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**Beyond NORAD
and Modernization to North American Defence Evolution**

by Dr. Andrea Charron and Dr. James Fergusson
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POLICY PAPER

BEYOND NORAD AND MODERNIZATION TO NORTH AMERICAN DEFENCE EVOLUTION¹

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► **Executive Summary**

While most attention on NORAD and North American defence cooperation is focused on the modernization of the North Warning System (NWS), significant developments have occurred that suggest modernization will be accompanied by significant evolutionary changes to the Command. The new threat environment, centered upon Russian behaviour in Crimea, Ukraine and Syria, a new Russian strategic doctrine, and a new generation of advanced Russian long-range cruise missiles dictate not only layered, multi-sensor early warning system, but also changes in NORAD command arrangements. In addition, the maritime component of the cruise missile threat, alongside continuing concerns of terrorists employing freighters as cruise missile platforms, raise the question whether NORAD should evolve into a binational air-maritime defence command.

These considerations are central to the ongoing Evolution of North American Defence (EVONAD) study, emanating from the Canada-US Permanent Joint Board on Defence, under the lead of NORAD, in collaboration with the Canadian Joint Operations Command (CJOC) and US Northern Command (the tri-command structure). The final result is difficult to predict. However, it is clear that both modernization and evolution will be driven by the militaries engaged, with civilian authorities guiding the process, and the public and Canadian government not paying attention.



INTRODUCTION

Almost since its inception in 1957, little public attention was paid to the North American Aerospace Defense Command (NORAD) even though both the Canadian and American governments reflexively point to NORAD as the institutional centerpiece of a deep and broad Canada-United States defence relationship. From its original air defence mission, NORAD has evolved through the acquisition of ballistic missile warning in the 1960s, the provision of support to drug interdiction in the 1990s, and, most recently, maritime warning in 2006. Today, NORAD is on the cusp of another major evolutionary step forward that goes beyond upgrading and modernizing aged infrastructure and equipment.

Current attention to NORAD, however, has almost exclusively focused upon the modernization need, centered upon the requirement to replace the aging, and outdated North Warning System (NWS). While this requirement is certainly pressing and likely to be very costly, it masks much more significant evolutionary changes in the Command. Indeed, the very factors driving NWS modernization are also driving the need for evolution. Moreover, NWS modernization itself can be neither truly understood, nor undertaken without an understanding of broader factors at play and the underlying requirements necessary to integrate NWS modernization into the Command.

THE NEW THREAT ENVIRONMENT

The post-Cold War/911 era is ending. In the future, observers are likely to identify the period between 2014 and 2016 as the defining moments shifting attention from intra-state conflict and ‘the war on terror’ back to state-on-state great power politics and deterrence. In 2014, Russia annexed Crimea, and then covertly supported rebels in Eastern Ukraine. In 2015, the Russian military engaged in the Syrian civil war in support of the Assad Regime. At about the same time, China expanded its military activities in the disputed South China Sea, and refused to recognize the Permanent Court of Arbitration’s 2016 tribunal award on the South China Sea in favour of the Philippines.¹ At the same time, both Russia and China continue to develop advanced, technologically sophisticated military capabilities, clearly indicating an attempt to challenge American military superiority.

The most immediate and pressing concerns facing North American defence are from Russia, largely because China, for the time being, has adopted a regional access denial strategy, rather than an inter-continental one. Strategically, Russia has adopted the doctrine of ‘escalation to de-escalate’.² In a regional crisis or conflict, likely around Russian borders as a function of the expansion of NATO into Eastern Europe, Russia may seek to escalate the crisis by threatening or striking at a target outside the region, as means to force NATO/United States to de-escalate the crisis or conflict. In effect, the threat or act of escalation is designed to indicate the credibility of the possibility that Russia will go up the escalation ladder to the ultimate use of strategic nuclear weapons.



Combined with this doctrine, a new generation of military capabilities, nuclear and conventional, have been developed by Russia, along with significant increases in overall defence spending.³ Of major concern for North American defence is the new generation of air (ALCMs) and surface/submarine launched cruise missiles (SLCMs).⁴ These new long-range cruise missiles can be launched from their platforms at distances far outside of North American airspace in the Arctic, potentially from Russian maritime and airspace.⁵

The NWS as currently configured is inadequate to meet this threat and has been for some time. It is not in a physical position to be able to identify cruise missile launch platforms (bombers) at distances emanating from the Russian Arctic far before they reach of North American airspace as is required currently for NORAD to mount a response. Nor is the NWS capable of identifying and tracking cruise missiles, because of their low radar and flight path profiles. This also has direct implications for the final decision on the CF-18 replacement. In addition, the current location of NORAD forward operating locations (FOL) for jet fighters are likely too distant to be able to intercept and destroy the platforms prior to launch. There are no radar systems currently available, except for a limited supply of American Airborne Warning and Control (AWACS) platforms, to be able to detect ALCMs or SLCMs from a long distance off the east, and west, and north coasts of North America. Finally, Canada, in particular, does not possess any ground-based air defence capacity to intercept the missiles.

In effect, there exists a significant gap in North American defence especially with respect to cruise missiles, which in turn, cedes escalation dominance to the Russians. In other words, it provides Russia with a valuable tool for coercive diplomacy, central to the doctrine of 'escalation to de-escalate' by undermining the credibility of western deterrence, which would then rest upon the threat of strategic nuclear retaliation with all its credibility concerns.

This gap extends into another area of concern. Following the 9/11 experience and the ongoing proliferation of cruise missile technologies, potentially to terrorist organizations, the threat of a maritime platform (freighter) approaching North America armed with cruise missiles has become a security concern. While significant improvements have been made in North American maritime domain awareness (MDA) partially as a function of NORAD's newest maritime warning mission, Canada and the United States still face the possibility of a cruise missile attack by an ambitious nonstate actor.⁶ In this scenario, the maritime threat transitions into an air threat, and North American defence then faces the same problem as in the Russian case; the inability to defeat a cruise missile that crosses into North American airspace.

NORAD MODERNIZATION AND EVOLUTION

The 'new' threat or strategic environment is the primary driver behind both modernization and evolution. There are major gaps related to NORAD's aerospace and maritime warning missions, and its air defence control mission. Essentially, the requirements to fill these gaps dictate a response beyond simply modernizing the NWS and replacing aged radars, jets and ships. Concomitant with the new threats is the need for evolved command and control arrangements



as well as potentially expanded delegations of authorities, and the potential acquisition of a new missions, especially maritime control, to NORAD. In effect, the NORAD of tomorrow may be appreciably different from NORAD today which also means that the defence of North America will be different, assuming, of course, both governments agree to taking the necessary steps forward.

This modernization/evolution debate is not new. In 2013, General Jacoby, the commander of NORAD and US Northern Command (2011-2014), launched the NORAD Next study on the direction of the Canada-US Permanent Joint Board on Defense (PJBD)⁷; an in-depth examination of future North American defence requirements. Subsequently, it was reduced in scope, largely because of resource constraints especially on the Canadian side. In 2016, following a briefing on future requirements, the PJBD formally tasked NORAD, USNORTHCOM, CJOC, the NORAD regions and subordinates as well as the departments of defence on both sides of the border to examine future requirements. In so doing, the PJBD requested that the study, now labeled the Evolution of North American Defense (EVONAD), identify and establish priorities for modernization and evolution beyond just potential changes to NORAD, the first results of which will be briefed to the PJBD sometime this year.

The modernization side of EVONAD is focused naturally on the next generation of the North Warning System (NWS). However, modernization entails more than the simple replacement of the aging ground-based radars. The 'new' NWS will require the capability to identify and track air-breathing threats far farther from North America and may well need to be able to identify maritime threats as well. This cannot be achieved simply using ground-based sensors so some mix of ground, air, space and sea-based sensors, will be required. In addition the NWS will likely move farther north, and contribute to a layered system of sensors. Including potentially down the coastlines of North America.⁸

These requirements to modernize the NWS are also directly informed by strategic considerations. Rather than focusing on the threat projectile or 'arrows' (the missiles), the ideal strategy is to intercept the launch platforms or 'archers' as was the case during the final decade of the Cold War. Then, intercepting the 'archers' was not politically problematic, as such intercepts would take place near or in North American airspace in response to clear violations of international law and an armed attack against North America. However, this strategy now implies potential intercepts close to, or in Russian airspace or elsewhere far outside of North America. This, in turn, has significant political implications in times of crisis. It could entail a pre-emptive strategy and thus potentially shifts NORAD's posture from pure defence *per se* to one of offensive-defence.

Two key issues thus arise which extend beyond modernization to the evolution of North American defence more generally. First, such a doctrine of detecting, deterring and defeating the archers far from North America would potentially require a delegation of new authorities to NORAD, or under the purview of the Tri-Command relationship between NORAD, Canada Joint Operations Command (CJOC) and USNORTHCOM. Such new delegations would then have



implications for command and control (C2) constructs between and within the tri-command structure. Second, the American and in particular Canadian governments must clearly understand the political implications of such doctrinal changes.

A pre-emptive posture has long been central to American strategic doctrine. However, Canada has traditionally eschewed pre-emption mainly because of political and resource constraints, as well as the much smaller size and reach of its military. As such, the Canadian government may prefer to leave the ‘archers’ to the United States, and adopt a counter-cruise missile defence function of intercepting the ‘arrows’. This, however, has two related implications. It suggests that Canadian fighters dedicated to NORAD will not undertake the ‘archer’ mission, thereby potentially leaving a significant Northern gap that would likely be filled by the US. If so, Canada could agree to allow U.S. fighters to deploy to the northern FOL in lieu of Canadian fighters for the ‘archer’ mission. Politically, it does not really matter *per se*, as Canada, by virtue of its Article 5 NATO commitment and the reality of the indivisibility of North American defence, would end up engaged regardless of who undertook the pre-emptive mission. The other option, however, is for Canada to disagree or not agree. This would then re-create the ‘defence against help’ situation of the late 1940s, which somewhat strained Canadian and US relations.

A preemptive US posture, in which Canada stands aside, could potentially lead Canada to invest in cruise missile intercept capabilities, air, ground and sea-based, in the context of a binational military division of labour.⁹ Currently, Canada possesses, at best, limited, if any such capabilities. Indicative of this missing capability, the last NORAD Vigilant Shield exercise in 2017 entailed the deployment of American Avenger short range surface-to-air missile systems to CFB North Bay with sixty members of the South Carolina Army National Guard’s (SCNG’s) 263rd Army Air and Missile Defense Command.¹⁰ If Canada failed to invest as a function of costs, then arrangements would likely be required for Canada to accept more US personnel and equipment in Canada. This, in turn, would also have implications for current command and control arrangements in NORAD.

At the same time, the cruise missile threat extends into the maritime environment, in which a maritime threat, the platform, can quickly produce an air-breathing threat – a SLCM. This then raises the question of integrating maritime and air defence, and thus whether NORAD’s mission suite should expand into maritime control. Currently, maritime defence cooperation is undertaken based on a longstanding relationship, underpinned by memorandums of understandings (MOUs), between the Royal Canadian Navy (RCN) and US Navy. It lacks, however, a formal integrated centralized Canada-US command structure.¹¹ This, in turn, requires consideration of the linkages between North American command and control and the other US combatant commands, especially European Command (EUCOM) and Pacific Command (PACOM), as well as NATO. Events in EUCOM’s area of responsibility (AOR), for example, can have an impact in North America faster and more profoundly than was the case in the past as a function of the speed and technology of new weapon systems.¹² Deepening the connections to other combatant commands and regular strategic updates are essential to ensure that AOR’s are not stove piped or situation-specific.



The future of North American defence cooperation also extends beyond the aerospace and maritime sectors. One such sector is military outer space, which currently is managed bilaterally outside of NORAD, even though NORAD still tracks for inbound missiles and other objects on orbit. Here, of course, the thorny issue of ballistic missile defence (BMD) resides as a barrier somewhat.¹³ As a function of the integrated nature of North America *writ large*, cyber defence is another area of concern. While the US has stood up Cyber Command, Canada has no equivalent in terms of size and experience and is, for now, behind the curve. In addition, cooperation in the land environment remains largely nationalized, notwithstanding existing MOUs related to consequence management (for example, mutual assistance after a natural disaster).

Of course, this does not necessarily mean that NORAD is the only solution to command and control requirements for the defence of North America. Moreover, there are distinct differences among the air, cyber, land, maritime and space defence environments. Nor is it necessarily the case that all of the environments need to be integrated into a single binational command structure. Nonetheless, NORAD is an obvious solution to the demands generated by the new threat environment, especially in the air and maritime sectors, not least of all because of its highly successful track record as the centerpiece of North American defence cooperation. In addition, NORAD is no longer simply an aerospace command. As a function of its maritime warning mission acquired in 2006, NORAD has already become much more.

The more domains surveilled under the NORAD commander, the more information the commander has, in theory, to take decisions presumably farther out in time and space. In other words, an expanded range of missions sets allow NORAD to see and react farther away on the threat to “bang” continuum. If the addition of maritime warning to NORAD in 2006 is any guide, such decisions will be made with caution and then, if adopted, will be slowly accepted, with needed intervention at the highest levels before the militaries and federal agencies responsible for such domains are working seamlessly, if ever.

CONCLUSION

One might be quick to conclude that the primary driver behind EVONAD is the military and NORAD itself, following a pattern of evolving military cooperation that led to the creation of an operational NORAD command in 1957, followed by its political formalization in 1958. However, it is evident that modernization and evolution is on the higher political agenda. In the joint statement concerning the first meeting of Prime Minister Trudeau and President Trump in February, the two agreed that: “North American Aerospace Defense Command (NORAD) illustrates the strength of our mutual commitment. United States and Canadian forces jointly conduct aerospace warning, aerospace control, and maritime warning in defence of North America. We will work to modernize and broaden our NORAD partnership in these key domains, as well as in cyber and space.”¹⁴



Of course, how the President and Prime Minister, and their senior advisors understand and interpret the meaning of modernization and evolution, and whether they share a common interpretation remains for now an open question. In addition, the priority attached to EVONAD is likely to differ between Washington and Ottawa. For Canada at least, trade and border issues remain, as always, the priority.

NORAD will celebrate its 60th anniversary on 12 May 2018 and given the current geopolitical threat environment, both military and civilian authorities on both sides of the border are considering the future of NORAD and the evolution of North American defence. NORAD, however, is arguably the least understood of all the Canadian Armed Forces (CAF) and US commitments. The PJBD has yet to announce its American co-chair and attention to its role and purpose by governments on both sides of the border waxes and wanes. NORAD is also quite literally out of sight and out of mind for both publics: NORAD is considered in the vaguest of terms peaking at Christmas and the arrival of Santa.

This can be argued as evidence of NORAD doing its job well; usually press coverage is for failures not successes. On the other hand, NORAD can be more easily marginalized if it is not fore in the minds of governments and the publics. From the perspective of Canada, if past reactions involving increased US military cooperation with Canada outside of a foreign deployment is any guide, political resistance will be strong to changes to NORAD that involve a visible increase of US presence in Canada especially now when many Canadians are very suspicious of the current US administration. On the US side, any suggestion that the US is not clearly in control of its homeland defences requiring the aid of its much weaker neighbour would be treated as conspiracy and nonsense, especially in today's political climate. In the end, the future of EVONAD and NORAD, and thus Canada-US North American defence cooperation will emerge initially from the militaries, with civilian authority engagement guiding the process, and the government and public playing catch up not unlike lag between the operational inception of NORAD in 1957, followed by its political inception in 1958.



¹ See <https://pca-cpa.org/wp-content/uploads/sites/175/2016/07/PH-CN-20160712-Award.pdf>

² In some ways, Russian military doctrine is a reflection of NATO's Cold War doctrine. Whether in the context of massive retaliation of the 1950s, or flexible response of the 1960s and beyond, NATO's conventional military inferiority dictated a posture of first use of nuclear weapons, and domination of the escalation ladder to deter Soviet military aggression in Europe. Today, the situation has been reversed. Russia faces conventional military inferiority, and has responded by adopting a policy of first use of nuclear weapons, and a doctrine designed to provide Russia with escalation dominance.

³ In 2011, the Putin government announced an RUR trillion-dollar state armament investment program for the next ten years. See S. Oxenstierna and F. Westerlund, "Arms procurement and the Russian defense industry", *Journal of Slavic Military Studies*, 26 (2013): p.2. pp. 1–24 The planned investments have slowed somewhat as a function of economic issues directly related to the decline in the price of oil. Nonetheless, Russia has emerged as the third largest defence spender in the world, but its level is still dwarfed by American defence spending. (\$US 596024 millions in 2015 vs Russia's \$US 91081 million in 2015) From SIPRI Military Expenditure in constant \$US (2014) 1988 – 2015 found at <https://www.sipri.org/sites/default/files/Milex-constant-USD.pdf>

⁴ In addition, Russia also recently deployed a new generation of ground-launched cruise missiles (GLCM) in violation of the 1987 Intermediate Nuclear Forces (INF) Treaty. In 2016, the United States convened a meeting of the special verification committee created by the Treaty to raise formally the violations. Of note, Russian leadership, in the past, has threatened to withdraw from INF in response to United States/NATO ballistic missile defence developments, and have also argued that the Treaty is obsolete as a function of the development and deployment of intermediate range ballistic missiles by others not party to the Treaty. Michael R. Gordon. "Russia deploys missile, violating Treaty and challenging Trump. *New York Times*. Feb. 14, 2017. www.nytimes.com/2017/02/14/world/europe/russia-cruise-missile-arms-controltreaty.html?action=click&contentCollection=Politics&module=RelatedCoverage®ion=EndOfArticle&pgtype=article&r=0

⁵ The KH-101 cruise missile, first employed in Syria from a Blackjack bomber, is estimated to have a maximum operational range of 5500 km. at a cruising speed of 700 km, and capable of delivering either conventional ordinance or a 250 Kt. nuclear warhead. Andrei Akulov. "Russian Kh-101 Air-to-Surface Cruise Missile: Unique and Formidable" *Strategic Culture Foundation*. October 19, 2016. www.strategic-culture.org/news/2016/10/19/russian-kh-101-air-to-surface-cruise-missile-unique-and-formidable.html

⁶ For details on this mission and North American MDA, see Andrea Charron, James Fergusson and Nicolas Allarie. *Left of Bang: North American Domain Awareness and NORAD's Maritime Warning Mission*. Winnipeg: Centre for Defence and Security Studies. 2015.

http://umanitoba.ca/centres/cdss/media/0_NORAD_Maritime_Warning_Mission_Final_Report_8_Oct_2015.pdf

⁷ Donna Miles, "US Canada think ahead to NORAD Next" Airforces Press Service (7 January 2013) see <http://archive.defense.gov/news/newsarticle.aspx?id=118926>

⁸ The US has faced numerous problems with trails of the Raytheon high altitude tethered aerostats for cruise missile defence. See Jen Judson. "After blimp's wild ride, JLENS program will fly again, NORAD say." *Defense News*. Feb. 11. 2016.

⁹ This is not necessarily new. There already exists a *de facto* division of labour, because Canada is not engaged in ballistic missile defence, even though the US is not formally committed to defend Canada from a ballistic missile attack. This option was first raised in 1985 in the context of the US invitation for the allies to participate in the Strategic Defense Initiative (SDI). Canada would take responsibility for modernizing the NWS and air control mission, and leave the missile defence mission to the US. See, James Fergusson. *Canada and Ballistic Missile Defence 1954-2009; Déjà vu all over again*. Vancouver: University of British Columbia Press. 2010.

¹⁰ Vigilant Shield is the annual NORAD air defence exercise.

¹¹ In the case of the US, such a structure exists as a function of US Fleet Forces/NAVNORTH under US Northern Command.

¹² Of note here, US Northern Commands AOR extends 500 miles into the Atlantic, whereas Canada Maritime Atlantic Command (MARLANT) only extends to the limits of the Canadian exclusive economic zone of 200 nautical miles.

¹³ In 2004, Canada and the US amended the NORAD agreement to include the provision of ballistic missile early warning assessment to US NORTHCOM's BMD mission. It is a US only mission, although one can expect some positive reference to possible Canadian participation in the forthcoming Defence Review. On the amendment and existing relationship, see James Fergusson. *op.cit.*

¹⁴ *Joint Statement from President Donald J. Trump and Prime Minister Justin Trudeau*. Washington D.C. February 13, 2017. <http://pm.gc.ca/eng/news/2017/02/13/joint-statement-president-donald-j-trump-and-prime-minister-justin-trudeau>

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Dr. Andrea Charron holds a PhD from the Royal Military College of Canada (Department of War Studies). She obtained a Masters in International Relations from Webster University, Leiden, The Netherlands, a Master's of Public Administration from Dalhousie University and a Bachelor of Science (Honours) from Queen's University. Her research and teaching areas include NORAD, the Arctic, foreign and defence policy and sanctions. She serves on the DND's Defence Advisory Board and has published in numerous peer-reviewed journals. Dr. Charron worked for various federal departments including the Privy Council Office in the Security and Intelligence Secretariat and Canada's Revenue Agency. She is now Deputy-Director of the University of Manitoba's Centre for Defence and Security Studies and Assistant Professor in Political Studies.

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