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A Canadian CF-18 *Hornet* intercepts a Russian Tu-95 *Bear* long-range bomber.

Canada, the Freeloader, Rather Than Vested Defence Partner in NORAD and the Defence of North America

by Andrew Wood

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Introduction

The North American Aerospace Defence Command (NORAD) is often framed as the benchmark in the Canada-United States (U.S.) relationship, which celebrated its 60th anniversary in May 2018. It is charged with defending North America in the Air and Maritime domains.¹ The Cold-War origins of the relationship benefited both parties and traded space for capability and protection. Yet, despite Canada's repeated commitment to NORAD and the defence of North America,² a lack of political willingness, a diverted focus in favour of overseas operations, and a failure to invest in the capabilities required to maintain NORAD as a credible defence, has resulted in the Command's falling behind in its effectiveness to

carry out its assigned missions, failure to respond to, and lacking the capabilities required to respond to current and evolving threats to North America.

This article contends that a political commitment to the Canada-US relationship, combined with the policy and capability investments required to modernise NORAD, is urgently needed to restore the relevance of NORAD and render it an effective deterrent. These factors are, however, unlikely to be considered, due to the short-term political vision of Canadian politics, the unwillingness to commit the required funds to re-balance the capability relationship, and the belief that the U.S. will ultimately guarantee Canada's security. Canada, while considering itself equal, has always been the junior partner in an unequal relationship, and as the threats and organisation have evolved, that gap has widened.

The article will also briefly examine the mutually beneficial circumstances that led to the creation of NORAD, and for 30 years of its life, provided an effective defence of North America. It will then examine some contributory factors in the decline of its relative value and lost opportunities degrading deterrent effect, resulting in a flawed Canadian assessment of its own relevance and the utility of NORAD. Linked to this assertion, it will also examine the corresponding decline in its relevance to the U.S.,

and offer an opinion as to whether this is, in fact, due to Canadian neglect or other factors. The article will constrain itself to the extant NORAD Mission set and not venture into additional domains that are addressed through the Tri-Command sponsored Evolution of North American Defence (EvoNAD)³ study.

Historical Perspective

North America has the advantageous position of facing potential threats at standoff distances. Separated from potential aggressors by the Atlantic, Pacific and Arctic Oceans, Canada and the U.S. share an unparalleled defence relationship forged by a shared geography, common values/ interests, deep historical connections, and highly integrated economies. These factors inevitably elevate the task of defending North America to the strategic level. Equally important has been the commitment to work together to defend North America, initially through the joint commitment of the Ogdensburg Declaration in 1940,⁴ and since 1957/1958,⁵ through the Bi-National NORAD command.

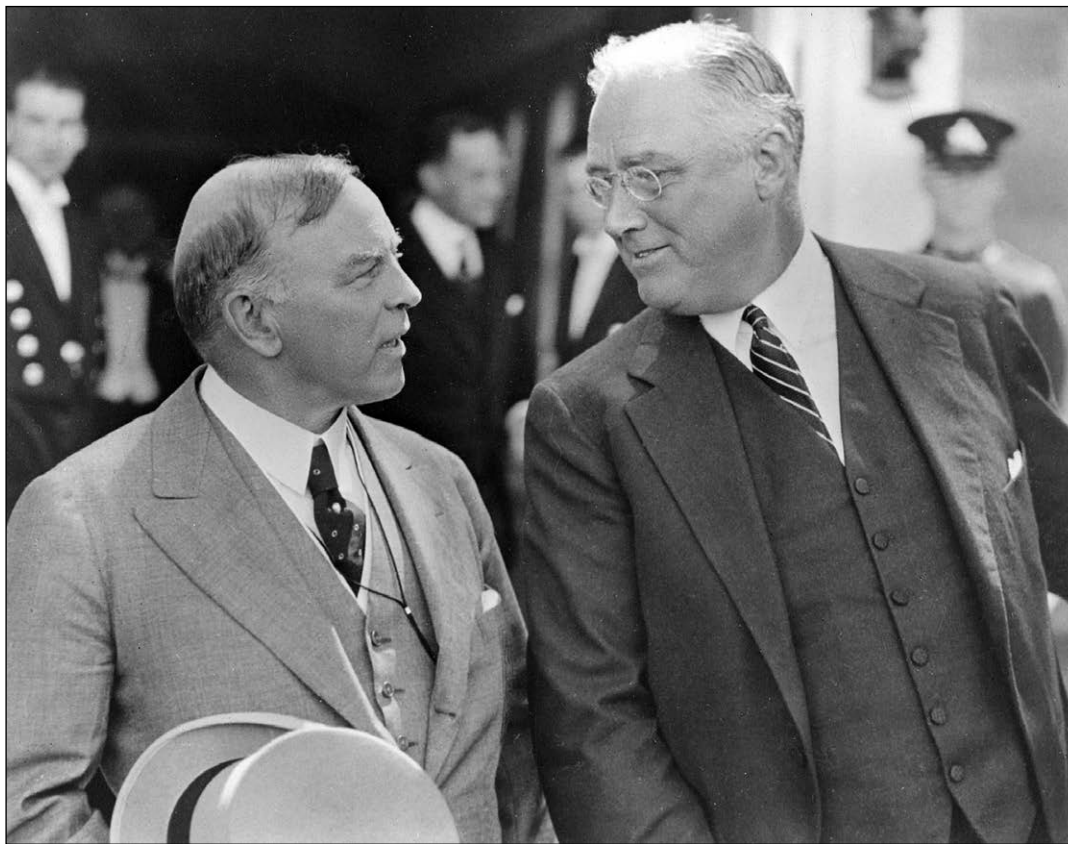
“North America has the advantageous position of facing potential threats at standoff distances.”

and threats faced by Canada and the United States. Its missions expanded in the 1960s to ballistic missile early warning with the emergence of intercontinental (ICBM) and submarine launched (SLBM) ballistic missiles. Subsequently, post 9/11, it assumed an asymmetric mission set, consisting of Operation *Noble Eagle One* to intercept and interdict civil aircraft with potentially nefarious intentions, and to the war on drugs, with its Aerospace Control Mission and a Maritime Warning Mission.⁶

The evolution of NORAD manifested itself in the Americans not wanting Canada to be a liability in its defence against Soviet aggression, and the recognition that Canada was incapable of defending itself.⁷ The U.S. therefore, identified the need for cooperation with Canada to acquire territory and airspace in order to provide strategic depth against potential Soviet targets.⁸ This led initially to the construction of the Pine Tree Line Radar warning installations, followed shortly afterwards by the Distant Early Warning (DEW) line radar-warning system.⁹ Concerns over Canadian sovereignty were addressed in terms of Canadian inclusion in site selection, and the application of Canadian legal status and title.¹⁰ Cooperation at the military

level led to the development of protocols for the cross-border interception and control of aircraft.¹¹ These protocols were subsequently accepted at the political levels of both governments, resulting in the NORAD agreement with its corresponding checks and balances,¹² to become responsible to both nations for the shared defence of North America.

The NORAD Agreement, most recently renewed in 2006,¹³ deliberately highlights the enduring nature of the bi-national relationship. However, the passing of 40 years since the last significant series of investments exposes the neglect both governments have placed upon continental defence, despite the rhetoric¹⁴ embodied in subsequent



Prime Minister William Lyon Mackenzie King and President Franklin D. Roosevelt at Ogdensburg in 1940.

The Cold-War Soviet nuclear threat, initially through manned bombers, led to the combined military conclusion that defence would be most effectively and efficiently met through a shared command and control structure. Based upon this conclusion, NORAD was founded in 1957, centred upon the shared interests

defence policies and national military strategies. Other factors have contributed to this neglect, namely, the end of the Cold War and a subsequent shift from continental defence, to expeditionary operations, and the historical belief that the defence of North America is best achieved far away from national territory.¹⁵



Close up of a radar antenna with the dome in the background. This DEW Line site is located at Cambridge Bay in the Arctic.

power conflict subsided, to be replaced by primarily-American led or supported Western military interventions. This resulted in a shift in direction towards expeditionary deployments to address post-Soviet Union security impacts, such as those experienced in Bosnia and Kosovo.

The second factor was 9/11, which represented a NORAD failure through, neither predicting, nor being able to respond to the events of that day.

“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 might even use planes as missiles.”¹⁷

This did lead to the creation of Operation Noble Eagle mission to address the asymmetric (terrorist) threat under NORAD auspices, and subsequently, the creation of United States Northern Command (USNORTHCOM) to inwardly address homeland defence missions.

NORAD is often described as the benchmark of the Canada-United States relationship, and yet it largely exists ‘beneath the political radar,’ successfully operating in the military domain, out of sight and out of mind. As such, there are few motivating factors for either government to concentrate efforts on North American Defence.

“NORAD today is largely out of sight and out of mind, best known as the organization that ‘tracks Santa.’”¹⁶

These initiatives and shared perspectives set the scene for the bi-national relationship, and provide the reference point as to how NORAD has diverged from its founding intent.

Catalyst for Change

Three factors served as a catalyst for change with respect to NORAD’s focus. First was the ending of the Cold War, which viewed the marginalisation of the continental defence mission as the threat of great



Figure 1: The vastness of Canada’s Arctic is graphically driven home through this overlay of Europe upon the region.

The final catalyst factor for change is the re-directed international focus, following the events of 9/11, towards global counter-terrorism operations, initially in Afghanistan and subsequently Iraq. In the absence of any superpower threat following the end of the Cold War, attention and resources were diverted overseas, to the detriment of the homeland defence mission. Domestically, the creation of USNORTHCOM resulted in an inwardly orientated, all domain command; in and of itself contributing to the creation of Canada Command (CANCOM).¹⁸ The subsequent decision by Canada to not participate in the proposed US ballistic missile defence system¹⁹ strained the political relationship, and forced USNORTHCOM and United States Strategic Command (USSTRATCOM) to adopt the ballistic missile mission set. This decision marginalized NORAD and the extant mission set, challenging its continued relevance.

“It is important to note what NORAD has provided to Canada, especially, ready access to the huge U.S. military capability and investment structure.”

and the ability to exercise sovereign control would be hugely taxing for Canada alone, yet outsourcing to the U.S. to provide this on our nation’s behalf erodes Canada’s sovereignty. Therein lies the paradox that the government faces, and the environment in which NORAD exists.

“...no alternative to NORAD which would not involve a substantial reduction in military effectiveness...”²¹

As the threats to North America have evolved, the American reliance upon Canada to defeat them has diminished, and hence, a gap has opened up. Space-based capabilities enable the U.S. to act independently, leaving Canada woefully short of the capabilities required to address them alone. As such, Canada needs to make substantive efforts to make NORAD relevant to the United States.

Geo-Strategic Context

The Westphalian notion of sovereignty has become the foundation of the modern nation state. The challenge for Canada remains the maintenance of sovereign control over its diverse and expansive geography.²⁰ The ability to maintain domain awareness

It is important to note what NORAD has provided to Canada, especially, ready access to the huge U.S. military capability and investment structure. These capabilities have consistently made up for Canadian shortfalls, such as Generation Five Lockheed *Raptor* F-22 fighters, the Airborne Warning and Control System (AWACS) and air-to-air refuelling platforms, and these



Treaty of Münster, 1648, preliminary of the Peace of Westphalia, which ended the Thirty Years War.



DND/National Defence Image Library/PCP85-7

Another shot of a Russian Tu-95 *Bear* being intercepted by an earlier Canadian fighter-interceptor, this time, a CF-101 *Voodoo* out of CFB Bagotville, Quebec.

investments have largely been at U.S. expense. Furthermore, the increased ability to exercise control over Northern airspace has enabled Canadian sovereignty.²² Being a Combatant Command²³ (COCOM), NORAD enabled Canada to have unique access to both the strategic viewpoint of the United States, and its seemingly-limitless intelligence and decision making network, providing Canada a more influential global position than might be *expected* or *deserved*.²⁴ Furthermore, bi-national cost sharing has avoided duplication and promoted the efficient and effective use of resources for each country.²⁵ The financial costs are such that Canada would not have been able to meet them with its significantly smaller defence budget.

Decades of Under-Investment

NORAD last underwent a major modernization in the 1980s as part of the North American Air Defence Modernization (NAADM) memorandum of understanding (MoU). This, along with other minor projects, resulted in the building of the North Warning System (NWS), a set of short- and long-range radars linking Alaska to Greenland, across Canada's North. It also led to the construction of Forward Operating Locations²⁶ (FOLs) in Northern Canada, the integration of Canadian Air Force (CAF) personnel into the US AWACS program, and the purchase of CF-18 *Hornets* for the CAF, which is now the Royal Canadian Air Force (RCAF).²⁷ These initiatives significantly enhanced Canada's and NORAD's ability to detect, operate and intercept the threats presented by the Soviet Union.

Since then, the threat environment has evolved significantly, in part resulting in the introduction of the maritime warning mission, and the asymmetric mission exercised through Operation *Noble Eagle*. However, RCAF capabilities and force structure supporting the NORAD mission have remained relatively unchanged. This has contributed to NORAD's decreasing ability to keep pace with the changing strategic environment and evolving threats. Given the return of great power competition, particularly with regard to Russia and China, increased capabilities of these potential adversaries, and limited capacity due to aging infrastructure, there is an overwhelming requirement to re-modernize NORAD to ensure that it has the equipment, resources and force structures needed to effectively conduct its missions.

The threats of today are not those faced in the 1980s. Manned Soviet long-range bombers were required to fly over the northernmost areas of North America in order to launch missiles against targets to the south. Submarines of the 1980s had limited abilities to operate in the Arctic and were addressed largely in the maritime domain.²⁸ The extant NWS acted as a 'trip-wire' against aerial attack, and provided the command and control for air interception in the Canadian Air Defence Identification Zone (CADIZ). The CADIZ represented the limit-of-range of the NWS radar coverage, but astonishingly, it did not cover the full sovereign territory of Canada's Arctic Archipelago. The addition of the FOLs provided the ability to base fighters to intercept manned bombers within the CADIZ, and the CF-18s themselves were capable against a likely Soviet *Bear*²⁹ threat.

Redrawn map taken from Nasitluq Corporation/CBC News article at <https://www.cbc.ca/news/canada/north/raytheon-wins-5-year-north-warning-system-contract-1.2594075>



Figure 2: The Canadian North Warning System Radar Site laydown.

After nearly 40 years, the Russian long-range aviation (LRA) incursions have become more frequent and adventurous in nature as a result of Russia’s emerging assertiveness.³⁰ Advances in technology, including stand-off cruise missiles,³¹ which no longer require the overflight of North America to range their targets, combined with stealth technologies, enable the air and submarine launched cruise missiles to remain undetected by NWS radars. Blended with an emerging Chinese threat, intermixed with rogue state (North Korea and Iran) and non-state actors, we see a situation whereby the threat has outpaced the capabilities that were designed to counter the threats, eroding the defence credibility of Canada in the eyes of the United States, and with it, the deterrent effect of NORAD.

Political Malaise

Both countries have traditionally valued the priority of defending North America overseas,³² far away from national territories. Correspondingly, the level of political interests and understanding in NORAD has waxed and waned over the years, from PM Diefenbaker’s lack of understanding over the command’s role in the Cuban Missile Crisis,³³ to PM Pearson’s 1964 *White Paper on Defence*, which, despite reaffirming the commitment to collective security, focused national priorities upon international peacekeeping.

“Additionally, Canada’s financial commitment to defence has steadily declined.”

“NORAD has to an extent benefitted from the lack of political attention to date... and political oblivion is easily managed. There is, however, the great risk that too little attention will lead to NORAD’s marginalisation, especially in terms of resource commitments.”³⁴

Another example of malaise can be found in the 1986 NAADM Agreement, which saw the development of the NWS to replace the DEW and Pine Tree Line surveillance systems. Despite a 50:50 split in construction costs, the agreement generated a 60:40 split³⁵ in operations and maintenance costs,³⁶ which provided clear gains to Canada with significant enhanced capabilities. This was shortly followed by the Canadian refusal to join the U.S. Ballistic Missile Defence (BMD) programme, despite an American desire to base interceptors in Canada, ignored NORAD’s missile warning role within the integrated tactical warning/ attack assessment (ITW/AA) system. This demonstrates the relative lack of political understanding of the role NORAD fulfils in multi-domain North American Defence.

While the key concerns of the U.S. have been around security, those of Canada have been around its junior partner status’ and of balancing the sovereignty issue with the realities of “securing security.” Additionally, Canada’s financial commitment to defence has steadily declined.³⁷ However, the threats to North America

have changed, and the U.S. has been able to address much of this change independently, widening the gap between the two countries and further diminishing Canada's roles within NORAD. The stand-up of USNORTHCOM³⁸ in 2002 is an example of the Americans taking more independent responsibility for homeland defence, thus marginalizing Canada in the process. That said, the political rhetoric has been unchanged since its formation, most recently articulated in the 2017 joint statement by President Trump and PM Trudeau:

"The 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."³⁹

This demonstrates that politically NORAD is a great soundtrack to benchmark the CAN-US relationship, despite the misalignment with military reality.

Defence Policy

Repeated defence policies from the 1964 *White Paper on Defence*, to the *Canada First Defence Strategy* (CFDS)⁴⁰ have consistently committed to strong North American defence and the unique partnership arrangement with the United States, which is exemplified by the bi-national NORAD agreement.

"Only the U.S. has the military capabilities necessary to defend North America's geographic expanses and that Canada would maintain its existing security relationship with the U.S."⁴¹

The most recent defence policy, *Strong Secure Engaged*⁴² is no different. Dr. Kim Nossal articulates this as being "old wine in new skins,"⁴³ indicating that little has really changed over time:

"Canada's new defence policy announced by the Liberal government of Justin Trudeau in June 2017—entitled Strong, Secure, Engaged (SSE)—is indeed a case of "old wine" (an established and largely unchanging Canadian defence policy) in a "new bottle" (a new defence policy statement)."⁴⁴

The latest Defence Policy, *SSE*, emphasised being Strong at Home and Secure in North America. Within that, it announced significant investments and outlined a strong focus on the defence of Canada and North America. Most notably was the commitment to modernise NORAD,⁴⁵ which was hailed as the unwritten and unfunded chapter of SSE. Yet, over two years since its launch, there is no follow-on chapter, nor is there currently any plan to modernize NORAD. There were significant commitments, such as the pledge to replace the CF-18s with 88 advanced fighters.⁴⁶ However, the difficult decision with respect to which fighter would actually replace the CF-18 was pushed into a new electoral mandate, and the interim fighter purchase of 25 Ex-RAAF F-18s⁴⁷ adds no realistic capability over the existing aging CF-18s, unless it is for a pool of spare parts.⁴⁸ The expansion of the CADIZ⁴⁹ was a mere line on a map, aligning Canadian airspace with the Exclusive Economic Zone (EEZ). It was accompanied with no increased capability to sense, or to control the full extent of the Arctic Archipelago.

The area in red (Figure 3) represents the expanded zone, with the previous line highlighted as the Canada ADIZ, which represents the limit of range of the current NWS. The policy highlights plans to replace the NWS with a 'system-of-systems.'⁵⁰ This will not be fielded until at least 2035, leaving a 15-year capability gap. The project to replace the aging CC-150 *Polaris* air-to-air tanker transport capability⁵¹ envisages a 'like-for-like' replacement, yet falls short of assigning any replacement to the NORAD mission, and fails to mention the NORAD assigned CC-130T⁵² based out of Winnipeg, which represents the sole RCAF NORAD tanker commitment at

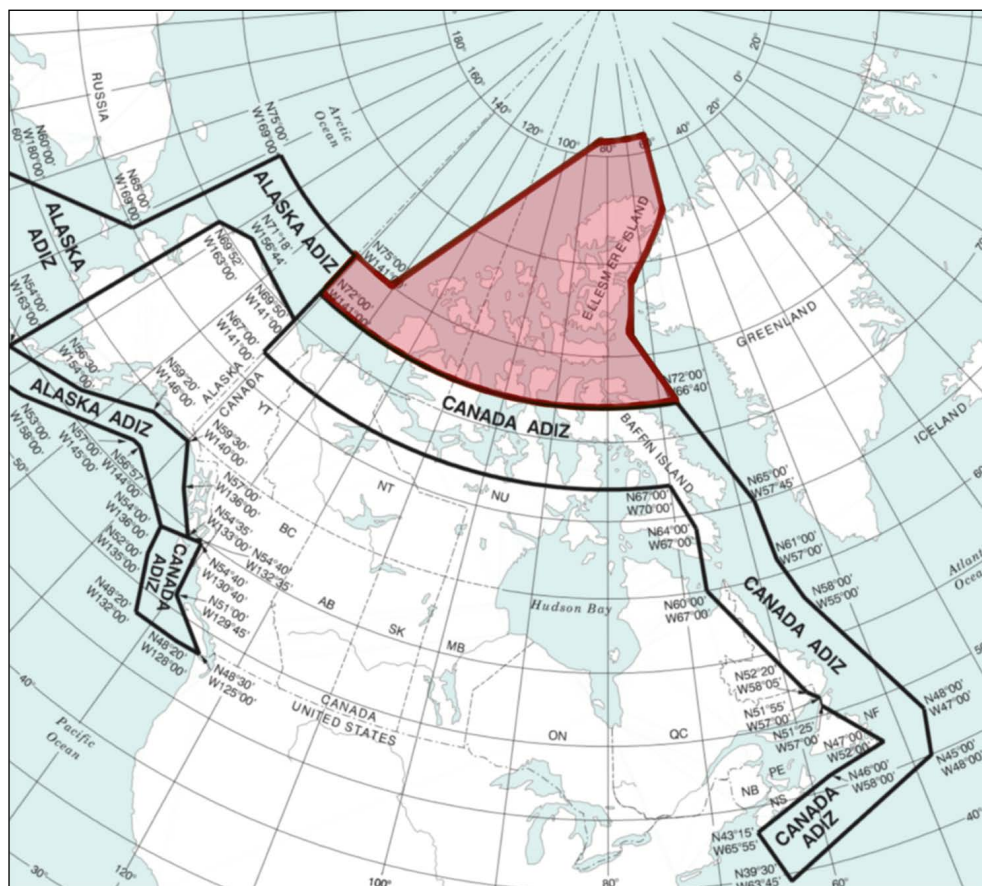


Figure 3: The expanded Canadian Air Defence Identification Zone (CADIZ).

Superimposed by Zavidli. Expanded Canadian ADIZ upon original at NAV CANADA, Notice of Change, 2018

this time.⁵³ The Ground Based Air Defence (GBAD) investment⁵⁴ is configured for army expeditionary deployments, such as the Enhanced Forward Presence (eFP)⁵⁵ battlegroup in Latvia, and is defined as being very short range air defence (VSHORAD).⁵⁶ As such it will not provide a domestic capability that could support an event, such as the G8 summit or the Olympics, nor would it support the NORAD forward operating locations against the types of threats that they would now likely face. These examples demonstrate the reality of the political and policy malaise. The reality translates into a Canadian practice of delayed decisions and short term stop gap acquisitions that suit political mandates and further the erosion of Canada's credibility with the United States.

Conclusion

Politically, Canada has traditionally prioritized its CAN-US relationship more in terms of economics, the current NAFTA/USMCA dynamic being such an example. Furthermore, the view that a dollar spent on defence is a dollar not spent on social programs, education or infrastructure development, leads to the marginalization of defence in Canadian politics to an extent that it is not in U.S. politics. Given the current rhetoric emerging from the present U.S. administration,⁵⁷

Canada can no longer depend upon the U.S. to bear the 'lion's share' of the financial burden for the shared defence of North America. Despite successive governments traditionally showing little appetite to shoulder the huge financial burden of North American defence, current and future government's need to be prepared to invest a higher priority in defence spending, particularly in support of large-scale projects, such as the NWS replacement and high Arctic basing.

This article has explored the founding conditions of NORAD and the evolving nature of the Bi-National Command; the underpinning of mutually shared interests, and the offset of capability for space against a shared threat dynamic. It focused upon Canada's benefit from the deal involving the trading of space for protection and assurance, as well as the associated compromises with regard to sovereignty. The article has attempted to demonstrate that while NORAD has historically evolved to meet emerging threats, the last significant investment was with the NAADM agreement in

the 1980s. Since then, investment and capabilities have atrophied. This has largely been due to changed focuses towards the war on terrorism and expeditionary operations, in and of themselves reflecting broader historical defence policy trends.

The requirement for renewed focus and investment is clear, SSE provided the impetus, but it has so far failed to deliver the required capabilities that will retain NORAD's relevance into the future. Limited space available in this article prevents a detailed investigation of capabilities and investments required to rebalance. However, it is clear that failure to modernize with a sense of immediacy will render the bi-national command irrelevant. Subsequently, Canada will no longer be the beneficiary of this mutually beneficial arrange-

ment, as the U.S. will likely embark upon unilateral solutions to assure their homeland defence, in all probability at the expense of Canadian sovereignty, which would be to our detriment. Canada has a small, and closing, window of opportunity to demonstrate that it is a vested defence partner in NORAD and the defence of North America *alongside* the United States, as opposed to being the freeloader.

“The article has attempted to demonstrate that while NORAD has historically evolved to meet emerging threats, the last significant investment was with the NAADM agreement in the 1980s.”



NOTES

- 1 NORAD's three mission are Aerospace Command, Aerospace Control and since 2006, Maritime Warning.
- 2 Emphasised in repeated defence policies, including the Canada First Defence Strategy and the latest published defence policy, "Strong, Secure, Engaged."
- 3 EvoNAD is an all-domain study being conducted by the Tri-Command (CJOC, NORAD and USNORTHCOM) into all domain threats to North America. It reports its findings to the Permanent Joint Board on Defence (PJBD).
- 4 Which led to the establishment of the PJBD, followed by the CAN-US Military Cooperation Committee (MCC).
- 5 Militarily established in 1957, but not politically ratified until 1958.
- 6 It assumed the Maritime Warning Mission in 2006 with the re-signing of the NORAD Agreement in perpetuity.
- 7 J Jockel, *Canada in NORAD, 1957 – 2007: A History*. McGill-Queens University Press, 2007, pp. 9-11.
- 8 *Ibid*, pp. 1-3.
- 9 At US expense.
- 10 J Jockel, *No Boundaries Upstairs: Canada, the United States and the origins of North American Air Defence*. Vancouver: University of British Columbia Press, 1987, p. 83.
- 11 Recognising sovereign rules of engagement. *Ibid*, p.54-55.
- 12 Namely that the commander and deputy commander would be approved by, and from, both nations. *Ibid*, p. 58.
- 13 At which time it was signed in perpetuity by the Canadian and U.S. Governments.
- 14 K Nossal, *New Wineskin, Old Wine: The Future of Canadian Contributions to North American Security*, North American Strategic Defense in the 21st Century, Springer Publishing, 2018, pp. 97-107, at: https://link.springer.com/chapter/10.1007/978-3-319-90978-3_8
- 15 A Charron and J Fergusson, *Beyond NORAD and Modernization to North American Defence Evolution*. Canadian Global Affairs Institute, May 2017, pp. 1-3.
- 16 A Charron et al, *NORAD: Beyond Modernisation*, University of Manitoba. January 2019, p. 6.
- 17 The 9/11 Commission Report, *Final Report of the National Commission on Terrorists Attacks Upon the United States* (Washington, DC: 2004), p. 427.
- 18 The mission sets are now incorporated into Canadian Joint Operations Command (CJOC), with both domestic and expeditionary focus.
- 19 In 2004, Canada and the US had agreed to assign the early warning component of missile defence to NORAD. The decision by PM Martin in 2005 not to participate in BMD was a surprise to the US. J Fergusson, *Shall we Dance? The Missile Defence Decision, NORAD renewal, and the future of Canada-US defence Relations*, in *Canadian Military Journal*, Vol. 6, No. 2 (2005), pp. 12-15.

- 20 Bordering three oceans, the world's second largest landmass, a low population density and the world's longest undefended border.
- 21 J Jockel, *Canada in NORAD, 1957 – 2007: A History*. McGill-Queens University Press, 2007, p. 76.
- 22 *Ibid*, pp. 12-15.
- 23 Though its dual USNORTHCOM role.
- 24 Eluding to Canada's "middle power status" as defined by Nils Brvik in D. Barry and D. Bratt. *Defence against Help: explaining Canada-US Security Relations*. In *American Review of Canadian Studies* 38. No1, 2008, p. 64.
- 25 A Charron and J Fergusson, *NORAD in Perpetuity? Challenges and Opportunities for Canada*. University of Manitoba, 2014, p.9.
- 26 Located in Iqaluit, Inuvik, Yellow Knife and Rankin Inlet.
- 27 Themselves replacing CF-101 *Voodoos* and CF-104 *Starfighters*.
- 28 A Charron and J Fergusson, *NORAD in Perpetuity*. University of Manitoba, 2014, pp.36-38.
- 29 Tupolev 95/142 Aircraft.
- 30 NORAD has tracked an increase in LRA activity since 2007.
- 31 Kh-101 (with a range of up to 4500km) recently demonstrated in Syria, and the nuclear capable Kh-102 cruise missile.
- 32 A Charron, *NORAD: Beyond Modernization*. University of Manitoba, 2019, pp. 11-12.
- 33 J Jockel, *Canada in NORAD, 1957 – 2007: A History*. McGill-Queens University Press, 2007, pp. 54-58.
- 34 A Charron, *NORAD: Beyond Modernization*, University of Manitoba, 2019, p. 59.
- 35 The 60% share being borne by the US.
- 36 Despite 11 of 15 Long-Range Radars and 36 of 30 Short-Range Radars being located in Canada.
- 37 A Charron, *NORAD: Beyond Modernization*, University of Manitoba, 2019, p. 15.
- 38 The BMD role is resident in US Northern Command (USNORTHCOM).
- 39 Joint Statement from President Trump and Prime Minister Trudeau on 13 February 2017. Accessed: <https://pm.gc.ca/eng/news/2017/02/13/joint-statement-president-donald-j-trump-and-prime-minister-justin-trudeau>
- 40 Canada. Department of National Defence. *Canada First Defence Strategy*, 2008. Accessed: https://www.canada.ca/content/dam/dnd-mdn/migration/assets/FORCES_Internet/docs/en/about/CFDS-SDCD-eng.pdf
- 41 1992 Defence White Paper (Mulroney).
- 42 Canada, Department of National Defence, *Strong Secure Engaged Canada's Defence Policy*. 2017. Accessed: <http://dgpapp.forces.gc.ca/en/canada-defence-policy/docs/canada-defence-policy-report.pdf>
- 43 K, Nossal, *New Wineskin, Old Wine: The Future of Canadian Contributions to North American Security*, North American Strategic Defense in the 21st Century, Springer Publishing, 2018, pp.97-107. Accessed: https://link.springer.com/chapter/10.1007/978-3-319-90978-3_8
- 44 *Ibid*, pp. 98-99.
- 45 SSE initiative 111, Modernize NORAD to meet existing challenges and evolving threats to North America, taking into account the full range of threats.
- 46 SSE initiative 44. Replace the CF-18 fleet with 88 advanced fighter aircraft to improve Canadian Armed Forces air control and air attack capability
- 47 Purchase of interim fighters. Accessed: <https://nationalpost.com/news/canada/deal-to-buy-used-australian-fighter-jets-finalized-with-canadian-forces-set-to-be-flying-them-by-summer>
- 48 Utility of interim fighter purchase. Accessed: <https://www.macdonaldlaurier.ca/mlis-shimooka-available-comment-scathing-ag-report-ailing-rcaf/>
- 49 SSE initiative 107. Align the Canadian Air Defence Identification Zone (CADIZ) with our sovereign airspace.
- 50 SSE initiative 109. Collaborate with the United States on the development of new technologies to improve Arctic surveillance and control, including the renewal of the North Warning System.
- 51 SSE initiative 47. Recapitalize next generation strategic air-to-air tanker-transport capability (CC-150 Polaris replacement).
- 52 CC-130T H Model Hercules Aircraft based out of Winnipeg on 24 hours' notice-to-move
- 53 The CC-130T goes out of service in 2020, with the STTC Polaris replacement not due in service until at least 2028, leaving the RCAF and NORAD solely reliant upon the US, which in peacetime provides KC-135 aircraft (configured specifically to support the RCAF mission with hose and drogue vice probe) from the air National Guard based in Spokane, WA and Bangor, ME.
- 54 SSE initiative 34. Acquire ground-based air defence systems and associated munitions capable of protecting all land-based force elements from enemy airborne weapons
- 55 Enhanced Forward Presence.
- 56 Very Short Range Air Defence.
- 57 Trump rhetoric on allied burden-sharing. Accessed: <https://www.brookings.edu/blog/order-from-chaos/2018/07/11/what-trump-gets-wrong-on-allied-burden-sharing/>

DND/CFJC photo PC-3107 by Flying Officer Sankey



NORAD nostalgia... A flight of four Avro CF-100 *Canuck* fighter interceptors overfly a radar site near RCAF Station Cold Lake, Alberta, circa the early-1960s.