall system? Would Canada's actions cause nations that see the U.S. as an adversary to now see Canada as an adversary?⁴³

However, the committee would point out that this same logic would apply to Canada's existing radar installations, such as the North Warning System and the DEW Line that preceded it. The danger is already shared. As a full partner under NORAD, it is only right that Canada should share both the benefits and the risks of its defence agreements with the United States. Unless we partner with the U.S. on BMD, we will continue to share all the risks but not all the benefits.

Mr. Coyle also expressed concern about the potential consequences that a decision to join BMD might have on Canada's relations with China. He also suggested that such a decision would also have negative implications for Canada's arms control objectives.

According to Mr. David Pratt:

[F]rom the issue of ballistic missile defence destabilizing the international security architecture, that's simply not the case [...T]hose arguments made in 2004 have not stood the test of time at all. I think there's so much compelling evidence to the contrary when we look at what our NATO allies have done in terms of their support for ballistic missile defence, we have 28 NATO nations saying that they endorse the need to protect their populations against rogue missiles, and Canada has been saying all the right things at NATO but not doing anything when it comes to our own situation here in North America.⁴⁴

The committee's view is that, while it is true that the sensitivities of Russia and China regarding BMD should be taken into account, development of missile defences against rogue states is too pressing a matter to be held hostage to these two countries. Moreover, it is worth pointing out that neither Russia nor China has been particularly helpful in international efforts to control the spread of nuclear and missile technologies that created the rogue state problem in the first place.⁴⁵

Were it to announce its full participation, those experts who supported Canada joining BMD said Canada would be joining 27 other members of NATO with Australia, Japan and South Korea. Michaela Dodge, a policy analyst with the Heritage Foundation in Washington D.C., reminded the committee of the breadth of allied involvement, saying:

Allies are embracing missile defence through NATO. Poland and Romania have agreed to host Aegis Ashore sites; Turkey hosts AN/TPY forward-deployed radar; Spain is hosting U.S. BMD-capable ships; and Germany and Denmark are considering upgrading their ships for a missile defence role. The Dutch navy is modifying ship radars to track ballistic missile targets. Spain, Norway and the UK

⁴³ Senate Standing Committee on National Security and Defence, [Evidence](#) (Philip Coyle), 41st Parliament, 2nd Session, 12 May 2014.

⁴⁴ Senate Standing Committee on National Security and Defence, [Evidence](#) (David Pratt), 41st Parliament, 2nd Session, 26 May 2014.

⁴⁵ See, for example, references to Russian and Chinese entities used by North Korea to evade export restrictions in United Nations Security Council, [Report of the Panel of Experts established pursuant to Security Council resolution 1874 \(2009\)](#), S/2014/147, 6 March 2014.

have expressed interests in upgrading their ships, and Denmark and the UK already host[s] upgraded early warning radar.⁴⁶

And, as previously noted, partnership in BMD would align Canada's commitments to NATO and NORAD. Summing it up, Colin Robertson said, "[P]articipation in BMD is both insurance policy for our homeland and a renewed commitment to contemporary, collective defence."⁴⁷

Some experts warned that choosing to maintain the status quo may not necessarily be the safe bet it appears to be. On this, Richard Weitz, Director for Political-Military Analysis at the Hudson Institute, said:

There are some advantages to that. It doesn't really cost much in terms of finances. There is not a clear threat. There is no country out there that would, at least at present, deliberately target Canada with a nuclear-armed ballistic missile, but this could change. We have a changing security environment. There could be a misfiring of a launch. It could either go off course or be hit in a failed interception attempt and head towards Canadian territory. There is a possibility that, as some of the European countries fear, Canada could be held hostage. To deter the U.S. from taking some action, an adversary might want to threaten or target a less well defended target. Canada has always strived not to be seen as a free rider within the alliance and has always succeeded to that end, so the status quo might hurt that.⁴⁸

Counting on the proximity of Canadian cities to the U.S. border to protect us during an ICBM attack may also be a mistake. Technical experts agreed that, in using GMD to defend American cities against ballistic missiles, the United States could not help but simultaneously protect Canadian population centres concentrated along the Canada-U.S. border. Policy experts questioned both the ethics and logic of this stance. Speaking to the ethical component, Former Vice Chief of the Defence Staff, Lieutenant-General (Retired) George MacDonald said:

There's a moral issue here. We talked at the time of what is the protocol? You've got two missiles inbound and one is headed for Winnipeg and one is headed for a missile site in North Dakota, do you defend against both of them? Yes, I think so. What if there are five missiles inbound and you can only defend against three of them, how do you prioritize that?⁴⁹

University of Manitoba Professor James Fergusson questioned the legal logic, saying:

Moral considerations are one thing, but it's important to note that a U.S. officer's command is legally bound to defend the United States. It is not legally bound to defend Canada, even though this commander may wish to defend Canada,

⁴⁶ Senate Standing Committee on National Security and Defence, [Evidence](#) (Michaela Dodge), 41st Parliament, 2nd Session, 28 April 2014.

⁴⁷ Senate Standing Committee on National Security and Defence, [Evidence](#) (Colin Robertson), 41st Parliament, 2nd Session, 10 February 2014.

⁴⁸ Senate Standing Committee on National Security and Defence, [Evidence](#) (Richard Weitz), 41st Parliament, 2nd Session, 28 April 2014.

⁴⁹ Senate Standing Committee on National Security and Defence, [Evidence](#) (George MacDonald), 41st Parliament, 2nd Session, 5 May 2014.

thereby, in the absence of our participation, placing the U.S. commander in a difficult situation.⁵⁰

Ms. Dodge explained the implications of not having a legal framework in place during a missile attack, saying:

You have precious little time to decide what you want to do. That time is taking away from your option to shoot a second time if you miss the first. Having that legal framework, those command and control issues worked out and pre-delegated authorities gives you a much better chance to make an intercept and, if you miss, try a second time. It is called look-shoot-look capability in the U.S. missile defence parlance, but it is very important to keep that in mind. It takes about half an hour for a long-range missile to reach U.S. territory, and you literally have minutes to decide what you want to do about that missile.⁵¹

PRESERVING CANADA'S SOVEREIGNTY AND SECURITY

The committee heard evidence about the importance of NORAD as a vital binational organization that has been implemented through “roughly 80 treaty-level agreements, more than 250 memoranda of understanding and 145 bilateral forms on defence issues.”⁵² The committee was told that the decision-making aspects of NORAD are seamless, except with ballistic missile defence.

Former Minister of National Defence, David Pratt, praised NORAD as “the most comprehensive defence relationship between two countries” but noted that Canada's absence from BMD is a “missing link.”⁵³ In simple terms, the decision not to participate in BMD has had significant implications for Canada and its partnership within NORAD. The United States created a separate command structure after 9/11, USNORTHCOM, to address a full range of threats to the U.S. homeland. It placed BMD under this command but co-located USNORTHCOM at NORAD headquarters so as to benefit from the NORAD warning mission but created a separation in the command structure from Canada.

In such situations, although Canada provides early warning data as part of NORAD, once the data has been shared with USNORTHCOM, its representative at NORAD is only going to be “a silent observer on all the decisions being taken during that engagement cycle,” said Lieutenant-General Parent.⁵⁴ As an ICBM passes through the mid-course phase of its approximately 36-minute journey from launch to impact, Canada currently has no say on when, where or whether it should be engaged. As a result, the decision to intercept a missile aimed at a Canadian city would be left to the sole discretion of a U.S. command.

⁵⁰ Senate Standing Committee on National Security and Defence, [Evidence](#) (James Ferguson), 41st Parliament, 2nd Session, 24 February 2014.

⁵¹ Senate Standing Committee on National Security and Defence, [Evidence](#) (Michaela Dodge), 41st Parliament, 2nd Session, 28 April 2014.

⁵² Senate Standing Committee on National Security and Defence, [Evidence](#) (David Pratt), 41st Parliament, 2nd Session, 26 May 2014.

⁵³ Senate Standing Committee on National Security and Defence, [Evidence](#) (David Pratt), 41st Parliament, 2nd Session, 26 May 2014.

⁵⁴ Senate Standing Committee on National Security and Defence, [Evidence](#) (Lieutenant-General J.A.J. Parent), 41st Parliament, 2nd Session, 2 June 2014.

POTENTIAL FUTURE OPPORTUNITIES FOR CANADA TO PARTICIPATE IN U.S. BALLISTIC MISSILE DEFENCE

The committee learned that, should Canada decide to partner with the United States on BMD, Canada can lend its expertise to enhance the BMD program.

The committee noted the strong views held by two former Ministers of National Defence on the opportunity costs. Mr. Graham warned the committee:

It seems to me we're outside of an extraordinary complex and amazingly new form of a weapons system which will affect our security, but which we are foreign to decisions around its development. I think that's a dangerous place to be.⁵⁵

For his part, Mr. Pratt, expressed the view that Canada's current BMD policy does not serve its national interests, saying:

I can't understand why we would forfeit aspects of our national security by not working with the Americans directly to implement this system, because that's what we are doing, effectively. Yes, we would have some knowledge of the warning, but beyond that, what is there? There's really no role for Canada at this point. I think that is something we have to correct.⁵⁶

The committee concurs.

Even some critics of the current U.S. BMD system urged Canada to consider a contribution in the form of research and development. Canada, they said, could have a positive influence on the future direction of BMD if it were to participate and focus its efforts on finding solutions to current technological challenges. Highlighting the difficulty current radar technologies have in distinguishing an incoming warhead from decoys or debris created by an unsuccessful strike – a capability referred to as “discrimination” – Lieutenant-General Gard said that he “would certainly welcome Canada's joining in some sort of serious research effort to see if there might be some way of dealing with the problem of discrimination.”⁵⁷

Mr. Coyle also advocated that Canada join the BMD research and development effort, saying that “if those threats [from North Korea and Iran] went away, I would still support research and development on missile defence if for no other reason than to avoid technological surprise...I would support R & D in this program even if there were no threat.”⁵⁸

The committee took note also of Lieutenant-General Gard's advice not to lose sight of the growing threat posed by cruise missiles and short-range ballistic missiles launched offshore. These threats

⁵⁵ Senate Standing Committee on National Security and Defence, [Evidence](#) (Bill Graham), 41st Parliament, 2nd Session, 26 May 2014.

⁵⁶ Senate Standing Committee on National Security and Defence, [Evidence](#) (David Pratt), 41st Parliament, 2nd Session, 26 May 2014.

⁵⁷ Senate Standing Committee on National Security and Defence, [Evidence](#) (Robert Gard), 41st Parliament, 2nd Session, 12 May 2014.

⁵⁸ Senate Standing Committee on National Security and Defence, [Evidence](#) (Philip Coyle), 41st Parliament, 2nd Session, 12 May 2014

“fly under the radar,” he said, and more efforts are needed to find solutions to defend against them.⁵⁹

Speaking of his involvement in the deliberations that led up to Canada’s 2005 decision on U.S. BMD, Lieutenant-General (Retired) George MacDonald said,

At the time of the decision, I made the case that there was no evidence that the Americans would ask us to provide anything directly — not early warning radars or satellite capabilities or anything. I suggested that we should consider offering a geographic location for radar, for example, and adding personnel to NORAD to man radar sites or ballistic missile sites — and we have Canadians at some of those sites already — or that we should do some asymmetric contribution.⁶⁰

The committee welcomes the suggestion by Lieutenant-General Gard, Lieutenant-General MacDonald and other witnesses that Canada’s BMD contribution might take more indirect forms. Possible indirect contributions might include enhancing surveillance against air-breathing threats through modernization of Arctic surveillance capabilities, including the North Warning System; increasing maritime domain awareness through deployment of High Frequency Surface Wave Radars or the RADARSAT Constellation; helping to tackle the discrimination problem, possibly through enhanced data processing of multiple sensor inputs; increasing emphasis on space situational awareness in Canada’s space program; or accepting X-band radar sites on Canadian territory.

Another indirect contribution Canada could make to enhance the future prospects of BMD, one that addresses concerns raised by witnesses about use of countermeasures to defeat BMD, would be to increase Canada’s arms control efforts. Key to these efforts would be expansion of the Missile Technology Control Regime (MTCR) to incorporate BMD counter-measures technologies and encouragement of China to join the regime as a full participant.

The committee takes note of these suggestions and acknowledges that these are decisions which can be made only after the Government of Canada has fully assessed the risks to Canadian territory not being covered under United States BMD.

Describing how his role as NORAD Deputy Commander would change if the BMD mission were to come completely under the NORAD umbrella, Lieutenant-General Parent said,

[I]t would practically remove a caveat for the aerospace defence of North America. It’s seamless and one change of command with one focus and unity of purpose. What it means practically is that I would not necessarily be asked to leave the room when there are discussions that lead to a ballistic missile defence engagement. It could mean that General Jacoby could appoint me to be part of the decision-making in ballistic missile defence, which I’m not. It would probably mean that I would be put on a shorter leash on the phone than I am right now. It would also allow Canadians across all the domains that we look at with NORAD and NORTHCOM command centre.

⁵⁹ Senate Standing Committee on National Security and Defence, [Evidence](#) (Robert Gard), 41st Parliament, 2nd Session, 12 May 2014.

⁶⁰ Senate Standing Committee on National Security and Defence, [Evidence](#) (George MacDonald), 41st Parliament, 2nd Session, 5 May 2014.

It would also probably allow our scientists, in terms of research and development – because we have some science and technology people working at NORAD from Canada to look at it and see if there are Canadian scientific developments that could help the system.

Lastly, it would make General Jacoby's job easier if a missile comes close to the border, as far as his decision would be much simpler to decide whether he elects to defend Canada or not.⁶¹

Speaking to this issue, Mr. Graham said,

As Minister of National Defence, I was concerned that a decision not to participate in BMD would marginalize NORAD. There were already concerns in the early 2000s that NORAD was something of a Cold War relic with little relevance in a post-Soviet world [...] In my view, and in the view of many in my department, a failure to participate in BMD would give the Americans more reason to shunt NORAD aside in favour of NORTHCOM.⁶²

In Mr. Graham's estimation, NORAD is a vital instrument of Canadian security and foreign policy that has "been weakened as a result of the [BMD] decision."⁶³

Mr. Graham told the committee that "participating in BMD would help preserve NORAD and Canada's overall security relationship with the United States. Furthermore, in my view Canadian involvement in the BMD program would give us a voice in the creation and use of BMD, thereby strengthening and not weakening our sovereignty."⁶⁴

Mr. Pratt sees Canada's participation in BMD as "an opportunity to express and display goodwill in relation to that critical defence arrangement."⁶⁵

The committee recognizes that the United States faces many technical challenges in its efforts to create a global network of systems to defend its citizens, deployed U.S. personnel and allies against ballistic missile attack by rogue states. At the same time, the committee has heard compelling testimony indicating that the threat of such attack has become a practical reality for which it is only prudent to prepare.

The committee believes that Canada must become a partner in U.S. BMD to protect Canada's security and national interests.

⁶¹ Senate Standing Committee on National Security and Defence, [Evidence](#) (Lieutenant-General J.A.J. Parent), 41 Parliament, 2nd Session, 2 June 2014.

⁶² Senate Standing Committee on National Security and Defence, [Evidence](#) (Bill Graham), 41st Parliament, 2nd Session, 26 May 2014.

⁶³ Senate Standing Committee on National Security and Defence, [Evidence](#) (Bill Graham), 41st Parliament, 2nd Session, 26 May 2014.

⁶⁴ Senate Standing Committee on National Security and Defence, [Evidence](#) (Bill Graham), 41st Parliament, 2nd Session, 26 May 2014.

⁶⁵ Senate Standing Committee on National Security and Defence, [Evidence](#) (David Pratt), 41st Parliament, 2nd Session, 26 May 2014.

RECOMMENDATION

The committee is unanimous in recommending that the Government of Canada enter into an agreement with the United States to participate as a partner in ballistic missile defence.

APPENDIX 1 – WITNESSES

Organization	Name/Title	Date of appearance
As individuals	The Honorable Philip E. Coyle, Senior Science Fellow, Center for Arms Control & Non-Proliferation	May 12, 2014
	Michaela Dodge, Policy Analyst, Defence and Strategic Policy, Heritage Foundation	April 28, 2014
	James Fergusson, Director, Centre of Defence and Security Studies, University of Manitoba	February 24, 2014
	Lieutenant-General (U.S.A) (Retired) Robert G. Gard Jr., Chairman, Center for Arms Control & Non-Proliferation	May 12, 2014
	The Honourable Bill Graham, P.C., former Minister of National Defence	May 26, 2014
	Frank Harvey, Professor of International Relations, Dalhousie University	February 24, 2014
	Lieutenant-General (Retired) George MacDonald, Former Vice- Chief of the Defence Staff	May 5, 2014
	The Honourable David Pratt, P.C., former Minister of National Defence	May 26, 2014
	Colin Robertson, Fellow, Canadian Defence and Foreign Affairs Institute	February 10, 2014

Organization	Name/Title	Date of appearance
As individuals	Lauren van den Berg, Foreign Policy Consultant	April 28, 2014
	Richard Weitz, Director, Center for Political-Military Analysis, Hudson Institute	April 28, 2014
	Dean Wilkening, Physicist at Lawrence Livermore National Laboratory	March 3, 2014
Canadian Space Agency	General (Retired) Walter J. Natynczyk, President	April 28, 2014
	Luc Brûlé, Vice President	
Conference of Defence Associations Institute	Ferry de Kerckhove, Executive Vice-President	February 10, 2014
National Defence and the Canadian Armed Force	Major-General Christian Rousseau, Chief of Defence Intelligence	March 3, 2014
	Craig Maskell, Director of Scientific Technical Intelligence	
	Major General J.P.J. St-Amand, Commander, 1st Canadian Air Division	April 7, 2014
	Major-General Michael Day, Chief of Force Development	April 28, 2014
North American Aerospace Defence Command (NORAD)	Lieutenant-General Alain Parent, Deputy Commander	June 2, 2014
Rideau Institute	Steven Staples, President	March 3, 2014

APPENDIX 2 –FACT-FINDING MISSION

Colorado Springs, Colorado, U.S.A. March 2014

The Committee met with the following people:

- General Charles (Chuck) Jacoby, Commander of the North American Aerospace Defense Command (NORAD) and United States Northern Command. (USNORTHCOM)
- Lieutenant-General Alain Parent, Deputy Commander North American Aerospace Defense Command (NORAD)
- Lieutenant-General Michael D. Dubie, Deputy Commander, U.S. Northern Command (USNORTHCOM) and Vice Commander (U.S.) North American Aerospace Defense Command (NORAD) Element
- Major-General Charles Luckey, Chief of Staff, North American Aerospace Defense Command (NORAD) and U.S. Northern Command (USNORTHCOM)
- Ambassador Stuart Symington, U.S. Policy Advisor
- Major-General André Viens, Director of Operations, North American Aerospace Defense Command (NORAD)
- Major-General Lew Craparotta, Director of Operations, J-3, U.S. Northern Command (USNORTHCOM)
- Major-General Jeff Newell, Director of Strategy, Policy and Plans (J5), North American Aerospace Defense Command (NORAD) and United States Northern Command (USNORTHCOM)
- Rear Admiral Thomas H. "Hank" Bond, Jr., Director of Cyberspace Operations (J6/J3D), North American Aerospace Defense Command (NORAD)/ US Northern Command (USNORTHCOM)
- Brigadier-General Guy Hamel, Deputy Director of the Strategy, Policy and Plans Directorate North American Aerospace Defense Command (NORAD) and United States Northern Command (USNORTHCOM), (N-NC/J5D)
- Brigadier-General Bob Walters, Intelligence Director, North American Aerospace Defense Command (NORAD) and United States Northern Command (USNORTHCOM)
- Brigadier-General Walter Sams, Deputy Director of Operations, North American Aerospace Defense Command (NORAD)/J3D
- Randel Zeller, Director, J9 Directorate at US Northern Command (USNORTHCOM)/ North American Aerospace Defense Command (NORAD)
- Dr. Michael Dawson, Canadian Policy Advisor

- Colonel Henrik Smith, N-NC/J85 ,North American Aerospace Defense Command (NORAD) and United States Northern Command (USNORTHCOM)
- Colonel Scott Clancy, N2C2 North American Aerospace Defense Command (NORAD)
- Colonel Tom Hensley, N-NC/J2D North American Aerospace Defense Command (NORAD) and United States Northern Command (USNORTHCOM)
- Colonel Alvin Vann, Executive Officer to Deputy Commander, North American Aerospace Defense Command (NORAD)
- Steven Allen, Deputy, BMD Division at US Northern Command (USNORTHCOM)
- Commander Edd King, Branch Chief, Strategy and Campaign Plans, North American Aerospace Defense Command (NORAD)
- Commander Richard Dowker, N/J32, North American Aerospace Defense Command (NORAD)
- Lieutenant-Commander Erik Landstrom, N/J32, North American Aerospace Defense Command (NORAD)
- Kathy Bukolt, Senior Expert Counterterrorism and Homeland Defense
- Mike Lupow, Senior Intelligence Analyst, Arctic
- Jason Croyle, Strategic Analyst
- Katherine Koteless, Senior Analyst for Mexican Division
- Lieutenant (Navy) Andrew MacKay, RCN, J32, North American Aerospace Defense Command (NORAD)