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NORAD in the Arctic: Command and Control Gaps and Information Siloes

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The North American Aerospace Defense Command (NORAD) is the binational command that provides aerospace warning, aerospace control, and maritime warning for Canada and the continental United States.¹ Operationalized in September 1957 but formally founded by diplomatic exchange of notes in May 1958, NORAD serves as the “institutional centrepiece” of the Canada-US (CANUS) relationship.² NORAD has consistently been modernized to reflect the peaks and troughs of the continental defence relationship, reflective of the evolution of adversarial threats. This included Soviet long-range strategic bombing and intercontinental ballistic missiles (ICBMs) with conventional or nuclear payloads during the Cold War, asymmetric terrorist threats in both air and maritime domains after 9/11, and the return of great power competition with the development of hypersonic weapons, sea-launched cruise missiles (SLCMs), and remotely piloted aerial systems (RPAS) in the 2010s. NORAD’s Command and Control (C²) of regional assets and mission suites had been continually re-arranged through regular agreement renewal processes until both governments agreed in perpetuity in 2006 with the addition of maritime warning.³ Given the NORAD agreement’s importance to Canada, and the US “persistent” and “pacing” threats of Russia and China⁴ pivoting their attention towards the Arctic, a reimagining of NORAD C² capabilities relative to the US Unified Command Plan (UCP) and the development of Pan-Domain Situational Awareness (or Joint All-Domain Command and Control [JADC2] in US lexicon) will be an upcoming conversation in Canada-US defence dialogue.

The UCP divides the world into geographic Combatant Commands (CoCOMs). The Arctic is the regional Area of Operation (AOR) for US Northern Command (USNORTHCOM – and this Commander is also the dual-hatted Commander of NORAD), US European Command (USEUCOM), and US Indo-Pacific Command (USINDOPACOM). The crux of the immediate C² issue for NORAD in the Arctic is twofold: First, capabilities of the Forward Operation Locations (FOLs) constructed in the late 1980s in Inuvik, Yellowknife, Iqaluit, and Goose Bay must be updated for the newly procured F-35 fighter jet acquisition. Lengthening and rebuilding runways and on-site infrastructure to accommodate air-to-air re-fuelers, strategic airlift, Airborne Warning and Control Systems (AWACS) airframes is also necessary.⁵

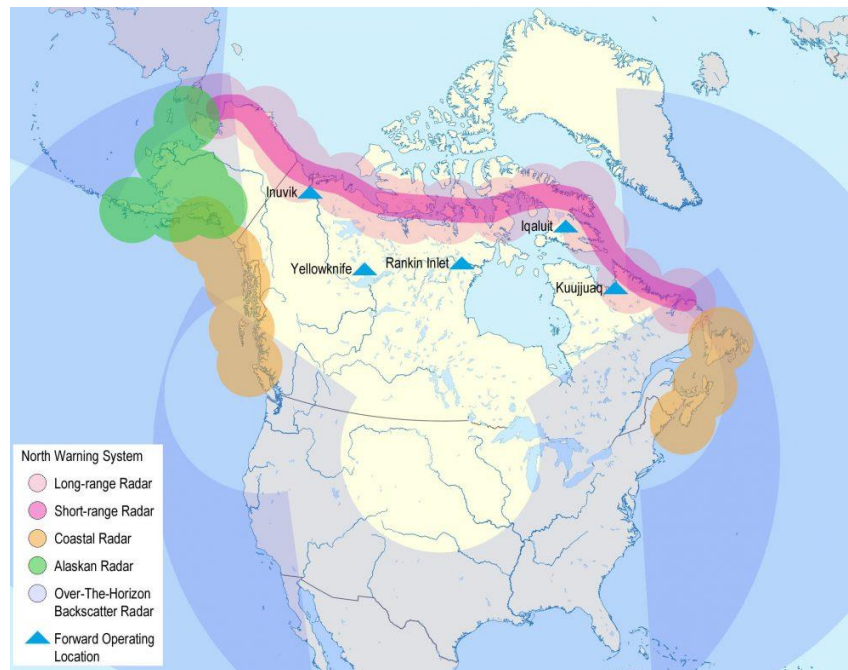


Figure 1: Intentions for the Northern Warning System and supporting FOLs. Department of National Defence, *Challenge and Commitment: A Defence Policy for Canada* (Ottawa: Minister of Supply and Services Canada, 1987).

The lengthy procurement timelines and locations of FOLs could pose operational challenges. A FOL was never built at Kuujuaq due to the cost⁶ and Rankin Inlet is not on the Government of Canada NORAD Modernization project timeline. The expected full operational capacity for “Northern Basing Infrastructure” is not anticipated until 2039.⁷ This will present operational challenges for an expanded Canadian air presence in the North Atlantic to deter primarily Russian SLCMs.

Second, the C² seam in the North Atlantic and the Greenland-Iceland-United Kingdom (GIUK) gap raises questions about how the UCP divides the world. Greenland and Iceland are strategically viewed by Canada and the US as “European” in the larger context of the “away game,” where US decision-makers view conflict as always taking place outside of North America. Due to this thinking, the EUCOM AOR includes Greenland and Iceland. The close geographic proximity of Greenland and Iceland to North America, relative to the launching points and in-flight trajectories of aerospace threats emanating from the maritime domain in the North Atlantic or from fixed launch points in northwestern Russia, highlights the strategic importance of USNORTHCOM for North American defence and raises the question of the UCP’s modern viability.

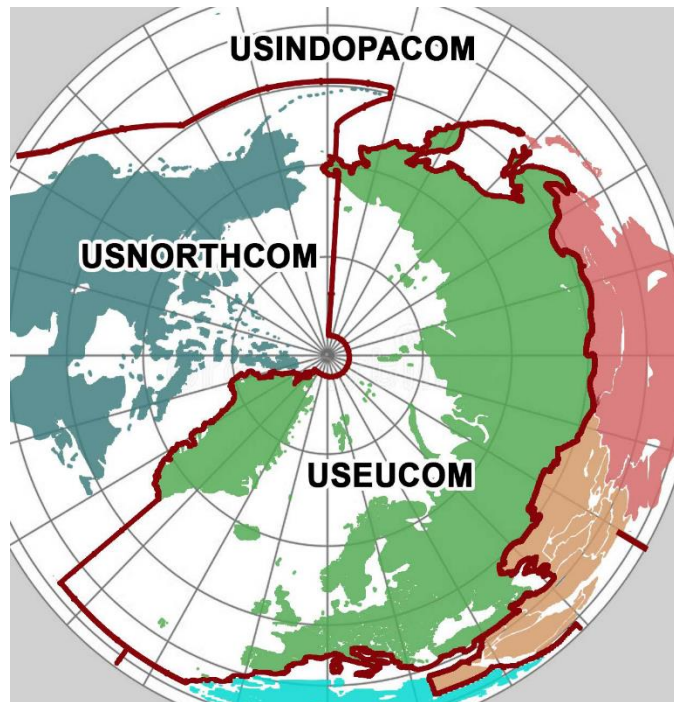


Figure 2: North America Unified Command Plan seams (courtesy of US Department of Defense) and created by Troy J. Bouffard.

Continental defence should be prioritized over the “away game” to provide credible deterrence by denial to adversaries from targeting forces staged in North America, and creating distraction for actions elsewhere.⁸ This raises additional critical questions over the merger of deterrence by denial and punishment capabilities for North American defence writ large, and of which Canada has none.⁹ This is surely to be a forthcoming conversation between Ottawa and Washington, and due to its difficult political connotations, could be best advised on via an institution like the Canada-United States Permanent Joint Board on Defence (PJBD).¹⁰

RPAS (or drones) can be launched by hostile actors already inside Canadian territory and could even be married to crude weapons or biochemical agents.¹¹ The wider discussion over continental defence and NORAD modernization, and what would be widespread US military doctrinal changes, represent a Cold War-like environment (but with new threats and actors), where defence investment and political requirements may diverge.¹²

This possible divergence effects crucial defence investment considerations such as radar lines like replacing the North Warning System (NWS) with the Polar and Arctic lines that feed into NORAD’s Integrated Tactical Warning and Attack Assessment (ITW/AA) for missile warning,¹³ and fundamental C² questions that will primarily be driven by US decision-making and security needs. Canada needs to be prepared to engage in this dialogue, given the scarcity of air assets in the Arctic and additional infrastructure requirements for presences in Greenland and Iceland — likely to be located at Pituffik Space Base (formerly Thule Air Force Base) and Keflavik Air Force Base, respectively. This also raises a myriad of other questions and concerns regarding the NORAD agreement and an

expanded AOR to cover the critical GIUK gap and how it relates to Canadian domestic political audiences and the pertinent question of Canadian sovereignty vis-a-vis the United States.

The creation of an overarching bi-national command structure that sees USNORTHCOM take precedence as the most strategic CoCOM would be a large-scale re-imagining of US defence policy. A “North American Defense Command,” incorporating all six domains (air, space, aerospace, maritime, land, and cyber)¹⁴ and a UCP that focuses on USNORTHCOM as the command with the most resource attention, is seemingly the next step – especially should policy initiatives like JADC2 come to fruition and be widely accepted and adopted by the US services. This is likely to be a politically challenging process for both Ottawa (public opinion) and Washington (military and service histories of culture and prestige), regardless of the entrenched nature of the CANUS defence relationship.¹⁵ Potential Canadian unwillingness to participate in JADC2 or an expanded NORAD AOR that includes Iceland and Greenland, may cause tension in the bilateral relationship – an example of Canada not “burden-sharing” with the US,¹⁶ but continuing to protect its most important relationship from outside influence.¹⁷

Challenges with operational-level information sharing also exist. This is primarily located within the realm of JADC2. Given the Arctic’s remote location and austere operating environment, information sharing between like-minded allies would depend on the US-led effort to amalgamate sensor data into a cloud computing network architecture that uses machine learning to give decision-makers additional time to act. JADC2 would connect sensors from all US military services into a single network that could also share information with like-minded allies and partners relative to the issue of the day.¹⁸ Canadian sensor assets, such as the classified Crossbow network,¹⁹ could be linked to the JADC2 architecture which seeks to eliminate information siloes so that all services and agencies relative to the situation at hand have the same critical information and are speaking to one another.

Canada is involved with JADC2 via the Pathfinder program at NORAD/USNORTHCOM headquarters in Colorado Springs. Pathfinder is a software program that can “see” additional information from sensors like the NWS by using artificial intelligence (AI) to process more data and detect additional information.²⁰ JADC2 adoption could also contribute to Canadian multi-use/dual-purpose investment in the Arctic. The telecommunications infrastructure needed for the sensors could be arranged to allow for civilian, business, law enforcement, and emergency system access. However, the development and deployment of JADC2 poses three pertinent questions for Canada.

First, JADC2 adoption “implies the merger of [deterrence by] punishment and denial,”²¹ and how Canada’s involvement in wider US strategic deterrence – despite lacking its own punishment capability – is reminiscent of the 2005 Ballistic Missile Defence debate and Canadian domestic politics. Next, what will Canada contribute via Crossbow? Is the topic of Ballistic Missile Defence, relative to Arctic-stationed ground-based sensors and interceptors, tied into JADC2 a discussion to be had in the short-term or does it remain a Canadian political “no-go-zone”? Does Canada see the North American threat environment the same as the US, or is the Canadian Armed Forces (CAF) preoccupied and overstretched with existing NATO, UN, and domestic emergency commitments? Lastly, JADC2 also raises the question of how much data is too much? Could a large amount of data not pertinent to the situation at hand hamper decision-makers? Will the architecture be able to

accommodate sensors for hypersonic missiles, cruise missiles, RPAS, and “boots on the ground” like the Canadian Rangers so the decision-maker does not have to weigh the validity of one type of data over another? Will the decision-maker even know where the data is from, or will AI filter this out? Does the information's origin even matter to the decision-maker if already deemed valid by the computer system?

At the information-sharing strategic-level, relative to the Greenland-Iceland C2 gap, there is a Danish military liaison to US Strategic Command (STRATCOM), the CoCOM responsible for strategic and nuclear operations. But glaringly, there is no Danish liaison to USNORTHCOM, even with increasing cooperation with the US-Denmark Defense Cooperation Agreement,²² the US-Icelandic bilateral relationship, and returning strategic attention to the North Atlantic and with increased air capabilities being forward projected at Keflavik.²³ The Danish-USNORTHCOM link represents an opportunity space for Canada to engage in future dialogue — or perhaps even a formal Danish-CJOC or Danish-RCAF liaison — with an increasingly important Arctic ally because Denmark's control of Greenlandic foreign policy and defence (or publicize it if such a connection already exists).

This new era of Great Power Competition is not the Cold War. The structure of the CANUS relationship (and the CANUS relationship relative to new players like Iceland and Denmark) must adapt and evolve to meet the varied threat environment, which now includes an Arctic region that is receiving increased attention. These structural changes are likely to be driven bilaterally by Washington, rather than collectively, and will be highly reactive to geostrategic events (such as the Russian invasion of Ukraine and how it has precipitated increased Canadian defence spending).²⁴ Canada should proactively prepare for these conversations and increase knowledge to adapt, to modernize NORAD's C² and information sharing architecture, and to follow the lead of our most vital defence and security ally in Washington.

Further Readings:

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- ⁴ Government of the United States, *National Security Strategy*, (Washington, D.C.: The White House of President Joe Biden, 2022), 20, 25, <https://www.whitehouse.gov/wp-content/uploads/2022/10/Biden-Harris-Administrations-National-Security-Strategy-10.2022.pdf>.
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- ⁷ Government of Canada, "Fact sheet: NORAD modernization project timelines."
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- ⁹ Andrea Charron and James Fergusson, "North America's Imperative: Strengthening Deterrence by Denial," *Strategic Studies Quarterly* (Winter 2021): 47.
- ¹⁰ Nicholas Glesby, "The Permanent Joint Board on Defence: Foundational to "Limbo" to a Renewed Purpose?" *North American and Arctic Defence and Security Network*, 30 August 2021, <https://www.naadsn.ca/wp-content/uploads/2021/08/Nicholas-Glesby-NAADSN-PJBD-Policy-Brief-August-2021.pdf>.
- ¹¹ Bi-National Planning Group, *The Final Report on Canada and the United States (CANUS) Enhanced Military Cooperation*, (Peterson Air Force Base, USA: 13 March 2006), <https://www.hsdl.org/?view&did=462647>.
- ¹² James Fergusson, "The Changing Arctic: Will the Arctic see greater military engagement or continued cooperation? Canadian and Icelandic perspectives," Keynote address, 7 June 2023, Reykjavik, Iceland.
- ¹³ The US missile defence function is in USSTRATCOM, not USNORTHCOM. Canada has no missile defence capabilities. For a comprehensive examination, see James Fergusson, *Canada and Ballistic Missile Defence, 1954-2009: Déjà Vu All Over Again* (Vancouver: UBC Press, 2010).
- ¹⁴ Andrea Charron and James Fergusson, "From NORAD to NOR[A]D: The Future Evolution of North American Defence Cooperation," *Canadian Global Affairs Institute*, May 2018, 7, https://www.cgai.ca/from_norad_to_nor_a_d_the_future_evolution_of_north_american_defence_co_operation.
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- ¹⁶ *Ibid.*
- ¹⁷ James Fergusson, *Canada and Ballistic Missile Defence, 1954-2009: Déjà Vu All Over Again*, (Vancouver: UBC Press, 2010), 122.
- ¹⁸ John Hoehn, "Joint All-Domain Command and Control," IF14933, *Congressional Research Service*, July 2021, <https://sgp.fas.org/crs/natsec/IF11493.pdf>.
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