

## SUGGESTED READINGS

# NORAD and North American Defence

Compiled by Nicholas Glesby

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The internet is filled with perspectives and opinions. These lists, compiled by academic subject matter experts, are intended to help direct policy makers, practitioners, and academics to credible, open-access sources, available online, free of charge, that reflect leading-edge research and thinking. The compilers of each list have been asked to select readings that are accessibly written (i.e. they are not filled with excessive jargon), offer a diversity of viewpoints, and encourage critical thinking and debate.

The North American Aerospace Defense Command (NORAD) is the binational military command responsible for the aerospace warning, aerospace control, and maritime warning of Canada and the continental United States. It is the first line of defence for North America. The international security environment of the 2020s is in flux, with the return of global strategic competition, primarily between the United States and its “pacing” and “proximate” threats of China and Russia, respectively,<sup>1</sup> and the development of weapons technology that can threaten North America from afar. These considerations now mean that existing capabilities, such as the 1980’s North Warning System of early-warning uncrewed radar stations, can no longer detect a variety of new threats, leaving the continent vulnerable.

NORAD Modernization is not just simply about new jets and radars. It demands a fundamental rethink of what it means to provide continental defence. The threats facing Canada and the United States are complex and span a variety of traditional military domains and emerging spaces, inflamed by Russia’s full-scale invasion of Ukraine in February 2022 and concerns over Canada’s military readiness. For decision-makers in both capitals and at NORAD Headquarters in Colorado Springs, a myriad of external considerations for NORAD Modernization are currently at play: collaboration with Northerners and residents of the Arctic; questions over Command and Control (C<sup>2</sup>) arrangements, geographical responsibilities, and deterrence posture; artificial intelligence and machine learning; hybrid tactics below the threshold of conflict; constrained national budgets; and a political landscape rife with distrust and disinformation.

The following is a selection of recent, open-access publications that examine how these considerations are being factored into a generational re-think of North American defence. Sources chosen represent both Canadian and American academics, practitioners, and commentators across a wide variety of issue areas related to the binational command and continental defence more broadly.

**Bohnert, Michael and Scott Savitz. “[Should Greenland and Denmark Become Part of NORAD?](#)” *Breaking Defense*. 15 September 2022.**

This commentary from RAND Corporation engineers discuss inviting Greenland and the Kingdom of Denmark to join NORAD due to Greenland’s strategic geography as an avenue of approach to North America (as adversaries would orient weapons to fly over Greenland and strike at targets inside Canada and the United States). It highlights the long-accepted understanding of Greenland’s role in continental defence with the presence of the US Pituffik Space Force Base (formerly US Thule Air Force Base) and the positive and negative implications of integrating another state into the binational agreement. These discussions about Greenland’s inclusion in NORAD will only continue in the coming years, as Denmark now has a liaison in US Northern Command (the US Combatant Command twinned with NORAD).

**Charron, Andrea. “[Amid tumultuous times, NORAD needs a consistent Canada-U.S. commitment.](#)” *The Conversation*. 5 January 2023.**

Russia’s war in Ukraine primed the Canadian public to think more urgently about our defence and security. This analysis examines whether attention given by both Canada and the United States to NORAD will be sustained or fleeting, given a variety of internal and external commitments. For a variety of political, historic, and strategic considerations, it is strongly advised NORAD should remain a top shared priority in both states long-term.

**Charron, Andrea. “[NORAD’s value is on full display as flying objects shot down over North America.](#)” *The Conversation*. 13 February 2023.**

Four high-altitude objects (including a Chinese surveillance balloon) were detected and tracked over North America in February 2023. These incidents showcase NORAD’s agility to respond to air threats as outlined in the binational agreement and reveal North America’s vulnerability. However, a better understanding of what NORAD is designed to do and how it operates will contribute to a greater awareness of its value and importance to protecting Canada and the United States.

**Charron, Andrea and James Fergusson, “[NORAD’s Five P’s: Perils, Purse Strings, Politics, Paradigms and Possibilities.](#)” *US Department of Defense*. 2022.**

The two preeminent Canadian scholars on NORAD outline five impediments to further integration of NORAD across domains. This article suggests that NORAD Modernization needs a commitment from political leaders (Justin Trudeau was the first Prime Minister to visit Colorado Springs since his father) and that practitioners cannot be the only champions of modernizing the binational command. How deep future changes are will depend on how the process is conceptualized and defined by decision-makers. Furthermore, the largest obstacle to integration may be

Ottawa, given it has long guarded access to its special relationship with Washington.<sup>2</sup>

**Charron, Andrea and James Fergusson. “[NORAD’s Maritime Warning Role: Origins and Future](#).” *Canadian Naval Review* 17, no. 2 (2021): 10-14.**

NORAD was agreed to in-perpetuity in 2006, when the maritime warning mission was included. Originally a by-product of the September 11<sup>th</sup>, 2001 attacks and restructuring of Canadian and American defence and security institutions, the return of more traditional military threats has merged homeland defence and security together – highlighting the importance of the maritime warning mission. However, NORAD has no defeat mandate for the maritime domain. This article explores the implications of making full use of the maritime warning mission and possible political resistance to it.

**Charron, Andrea and James Fergusson, “[North America’s Imperative: Strengthening Deterrence by Denial](#),” *Strategic Studies Quarterly* 15, no 3 (Winter 2021): 42-58.**

Longstanding strategic thinking has led to the United States and its allies to adopt a deterrence approach that is predicated on overseas commitments or forward defence (known as the “away” game) and a deterrence by punishment posture first predicated on a lack of North American defence for intercontinental ballistic missiles. C<sup>2</sup> seams, capability gaps, and merging domains leave North America and its deterrence-by-punishment strategy vulnerable and open to exploitation by our adversaries. Charron and Fergusson argue structural changes to NORAD to provide deterrence by denial is needed in this geopolitical and geostrategic environment.

**Charron, Andrea and James Fergusson. “[Out of sight, out of mind: NORAD vis-à-vis CANUS politics](#).” *Canadian Foreign Policy Journal* 26, no. 2 (2020): 137-151.**

NORAD is often reflexively pointed to as evidence of a strong Canada-US relationship when tensions exist in other issue areas. This article describes three reasons for the binational command’s political insulation: it exists low on the political radar outside of watershed moments; it is often marginalized by defenders and challengers of the sovereignty debate; and, the day-to-day relationship is largely managed by technocrats in both militaries. Challenges and implications of NORAD raising its profile for Modernization amongst political decision-makers are examined through national priorities, national sovereignty, and functional defence cooperation as lens of analysis.

**Fergusson, James. “[North American defence modernization in an age of uncertainty](#).” *Macdonald Laurier Institute*. 18 October 2022.**

This commentary explores the unpredictability of NORAD Modernization relative to political, economic, strategic, and technological considerations. This includes: governments in Ottawa and Washington who may or may not see eye-to-eye; the ability of the Department of National Defence to spend money on capability

upgrades which has been marked for Modernization; the geostrategic environment and Canada/NORAD's relationship with Greenland/Denmark; and whether adversarial weapons systems will outpace the speed to which Canada and the United States can develop and employ the outlined physical capability upgrades to support NORAD.

**Glesby, Nicholas. "[NORAD in the Arctic: Command and Control Gaps and Information Siloes](#)," NAADSN Policy Primer, 27 August 2023.**

This NAADSN Policy Primer examines the effects of possible changes to the US Unified Command Plan (UCP) and adoption of Pan-Domain Situational Awareness (known as Joint All Domain Command and Control [JADC2] in US lexicon) on NORAD and future Canada-US defence dialogue. The UCP is covered through a discussion of the capabilities of Canada's Forward Operating Locations (FOLs), and Greenland remaining in the European Command (EUCOM) area of responsibility with its growing strategic importance to the defence and security of North America. Pan-Domain Situational Awareness considerations include information-sharing, Canadian participation in defeat mechanisms (i.e. ballistic missile defence), and arrangements for data collection and dissemination.

**Government of Canada. "[Fact sheet: NORAD modernization project timelines](#)," Department of National Defence. 24 March 2023.**

This document serves as a primary reference for physical capability upgrades and operational deployment timelines that the Government of Canada committed to for NORAD Modernization in June 2022. Investment areas include surveillance systems, decision-making, air weapons, infrastructure and support capabilities, and research and development. Timelines are provided for the definition, initial operational capability, and full operational capability phases for all investments until full capacity is reached in 2039.

**Government of Canada. "[Minister of National Defence Announces Canada's NORAD Modernization Plan](#)," Department of National Defence. 20 June 2022.**

Then-Minister of National of Defence Anita Anand outlined Canada's NORAD Modernization on 20 June 2022 at 8 Wing Trenton. The minister announced initiatives (which can be also found in the above fact sheet) such as the anticipated Arctic and Polar Over-the-Horizon Radar lines, the Crossbow sensor network, and upgrades to four Forward Operating Locations in the Arctic. The minister also mentioned that the upcoming (and yet to be released) Defence Policy Update to 2017's *Strong, Secure, and Engaged* defence white paper will reflect the changing geostrategic environment and the role of the Canadian Armed Forces.

**Guillot, Gregory M. [“Statement of General Gregory M. Guillot, United States Air Force, Commander United States Northern Command and North American Aerospace Defense Command.”](#) *Testimony to the Senate Armed Services Committee*. 14 March 2024.**

Gen. Gregory M. Guillot was sworn in as the twenty-seventh Commander of NORAD on 5 February 2024, replacing the retiring Gen. Van Herck. As the NORAD Commander also serves as the Commander of USNORTHCOM, Guillot provided testimony to the US Senate Armed Services Committee on 14 March 2024. He outlined the international threat environment from state actors, specific adversary capabilities of concern (i.e. drones), and NORAD and USNORTHCOM strategic priorities. NORAD will continue to pursue the Van Herck doctrine of all-domain awareness, information dominance, decision superiority, and global integration to modernize continental defence, in what is being called “Homeland Defense Design Next” (which was previously called Homeland Defense Design 2035).

**Kimball, Anessa L. [“Canada’s “Open Door” on 9/11.”](#) *Air & Space Operations Review* 2, no. 1 (2022): 62-77.**

The September 11, 2001 terrorist attacks in the United States fundamentally changed the North American security landscape. This article has interviews with 27 Canadian officials from National Defence, Foreign Affairs (now Global Affairs Canada), and the Royal Canadian Air Force to ascertain the reasons behind NORAD’s modified mandate (the 2006 agreement which renewed NORAD in-perpetuity and added maritime warning to the mission suite). This article finds that NORAD’s flexibility facilitated changes to the agreement and that its future requires thinking of it as an interconnected actor across the Canadian and US governments, rather than as an independent partner.

**Kurl, Shachi. [“The spy-balloon saga carries a down-to-earth message about Canada’s defence.”](#) *Ottawa Citizen*. 17 February 2023.**

This op-ed by the president of the Angus Reid Institute discusses the general lack of awareness Canadians have about defence and security matters, particularly when it comes to NORAD and joint, binational, and bilateral arrangements with the United States. Kurl highlights the misinformation about American fighters in Canadian airspace as prime example. Furthermore, Kurl argues that when Canadians do think about foreign affairs, it is about being a good partner rather than thinking of Canada as vulnerable.

**NORAD and US Northern Command Public Affairs. [“NORAD and U.S. Northern Command lead the third Global Information Dominance Exercise \(GIDE\).”](#) *North American Aerospace Defense Command*. 21 July 2021.**

NORAD and USNORTHCOM GIDE (tabletop) exercises use artificial-intelligence provided information to simulate a scenario where the senior decision-maker requires additional time and options in a crisis setting where North America is

threatened. An integrated deterrence posture requires a globally collaborative network of fused information, intelligence, and sensor data that will provide the most credible and up-to-date information available for a proactive decision to protect the continent. This article provides a brief outline of how NORAD and USNORTHCOM will use this technology and posture in real-world situations.

**O'Shaughnessy, Terrence J., and Peter Fesler. "[Hardening the Shield: A Credible Deterrent & Capable Defense for North America](#)." *Wilson Center*. September 2020.**

Gen. O'Shaughnessy (ret'd), the former Commander of NORAD and USNORTHCOM, and Maj. Gen. Fesler (ret'd), the former Deputy Director of NORAD Operations, argue that the existing deterrence by punishment posture is out of balance due to advancements in missiles (which can hold North America hostage), missile defence systems (which weaken the US punishment capabilities), and the Arctic as an avenue of approach. The two critically examine areas of weakness in North America where China and Russia can exploit and escalate under the threshold of armed conflict. O'Shaughnessy and Fesler's fundamental argument is that North American defence should be predicated on the principle of engaging the "archer" (i.e. the delivery platform) rather than the "arrow" (the in-flight missile).

**Perry, David. "[Spy Balloons and NORAD Decision-Making](#)." Interview with MGen (ret'd Scott Clancy), *Canadian Global Affairs Institute*, 17 February 2023.**

MGen (ret'd) Scott Clancy, former NORAD Director of Operations, outlines the NORAD detection and response architecture during the February 2023 high-altitude objects incident. He highlights such considerations as radar systems previously filtering out objects in favour of specific altitudes and airspeeds (i.e. missiles and aircraft) due to the sheer volume of anomalies such as helium balloons or civilian drones. Clancy also discussed that new "defeat mechanisms" in NORAD Modernization are expensive fighter jets, as opposed to a ground-based air defence system with layered and integrated sensor grids around critical infrastructure, which include civilian-operated, inward-looking radar systems from NAV CANADA and the US Federal Aviation Administration (FAA).

**Ritchie, Sarah. "[Outgoing Norad commander says Canada, U.S. too slow to adapt to threats](#)." *The Canadian Press*. 21 December 2023.**

This exit interview with Gen. Van Herck highlighted NORAD's difficulty in communicating its vital and important mandate to defend North America. The yearly "NORAD Tracks Santa" is an important public relations tool, but the February 2023 high-altitude objects incident further raised the public profile of NORAD's missions and "domain awareness gaps" in need of modernizing. Van Herck definitively calls out both Canadian and American governments for not providing clear policy decisions and lists of critical infrastructure for NORAD to better prioritize its resources.

**VanHerck, Glen D. “[Deter in Competition, De-escalate in Crisis, and Defeat in Conflict.](#)” *JFQ 101* (2<sup>nd</sup> Quarter 2021): 4-10.**

In an era of global competition, which not only threatens North America in all-domains but can also hold it hostage, senior leaders in the United States need more options to the “left” (of both defeat and launch). The objective is to provide more time in a decision-making situation (i.e. a crisis) through all-domain awareness, information dominance, and decision superiority. This is to provide a fulsome operating picture and situational awareness through a variety of sensor and intelligence systems (such as the classified Canadian Crossbow network). Gen. Van Herck lays out his thinking as a whole-of-government approach to thinking about defence, so that North America is invulnerable for our adversaries to exploit or attack. This article essentially acts a policy statement for NORAD and USNORTHCOM under his tenure.

**VanHerck, Glen D. and Jacqueline D. Van Ovost. “[Fighting to get to the fight,](#)” *Military Times*. 31 May 2022.**

Similar to the article above, Gen. Van Herck (former NORAD and USNORTHCOM Commander) and Gen. Van Ovost (Commander of US Transportation Command – USTRANSCOM) argue for an integrated deterrence posture supporting homeland defence, a shift in strategic thinking from the historically-preferred traditional forward-deployed deterrence. This requires a whole-of-government buy in to use levers of influence across all domains globally to ensure North American resilience of critical infrastructure at home to be able to forward deploy and project power globally. In short, deterrence fails if North America is vulnerable and unable to quickly mobilize or deploy forces worldwide – a hallmark of American military might.

#### **Further Reading:**

Charron, Andrea and James Fergusson. [NORAD: In Perpetuity and Beyond](#). Montreal and Kingston: McGill-Queen’s University Press, 2022.

Charron, Andrea and James Fergusson, “NORAD Modernization: Past, Present and Future.” In [Canadian Defence Policy in Theory and Practice vol. 2](#), by Thomas Juneau and Phillipe Lagassé (eds). Cham, Switzerland: Springer Nature, 2023: 75-96.

Hristoulas, Athanasios. “Two Steps Forward, Two Steps Back: Mexico’s North American Security Policy.” In [The Legacy of 9/11: Views from North America](#) by Andrea Charron, Alexander Moens, and Stéphane Roussel (eds). Montreal and Kingston: McGill-Queen’s University Press, 2022.

Nicholas Glesby is the Administrator of the North American and Arctic Defence and Security Network (NAADSN) and incoming Ph.D. student in Canadian Studies at Trent University. He holds a Bachelor of Arts Honours and a Master of Arts in Political Studies from the University of Manitoba.

## Notes

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<sup>1</sup> Government of the United States. [National Security Strategy](#). Washington, D.C.: The White House, 2022.

<sup>2</sup> James Fergusson, [Canada and Ballistic Missile Defence, 1954-2009: Déjà Vu All Over Again](#) (Vancouver: UBC Press, 2010), 122.