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CANADIAN FORCES COLLEGE / COLLÈGE DES FORCES CANADIENNES
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EXERCISE/EXERCICE NEW HORIZONS

NORAD: the end of evolution

By /par LCol J.Matson

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Abstract

The North American Aerospace defence (NORAD) agreement is a visible and effective manifestation of the close defence ties that have existed between Canada and the United States (U.S.) since the 1940s. NORAD has effectively evolved since that time to counter aerospace threats and built a sophisticated system, which includes an integrated bi-national common operating picture and warning function. However, NORAD has reached the limits of its ability to evolve or absorb other domain activities (such as maritime and land surveillance and control) because of existing technology and defence commands. Its ability to merge more closely with Mexico into a truly continental defence command is unlikely. Therefore, a unified bi-national defence command is unattainable, perhaps even undesirable, and closer bi-national collaboration must be pursued if the seams and gaps in continental defence are to be minimized.

*Geography has made us neighbors. History has made us friends.
Economics has made us partners. And necessity has made us allies. Those
whom nature hath so joined together, let no man put asunder.*

President John F. Kennedy¹

*Canada has benefited immensely from its defence partnership with the
United States over the years. Our bilateral cooperation continues to
provide us with a degree of security that we could never achieve on our
own...It is clearly in our sovereign interest to continue doing our part in
defending the continent with the United States.*

Canada's International Policy Statement²

INTRODUCTION

As little as seven years ago Canadians and Americans could boast they shared the longest undefended border in the world. This is not the case anymore. While European Union nations are removing barriers to the flow of goods and people in favour of a common security policy, the Canada-United States (CANUS) border is being reinforced because it is the United States' (U.S.) last line of defence.

Canada and the U.S. share a set of common core values, such as the respect for democracy, human rights and the rule of law.³ However, Canada and the U.S. frequently

¹John F. Kennedy, President of the United States, *Address Before the Canadian Parliament in Ottawa*, May 17th, 1961, available from <http://www.presidency.ucsb.edu/ws/index.php?pid=8136>, accessed, April 9th, 2007.

² Government of Canada, *Canada's International Policy Statement: A Role of Pride and Influence in the World, Defence* (Ottawa: 2005), 21.

³ Privy Council Office, *Securing an Open Society: Canada's National Security Policy* (Ottawa: 2004), i. The U.S. core values are probably best articulated as "...promoting freedom, justice, and human dignity." United States, *The National Security Strategy of the United States of America* (Washington: 2006), ii.

diverge as to how these values should be protected and promoted so it is natural that the resources applied towards national security will also differ.⁴

Canadian governments are increasingly making a direct link between national interests and security; therefore, demonstrating a more strategic decision making process.⁵ “The [Canadian] Government is determined to pursue our national security interests and to be relentless in the protection of our sovereignty and our society...” is proof of this statement.⁶ Canada has identified three core national security interests, which are protecting Canada and Canadians at home and abroad, ensuring that Canada is not a base for threats to our allies, and contributing to international security.⁷ Together these reflect a simple fact – in the context of national security the CANUS relationship is critical to Canadian interests and our security. To nurture this relationship, Canada must continually demonstrate that it is a trusted partner in continental defence.

Although the U.S. has the capability to unilaterally defend itself, it is better served by cooperating with its neighbours, if for no other reason than economy of effort. The realization that North America is a single military theatre of operations is not so

⁴ “The United States is a great friend of Canada. On a huge number of issues, our interests are complementary. The real test of our sovereignty is whether we are capable of acting in our own interests when those interests do not coincide with what any particular U.S. government deems American interests to be. The interests of the two countries will not always coincide.” Senate Committee on National Security and Defence, *Interim Report by the Senate Committee on National Security and Defence – Canadian Mindsets on Defence and Security* (Ottawa: June 2006); available from http://www.parl.gc.ca/39/1/parlbus/commbus/senate/com-e/defe-e/rep-e/repintjun06-e.htm#_Toc138400005, accessed April 9th, 2007.

⁵ Andrew Richter, “Towards a More Strategic Future? An Examination of the Canadian Government’s Recent Defence Policy Statements,” *Canadian Military Journal*, Vol. 7, no. 1 (Spring 2006): 34.

⁶ *Canada’s National Security Policy*, 1.

⁷ *Idib.*, vii.

remarkable, in hindsight, given the geographic realities and interdependent economies of Canada, the U.S. and Mexico. President Roosevelt and Prime Minister Mackenzie-King realized that mutual cooperation was essential in 1938.⁸ For Canada this imperative to cooperate has always necessitated striking a balance between sovereignty and too much help with defence.⁹ A principal success in this regard is the North American Aerospace Defence (NORAD) agreement.

Canada is acutely aware of NORAD's significance within the overall CANUS relationship and is committed to its ongoing development – principally because Canada has much to lose if it should dissolve. In the most recent Defence Policy Statement (DPS), the Minister of National Defence (MND) wrote:

*We will build on the successful bilateral defence arrangements currently in place, such as NORAD. And we will seek to develop new, innovative approaches to defence cooperation with the United States, to better meet the threats to both countries.*¹⁰

NORAD is a strategic interest for both countries. The continued existence of NORAD is de-facto proof that bi-national defence agreements are effective and future defence agreements should capitalize on NORAD's successes. This does not mean that NORAD must trump other options or exist in perpetuity. The challenge is to leverage NORAD's strengths when designing the next generation continental defence agreement.

⁸ “The Dominion of Canada is part of the sisterhood of the British Empire. I give to you assurance that the people of the United States will not stand idly by if domination of Canadian soil is threatened by any other Empire.” Franklin D. Roosevelt, *Address at Queen's University*, Kingston, Ontario, August 18th, 1938. Available from <http://www.ibiblio.org/pha/7-2-188/188-09.html>, accessed April 20th, 2007.

⁹ Bernard Stancati, “The Future of Canada's Role in Hemispheric Defense.” *Parameters*, Vol. 36, no. 3 (Autum 2006): 106.

¹⁰ *A Role of Pride and Influence in the World, Defence*, i.

This essay will argue that NORAD has reached the limit of its ability to further expand its mandate and that future defence arrangements on a bi-national NORAD model are problematic. Specifically, the limits reflect the differing characteristics between the non-aerospace domains (land, maritime and space) and the challenges associated with implementing a pan-continental defence regime that includes Mexico. The paper is structured to provide a historical background, with a view to identifying NORAD's strengths. With this understanding the impediments to closer defence integration will be discussed. Finally, the issue of a pan-continental defence agreement will be explored.

This essay is focused on the military aspects of national security as they pertain to continental defence.¹¹ Defence exists within a much larger overall security framework, which is dominated by other government departments normally assigned a lead role. Therefore, issues such as interagency cooperation and the other elements of national power that contribute to security (such as diplomacy, information and economics) are introduced only as they pertain to defence, and more specifically NORAD.

BACKGROUND

The following discussion will provide an historical overview of modern CANUS defence cooperation, which led to the development of NORAD. The consequences of the September, 2001 attacks on the security environment and the reorientation of NORAD's mandate will conclude the background.

¹¹ The North American continent includes Canada, U.S., Mexico, Central American and Caribbean nations. For the purposes of this essay the latter two sub-sets will be ignored in favour of the three larger contiguous nations, which share common borders with the U.S.

Cooperation and Evolution

NORAD is part of a much larger framework of contemporary CANUS defence agreements, which began during World War II. In 1940 the two countries announced the Ogdensburg Agreement, which formalized continental defence cooperation, and formed the basis for increased wartime collaboration.¹² Since 1940 over 2,500 agreements have been formalized between the two nations. The three most significant defence agreements are the Permanent Joint Board on Defence (PJBD), the Military Cooperation Committee (MCC) and NORAD.¹³

The PJBD is the senior advisory board on defence matters between the two nations. It is comprised of senior military and political representatives functioning at the federal level and provides recommendations on bi-national defence issues.¹⁴ The MCC was established by the PJBD in 1946 to “act as a forum for the management of military planning and the coordination of military information exchange” at the strategic-military level.¹⁵ The MCC developed the Basic Security Plan and aided in the creation of the continental air defence system, which was a precursor to NORAD. Together these two

¹² Foreign Affairs and International Trade, “Canada and the World: a History,” available from <http://www.dfait-maeci.gc.ca/department/history/canada6-en.asp>, accessed April 18th, 2007.

¹³ Canadian Forces, “Defence Cooperation: Principle Agreements,” available from http://www.forces.gc.ca/site/focus/canada-us/agree_e.asp, accessed April 4th, 2007.

¹⁴ Department of National Defence, “Backgrounder: the PJBD,” available from http://www.dnd.ca/site/newsroom/view_news_e.asp?id=298, accessed April 4th, 2007.

¹⁵ Government of Canada, “Canada-U.S. Defence Organizations,” available from http://www.canadianembassy.org/ca/canus_mcc-en.asp, accessed April 4th, 2007.

forums have established a precedent for bi-national cooperation, which continues to underpin continental defence today.¹⁶

The North American Air Defence Command was formally established on May 12th, 1958, with an exchange of diplomatic notes between Canada and the U.S. Since that time the agreement has been renewed nine times – most significantly in 1975, 1981, 1996 and 2006.¹⁷ The original agreement is a good example of bi-national cooperation, which was developed from the bottom-up and formalized the pre-existing air defence arrangements.¹⁸ It was also a recognition that Canadian national interests were better served within, rather than without, a CANUS defence agreement.¹⁹ NORAD remains unique because it established a bi-national command structure that reports to both governments, while preserving the national control of military forces. It facilitated the cross border movement of air forces and the establishment of jointly operated (and funded) radar facilities on Canadian territory.

During the 1950s NORAD was solely focused on the manned bomber threat originating from the USSR, which was expected to cross the polar region carrying nuclear weapons destined for urban centres in the U.S. By contemporary standards the threat was unidirectional and slow flying. Surveillance and detection was primarily affected by ground based radar stations and designed to give early warning so that air

¹⁶ Philippe Lagasse, “Northern Command and the Evolution of Canada-US Defence Relations,” *Canadian Military Journal*, Vol. 4, no. 1 (Spring 2003): 17.

¹⁷ Department of National Defence, “Backgrounder: NORAD (BG-06.011 - May 12, 2006),” available from http://www.mdn.ca/site/Newsroom/view_news_e.asp?id=1922, accessed April 12th, 2007.

¹⁸ D.F. Holman, *NORAD In the New Millennium* (Toronto: Irwin Publishing, 2000): 12.

¹⁹ Lagasse, 17.

defence missiles and fighters could be respond accordingly. A successful shoot down was essential to avoid a massive retaliation by the U.S. strategic nuclear forces. In subsequent decades three radar lines were established, slowly creeping northward as the demand for greater stand-off distances was matched with improved technology (Figure 1). Each successive line established a greater degree of warning but the overall coverage remained discontinuous:²⁰

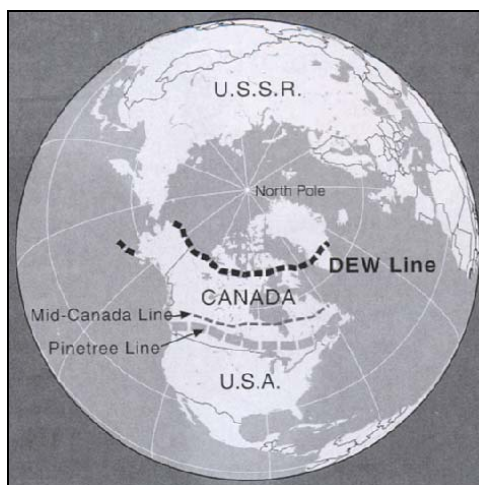


Figure 1. Early NORAD radar lines.²¹

The 1960s heralded the deployment of intercontinental ballistic missiles (ICBMs) and a new threat for NORAD systems to contend with. These weapons remained at high readiness and their short time of flight (less than one hour) required high air defence readiness levels when compared to bombers.²² Submarine launched ballistic missiles (SLBM) further complicated air defence because of their strategic mobility and reduced

²⁰ Holman, 9.

²¹ Arthur Johnson, "Undoing the DEW Line," *Canadian Geographic* 127, no. 2 (March/April 2007): 72.

²² Holman, 14.

flight time when compared to the ICBM. Warheads and guidance technology continued to improve but the strategic triad – bombers, ICBMs and SLBMs – remained the principle threat throughout the Cold War. During the period 1960-90 new defensive countermeasures were fielded within NORAD; such as sophisticated phased array radars, the Ballistic Missile Early Warning System (BMEWS) and satellites to detect thermal launch signatures and track space objects. U.S. strategic doctrine also evolved into mutually assured destruction (MAD) and the survival of the retaliatory second strike capability were paramount defence concerns.²³ NORAD played a crucial role in this regard because it was a trip wire, ensuring that “launch on warning” was a credible deterrent.²⁴

In 1981 the Command was renamed from Air Defence to Aerospace in recognition of the continuous battle space it was contending with. Concurrently the emergence of the Air Launched Cruise Missile (ALCM) coincided with the fielding of new counter-measures fielded under the NORAD Modernization program. This included the integration of Airborne Warning and Control System (AWACS) platforms into the existing radar system and fighter aircraft upgrades. Construction of the North Warning System (NWS) was also undertaken to enhance ground based radar surveillance of the northern airspace (Figure 2):

²³ Peter Paret, *Makers of Modern Strategy* (New Jersey: Princeton University Press, 1986): 757.

²⁴ Holman, 17.

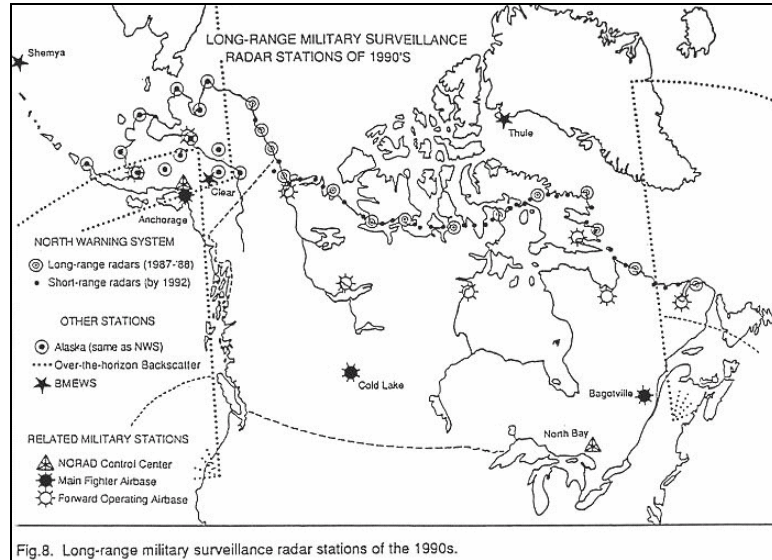


Figure 2. North Warning System (NWS).²⁵

Throughout the first 40 years, NORAD had successfully managed a relentless series of measure-countermeasure cycles whereby the U.S. and USSR postured to gain a relative advantage. However, the fall of the Berlin Wall and the dissolution of the USSR into its constituent parts ushered in a new security era. What emerged was the spectre of terrorism and Weapons of Mass Destruction (WMD) under the control of rogue states or non-state actors. Concurrently, a complementary missile defence concept (Strategic Defence Initiative (SDI)) emerged in the U.S., which was focused on defeating massive missile launches by the USSR. Eventually this was proved too costly and it was re-focused to counter the lesser rogue missile threat and this system was the genesis of

²⁵ Roy J. Fletcher, "Military Radar Defence Lines of Northern North America: An Historical Geography," available from <http://www.pinetreeline.org/articles/figure8.jpg>, accessed April 4th, 2007. The NWS consists of 15 long-range radars (11 in Canada, four in Alaska) and 39 short-range radars (36 in Canada, three in Alaska) and remains active today.

Ballistic Missile Defence (BMD), which is intrinsically linked to national defence and NORAD.²⁶

Throughout the 20th century NORAD excelled at deploying air defence countermeasures in a bi-polar world. What emerged was a complex network of space and ground-based radars, fighters, air refuelling tankers and surveillance aircraft, commanded by a single bi-national HQ. In spite of its singular purpose, NORAD was incapable of detecting or warning of the attacks on September 11th, 2001.

9/11 and the Aftermath

We found that NORAD, which had been given the responsibility for defending U.S. airspace, had construed that mission to focus on threats coming from outside America's borders. It did not adjust its focus even though the intelligence community had gathered intelligence on the possibility that terrorists might turn to hijacking and even use of planes as missiles.²⁷

The National Commission on Terrorist Attacks Upon the United States uncovered “...failures of imagination, policy, capabilities, and management,” which contributed to the successful attacks on 9/11.²⁸ NORAD was a crucial pillar of CANUS national defence and its inadequacies contributed to the overall system failure. The Commission determined that NORAD was primarily defending outwards and failed to anticipate the threat of asymmetric suicide hijacking. Additionally, the NORAD-FAA (Federal

²⁶ Missile Defence Agency, “Ballistic Missile Defense: A Brief History,” available from <http://www.mda.mil/mdalink/html/briefhis.html>, accessed April 13, 2007.

²⁷ *The 9/11 Commission Report, Final Report of the National Commission on Terrorist Attacks Upon the United States* (Washington: 2004): 427.

²⁸ United States, “The 9/11 Commission Report, Final Report of the National Commission on Terrorist Attacks Upon the United States - Executive Summary,” available at http://www.9-11commission.gov/report/911Report_Exec.htm, accessed April 5th, 2007.

Aviation Administration) hijacked aircraft protocols were inadequate to deal with the situation.²⁹ Following the attacks poor communications resulted in the scrambling of U.S. National Guard units with different rules of engagement and without the knowledge of NORAD.³⁰ In spite of these failings, NORAD was credited with a flexible response that re-established airspace control (i.e. a nationwide alert was implemented, local air traffic was stopped and inbound international flights were diverted).³¹ The attacks also highlighted the inherent weakness of high technology, and NORAD, when confronted with a determined enemy operating well below the radar detection threshold.

This watershed event precipitated a reorientation of U.S. security efforts. The 2002 NSS reaffirmed that “[d]efending the U.

The creation of the Department of Homeland Security (DHS) and U.S. Northern Command (USNORTHCOM) in October 2002 was tangible proof the security posture had changed (see missions [Appendix 2](#)).³⁴ This was significant to Canada for two reasons. First, the new command was aligned with other powerful U.S. combatant commands and its scope of responsibilities was initially unclear.³⁵ This situation challenged the status quo because the NORAD region was subsumed within a larger area of responsibility (AOR) and there was not an overarching bi-national command relationship. Second, almost overnight a gap (i.e. in readiness, posture and policy) existed between the two nations and Canada might be shut-out of future continental defence initiatives if the U.S. pursued unilateral action.³⁶ Canada's initial response caused concerns within the U.S., where doubts began to emerge about our willingness and capability to participate in continental defence:³⁷

³⁴ Also significant was the integration of USSPACECOM's responsibilities by USSTRATCOM, which linked NORAD's warning and assessment functions to the strategic nuclear forces. Joseph T. Jockel, "Four U.S. Military Commands: NORTHCOM, NORAD, SPACECOM, STRATCOM – T. 0.044S. BDCd[(whi)T Td

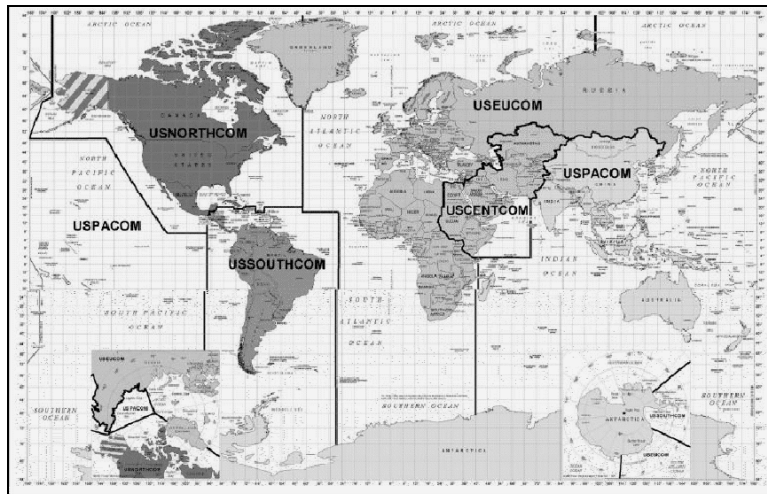


Figure 3. USNORTHCOM area of responsibility.³⁸

In quick succession Canada began to reorder its domestic policies and align them more with the U.S. security needs.³⁹ In December 2001, the CANUS Smart Border Declaration (SBD) was signed.⁴⁰ Under this agreement the two nations pledged to cooperate in order to improve the flow of people and goods, secure infrastructure and share information in order to bolster security.⁴¹ Significant Canadian military activity did not begin until 2002 when a Diplomatic Note for Enhanced Military Cooperation was exchanged, which enabled the establishment of the Bi-national Planning Group (BPG).

³⁸ GlobalSecurity.org, “U.S. Unified Command Plan (UCP),” available from <http://www.globalsecurity.org/military/agency/dod/unified-com.htm>, accessed March 15, 2007.

³⁹ Stephen Clarkson and Maria Banda, “Congruence, conflict, and continental governance: Canada and Mexico’s response to paradigm shift in the United States,” *The American Review of Canadian Studies* 34, iss. 2 (Summer 2004): 323.

⁴⁰ Concurrently the U.S. withdrew from the 1972 Anti-Ballistic Missile (ABM) Treaty in December 2001. Overnight Canadian concerns about arms control and the Soviet Union’s response to BMD evaporated due to a paucity of serious international complaint. Wade Boese, “U.S. Withdraws From ABM Treaty; Global Response Muted,” *Arms Control Today*, available from http://www.armscontrol.org/act/2002_07-08/abmjul_aug02.asp, accessed, April 15th, 2007.

⁴¹ Canadian Border Services Agency, “North American Partnerships: Working with the United States,” available from <http://www.cbsa-asfc.gc.ca/agency-agence/partner-partenaire-e.html>, accessed April 15th, 2007.

The BPG's purpose "was to enhance bi-national military planning, surveillance and support to civil authorities" and would submit its final report in 2006.⁴² This Group operated outside of the NORAD structure in order to provide a conduit for discussions between the two militaries. Its tasks included a review of plans and agreements, training, and proposals to expand the NORAD mandate into other domains. The BPG's success was heavily reliant on its ability to synchronize military plans within the larger security framework, which was dominated by non-defence agencies (and departments) in both nations.⁴³

The August 2004 NORAD renewal was not a substantial change in modus operandi but it did incorporate the missile warning function, which formally linked NORAD to USSTRATCOM and BMD. NORAD was already providing the missile warning function (since the early 1960s) and the renewal, much like the original 1958 agreement, merely reflected reality.⁴⁴ This was significant because it reflected the fact that NORAD's future role was dependent on integration to avoid marginalization (i.e. to the lesser air defence role).⁴⁵ Throughout this period the BMD debate simmered without a Canadian commitment.

⁴² Department of National Defence, "Backgrounder Enhanced Canada-U.S. Defence Cooperation and the Bi-National Planning Group (BG-04.041 - April 1, 2006)," available from http://www.dnd.ca/site/Newsroom/view_news_e.asp?id=1528, accessed April 10th, 2007.

⁴³ Lieutenant-General Rick Findley and Lieutenant General Joe Inge, "North American Defence and Security in the Aftermath of 9/11." *Canadian Military Journal* 6, no. 1 (Spring 2005): 13.

⁴⁴ *A Role of Pride and Influence in the World, Defence*, 22. "Canada became part of BMD, whatever the minister of defence or the PM may claim." John J. Noble, "Defending the United States and Canada, in North America and Abroad," *Policy Options* 26, no. 4 (May 2005): 28.

⁴⁵ Jockel, "Four Commands..." 6.

After years of indecision and ambiguity the Canadian government abruptly decided, in February 2005, not to participate in the BMD program. Canada was concerned with its future credibility in arms control negotiations; but more important was the adverse effect of domestic politics and the influence it exerted on a minority government.⁴⁶ Not surprisingly, the decision was at odds with published policy statements that sighted a need for closer collaboration with our closest ally. The decision also called into question Canada's credibility and reliability as a defence partner.⁴⁷

The U.S was keenly aware that “[i]f America's nearest neighbors are not secure and stable, then Americans will be less secure” and Canada began to take concrete measures to address the capability gap in 2005.⁴⁸ The Defence Policy Statement (DPS) acknowledged “...that a greater emphasis must be placed on the defence of Canada and North America than in the past” and that enhanced relations with the U.S. were essential to this end.⁴⁹ Crucial activities were initiated to revitalize the Canadian Forces (CF), such as the transformation of command and control (C²), improved coordination with other government departments (OGD), improved interoperability with its allies, and

⁴⁶ Andrew Richter, “Towards a More Strategic Future? An Examination of the Canadian Government's Recent Defence Policy Statements,” *Canadian Military Journal* 7, no. 1 (Spring 2006): 37-38.

⁴⁷ Raymond Chretien, “Canada losing its credibility, ex-envoy says,” *The Ottawa Citizen* (Ottawa: May 25th, 2005). The decision also relegated elements of self defence to the U.S. It is conceivable that a rogue missile attack might not be intercepted in the global commons and Canada could be confronted with a unilateral U.S. action over Canadian territory. This decision also sent mixed messages about our willingness to defend the continent and this might affect future NORAD renewal negotiations unless concrete action was taken. Lieutenant-General (ret'd) George Macdonald, “Canada-U.S. Defence Cooperation: where to from here?” *Canadian Military Journal* 6, no. 2 (Summer 2005): 5-7.

⁴⁸ *The National Security Strategy of the United States of America 2006*, 37.

⁴⁹ *A Role of Pride and Influence in the World, Defence*, 2.

updated C4ISR capabilities.⁵⁰ The 2005 Budget allocation for defence and the ongoing commitment to Afghanistan were two more tangible signs that security was gaining in prominence.⁵¹ From a NORAD perspective the establishment of Canada Command (Canada COM) in February 2006 was highly significant. This command was designated as the primary operational military link with USNORTHCOM and an essential partner in CANUS defence.⁵² The issue of an expanded NORAD role and the results of the BPG would figure prominently in the upcoming 2006 NORAD renewal.

NORAD Mandate

*[NORAD's mission is to] continuously provides worldwide detection, validation and warning of a ballistic missile attack on North America and maintains continental detection, validation, warning and aerospace control of air-breathing threats to North America, to include peacetime alert levels and appropriate aerospace defense measures to respond to hostile actions against North America.*⁵³

⁵⁰ *Ibid.*, 11. Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR).

⁵¹ Canadian defence spending remains meagre by western standards. The 2005 budget allocated \$12.5B and an additional \$12.8B over five years for defence procurement. Defence spending as a percentage of GDP has declined steadily from 1.7% (1983-84) to its current 1.0% (2005-06). This places Canada 24th in NATO and well behind the U.S. (3.7%, 2005) and UK (2.3%, 2005). Senate Committee on National Defence and Security, "Interim Report by the Senate Committee on National Security and Defence" (Ottawa: June 2006), Appendices 4 and 5; available from http://www.parl.gc.ca/39/1/parlbus/commbus/senate/com-e/defe-e/rep-e/repintjun06-e.htm#_Toc138400005, accessed April 9th, 2007.

⁵² "The Commander, Canada COM, tasked as responsible for the overall defence of Canada, will necessarily need to develop an effective relationship with NORAD. To that end, the Commander of the Canadian NORAD Region (CANR), while operationally responsible to the Commander NORAD for the aerospace defence mission within his AOR (all of Canada), will be double hatted as the Combined Forces Air Component Commander for Canada COM, and responsible to the latter for the centralized generation and scheduling of all non-NORAD (and non-CEFCOM) assigned air assets within the CF." and is delegated "Planning authority with USNORTHCOM, NORAD and other US Combatant Commands, and Mexican Military Authorities as required." Canada Command, "Concept of Operations (unclassified)," (Ottawa: April, 2006): 4-8/8 and 5-4/45.

⁵³ NORAD, "Our Vision," available from http://www.norad.mil/about_us/vision.htm, accessed March 28th, 2007. Note, this statement has not been revised to include maritime warning.

NORAD's bi-national defence mission is best described as watch, warn and respond. It has three principle tasks, which are aerospace warning, aerospace control and maritime warning (see lexicon [Appendix 1](#)). The assessment and warning functions are performed by headquarters (HQ) NORAD, which is co-located with USNORTHCOM in Colorado. This Combined Command Centre is responsible to integrate a worldwide system of sensors and fulfill the Integrated Tactical Warning and Attack Assessment (ITWAA) role for continental defence.⁵⁴ This arrangement reflected a growing trend in the U.S. towards the integration of surveillance information and the staffs responsible for ITWAA. The surveillance and control functions are performed by the three NORAD Regions (see organization [Appendix 2](#)), which also employ the attached national air forces.

In summary, there are three characteristics that strongly favour NORAD in any future continental defence and security framework. These characteristics are its institutionalized unity of purpose (i.e. bi-national command), flexibility and cooperation, and a broadening common operating picture (COP). Therefore, the inclusion of the maritime warning function into the NORAD mandate in 2006 was not surprising. More significant were the other functions that were excluded – maritime control, land

⁵⁴ The Combined Command Centre was previously the Cheyenne Mountain Operations Centre (CMOC), which included “peripheral centres such as the Missile Warning Centre, NORAD Battle Management Centre, Space Control Centre, Systems Centre, Intelligence Centre and Weather Centre. CMOC is the central collection, assessment, coordination, and warning centre... The Combined Command Centre and the Missile Warning Centre perform the missile warning and assessment role for NORAD. The missile events are detected by U.S. Defence Support Program satellites and by ground-based early warning radars located in Alaska, Greenland, Britain and the continental United States.” Department of National Defence, “NORAD: Working Together,” available from http://www.airforce.forces.gc.ca/athomedocs/athome_1_2_e.asp, accessed April 5th, 2007.

operations and further expansion into a tri-national context – that expose the future limitations.

LIMITATIONS

The continued integration of information and staffs is inevitable and NORAD is well positioned to contribute to this evolution. Ultimately this integration must include all domains and agencies involved in defence and security to be truly effective.

Concurrently the move towards a higher degree of tri-lateral defence cooperation within the continent is essential to success.

Collaboration versus Integration

Over the next decade, the Department of Defense, in conjunction with the Department of State and the Department of Homeland Security, and working with our Canadian partners, will strengthen the NORAD concept by identifying mechanisms for sharing information across the air, maritime, and land operational domains— with shared awareness of the North American maritime domain as the first priority.⁵⁵

NORAD is a key defence enabler but it is incapable of warning and responding in isolation. The CANUS defence architecture has developed into a mosaic of agencies with overlapping geographic areas of responsibility and interest, which is represented in [Table 1](#). This table is a comparison of the national defence organizations and their respective functions (lead civilian agencies are excluded):

⁵⁵ *Strategy for Homeland Defense and Civil Support* (Washington: June 2005): 34.

		FUNCTION		
		SURVEILLANCE (WATCH)	WARNING	CONTROL (RESPOND)
DOMAIN	SPACE	USSTRATCOM	NORAD	USSTRATCOM USNORTHCOM
	AIR	NORAD	NORAD	NORAD
	MARITIME	Navy-CA USCG	NORAD	Navy-CA USCG
	LAND	Canada COM USNORTHCOM	Canada COM USNORTHCOM	Canada COM USNORTHCOM

Table 1. Continental defence responsibilities.

NORAD must interface with numerous organizations and no single entity has complete situational awareness (i.e. surveillance and COP) across all domains. NORAD is a key information integrator for a majority of the domains but the surveillance and control missions are performed by other organizations. This architecture is comprised of multiple sub-systems and is vulnerable to penetration along the seams. Two examples highlight this vulnerability. First, an action in the aerospace environment could have consequences in the land or maritime domains (i.e. an aircraft shoot down). Without the real-time integration across all functions the latter (i.e. Canada COM) could be unprepared to respond. Second, a threat in the maritime domain (i.e. a vessel with a cruise missile) could quickly escalate into a bi-national joint (and inter-agency) operation, which may be problematic without a common operating picture (COP) and unity of command.⁵⁶

⁵⁶ Brad W. Gladman, "Strengthening the Relationship: NORAD Expansion and Canada Command," *Journal of Military and Strategic Studies* 9, iss. 2 (Winter 2006/07): 9. At the military

To address these issues integration, or at the very least collaboration, is required. The combined NORAD and USNORTHCOM staffs and the shared command centre, which also includes an embedded Canadian staff, is a good example.⁵⁷ However, this arrangement is not without its problems for Canada (and defence in general), as identified by the BPG in its final report:

- ◁ **Access to Information.** Bi-national access to information is difficult due to restrictive security classification regimes and a “need to know” vice a “need to share” paradigm.⁵⁸
- ◁ **Technology.** Technology is a blessing as well as a curse. NORAD leads the defence community with a robust and integrated C4 capability in the aerospace domain. The current weaknesses are inter-organizational (i.e. common protocols and hardware) and inhibit the passage of real time information between departments, agencies and across borders.⁵⁹

Integration can only go so far and the recent inclusion of maritime warning into NORAD’s mandate is a case in point. Canada and the U.S. pursue maritime security differently. The Canadian Coast Guard is unarmed and maritime security is divided between four government departments – Defence, Transport, Fisheries and Oceans, and

operational level a combined maritime-air threat scenario could conceivably involve six or more agencies from Canada (coast guard, navy and Canada COM), the U.S. (coast guard, USNORTHCOM) and NORAD.

⁵⁷ Gladman, 10.

⁵⁸ *Canada and the United States (CANUS) Enhanced Military Cooperation* (Colorado: Bi-National Planning Group, 2006): 18.

⁵⁹ *Ibid.*, 22-24. Command, Control, Communications and Computers (C4).

Public Security and Emergency Preparedness.⁶⁰ In contrast, the U.S. Coast Guard is an armed and uniformed service; operationally employed by the Department of Homeland Security (DHS) with a lead role in maritime security.⁶¹ The likelihood of establishing a common bi-national maritime security framework that includes sea control and extends globally is very unlikely.⁶² From a Canadian perspective maritime warning represents the current limit of integration and future arrangements will need to be cooperative rather than integrative.⁶³

There is an increased reliance on space-based systems for communications and the observation of terrestrial objects.⁶⁴ This movement of sensors into the ultimate high

⁶⁰ “As an essential component of Canada’s sovereignty, the Canadian Coast Guard is a national institution, providing service in: Maritime safety, Protection of the marine and freshwater environment, Facilitating maritime commerce and sustainable development, Support of marine scientific excellence, and Support of Canada’s maritime priorities.” Canadian Coast Guard, “Canadian Coast Guard: Context - Canada as a Maritime Nation,” available from http://www.ccg-gcc.gc.ca/overview-apercu/context_e.htm, accessed April 16th, 2007. “The Canadian Coast Guard has not been able to contribute to the defence of Canada’s coastlines in any significant way because it lacks the mandate, the experience, the equipment, and the institutional focus to do so.” Senate Committee on National Security and Defence, “Canadian Security Guide Book: Coasts” (Ottawa: March 2007), available from http://www.parl.gc.ca/common/Committee_SenRep.asp?Language=E&Parl=39&Ses=1&comm_id=76, accessed April 16th, 2007, 1.

⁶¹ The USCG “is a military, multimission, maritime service within the Department of Homeland Security and one of the nation’s five armed services. Its core roles are to protect the public, the environment, and U.S. economic and security interests in any maritime region in which those interests may be at risk, including international waters and America’s coasts, ports, and inland waterways. . . To serve the public, the Coast Guard has five fundamental roles: Maritime Safety, Maritime Security, Maritime Mobility, National Defense and Protection of Natural Resources.” United States Coast Guard, “Missions,” available from <http://www.uscg.mil/top/missions/>, accessed April 16th, 2007.

⁶² Eric Lerhe, “Will We See a Maritime NORAD?” *Journal of Military and Strategic Studies* 9, iss. 2 (Winter 2006/07): 13-15.

⁶³ Joel J. Sokolsky and Philippe Lagasse. “Suspenders and a Belt: Perimeter and Border Security in Canada-US Relations.” *Canadian Foreign Policy* 12, no. 3, 21-22.

⁶⁴ Robert G. Joseph, Under Secretary for Arms Control and International Security, “Remarks on The President’s National Space Policy,” (Washington: December 13th, 2006), available from <http://www.state.gov/t/us/rm/77799.htm>, accessed April 18th, 2007. “The United States is more dependent upon space than any other nation. . . [and the] unimpeded access to and use of space is a vital national interest. . . The Defense Department has long acknowledged the vital importance of space. . . [and] Like their commercial counterparts, the reliance on these space-based assets is only increasing.”

ground is important and Canada is an active participant. Canada does not have the wherewithal to support its own space program so it must maintain access to the U.S. system – and this means delivering supporting capabilities and working within an increasingly integrated continental defence structure.⁶⁵ Canada is pursuing the Joint Space Project, which will introduce a number of capabilities to augment NORAD and security in general.⁶⁶ However, there are very real limits to the U.S. willingness to involve Canada in its space operations.⁶⁷ Cooperation towards enhancing the ITWAA functions is foreseeable but greater access to U.S. space and space-based systems, or further integration, is unlikely.⁶⁸ Closely related to the collaboration on space is the question of BMD.

⁶⁵ Holman, 73.

⁶⁶ The CF has two space-oriented surveillance programs under way. Project Epsilon, will use Canada's commercial Radarsat-2 imaging satellite (launched in 2005), to monitor maritime approaches to North America (i.e. general details on ship movements on the Pacific and Atlantic approaches out to 1,000 nautical miles as well as imagery from the polar regions). Project Sapphire, will feed data into the U.S. space surveillance network. The projected launch date of that system is 2009/2010. The system will use a single electro-optical sensor to provide information on the whereabouts of foreign satellites and orbiting debris. Sapphire also will allow gather data about objects re-entering Earth's atmosphere and could be integrated with NORAD's missile warning function. David Pugliese, "Canada Focuses Military Space on Continental, Homeland Defense," April 4th, 2005, available from http://www.space.com/spacenews/archive05/Milcan_040405.html, accessed April 10th, 2007.

⁶⁷ The U.S. is inclined to reject Canadian space integration because: it is a unified combatant command, sensitivity and U.S. reliance on space systems, Canadian air space and territory are not required, and the U.S. has an established space program. Joseph T. Jockel, *Security to the North: Canada-U.S. Defence Relations in the 1990s*, (East Lansing: Michigan State University Press, 1991), 155.

⁶⁸ United States, *U.S. National Space Policy (Unclassified)*, 7; available from <http://www.ostp.gov/html/US%20National%20Space%20Policy.pdf>, accessed April 17th, 2007. "International Space Cooperation. The United States Government will pursue, as appropriate, and consistent with U.S. national security interests, international cooperation with foreign nations and/or consortia on space activities that are of mutual benefit and that further the peaceful exploration and use of space, as well as to advance national security, homeland security, and foreign policy objectives. Areas for potential international cooperation include, but are not limited to: Space exploration; providing space surveillance information consistent with security requirements and U.S. national security and foreign policy interests; developing and operating Earth-observation-systems."

The U.S. did not ask to station BMD interceptors or radar on Canadian territory, and there was no financial cost associated with participation, when the 2005 no-decision was made.⁶⁹ Canada is inextricably linked to BMD through NORAD, which has developed a sophisticated aerospace COP that amalgamates air breathing and missile warning (i.e. they are both part of the integrated ITWAA function). Therefore, it is difficult to understand why, from a rational perspective, Canada remains opposed to the issue when it continues to pursue continental defence initiatives. If Canada is part of COP and has system providing input to its development, why not include ourselves in the decision to actively intercept a missile. A decision to opt-in demonstrates a willingness to participate in continental defence and further reduces the gaps in the overall defence architecture.

This reluctance to further integrate maritime and space functions also extends to the land domain. The U.S. Unified Command Plan (UCP) precludes the integration of foreign forces (i.e. within USNORTHCOM) and this would not be acceptable from a Canadian sovereignty perspective.⁷⁰ Land operations (i.e. surveillance and control) are fraught with complexities; such as interagency cooperation and concerns over border control and sovereignty. The feasibility of conducting surveillance over the entire continent is questionable; but a bi-national COP of specific regions (i.e. during a natural disaster) and border regions make sense. Therefore, it is prudent for Canada COM to pursue collaborative initiatives with USNORTHCOM that specifically support a land

⁶⁹ Dr. James Ferguson, "Shall We Dance? The Missile Defence Decision, NORAD Renewal, and the Future of Canada-US Defence Relations." *Canadian Military Journal* 6, no. 2 (Summer 2005): 18.

⁷⁰ Lagasse, "Northern Command..." 20-21.

COP.⁷¹ In the longer term NORAD may become less relevant as the USNORTHCOM-Canada COM connectivity improves; and NORAD is relegated to all domain warning and more traditional air defence missions.⁷²

The U.S. vision is clear, defence “...must approach the interception and defeat of threats to US territory from a joint, interagency, and, ultimately, intergovernmental perspective” and this includes Canada and Mexico.⁷³ The complete integration across all domains and functions under a single bi-national command, incorporating NORAD, is unlikely. What is emerging is a centralized NORAD warning capability while the surveillance and control functions remain with the respective parent commands (i.e. USNORTHCOM and Canada COM).⁷⁴ To improve effectiveness Mexico must become more integrated within a continental defence arrangement.

Pan-Continental Defence

*Our North American neighbors, Canada and Mexico, are vital to the protection of the US homeland and the continent.*⁷⁵

*...the Bi-National Planning Group is convinced that it is vital to adopt a continental approach to defense and security in order to optimize the effectiveness of both countries defense and security organizations.*⁷⁶

⁷¹ The BPG identified ongoing efforts to improve the COP capabilities and refinement of the Civil Assistance Plan (CAP), which covers bi-national actions to mitigate the effects of natural disasters or terrorist attacks. *Canada and the United States (CANUS) Enhanced Military Cooperation*, 22 and B-5.

⁷² Ernie Regehr, “NORAD: Further Down the Slippery Slope?” *The Ploughshares Monitor* 27, no. 3 (Autumn 2006): 9.

⁷³ *Strategy for Homeland Defense and Civil Support*, 17.

⁷⁴ Ernie Regehr, “NORAD Renewal: From joint defence to shared continental surveillance,” *Project Ploughshares Briefing #06/2*, February 2006.

⁷⁵ *Strategy for Homeland Defense and Civil Support*, 34.

⁷⁶ *Canada and the United States (CANUS) Enhanced Military Cooperation*, 32.

Continental defence is a daunting challe

and maritime) and enhance economic cooperation.⁸⁰ The vast majority of the initiatives are non-defence related but USNORTHCOM and Canada COM have identified the need to cooperate with Mexico on defence matters.⁸¹ However, the political intent to pursue collective defence has not translated to action on the ground as reflected in the BPG report:

During the SPP meeting in 2005, all three North American leaders described the security and prosperity of our nations as "mutually dependent and complementary." This evidenced the intent of our national leaders to move towards a continental approach to defense and security. While progress is being made, this political intent has not yet been fully translated into measurable initiatives among NORAD, Canada Command and U.S. Northern Command.⁸²

To date Ottawa has refused to endorse a continental security perimeter because of sovereignty concerns and worries about the “mexicanization” of the northern border. Instead Canada prefers to pursue bi-national agreements that protect the CANUS relationship.⁸³ The idea of a harmonized security and continental defence policy is chimerical at best. None of the nations will abandon their sovereign right to control immigration and trade in the foreseeable future – and the U.S. will always retain the right to unilaterally close its borders when threatened.⁸⁴ Therefore, a tri-national defence

⁸⁰ Government of Canada, “Canada, Security and Prosperity Partnership of North America - The Security Agenda,” available from <http://www.psp-spp.gc.ca/overview/security-en.aspx>, accessed April 15th, 2007.

⁸¹ “Canada COM will develop commensurate Situational Awareness on Mexico to complete the Continental picture” and is delegated “Planning authority with USNORTHCOM, NORAD and other US Combatant Commands, and Mexican Military Authorities as required.” Canada Command, “Concept of Operations,” 5-25/45 and 5-4/45.

⁸² *Canada and the United States (CANUS) Enhanced Military Cooperation*, 10.

⁸³ Sokolsky, “Suspenders...,” 19.

⁸⁴ “...security trumps trade...,” Clarkson, “Congruence...,” 322.

agreement, or even extensive military cooperation, is more and more unlikely. NORAD systems can penetrate Mexican aerospace to build the requisite maritime and air surveillance picture (or at least provide warning beyond territorial boundaries). The main difficulty arises with the surveillance and control of the land domain; hence the militarized U.S.-Mexico border. However, there are several measures that could improve the military situation. This includes inviting Mexico to send observers to NORAD and participating in discussions similar to the PJBD/MCC. The intent is to improve information sharing, enhance cooperation (such as tri-national exercises), and undertake planning particularly with respect to the response to civil emergencies along common borders.⁸⁵

In summary, the inclusion of Mexico into a pan-continental defence arrangement similar to NORAD is unlikely. The CANUS framework could be employed as a means to engage all three nations and enhance collaboration. However, there are considerable political as well as operational hurdles that must be cleared beforehand. In the meantime security initiatives such as the SPP and military liaison will have to bridge the growing divide between north and south.

CONCLUSION

NORAD has reached the limit of expansion; its future will increasingly focus on bi-national warning and traditional air defence functions. Given the increased dominance of USNORTHCOM and its growing links with Canada COM these two organizations

⁸⁵ *Building a North American Community*, 11.

will overtake NORAD and perform the terrestrial surveillance and control responsibilities. USNORTHCOM and Canada COM will continue to pursue greater collaboration with their respective national government security agencies, something that is clearly beyond the aerospace mandate of NORAD. It is also unlikely that any defence agreements will include Mexico given the current level of political resolve and the socio-economic stratification of the continent. Therefore, Canada must be prepared to pursue bi-national relations with the U.S. and ad-hoc initiatives with Mexico as necessary. Certainly tri-national cooperation will facilitate crisis planning and response so there is motivation to pursue wider pan-continental defence initiatives. Continued integration of national defence commands or the creation of a North American Defence Command is extremely unlikely. The continental defence system will remain a mosaic for the foreseeable future and collaboration must seek to close the gaps if it is to withstand the next unforeseen attack.

Appendices

[Appendix 1](#) Lexicon

[Appendix 2](#) Security Framework

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APPENDIX 1 – LEXICON

Aerospace is the environment that surrounds the earth and extends from the earth's surface vertically into space...two separate entities [air and space] considered as a single realm for activity..." (CF Aerospace Doctrine, 59).

Aerospace control consists of providing surveillance and exercising operational control of the airspace of Canada and the United States. Operational control is the authority to direct, coordinate, and control the operational activities of forces assigned, attached, or otherwise made available to NORAD. (NORAD Agreement)

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 defense. (NORAD Agreement)

Maritime warning consists of processing, assessing, and disseminating intelligence and information related to the respective maritime areas and internal waterways of, and the maritime approaches to, Canada and the United States, and warning of maritime threats to, or attacks against North America utilizing mutual support arrangements with other commands and agencies, to enable identification, validation, and response by national commands and agencies responsible for maritime defense and security. Through these tasks NORAD shall develop a comprehensive shared understanding of maritime activities to better identify potential maritime threats to North American security. Maritime surveillance and control shall continue to be exercised by national commands and, as appropriate, coordinated bilaterally. (NORAD Agreement)

National defence is an enabler of national security. It is the application of military power to promote and protect national security interests. It is part of national power, which includes diplomatic, information, military and economic (DIME) elements.

National security is the preservation of a way of life acceptable to the Canadian people and compatible with the needs and legitimate aspirations of others. It includes freedom from military attack or coercion, freedom from internal subversion, and freedom from the erosion of the political, economic and social values which are essential to the quality of life in Canada. *Promoting and protecting national interests is the essence of national security.* (CF Aerospace Doctrine, 19)

APPENDIX 2 – SECURITY FRAMEWORK

A conceptual CANUS security framework is depicted in Figure 5. This concept is not all inclusive and is intended to orient the key bi-national defence organizations (linked to NORAD) within the larger security environment. The lead agencies responsible for national security are the U.S. department of Homeland Security (DHS) and Public Safety and Emergency Preparedness Canada (PSEPC) respectively:

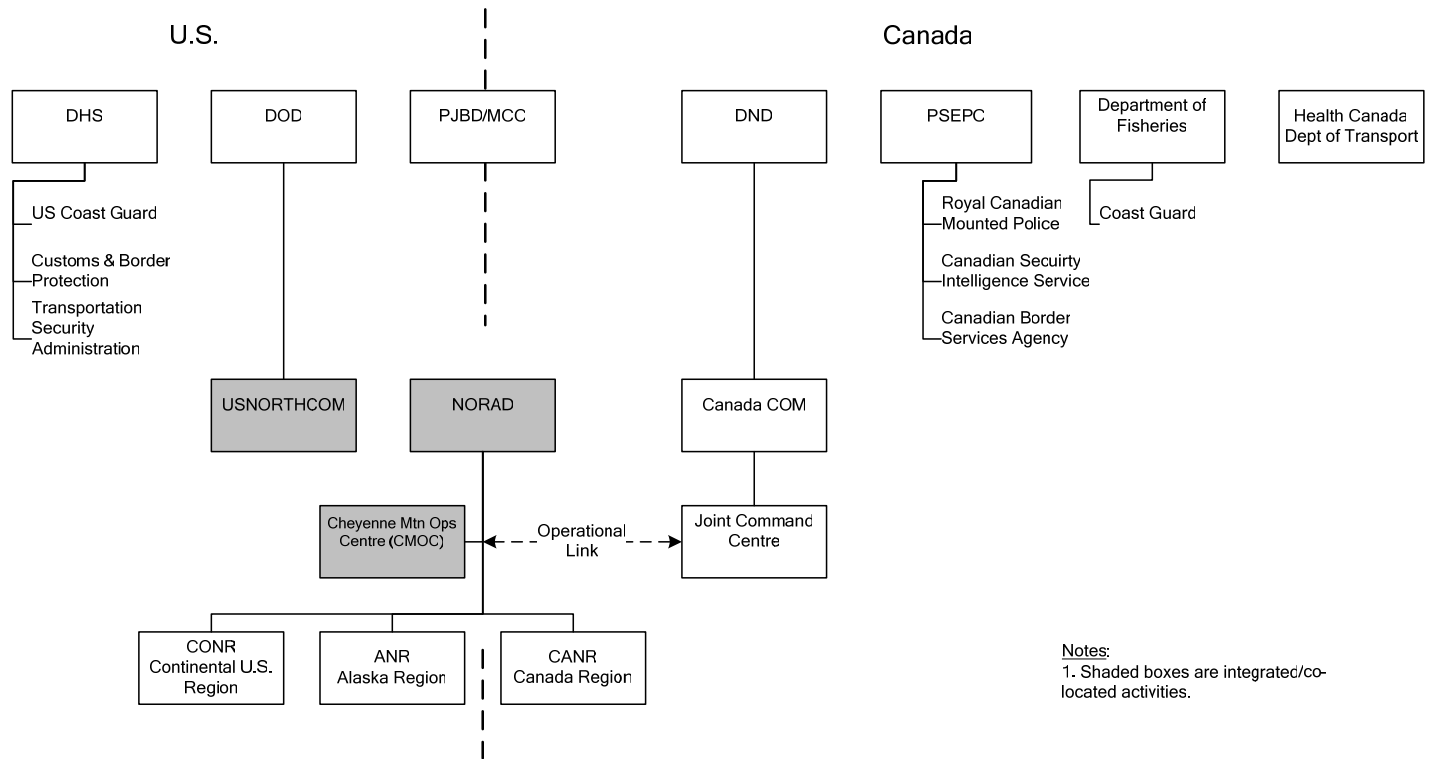


Figure 4. CANUS security framework.

Table 2 is a comparison of the assigned missions and areas of responsibilities:

AGENCY	MISSION	AREA OF RESPONSIBILITY	REMARKS
NORAD	NORAD continuously provides worldwide detection, validation and warning of a ballistic missile attack on North America and maintains continental detection, validation, warning and aerospace control of air-breathing threats to North America, to include peacetime alert levels and appropriate aerospace defense measures to respond to hostile actions against North America	Continental U.S. and Canada	
USNORTHCOM ⁸⁶	...conduct operations to deter, prevent, and defeat threats and aggression aimed at the United States, its territories and interests within the assigned area of responsibility (AOR); and as directed by the president	Air, land and sea approaches and encompasses the continental United States, Alaska, Canada, Mexico and the surrounding water out to approximately 500 nautical miles.	

⁸⁶ USNORTHCOM, available from http://www.northcom.mil/about_us/about_us.htm, accessed April 5th, 2007.

AGENCY	MISSION	AREA OF RESPONSIBILITY	REMARKS
	or secretary of defense, provide defense support of civil authorities including consequence management operations.		
Canada COM ⁸⁷	Canada COM will conduct operations to detect, deter, prevent, pre-empt and defeat threats and aggression aimed at Canada within the area of responsibility. When requested, Canada COM will provide military assistance to civil authorities including consequence management, in order to protect and defend Canada.	Canada..., the continental United States, specifically the 48 contiguous states and Alaska, Mexico and the approaches to these same landmasses.	Comd, 1 CA Air Div is double-hatted as the Combined Forces Air Component Commander (CFACC) for Canada COM. The CFACC, as the Commander, Canadian NORAD Region (CANR), retains his previously established NORAD responsibilities and duties, and remains operationally responsible to the Commander NORAD for all NORAD issues and operations.
USSTRATCOM ⁸⁸	Provide the nation with global deterrence capabilities and synchronized DoD effects to	Globe	

⁸⁷ Canada Command Concept of Operations, Version 3, April 3rd, 2006, 1-3/5.

⁸⁸ USSTRATCOM, available from <http://www.stratcom.mil/>, accessed April 5th, 2007.

AGENCY	MISSION	AREA OF RESPONSIBILITY	REMARKS
	combat adversary weapons of mass destruction worldwide. Enable decisive global kinetic and non-kinetic combat effects through the application and advocacy of integrated intelligence, surveillance and reconnaissance (ISR); space and global strike operations; information operations; integrated missile defense and robust command and control.		

Table 2. Mission comparison.