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How Canada Can Promote Awareness and Control in Arctic Waters

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Lieutenant-Commander Kyle Aubrey

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BETWEEN AN ICEBERG AND A HARD PLACE? HOW CANADA CAN PROMOTE AWARENESS AND CONTROL IN ARCTIC WATERS WHILE AVOIDING THE SECURITY DILEMMA

AIM

1. This service paper will discuss how Canada may effectively provide awareness and control of its Arctic waters in the face of climate change, growing strategic competition, and increased usage. It draws from Canada's practical Whole-of-Government Arctic framework to reason realistic priorities for a dedicated Arctic security strategy. Two approaches will be presented: leveraging NORAD modernization to implement underwater surveillance and "dual-use, no regret"¹ investments. These approaches will act to strengthen existing security partnerships and legitimize Canada's *de jure*² control of the region while avoiding a security dilemma.

INTRODUCTION

2. Climate change continues to disproportionately affect the Arctic region, warming it at over two times the global rate.³ Over the course of this century, the Arctic landscape, as we know it today, will change and Arctic waters will, to some degree, become more accessible.⁴ A rapidly changing Arctic, combined with the return of strategic competition, creates an impetus for Canada to direct more attention and resources towards awareness and control over its northern waters. For Canada, the challenge will be to effectively balance the need to invest in this endeavour while not contributing to a security dilemma that could destabilize an otherwise cooperative Arctic.

3. Climate change has also changed the way Arctic security is conceptualized. As noted in *Strong, Secure, Engaged*, future Arctic security challenges will extend beyond traditional military threats. Increased usage of Canada's Arctic will necessitate a greater constabulary focus on policing, environmental protection, and search and rescue (SAR). Canada's desire for Whole-of-Government practical solutions to Arctic security will be the centre of gravity for any strategy to improve domain awareness and control.

¹ Michael Byers and Nicole Covey, "Arctic SAR and the 'Security Dilemma,'" *International Journal* 74, no. 4 (December 2019): 500.

² *De jure* and *de facto* will be used to highlight the nuanced perceptions of Canada's control over its Arctic. According to the Washington School of Law, *de jure* refers to "a state of affairs that is in accordance with law" while *de facto* refers to "a state of affairs that is true in fact, but not officially sanctioned."

³ Intergovernmental Panel on Climate Change, "Sixth Assessment Report Regional Fact Sheets – Polar," accessed 10 January 2022, https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Polar_regions.pdf.

⁴ Lawrence R. Mudryk, Jackie Dawson, Stephen E.L. Howell, Chris Derksen, Thomas A. Zagon, and Mike Brady, "Impact of 1, 2 and 4° C of global warming on ship navigation in the Canadian Arctic," *Nature Climate Change* 11 (August 2021): 678.

4. This paper will focus on two main themes in how Canada may achieve this end while avoiding an Arctic security dilemma. The first theme is NORAD modernization and how the longstanding bilateral partnership could be leveraged to progress Canada's Arctic agenda. The

second theme is "dual-use, no regret" investments that will contribute to the broader definition of Arctic security without overtly militarising the region.⁵

DISCUSSION

5. In contemplating a Whole-of-Government strategy on Arctic security, it is necessary to consider the national priorities of such an undertaking. Taking into account the prevailing strategic environment, such a strategy would presumably follow three national priorities:

- a. to improve Arctic domain awareness and control through solutions and investments that provide utility across departments and agencies;
- b. to maintain the geopolitical status quo of the greater Arctic as a region of peaceful multilateral cooperation and model governance; and
- c. to leverage and enhance the strategic relationship with the United States, Canada's most important security partner, without compromising its perception of Arctic sovereignty.

Measuring potential solutions to improve Arctic awareness and control against these national priorities is necessary. These priorities will be discussed further to understand the nuance required in such an endeavour.

6. To control northern waters, it is first necessary to fully understand what is happening in the Arctic. Maximizing domain awareness will be the starting point of any Arctic security strategy. Canada's Arctic is sparsely populated and will be a harsh and inhospitable environment for the foreseeable future despite the effects of climate change. It follows that persistent and effective domain awareness will be contingent on the use of autonomous systems and leveraging advances in technology. Investments in Arctic surveillance will need to provide utility for all stakeholders in Arctic security beyond purely defence applications.

7. Presently, the greater Arctic is defined by model governance and multilateral cooperation. Despite rhetoric surrounding the Arctic as a potential area of conflict, bodies such as the Arctic Council have effectively progressed agendas on scientific research and environmental protection while avoiding over-securitizing the region. Accessibility and the restoration of strategic competition stand to challenge this status quo. Any action Canada takes to enhance security in the Arctic must not be misinterpreted as an attempt to engage in an Arctic arms race. This could lead to tensions between other Arctic nations, particularly Russia, and

⁵ Byers and Covey, "Arctic SAR," 500.

create a security dilemma⁶ in an otherwise peaceful Arctic. Canada must balance its need to improve Arctic security with avoiding a security dilemma.⁷

8. Since the end of the Second World War, Canada and the United States have largely enjoyed a close and mutually beneficial security partnership. Notwithstanding, the Arctic has been a source of latent bilateral tension. Canada's claim over its Arctic archipelago as internal waters has long been challenged by the United States. Despite these opposing stances, both countries have been diplomatically creative in maintaining a "gentlemen's handshake" agreement to progress mutually beneficial security policies. Nevertheless, the concept of American encroachment on Canadian Arctic sovereignty continues to occupy the collective Canadian psyche.⁸ Arctic security is an agenda item that would strengthen this partnership. It is an opportunity Canada must handle delicately to achieve its aim and preserve the perception of sovereignty in the north. A model for this type of mutually beneficial partnership is NORAD. NORAD's origins are in Cold War aerospace defence, however. This century's Arctic security environment demands a modernized approach to protecting the continent's northern approaches.

9. The existing NORAD agreement has been in place since 2006. The need to modernize the bilateral treaty is currently topical and often referred to as the unwritten chapter of *Strong, Secure, Engaged*.⁹ In August 2021, the U.S. Secretary of Defense and Canada's Minister of National Defence released a joint statement on NORAD modernization efforts that communicated its ambitions.¹⁰ The announcement included binational commitments to improving situational awareness, modernized Command and Control systems, capability improvements, and research and development of innovative technologies.

10. While the joint statement makes no explicit mention of expanding NORAD's maritime role, it clearly states its ambition to develop a continental-centric, pan-domain "network of Canadian and U.S. sensors from the seafloor to outer space."¹¹ In his recent appearance on the *Defence Deconstructed* podcast, Deputy Commander NORAD, LGen Alain Pelletier, describes how the existing framework and security partnership lends itself to an expanded role in pandomain awareness under the pretense of continental defence.¹² Both countries have already demonstrated their openness to adapting NORAD missions in the face of changing global

⁶ The term 'security dilemma' as defined by Encyclopedia Britannica is "a situation in which actions taken by a state to increase its own security cause reactions from other states, which in turn lead to a decrease rather than an increase in the original state's security."

⁷ Byers and Covey, "Arctic SAR," 500.

⁸ Adam Lajeunesse, "The Distant Early Warning Line and the Canadian Battle for Public Perception," *Canadian Military Journal* 8, no. 2 (Summer 2007): 53.

⁹ Financial Post, "Diane Francis: Canada, U.S. Move On Much-Needed NORAD Modernization," accessed 18 January 2022, <https://financialpost.com/diane-francis/diane-francis-canada-u-s-move-on-much-needed-noradmodernization>.

¹⁰ Canada, Department of National Defence, "Joint Statement on NORAD Modernization," last modified 14 August 2021, <https://www.canada.ca/en/department-national-defence/news/2021/08/joint-statement-on-noradmodernization.html>.

¹¹ Ibid.

¹² "A Pan-Domain Approach to North American Defence," *Defence Deconstructed*, 17 December 2021, https://www.cgai.ca/a_pan_domain_approach_to_north_american_defence.

security. In the most recent changes in 2006, in response to the 9/11 terrorist attacks, NORAD expanded its mandate to include maritime warning. Its current maritime warning mandate “consists of processing, assessing, and disseminating intelligence and information”¹³ as it pertains to maritime threats to North America. While this specific NORAD mission is currently limited to an intelligence-sharing partnership, there is both a willingness and an opportunity to improve maritime surveillance through NORAD modernization.

11. In Canada, the RADARSAT Constellation Mission (RCM) adequately handles surface maritime surveillance. The RCM system consists of three satellites capable of providing near-real-time ship data in Canada’s Arctic. Satellite imagery combined with Automatic Identification System (AIS) data provides the ability to fuse ship information with space-based radar tracking day or night in any weather conditions. Therefore, the capability gap that Canada should leverage in NORAD modernization is cooperation in the research and development of an advanced underwater surveillance network.

12. Over the last 70 years, there have been several joint endeavours in underwater surveillance. Most notably, Canada partnered with the United States-led development of the Sound Surveillance System (SOSUS) during the Cold War, but this did not include Arctic coverage. Over the years, Canada has undertaken many research projects involving Arctic underwater surveillance. Most recently, as part of their All-Domain Situational Awareness (ADSA) project, Defence Research and Development Canada’s (DRDC) Canadian Arctic Underwater Sentinel Experiment (CAUSE) attempts to leverage artificial intelligence (AI) to process data received from both autonomous underwater vehicles as well as passive acoustic hydrophones. This system uses AI to process, identify, and classify the raw captured acoustic data – normally a personnel-intensive task requiring a very specific skillset. This technology is not yet perfected but further development provides an opportunity for bilateral cooperation.

13. Partnership in this surveillance infrastructure would be mutually beneficial and has some historical precedence. Developing an advanced underwater surveillance system, CAUSE or another endeavour entirely, would significantly improve Canadian Arctic domain awareness. It would also signal Canada’s intent to meaningfully contribute to continental defence – undoubtedly welcome by the United States. This proposal is not unlike the development of the Distant Early Warning (DEW) Line project in the 1950s. Under the modernization umbrella, Canada could leverage the practical benefits of the American defence industry and financial power. The United States, like in the development of the DEW Line, could shoulder the lion’s share of the cost if it meant Canadian cooperation in progressing a continental pan-domain awareness network¹⁴ – an aspirational goal for the United States since the 9/11 attacks.¹⁵ Gen

¹³ Canada, Treaties, “Agreement Between the Government of Canada and the Government of the United States of America on the North American Aerospace Defense Command,” accessed 13 January 2022, <https://www.treatyaccord.gc.ca/text-texte.aspx?id=105060>.

¹⁴ The American term for this is ‘all-domain awareness.’

¹⁵ Andrea Charron, James Fergusson, and Nicolas Allarie, “Left of Bang: NORAD’s Maritime Warning Mission and North American Domain Awareness,” *Centre for Defence and Security Studies*, University of Manitoba (2015): 13.

¹⁶ Breaking Defense, “The key to all-domain warfare is ‘predictive analysis,’ Gen. O’Shaughnessy,” accessed 8 January 2022. <https://breakingdefense.com/2020/05/the-key-to-all-domain-warfare-is-predictive-analysis-genoshaughnessy/>.

Terrence O'Shaughnessy, Commander of NORAD between 2018-2020, stated the need for a "bigger ecosystem for sensing" and the "ability to see the approaches to our homeland" when referring to this capability void in the Arctic.¹⁶ Statements from both sides of the border would suggest NORAD modernization is an appropriate means to progress respective Arctic security agendas.

14. Like the development of the DEW Line, progressing a project of this nature would not be without its challenges. There would be renewed sensitivities around American *de facto* control over Canada's Arctic. Like in the 1950s, shared binational surveillance of these internal waters would likely be met with public perception of encroachment on Canadian sovereignty.¹⁶ Canada must again demonstrate legitimate *de jure* control of its northern waters to temper these concerns.¹⁷ Like NORAD's aerospace jurisdictions, Canada must maintain maritime control of its territorial waters, including the disputed Northwest Passage. This agreement would be a continuation of "don't ask, don't tell" mutually beneficial diplomatic arrangements in Canada's north. Demonstrating legitimate control of the Arctic will be a Whole-of-Government approach in progressing Arctic security. This approach will have its own factors and considerations.

15. For Canada to demonstrate control of its Arctic it must be able to execute law enforcement and emergency response in a challenging environment. It is an undertaking that will span agencies and departments with different jurisdictions and mandates. Future security requirements will require a constabulary focus on practical solutions that will need to provide utility across federal departments without leading to an Arctic arms race. Arctic security is broader than a matter of national defence and will require resource allocation that addresses all of these demands efficiently.

16. In their article "Arctic SAR and the 'Security Dilemma,'" Michael Byers and Nicole Covey present the concept of "dual-use, no regret" investments.¹⁸ These are security investments designed to improve Arctic *defence*, but they will provide utility within the broader *security* portfolio even if they never have to be employed in a national defence role. Their article posits relocation of SAR assets to Canada's north as an example of such an investment. Forward-basing SAR-specific assets in the Arctic, such as the article's Cormorant example, would satisfy several

Whole-of-Government priorities. This type of helicopter, despite being operated by the Royal Canadian Air Force (RCAF), does not pose an offensive military threat and thereby avoids contributing to a security dilemma. Notwithstanding, it contributes to Arctic security through surveillance and reconnaissance in addition to its core mandate of SAR.

17. Employment of "dual-use, no regret" technology will be critical to keeping pace in a changing Arctic. The previously discussed RCM is an example of a "dual-use, no regret" technology investment.²⁰ While this satellite technology directly contributes to national defence, it fulfills many other roles that provide utility to other government departments. Agriculture and

¹⁶ Lajeunesse, "Distant Early Warning Line," 53.

¹⁷ Ibid, 53.

¹⁸ Byers and Covey, "Arctic SAR," 499. ²⁰

Ibid, 515.

Agri-Food Canada uses RCM to monitor agriculture health and diversity. Environment and Climate Change Canada uses satellite data to improve climate models, to conduct weather forecasting, and to produce soil moisture maps. In addition to maritime domain awareness, data from the RCM directly contributes to Arctic security by helping to produce ice charts, pollution detection, and monitoring illegal fishing, among many other uses which benefit many government departments.

18. Explicit tasks for the CAF in Canadian internal waters are limited to aeronautical SAR. In their article, Byers and Covey suggest relocating the Cormorant fleet of helicopters during the summer months when SAR is most likely to occur in the Arctic.¹⁹ They also suggest that purchasing additional SAR airframes for this purpose would be a wise investment.²⁰ Beyond the aeronautical SAR mandate, the CAF will be relied upon to contribute to the security agenda through cooperation with other government departments. The *Harry DeWolf* class of Arctic Offshore Patrol Vessels is an example of employing CAF assets in this cooperative role. Despite being lightly armed, the new class of ship operated by the Royal Canadian Navy (RCN) hardly represents a bona fide military threat. Their ability to operate in first-year ice makes them well suited to operate in a constabulary role with other government departments.²¹ Departments such as the Royal Canadian Mounted Police (RCMP), Fisheries and Oceans, Canadian Border Services Agency (CBSA), and Transport Canada could embark in the RCN ships to exercise their respective jurisdictions in the Arctic. CAF contributions like this permit a military presence in the Arctic without alarming other Arctic nations. These two examples are ways the CAF should look to employ existing assets in the Arctic. This approach should also be a factor in the development or procurement of future capabilities for the CAF.

¹⁹ Ibid, 515.

²⁰ Ibid, 516.

²¹ Adam Lajeunesse, *Canadian Global Affairs Institute*, “Unarmed Warships: What Are the AOPS For?” accessed 8 January 2022. https://www.cgai.ca/unarmed_warships_what_are_the_aops_for.

CONCLUSION

19. Leveraging NORAD modernization in developing an advanced, integrated and layered underwater surveillance capability is a mutually beneficial endeavour. It could replicate past NORAD projects to give Canada access to the financial and technical expertise of the United States while also strengthening the bilateral security partnership. This development would be only one part of the modernization agenda but a critical step in progressing a pan-domain awareness C2 network. NORAD provides a logical Command and Control structure for this partnership and could align multiple government agencies under a unified decision-making framework. In a future security environment that will rely on information superiority and predictive analysis decision making, this type of integration will be necessary. A modernized, pan-domain NORAD is a worthwhile aspiration that starts with improved underwater sensing capabilities.

20. The best way for Canada to demonstrate *de jure* control over its northern waters is by implementing practical solutions to security threats effectively across multiple jurisdictions. The broader definition of Arctic security, beyond simply defence, requires a Whole-of-Government approach. This approach promotes cooperation, alignment and unity of effort between security agencies with different mandates and jurisdictions. “Dual-use, no regret” investments are financially efficient and will provide utility across departments regardless of whether they are ever needed for national defence. This approach allows Canada to advance its Arctic security agenda while also avoiding a security dilemma.

21. This paper has provided strategies for how Canada may improve its Arctic maritime awareness and control in the face of climate change and growing strategic competition. The Arctic is transforming and Cold War interpretations of Arctic defence are outdated. Arctic security is no longer defined by long-range aircraft and atomic power but by climate change, increased usage, and strategic competition.²² For Canada, this updated conception of Arctic security necessitates modernized partnerships in conjunction with cooperative national strategies focused on emerging technologies and unity of resources.

²² Lajeunesse, “Distant Early Warning Line,” 52.

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