

POLICY BRIEF



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The Arctic and North American Defence: Reflections on 2021

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Joint Statement on NORAD Modernization

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The Minister of National Defence of Canada, the Honourable Harjit Sajjan, and the Secretary of Defense of the United States, Lloyd James Austin III, approve this Joint Statement¹ to guide cooperation between Canada and the United States to enhance the ability of the North American Aerospace Defense Command (NORAD) to execute the missions outlined in the NORAD Agreement while facing evolving threats.

Statement

No two sovereign, neighboring nations enjoy as strong, supportive, and enduring a partnership as Canada and the United States. We understand that, to meet our security and defense objectives, both countries must be secure within our shared North American continent. The stronger and safer we are at home, the more we are capable of engaging and acting together in the wider world, in support of a strong, rules-based international order.

Canada and the United States have long benefited from the protection afforded by North American geography. However, growing strategic competition, rapid advancements in technology, and ongoing changes in our climate are eroding that protection, including by exposing North America to a greater and more complex conventional missile threat.

As an integral part of ongoing work to strengthen the security and defense of Canada and the United States, we reaffirm our commitment to supporting NORAD's ability to detect, deter, and defend against aerospace threats and to detect maritime threats to North America, today and in the future. In particular, NORAD must be able to detect and identify those threats earlier and respond to them faster and more decisively, including aerospace threats transiting our northern approaches.

With this joint statement issued on 17 August 2021, the then Canadian Minister of National Defence, Harjit Sajjan, and the US Secretary of Defense, intended to guide collaborative efforts between the two countries to modernize the binational North American Aerospace Defense Command (NORAD) in the face of evolving strategic threats. The statement highlighted the need to better integrate capabilities to maintain persistent situational awareness and understanding of potential threats to the continent, modernize command and control systems, and upgrade capabilities to deter (and, where necessary, defeat) acts of aggression against the Canadian and American homelands.¹

Prime Minister Justin Trudeau and President Joe Biden had pointed in this direction on 22 January 2021 - the first call that the new president made to a foreign leader. The White House's "read out" of the conversation emphasized the "strategic importance of the U.S. – Canada relationship" and a mutual desire to "re-invigorate" bilateral efforts to advance an "ambitious and wide-ranging agenda," including shared defence interests.² Trudeau's office offered more details, including the leaders' agreement "to expand cooperation on continental defence and in the Arctic, including the need to modernize NORAD." Towards this end, they instructed their Foreign Affairs and National Defence ministers and secretaries of State and Defense to meet "at the earliest opportunity."³

Meeting and pledging to collaboration on North American defence modernization is one thing. Converting this into practical action is another. "The current Liberal government committed to the renewal of NORAD early on; it was the top item in the first meeting between Prime Minister Justin Trudeau and now-former U.S. president Donald Trump in 2017," Canadian journalist Murray Brewster explained. "The proposal now presents a host of thorny political and financial problems for

Canada." The Trudeau government avoided costing out NORAD modernization in its 2017 defence policy, *Strong, Secure, Engaged (SSE)*, which analysts estimated at \$11-\$15 billion – with Canada's share projected to be at least 40% of the total (given historical cost sharing agreements).⁴

Thus, while high-level political statements over the past year have reinforced Prime Minister Trudeau's commitment to "work with the United States to ensure that the North American Aerospace Defence Command (NORAD) is modernized to meet existing and future challenges,"⁵ specific details remain unclear. The Department of National Defence (DND) has yet to undertake public expert consultations on the subject, and it has left its American counterparts to take the lead in articulating what NORAD renewal will look like. We noted last year that, "while the U.S. seems poised to forge ahead with its plans, Canada still offers no clear plan for how it intends to prioritize its general commitments to contribute to NORAD and North American defence modernization – often described as the 'unwritten and unfunded chapter' of Canada's defence policy."⁶ Despite lofty political promises, this assessment remains unchanged at the end of 2021.

Canada and North American Defence

In the 2020 OPSA *Annual Review*, we laid out the core elements of North American defence in *SSE* and the safety, security, and defence chapter of Canada's 2019 "Arctic and Northern Policy Framework" (ANPF). "While Canada sees no immediate threat in the Arctic and the North, as the region's physical environment changes, the circumpolar North is becoming an area of strategic international importance, with both Arctic and non-Arctic states expressing a variety of economic and military interests in the region," the policy framework emphasizes. "As the Arctic becomes more accessible, these states are poised to conduct research, transit through, and engage in more trade

in the region. Given the growing international interest and competition in the Arctic, continued security and defence of Canada's Arctic requires effective safety and security frameworks, national defence, and deterrence."⁷

The United States is Canada's "premier partner" to fulfill these missions.⁸ NORAD and the strong relationships fostered through the Tri-Command structure (which includes NORAD, Canadian Joint Operations Command, and United States Northern Command) are central to Canada's continental defence posture.⁹ The DND webpage on the Command pithily highlights how "the defence and security of Canada's North is key to the defence of North America" and that "the North is a critical region for NORAD" – but it does not elaborate beyond a description of the Canadian portion of the North Warning System (NWS) stretching along the Arctic coast that Canada maintains and operates "to detect anything approaching from the air."¹⁰ In support of Canadian NORAD Region (CNR),¹¹ Canada provides fighter aircraft on alert status to NORAD, operates three forward operating locations in Inuvik, Iqaluit, and Yellowknife to support fighter operations in the North, and also contributes to a layered defence network of radars and satellites.¹² The intersection with broader North American defence and security missions has been discussed at length elsewhere,¹³ but the full extent of Canada's envisaged contribution to continental defence efforts to detect, deter, and defend against or defeat threats from all domains remains to be determined.

Long-promised investments in Canadian Armed Forces (CAF) Arctic capabilities continue to yield dividends, albeit with delays. For example, COVID-19 further delayed the completion of the long-awaited Nanisivik refueling facility, announced in 2007 and originally slated to be operational by 2013, with DND officials "hopeful" it would open in 2022 –

but unwilling to guarantee this outcome in light of "significant" uncertainty.¹⁴ On a more positive note, the Royal Canadian Navy (RCN) officially welcomed into service the first Arctic and Offshore Patrol Ship (AOPS), Her Majesty's Canadian Ship (HMCS) *Harry DeWolf*, in June 2021. "Specifically designed to patrol Canada's northernmost regions and offshore waters," a department press release boasted, "this new class of ship will be at the core of an enhanced [CAF] Arctic presence, effectively complementing the capabilities of our other current and future warships through critical reconnaissance and surveillance activities"¹⁵ as demonstrated during its maiden voyage through the Northwest Passage.¹⁶ In July, the RCN received delivery of the second AOPS, the future HMCS *Margaret Brooke*, with a formal commissioning ceremony expected in fall 2022. Construction of three additional three ships in this class is ongoing, with a sixth expected to begin next year.¹⁷

The United States and NORAD Modernization: All-Domain Awareness Information Dominance, Decision Superiority, and Deterrence

US Secretary of Defense Austin has directed the Department of Defense (DoD) to think beyond traditional deterrence methods and adopt a new approach to respond to hybrid, cross-spectrum strategic challenges. In his articulation, integrated deterrence employs a "mix of technology, operational concepts, and capabilities—all woven together in a networked way that is so credible, and flexible, and formidable that it will give any adversary pause." This approach integrates both deterrence-by-punishment (fear of reprisal and associated costs) and deterrence-by-denial (perceptions that an attack will not succeed or will be too costly) options, with NORAD playing a pivotal role in early warning and command and control aspects.

Since assuming command of NORAD in August 2020, General Glen VanHerck has focused on four core principles to respond to a rapidly shifting global security environment: All-Domain Awareness, Information Dominance, Decision Superiority and Global Integration. The *NORAD and USNORTHCOM 2021 Strategy* codified and explained these principles, highlighting that while nuclear deterrence remains the cornerstone of continental defence, competitors have declared their intent to threaten the North American homeland below the nuclear threshold (Figure 1). Consequently, a balanced and integrated approach to deterrence must respond to all kinetic and non-kinetic options available to potential adversaries across the full spectrum of attack.¹⁸ VanHerck emphasizes how Decision Superiority over competitors is essential so that American and Canadian leaders have the time and information to assess various options at the speed of relevance. This approach requires a cultural change, rooted in effective competition (rather than a fixation on tactical defeat), and entails significant investments in All-Domain Awareness and Information Dominance. “If we cannot see the threat,” NORAD statements insist, “we cannot defend against it.”¹⁹

In this model, NORAD has flagged All-Domain Awareness and Information Dominance as priority areas for investment. The Arctic thus fits within a system-of-systems that tracks competitor activities globally from the sea floor to orbit (and in cyberspace) through a network of sensors and systems that provide persistent and complete battle-space awareness. Accordingly, NORAD’s integrated priority list includes Over-the-Horizon radars (OTHR), polar communications through

PROBLEM STATEMENT: Over the last three decades, our nations’ competitors and potential adversaries have watched Canada and the United States and our way of deterring, competing, and conducting war. They have adapted and developed advanced capabilities in all domains challenging us at home and across the competition continuum, and holding at risk our people, our critical infrastructure, and our power projection capabilities.

THEORY OF SUCCESS: A capable and persistent defense at home is a prerequisite to projecting power to a **globally integrated** forward fight. Our ability to **deter in competition, de-escalate in crisis, and deny and defeat in conflict** requires **all-domain awareness, information dominance, and decision superiority**. We must improve critical infrastructure resiliency, strengthen partnerships, and provide rapid flexible options and decision space in support of civil authorities.

Figure 1 – Framework defining the commander’s singular vision and guidance for NORAD and USNORTHCOM.

Proliferated Low-Earth Orbit satellites, and improving the Integrated Undersea Surveillance System (IUSS). These technological advances promise to provide earlier detection of sea-launched cruise missiles and hypersonic glide vehicles, with the Arctic serving as a key theatre given projected flight paths through the region. Recent strategic assessments also explain how winners in future competition, crisis, and conflict will be determined through information dominance systems that ingest, aggregate, process, display, and disseminate data quickly and reliably by harnessing the potential of Artificial Intelligence (AI)²⁰ and machine learning. The Global Information Dominance Experiments (GIDE)²¹ and the Pathfinder initiative, which fuses data from military, commercial and government sensors to create a common operating picture,²² point to developments over the past year that elevate the promise of these innovative solutions.

All-domain awareness and information dominance enable Decision Superiority, in which senior leaders

have the time and decision space to consider various options to “deter in competition, de-escalate in crisis, and defeat in conflict.”²³ Given the diverse nature of threats from every vector and across all domains, a fixation on defeating an adversary using kinetic force should be considered a last resort. Instead, Gen VanHerck notes the importance of getting “inside our potential adversaries’ OODA [observe-orient-decide-act] loops” so that senior leaders can message adversaries and create doubt in competitors’ minds. The NORAD command team also emphasizes the distinct concept of Risk Mitigation, which implies a much broader range of protection options in support of deterrence-by-denial. Determining appropriate risk mitigation requirements under the auspices of NORAD requires key policy decisions and guidance from Washington and Ottawa about what the Command is expected to defend against attack (kinetic or non-kinetic) – and deciding what risks should be left to civilian departments and agencies to manage. Arctic defence and security encompasses a broad and deep range of hazards, risks, threats, and vulnerabilities – and is a shared responsibility across government departments and agencies. Discerning the appropriate lead is essential, lest the Canadian and American militaries be thrust into roles best filled by others.

This requires more clarity on the nature of specific Arctic threats, with Lackenbauer proposing a model that differentiates between threats through, to, and in the Arctic.²⁴ Most of the challenges specifically identified by NORAD fall with the *through* category: threats that emanate from outside of the Arctic and/or do not target the North American Arctic itself. Thus, while strategic appraisals continue to package a diverse array of kinetic and non-kinetic threats as “Arctic” challenges, this can shroud or misrepresent how or why particular threats have an Arctic nexus. For example, NORAD’s 2021 *Strategy* highlights that:

The Arctic provides a good example of the changing physical and strategic environment and is a zone of international competition. Both Russia and China are increasing their activity in the Arctic. Russia’s fielding of advanced, long-range cruise missiles capable of being launched from Russian territory and flying through the northern approaches and seeking to strike targets in the United States and Canada has emerged as the dominant military threat in the Arctic.²⁵

Thus, Russian delivery systems passing *through* the Arctic to strike at targets in more heavily populated areas of the lower 48 states and southern Canada are identified as threats *in* the Arctic – although it is unclear how the changing physical environment of the Arctic itself has a bearing on this changing threat. It is also worth highlighting that threat assessments are opaque on how these constitute threats *to* the Arctic.

While distinctions such as this might seem academic, they colour political and public expectations about what US and Canadian investments in Arctic capabilities are intended to protect. They also intersect with increasingly strong messaging from NORAD leadership about the need to “Globally Integrate” defence efforts. In March 2021, VanHerck wrote in *Joint Force Quarterly*:

Our competitors’ actions are *global*, not regional. We must match this reality; we cannot continue to apply a regional perspective to plans, force management and design, or a parochial approach to acquisitions. Regionally focused plans do not address the fact that our peer competitors or potential adversaries are not constrained by our organizational boundaries or our command and control. ... We must create global plans that have

regional components, focused on strategies, plans, force management, and force design and development concepts that integrate homeland defense and strategic deterrence into every aspect of our defense, from planning to execution.²⁶

According to this logic, all “Arctic” security challenges must be nested within global and all-domain awareness, options, actions, and effects, with due consideration of global risk, resources, and readiness. Rather than Arctic-centric plans, this suggests the need for global plans with Arctic regional components that recognize the limits of existing “stove-piped” approaches and the risk of horizontal escalation of competition and conflict beyond regional boundaries.

By this logic, continental defence – and defence in and from the North American Arctic in particular – should be articulated in terms of globally-integrated layered defences that incorporate geography (forward regions, approaches, and the homeland layers), domains (air, land, sea, space, cyber, electromagnetic spectrum, and cognitive), and whole-of-governments/nations. The NORAD and USNORTHCOM 2021 *Strategy* describes how the forward and approaches layers consist of forward-deployed Canadian and U.S. forces integrated with allies and partners, while the homeland layer consists of joint force capabilities integrated with whole-of-government and strategic private sector partner capabilities. This entails cultural and procedural change within NORAD, DND, and DoD, as well as carefully coordinated planning across US combatant commands and Canadian Joint Operations Command (CJOC) to overcome the limitations of the current region-by-region approach to national defence.²⁷

Conclusion

In a roundtable with reporters during a visit to Ottawa in late November 2021, General VanHerck emphasized that while China and Russia actively develop new ways to attack North America using advanced cruise missiles and hypersonic vehicles, he still waits for political direction²⁸ to modernize increasingly outdated detection and defence systems. Plans to upgrade essential systems remain “in their infancy,” Lee Berthiaume of the Canadian Press cited, and VanHerck “is hoping for direction from Defence Minister Anita Anand and her American counterpart sooner rather than later so work on meeting the emerging threats can begin in earnest.”²⁹ Meanwhile, NORAD Deputy Commander Lieutenant-General Alain Pelletier spoke of the improving agile homeland defence enterprise and Information Dominance where NORAD can employ more affordable defeat mechanisms by working with commercial, private, and industry partners.³⁰ Yet, Vice-Admiral (ret). Mark Norman observes that the Government of Canada has given no clear indication of whether it intends to embrace “an extensive and ambitious approach” to continental defence, or continue with a minimalist approach reflected in past historical practice, “regardless of government du jour and defence planners.”³¹ Rideau Institute president Peggy Mason explains how general trends in policies and programmes guide administrations with regard to missile defence, including how missile defence and capabilities support strategic deterrence and stability, as well as influence of the cycle of national strategy reviews.³² These U.S. efforts continue unilaterally, with Canada opting out of the ballistic missile defense program – a stance that raises ongoing questions about Canada’s role in a future cruise missile defence program.

The revised Defence Policy Challenges released by DND's policy branch in November 2021 provide additional insight into evolving departmental thinking and priorities. In identifying challenges associated with "securing North America and enhancing continental defence," the Mobilizing Insights in Defence and Security (MINDS) program suggests that "today's security environment is more complex than ever; characterized by trans-regional, all-domain, and multi-functional threats, and the rapid evolution of technology and military capabilities. Developments in cyber capabilities, hypersonic weapons, advanced cruise and ballistic missiles, space and counter-space systems, remotely piloted systems, and information operations all affect North America's current and future threat environment." While insisting that "DND/CAF must continue to develop and enhance its approach to defending Canada and North America, including by working with the US and modernizing NORAD," the open-ended nature of

the questions indicates that its identification of threats and potential courses of action remain in their nascent stages.³³

For all the rhetoric and difficulties, NORAD continues to represent a highly effective source of North American defence and security. While challenges both persist and emerge, especially as adversaries project competitive ambitions, the United States and Canada continue to discern and act upon opportunities that balance and magnify their defence equities in continental defence. The Arctic, as an evolving operational environment, benefits from the proven history of NORAD and other binational efforts. To that end, Canadians and Americans must continue as determined partners who keep one another accountable as we discern ways to bolster overall effectiveness to defend a North American homeland that is "no longer a sanctuary."³⁴

Notes

¹ US Department of Defense, "Joint Statement on NORAD Modernization," 17 August 2021, <https://www.defense.gov/News/Releases/Release/Article/2735041/joint-statement-on-norad-modernization/>.

² White House, "Readout of President Joe Biden Call with Prime Minister Justin Trudeau of Canada," 22 January 2021, [Readout of President Joe Biden Call with Prime Minister Justin Trudeau of Canada | The White House](#).

³ Office of the Prime Minister, "Prime Minister Justin Trudeau speaks with the President of the United States of America Joe Biden," 22 January 2021, [Prime Minister Justin Trudeau speaks with the President of the United States of America Joe Biden | Prime Minister of Canada \(pm.gc.ca\)](#).

⁴ Murray Brewster, "Plan to rebuild defence early-warning system means political, fiscal headaches for Trudeau government," CBC News, 27 January 2021, [Plan to rebuild defence early-warning system means political, fiscal headaches for Trudeau government | CBC News](#).

⁵ Prime Minister's Mandate Letter to the Minister of National Defence, 13 December 2019, [ARCHIVED - Minister of National Defence Mandate Letter | Prime Minister of Canada \(pm.gc.ca\)](#).

⁶ P. Whitney Lackenbauer, Troy Bouffard, and Nancy Teeple, « L'arctique et la défense nord-américaine, » *Revue annuelle OPSA – L'année arctique 2020* (Montréal : Observatoire de la politique et la sécurité de l'arctique, December 2020), 61-69, <https://cirriq.org/wp-content/uploads/2020/12/Lannee-arctique-2020.pdf>.

⁷ Government of Canada, “Arctic and Northern Policy Framework: Safety, security, and defence chapter” (September 2019), <https://www.rcaanc-cirnac.gc.ca/eng/1562939617400/1562939658000>.

⁸ See P. Whitney Lackenbauer and Rob Huebert, “Premier Partners: Canada, the United States and Arctic Security,” *Canadian Foreign Policy Journal* 20/3 (Fall 2014): 320-33.

⁹ Government of Canada, “Arctic and Northern Policy Framework: Safety, security, and defence chapter.”

¹⁰ DND, “North American Aerospace Defense Command (NORAD),” 14 March 2018, [North American Aerospace Defense Command \(NORAD\) - Canada.ca](https://www.norad.ca/norad-1).

¹¹ NORAD, “Canadian NORAD Region” (2021), <https://www.norad.mil/About-NORAD/Canadian-NORAD-Region/>.

¹² NORAD News Release, “Commander NORAD completes first visit to Canada,” 30 November 2021, [Commander NORAD completes first visit to Canada > North American Aerospace Defense Command > Newsroom](https://www.norad.ca/Commander-NORAD-completes-first-visit-to-Canada).

¹³ See, for example, Andrea Charron, “Canada-U.S. Defence and NORAD,” NAADSN Reading List (May 2020), https://www.naadsn.ca/wp-content/uploads/2020/05/1NAADSN_Suggested_Readings-CANUS-NORAD-AC_SN-edits.pdf; Nancy Teeple and Ryan Dean, eds., *Shielding North America: Canada’s Role in NORAD Modernization* (Peterborough: NAADSN, 2021), <https://www.naadsn.ca/wp-content/uploads/2021/03/NAADSN-engage4-NORAD-NT-RD-upload.pdf>; Nicholas Glesby et al, “NORAD Modernization Closed Door Workshop” report, 21 June 2021, [NORAD-Workshop-21-June-2021-Report-FINAL.pdf \(naadsn.ca\)](https://www.naadsn.ca/NORAD-Workshop-21-June-2021-Report-FINAL.pdf); and Rob Huebert and P. Whitney Lackenbauer, *Debating Arctic Security: Selected Writings, 2010-2021* (Peterborough: NAADSN, 2021), [DebatingArcticSecurity-RH-PWL-nov2021.pdf \(naadsn.ca\)](https://www.naadsn.ca/DebatingArcticSecurity-RH-PWL-nov2021.pdf).

¹⁴ Todd Coyne, “Military hopeful new Arctic port will open in 2022, but 'significant' uncertainty remains,” CTV News, 9 July 2021, [Military hopeful new Arctic port will open in 2022, but 'significant' uncertainty remains | CTV News](https://www.ctvnews.ca/military-hopeful-new-arctic-port-will-open-in-2022-but-significant-uncertainty-remains-1.6194739).

¹⁵ DND Press Release, “Her Majesty’s Canadian Ship Harry DeWolf becomes the First Arctic and Offshore Patrol Ship Commissioned by the Royal Canadian Navy,” 26 June 2021, [Her Majesty’s Canadian Ship Harry DeWolf becomes the First Arctic and Offshore Patrol Ship Commissioned by the Royal Canadian Navy - Canada.ca](https://www.norad.ca/Her-Majestys-Canadian-Ship-Harry-DeWolf-becomes-the-First-Arctic-and-Offshore-Patrol-Ship-Commissioned-by-the-Royal-Canadian-Navy).

¹⁶ “Royal Canadian Navy Ship Completes Northwest Passage Journey for First Time since 1954,” CBC/Radio-Canada, 1 October 2021, <https://www.cbc.ca/news/canada/north/canadian-navy-ship-completes-northwest-passage-1.6194739>.

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¹⁸ NORAD/USNORTHCOM *Strategy: Executive Summary* (March 2021), [U\) NORAD-USNORTHCOM Strategy EXSUM - Signed.pdf](https://www.norad.ca/NORAD-USNORTHCOM-Strategy-EXSUM-Signed.pdf).

¹⁹ See, for example, Glen VanHerck, “Deter in Competition, Deescalate in Crisis, and Defeat in Conflict,” *Joint Task Force Quarterly* 101 (30 March 2021), [Deter in Competition, Deescalate in Crisis, and Defeat in Conflict > North American Aerospace Defense Command > Newsroom \(norad.mil\)](https://www.norad.ca/Deter-in-Competition-Deescalate-in-Crisis-and-Defeat-in-Conflict).

²⁰ *Summary of the 2018 Department of Defense Artificial Intelligence Strategy: Harnessing AI to Advance Our Security and Prosperity*. Washington, DC: DOD Chief information Officer, 2018.

²¹ See, for example, [NORAD and U.S. Northern Command lead the third Global Information Dominance Experiment \(GIDE\) > North American Aerospace Defense Command > Newsroom](https://www.norad.ca/NORAD-and-U.S.-Northern-Command-lead-the-third-Global-Information-Dominance-Experiment-GIDE).

²² VanHerck explained that Pathfinder “essentially takes and ingests — aggregates — data from multiple systems, data that would in the past have been ... left on the cutting room floor and not analyzed or assessed in a timely manner. ... The Pathfinder program uses machine learning to help us analyze that data from multiple systems — not only military systems, but commercial systems, other government agency systems.” Nathan Strout, “NORAD is using artificial intelligence to see the threats it used to miss,” 1 March 2021, [NORAD is using artificial intelligence to see the threats it used to miss \(c4isrnet.com\)](https://www.c4isrnet.com/NORAD-is-using-artificial-intelligence-to-see-the-threats-it-used-to-miss).

²³ VanHerck, “Deter in Competition, Deescalate in Crisis, and Defeat in Conflict.”

²⁴ P. Whitney Lackenbauer, “Threats through, to, and in the Arctic: A Canadian Perspective” in *On Thin Ice? Perspectives on Arctic Security*, eds. Duncan Depledge and P. Whitney Lackenbauer (Peterborough: North American and Arctic Defence and Security Network, 2021), 26-38.

²⁵ NORAD/USNORTHCOM *Strategy: Executive Summary* (March 2021), [\(U\) NORAD-USNORTHCOM Strategy EXSUM - Signed.pdf](#).

²⁶ VanHerck, “Deter in Competition, Deescalate in Crisis, and Defeat in Conflict.”

²⁷ NORAD/USNORTHCOM *Strategy: Executive Summary*; NORAD/NORTHCOM Public Affairs, “Commander NORAD and USNORTHCOM releases Strategic Vision,” 15 March 2021, [COMMANDER NORAD and USNORTHCOM releases Strategic Vision > North American Aerospace Defense Command > Newsroom](#).

²⁸ Troy J. Bouffard and Adam Lajeunesse, “NORAD Modernization: Next Steps,” *Vanguard* (December 2021) (in print).

²⁹ Murray Brewster, “Plan to rebuild defence early-warning system means political, fiscal headaches for Trudeau government,” CBC News, 27 January 2021, [Plan to rebuild defence early-warning system means political, fiscal headaches for Trudeau government | CBC News](#).

³⁰ [NORAD Modernization Forum: Information Dominance | CDA Institute](#)

³¹ Norman quoted in Nicholas Glesby, “Conference Report: Modernizing Continental Defence” (Calgary: Canadian Global Affairs Institute, August 2021), [Modernizing Continental Defence.pdf \(d3n8a8pro7vhmx.cloudfront.net\)](#).

³² David Perry, “Adapting North American Defence to Missile Threats,” audio podcast, *Defence Deconstructed* 52:542021, 14 October 2021, <https://soundcloud.com/user-609485369/defence-deconstructed-adapting-north-american-defence-to-missile-threats>.

³³ DND, “Mobilizing Insights in Defence and Security (MINDS: Defence Policy Challenges,” 17 November 2021, [Defence Policy Challenges - Canada.ca](#). For more details on the AOPS, see Adam Lajeunesse, “Canada’s Arctic Offshore and Patrol Ships (AOPS): Their history and purpose,” *Marine Policy* 124 (2021): 104323.

³⁴ See, for example, DND, “Canadian Armed Forces Operations and Activities – Transition Binder 2020: March 2020 - North American Aerospace Defense Command (NORAD),” <https://www.canada.ca/en/department-national-defence/corporate/reports-publications/transition-materials/caf-operations-activities/2020/03/caf-ops-activities/norad.html>.