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ROYAL CANADIAN NAVY CAPABILITIES FOR SITUATIONAL AWARENESS IN THE ARCTIC

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By Lieutenant-Commander Raphael Liakas

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AIM

1. This Service Paper outlines three capability areas that will enable the Royal Canadian Navy (RCN) to expand, mature, and share its Arctic-related situational awareness and includes institutional-level considerations tied to their advancement. Expressed as mutually reinforcing priorities, this informational piece positions a more nuanced understanding and corresponding operationalization of: organic shipboard sensors, technological networking, and professional networking. These perspectives can then lead to an in-depth examination by Level 1 / Level 2 (L1 / L2) principals and supporting staff with strategic direction from the Vice Chief of Defence Staff (VCDS).

INTRODUCTION

2. Climate change and scientific innovations will grant greater access to the North. By extension, substantial investments in infrastructure to support new travel patterns and underpin the presumably lucrative exploitation of resources will entail a larger regional human footprint. An expansive state and non-state presence equates to a need to administer Canadian policy positions and regulations, assure enforcement, and respond to arisings as they may occur. Consequently and as a proponent of cooperative, long-term, multi-departmental, multi-sector programs, the Government of Canada crafted *Canada's Arctic and Northern Policy Framework* and the *National Shipbuilding Strategy* (NSS), among other initiatives. As economic, societal, technology, and security interests are advanced, the Department of National Defence (DND), Canadian Armed Forces (CAF), and RCN hold crucial roles by virtue of offering niche contributions and being beneficiaries.

3. *Strong, Secure, Engaged* (SSE) identifies that “principal among the challenges at home is the need to operate in the Arctic.”¹ Accordingly, Harry DeWolf-class Arctic and Offshore Patrol Ships (AOPS) will represent the RCN’s primary hard-power assets for Northern presence and surveillance. While the capabilities therein will posture the RCN for partial situational awareness in the Arctic, these ships’ systems in addition to broader institutional-level interoperability in both the technological and people domains must be enhanced.²

¹ Department of National Defence, *Strong Secure Engaged – Canada's Defence Policy* (Ottawa: National Defence, 2017), 35.

² There is no intent within this Service Paper to advocate for specific equipment given that DND maintains robust requirement / procurement processes that would be ill-served by perceptions of corporate favouritism. Nor is there an intent to stipulate amendments to recruiting and training regimes as it would be inappropriate to do so without first engaging the appropriate L1 / L2 authorities and supporting staff.

DISCUSSION

Organic Shipboard Sensors

4. Although ice-capable AOPS are designed for a sustained at-sea presence in an austere Arctic, getting there and staying there is only the start; it's also about how quickly something of consequence can be done once there.³ Given the intensifying and at times unadvertised regional traffic which is anticipated, the quantity and quality of the RCN's situational awareness data must increase. Despite plans to fit AOPS with a Navigation Radar Group, surveillance radar, Forward Looking Echo Sounder, and Direction Finding Subsystem, these systems' multi-role capabilities have a limited ability to cross well past the threshold of own-ship operations. In essence, these ships' suites will not be drawn from a category of air, surface, and sub-surface sensors in addition to electronic support measures (ESM) which are capable of a longer-range detection, identification, and tracking of various craft.

5. Notwithstanding the virtues of hard-power assets, Canada's Northern sovereignty interests are being advanced by way of historical, cultural, and legal claims with a corresponding intent to not militarize the discourse. Furthermore, insofar as sensational foreign military involvement in the Arctic is concerned, conventional thought articulates that there is confusion between potentialities and probabilities.⁴ Consequently, since "dollars and decisions must work hand in hand,"⁵ a reticence to fund additional Arctic-bound RCN capabilities would not be unexpected in a ways-and-means reconciliation. Yet, a more nuanced appreciation of these capabilities would enable relevant situational awareness in the Arctic without digressing from the desired employment model for naval hard-power assets in that region.

6. Up-rated shipboard sensors are pragmatic non-escalatory instruments with which to manage both the announced and unannounced presence of increasingly sophisticated military in addition to non-military aircraft, surface vessels, and submersibles. Moreover, as these sensors' capabilities are seamlessly transferable between Arctic and non-Arctic environments (e.g. AOPS is also an offshore patrol ship), the matter gains financial appeal. Lastly, as a question of stewardship, the deployment of RCN assets which are Arctic-tailored and fit-for-purpose preserves the availability of higher-capacity warships for full spectrum operations elsewhere. These latter assets would otherwise be employed to a fraction of their potential based on a reduced ability to operate in Northern conditions and a desire to avoid an Arctic arms race, whether actual or perceived. In aggregate, a more capable 'Sense' operational function in AOPS reinforces Canada's sovereignty in a

³ Paul Otte, *Grayisms and Other Thoughts on Leadership from General Al Gray, USMC (Retired) 29th Commandant of the Marine Corps* (Arlington, VA: Potomac Institute for Policy Studies, 2015), 56, interpreted from General Al Gray.

⁴ Adam P. MacDonald, "China Looking North: Compromising Canada's Arctic Sovereignty and Security?" *Canadian Military Journal* (18 no. 1, Winter 2017), 12-13.

⁵ Rick Hillier, *A Soldier First* (Toronto: HarperCollins Publishers Ltd., 2009), 350.

manner that does not equate to militarizing the Arctic discourse and permits a reasoned de-linking of the potentialities / probabilities calculus.

7. The late-stage introduction of non-programmed equipment into new-construction AOPS would result in schedule, cost, scope, and contractual challenges for that Project based on a necessity to define requirements, secure appropriations, and solicit bids. These challenges would also induce secondary NSS deconfliction impacts, namely to the follow-on production of Canadian Surface Combatant (CSC) warships. As an alternative, the pursuance of a tailored hybrid approach would involve shaping the procurement of each new sensor so that installation then proceeds via the most appropriate of either a modular payload option⁶ or an Engineering Change Work Period. It should be emphasized that ideas such as these are simple to state yet complex to undertake. Propositions of this nature convey neither the intricacies of process to be navigated nor an appreciation of the effort inherent to multi-sector stakeholder management.

Technological Networking

8. The integration of air, surface, and sub-surface sensors in warships is but one facet of the networking architecture to be managed. Mindful of the *Vice Chief of the Defence Staff and Associate Deputy Minister Planning Guidance for Data and Digitization*, the seamless, digital, and reciprocal sharing of situational awareness data with Canadian and allied partners is “the currency of the future. ... [There is thus a] need to create the programs, projects, people, policies, and processes to reflexively turn data into useful, readily consumable information accurately and quickly to enable better decision-making.”⁷ Accordingly, layers of integration orient towards joint-CAF, pan-government, and alliance contexts to enable a common, theatre-level, Recognized Maritime Picture (RMP) and Air Picture.

9. The history of Tactical Data Link is such that the RCN has maintained own-fleet compatibility over the years whereas increasingly pronounced integration challenges with the Royal Canadian Air Force (RCAF) and allies have materialized. The current state is summarized as an imbalance between the usage of legacy systems and an asynchronous introduction of new systems (e.g. the intricacies of cross-operating North Atlantic Treaty Organization (NATO) Tactical Data Link standards 11, 16, and 22). Insofar as the Arctic is concerned, a relatively modern capability is included within AOPS specifications. However, seamless compatibility with the CH-148 Cyclone and the CP-140 Aurora will be achieved only after these aircraft have completed their respective upgrade and modernization projects.⁸ Consequently and arguably temporarily, there is a reduced

⁶ Department of National Defence, “Arctic and Offshore Patrol Ship Project,” Last accessed 6 January 2021, <http://www.navy-marine.forces.gc.ca/en/fleet-units/aops-home.page>.

⁷ Department of National Defence, *VCDS/DMA Planning Guidance – Data and Digitization* (Ottawa: National Defence, 2 November 2020).

⁸ The Aurora Incremental Modernization Project Block IV includes an upgrade to Link-16. Conversely, while the Cyclone is currently equipped with Link-11, discussions are underway on whether to proceed with Link-16 or Link-22. A corresponding project has not yet been established.

ability for the RCAF to effectively extend and supplement the capabilities of RCN Arctic-bound vessels. To clarify, the intent herein is not to ascribe blame to either the RCN or RCAF but rather, to signal the continued impacts of a yet unresolved situation.

10. In line with this future outlook, “the coming decades will likely see the widespread adoption of shipborne unmanned vehicles, which will be employed as ... intelligence, surveillance and reconnaissance assets ... in all three maritime dimensions.”⁹ Regardless of whether these are interpreted as organic shipboard sensors or as capabilities in their own right which may be tasked by non-Navy commanders, the higher-order consideration within this debate rests on a necessity to view the CAF as a joint force. RCN-RCAF interoperability will need to be better integrated with Canadian Army (CA) and Canadian Rangers units, a detail which has been conceptually acknowledged in the *Canadian Army Modernization Strategy*.¹⁰ In parallel, an added requirement is for all CAF contributions to be aggregated to support Arctic situational awareness writ large, whether by virtue of Joint Task Force North, the Component Commander construct or otherwise.

11. As an active participant within a Comprehensive Approach towards the Arctic, also termed as a whole-of-government effort based on the stakeholders involved,¹¹ RCN support to Canada’s other national instruments serves complementary vice substitutive functions. By extension, “partnership, not ownership, must be our philosophy as a team of teams”¹² to realize unity of effort. For instance, RADARSAT satellite imagery has been made available via the Polar Epsilon Project in support of “near-real-time ship detection and maritime surveillance.”¹³ However, deficiencies in fully aligning the joint interagency planning, procurement, and implementation of Information Technology (IT) projects persist.

12. Over a decade ago, “vessels from different departments [could not] securely exchange maritime situational awareness information in an automated, near real-time environment to establish a common understanding of the domestic maritime situation.”¹⁴ In addition to the creation of Marine Security Operations Centers, progress has been achieved through the Interdepartmental Maritime Integrated Command, Control and Communications (IMIC3) project. Aimed at introducing “a deployable interagency

⁹ Department of National Defence, *Canada in a New Maritime World: Leadmark 2050* (Ottawa: Commander Royal Canadian Navy, 2016), 49.

¹⁰ Department of National Defence, *Advancing with Purpose: The Canadian Army Modernization Strategy, 4th Edition* (Ottawa: Commander Canadian Army, 2020), 12.

¹¹ Department of National Defence, *CFJP 4.0, Support* (Ottawa: Canadian Forces Warfare Centre, October 2016), 2-1.

¹² Department of National Defence, *VCDS/DMA Planning Guidance – Data and Digitization* (Ottawa: National Defence, 2 November 2020).

¹³ Canadian Space Agency, “RADARSAT data to serve Canadians,” Last accessed 8 January 2021, <https://www.asc-csa.gc.ca/eng/satellites/radarsat/data-serve-canadians.asp>.

¹⁴ Department of National Defence, “Interdepartmental Maritime Integrated Command, Control, and Communications (IMIC3) Project,” Last accessed 8 January 2021, <http://dgpaapp.forces.gc.ca/en/defence-capabilities-blueprint/project-details.asp?id=1873>.

information exchange tool to enhance maritime situational awareness, improve informed decision-making and facilitate coordinated action,”¹⁵ AOPS will be ‘fitted for but not with’ this capability. Given that a legitimately joint defence and security establishment will exist only if each partner insists on it, attainment of ‘fitted with’ represents the definitive end-state.

13. RCN situational awareness in the Arctic must also be framed within the SSE objective of Canada being secure in North America. The continent’s northern regions fall within a tri-command consisting of not only the Canadian Joint Operations Command (CJOC) but also the North American Aerospace Defense Command (NORAD) and United States Northern Command (USNORTHCOM).¹⁶ Thus, RCN data networks must remain interoperable with a key ally towards contributing to and drawing from these Commands’ relational arrangements, mutual situational awareness interests, cyber investments, and force synchronization efforts.¹⁷ However, as research and development activities within the American military-industrial complex evolve their systems from one generation of technology to the next, DND’s and by extension the RCN’s ability to keep pace will be tested.

14. The pressures of achieving greater technological networking include an often overlooked complication related to accelerated IT refresh rates. In general, computerized systems are sourced via a combination of Commercial-Off-the-Shelf (COTS) and Military-Off-the-Shelf (MOTS) methods. As such, there is a ‘market obsolescence’ risk for equipment and software prior to ‘requirement obsolescence’ whereby industry will charge a premium when governmental needs no longer align with evolving product or service lines. Furthermore, interactions between older and newer systems become problematic as version compatibility reduces and security risks increase. In aggregate, Canada’s procurement processes have, to date, not proven sufficiently versatile to effectively address high-tech obsolescence management amid already difficult joint procurement practices. Long-term interoperability, not only between Canadian parties but also with allies, is thus in jeopardy.

Professional Networking

15. Given the Arctic’s increasing human footprint and the Navy’s participation in a Comprehensive Approach, networks will not be limited to those of a technical nature but will also be based on building, growing, and sustaining professional relationships. As such, definitions of ‘situational awareness’ must be widened to include information sharing in a consultative and collaborative sense.

¹⁵ *Ibid.*

¹⁶ Andrea Charron and Jim Fergusson, *NORAD: Beyond Modernization* (Winnipeg: University of Manitoba Centre for Defence and Security Studies, 31 January 2019), 6.

¹⁷ Department of the Navy, *A Strategic Blueprint for the Arctic* (Washington: Department of the Navy, 5 January 2021), 7, 13-16, 19.

16. The importance of employing service members who can “quickly and accurately comprehend, then appropriately and effectively engage, individuals from distinct cultural backgrounds”¹⁸ is not new. The Arctic’s intricacies will require a flexibly-minded, intellectually agile, and soft-skilled workforce that can connect with members of local communities in addition to public, private, and social sector representatives. The RCN already recognizes the importance of “developing strategic HR [Human Resource] policy and direction based on progressive principles, [thus] improving [the force’s] ability to recruit and retain talent.”¹⁹ While these are critical considerations, there is a corollary need for “education and training regimes that prepare individuals and organizations for the inherent and inevitable challenges of cross-organizational work.”²⁰

17. Mindful of the diverse communication channels that characterize this form of situational awareness, it bears stressing that Canada’s Arctic region is, as the term suggests, Canadian territory. When engaging with Canadians, care must be taken by those in the Profession of Arms to ensure that the legal distinctions between situational awareness and intelligence gathering are not crossed.²¹ Likewise, military actions in the Information Environment,²² however well-intentioned, to maintain awareness of evolving multi-sector events in a vast region must be based on a clear understanding of Canadian laws and departmental lines of authority. Public trust in DND, CAF, and the RCN must be protected.

18. Ultimately, “the only thing that allows government to work ... is trusted personal relations”²³ and considering the nature of Canada’s Arctic future, this same principle extends to each Department’s cooperative dealings with external parties. The RCN’s ability to build, grow, and sustain trusted relationships will substantively contribute to that Service’s, DND’s, and the nation’s Northern situational awareness.

CONCLUSION

19. The three capability areas outlined within this Service Paper are not stand-alone priorities to be addressed in isolation; they form layers of advantage along a deliberate and coordinated value chain. A more nuanced understanding and operationalization of

¹⁸ Brian Selmeski, “Military Cross-Cultural Competence: Core Concepts and Individual Development,” Centre for Security, Armed Forces and Society (May 2007), 12.

¹⁹ Department of National Defence, *Royal Canadian Navy Strategic Plan 2017-2022* (Ottawa: National Defence, 2016), 21.

²⁰ Neil Chuka and Heather Hrychuk, “CAF Operations: A Comprehensive Approach to Enable Future Operations,” Chap. 18 in *Canadian Defence Policy in Theory and Practice*, edited by Thomas Junea, Philippe Legassé, and Srđjan Vucetic (New York: Palgrave MacMillan, 2020), 324.

²¹ Department of National Defence, *CFJP 2-0, Intelligence* (Ottawa: Chief Defence Intelligence, October 2011).

²² Department of National Defence, *CDS/DM Planning Guidance – Enhancing Operational and Institutional Communications: Resetting Information-Related Capability Initiatives* (Ottawa: National Defence, 12 November 2020), 8.

²³ Jim Mattis, *Call Sign CHAOS – Learning to Lead* (New York: Random House, 2019), 201. Quoted from United States Secretary of Defense Robert Gates.

organic shipboard sensors, technological networking, and professional networking will enable the RCN to expand, mature, and share its Arctic-related situational awareness. Moreover, gains in each one of these areas improve RCN effectiveness and efficiency in non-Arctic situations.

20. Advancement of these capability areas entails institutional-level considerations that transcend service-specific, national, and international boundaries. As an integral element of an evolving CAF that continues to position itself as a relevant instrument of national influence, the RCN has linkages to Canadian and allied partners with mutual interests to manage.

RECOMMENDATION

21. It is recommended that an in-depth examination of the capability areas outlined within this Service Paper be pursued. Engagement of L1/L2 principals and supporting staff is critical to leverage subject matter expertise, consult with stakeholders outside of DND, identify additional risks, and secure buy-in.

22. Based on the extensive list of L1s/L2s involved with lines of accountability to the Deputy Minister of National Defence (DM), the Chief of Defence Staff (CDS) or both, it is recommended that the VCDS:

- a. Seek DM and CDS endorsement to prioritize the in-depth review and the implementation of follow-on L1/L2 recommendations; and
- b. Provide strategic direction as to this activity's relative importance, thus aligning and thereafter monitoring this joint Defence Team effort, noting that the Commander of the Royal Canadian Navy is a central stakeholder.

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