



Canadian Maritime Security Network iDEAS Series

Realizing the AOPVs' Potential

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OVERVIEW

The Arctic and Offshore Patrol Vessels offer Canada a capability and presence in the Arctic that it has not had since the late 1950s. While central to the country's security and defence posture in the region, the class has room for improvements. In this article, the Operations Coordinator onboard HMCS *Frédéric Rolette*, PO1 Douglas Theedom offers thoughts on how to get more from Canada's premier Arctic platform. These opinions are his own and do not represent those of the Royal Canadian Navy.

Canada's new fleet of Arctic and Offshore Patrol Vessels (AOPV) represent the fleet's first concerted effort to sustain a significant Arctic presence. The Government of Canada has always intended the ships to be principally used to project power into the Arctic and establish an effective maritime presence there as activity in the North increases. Over the past decade this task has become only more relevant in the face of growing Chinese activity in the North, and the growing competition with Russia in the region – and elsewhere. The recent update of Canada's defence policy, *Our North, Strong and Free: A Renewed Vision for Canada's Defence*, frames that requirement well, stating that “the most urgent and important task we face is asserting Canada's sovereignty in the Arctic and northern regions.”¹ In many respects, the AOPV are the Canadian Armed Forces' main asset for achieving that crucial objective.

Yet, while the AOPVs offer a presence and enhanced set of capabilities, they have never fully lived up to their promise. Now is the time to meet that promise with a set of reasonable upgrades to the class. As the Department of National Defence (DND) looks to meet its 2% spending commitments, and the RCN looks for quick ways to enhance regional and global capabilities, the AOPVs offer a clear opportunity.

Naval Boarding Parties

The AOPVs are not front-line warships, designed instead as patrol ships with constabulary duties, principally in support of other government departments. In the Arctic, they work with Fisheries and Oceans Canada, Transport Canada, the Royal Canadian Mounted Police (RCMP), and others to assert Canadian jurisdiction. As traffic increases in the North – and as the AOPVs increasingly take over for the *Kingston* class in the Caribbean and elsewhere – a missing capability is boarding. Indeed, the AOPV was originally designed to include a Naval Boarding Party, with space aboard specifically set aside for this

purpose. This capability is well established in the RCN and is a vital element in a ship's ability to undertake a wide array of security operations, from drug interdiction to the enforcement of maritime jurisdiction. While the AOPVs employ smaller crews than frigates, the personnel issues are mitigated by the fact that boarding parties are a secondary duty, which does not require any increase in crew numbers. This is an important consideration given the recruiting challenges facing the RCN.

Under normal operations, boarding parties are used in international waters to board low-risk, cooperative vessels of interest (VOIs) to conduct searches and investigate the sailing intentions of the vessel.² An embarked boarding party on an AOPV would provide an additional low-cost capability in the Arctic as commercial traffic becomes a more regular occurrence. It would also provide a potential political and diplomatic tool if Canada were forced to stop a non-compliant vessel. While there have been few trespassers in the region, it seems certain that, at some point, a foreign commercial or pleasure craft will choose to violate Canadian law. The illegal passage of *Kiwi Roa* in 2020 offers an example, and, while that small sailing craft was not deemed a serious enough threat to interdict, it is only a matter of time before a larger craft enters the Northwest Passage determined to flaunt Canadian regulations and challenge the state's control. While a boarding party cannot be used to board vessels within Canadian waters (given that the RCN has no law enforcement mandate), it can provide support to other government departments, such as the RCMP. Lacking an effective boarding party, an AOPV would have no easy remedy to halt an uncooperative vessel. It is unlikely to fire on a civilian ship, and the result might be an embarrassing inability to quickly enforce Canada's jurisdiction.

A well-trained boarding party would also offer the CAF a mobile security force that could be projected ashore from the AOPV if needed. Because Canada maintains no regular forces in the North (apart from the Reserve Ranger units), a set of security teams sailing with multiple AOPVs through the region, able to protect people or facilities ashore, would be an operationally (and politically) useful tool. Such a mobile armed team onboard provides additional deterrence to adversaries and support to communities in a crisis. Politically, it also demonstrates Canada's commitment to Arctic security and its ability to project force quickly where needed.

Boarding parties will increasingly be needed outside of the Arctic as well – particularly as the AOPVs operate more in the Caribbean. There, the RCN regularly assists the United States Coast Guard Law Enforcement Detachments (LEDET) during counter-narcotic missions. As the *Kingston*-class patrol ships age, this task will fall increasingly to the AOPVs. In a similar vein, as the RCN seeks to refocus its attention on great power conflict, the *Halifax* class will become less available for global deployments geared towards sanctions enforcement, the prevention of weapons smuggling, or other 'police' actions.

Helicopter Capabilities

The AOPVs are some of the largest ships in the RCN and offer excellent platforms for helicopter operations. In this respect, however, they are being underused. Originally, the AOPVs were intended to embark the CH-148 Cyclone. While their flight decks are large enough to fit the heavy aircraft, their operational capability is limited. The ships do not have the capability to refuel the CH-148, nor conduct repairs onboard. The AOPVs also lack a Bear Trap or another type of haul-down and traverse system to help helicopters land on the flight deck, keep them upright, and move them in and out of the hangar in rough seas. The deck is fitted with the required tracks, but the device has not been installed. There is also no crane in the hangar, so most maintenance cannot be performed. While the government has indicated

plans to refit the ships to improve helicopter operations with the CH-148, there is no timeline for this to be completed.³

Generating real capability will involve extensive modifications to the hangar, which will have to be enlarged and redesigned. Given the persistent procurement challenges facing the Canadian Armed Forces, this will realistically take years. While the Cyclone possesses anti-submarine and surface warfare capabilities, it may not be the most practical helicopter for the AOPVs and may not be worth significant ship modifications. Most tasks for which a helicopter onboard an AOPV would be used involve personnel or cargo movement, ice reconnaissance, and medical evacuation (MEDEVAC). These are all tasks that the Canadian Coast Guard (CCG) performs with either the Bell 412 or 429 EPI helicopters from their icebreakers in the Arctic.⁴ Both aircraft can be used on the CCG's AOPV variant.⁵

As such, using the same helicopters on the naval variant should be possible. Both helicopters are cheaper per unit than the CH-148, and although the Cyclone is already operational in the Royal Canadian Air Force (RCAF), whether the cost of redesigning and rebuilding the hangars is more expensive than procuring new helicopters should be explored. It is important to note that helicopters are deployed to ships in the RCN when required – they are not permanently assigned. Therefore, the RCN might only need to procure two or three Bell 412 or 429EPI helicopters. RCAF pilots would need to be trained on the platform, but the CCG already has a training program in place for its pilots.⁶ While the Cyclone has more cargo- and passenger-carrying capability, and the CCG helicopters lack a fighting or anti-submarine capability, these are not normally required for the AOPVs. Would a requirement exist to regularly transport more than 13 passengers at a time (the maximum capacity of a 429 EPI)?⁷ This is highly unlikely.

As for anti-submarine warfare (ASW) capability, the AOPVs were designed as patrol ships and not submarine hunters. They lack sonar to detect submarines, as well as the means to defend against them. They are also relatively slow platforms ill-suited to ASW. In a crisis requiring the RCN to hunt enemy submarines in the North, the Cyclone and P-8A Poseidon aircraft could more effectively perform that task operating out of Resolute, Cambridge Bay, and Iqaluit. While an ASW capability is desirable, it is probably a poor investment. Rather, the RCN should refocus on smaller aircraft that can more easily be employed in the Arctic in a wider range of scenarios.

Communications Systems

As the largest platform in the Arctic, the AOPVs have the potential to offer the CAF a new and exciting command and control platform, if the appropriate investments are made. The Multipurpose Operations Space (MPOS), aft of the bridge and forward of the Communications Control Room (CCR), acts as a small-scale Operations Room. It is equipped with the Terma Scanter 6002 Surveillance and Helicopter Control and Approach Radar (HCAR), navigation radars, Identification Friend or Foe (IFF), direction finding (DF) capability, and a forward-looking echo sounder.⁸ This information, among other details, is fed into the Combat Management System (CMS), which Naval Combat Information Operators (NCIOPs) monitor.⁹ Satellite communication systems remain a challenge onboard, especially since the company that supplied many components has been sold to a Chinese company and is no longer permitted to supply the military.¹⁰ The RCN is attempting to address these issues and is exploring Low Earth Orbit (LEO) satellite access to overcome some of the environmental challenges posed by operating in the Far North.¹¹ Improved communications and satellite access is critical to mission success for the AOPVs and developing the platform into a regional operations hub.

With a stable, fully functioning satellite communication system, a whole new world of possibilities opens for the AOPVs. In the 2024 defence policy update, *Our North, Strong and Free*, the Canadian government indicated that “to address new threats through, to, and in the Arctic and the North, we will prioritize detecting and understanding threats across all military domains.”¹² This means enhancing situational awareness in the region. The AOPVs could contribute more to this effort by placing additional capabilities in the MPOS, which is underutilized. The CMS onboard is different from that found on the *Halifax*-class frigates (CPFs), but it could be expanded to include input from additional sensors, thereby compiling an improved Common Operating Picture (COP).

These improvements could include underwater sensors (which were promised in the update), longer-range maritime radars (thereby enabling greater vessel tracking capability), and electronic intelligence (ELINT). These capabilities would allow an AOPV to better monitor the activities of vessels within the Arctic, including those of foreign navies. Providing a comprehensive COP must not be limited to the maritime domain. Information from surveillance aircraft and drones, including over the vast Arctic landmass, would greatly enhance domain awareness by identifying vessels or aircraft of interest early, and they could be tasked to specific areas to gather intelligence. The use of drones, a capability in its infancy on the AOPVs, is a promising development, but more work needs to be done to harden them for the polar environment. Finally, awareness of what is happening on land should also be fed into a COP. This should include the capability to monitor Canadian Army activities, not only to provide support (including enhanced communications capabilities) but also to aid with search and rescue (SAR) in case something goes wrong. Domain awareness on land should also include information from the Canadian Rangers who patrol the Arctic Archipelago and are uniquely placed to provide eyewitness information.

All of this information, including that from the CMS, should be fed into one place, a computer application available not just to personnel onboard but also to Joint Task Force North (JTFN) and other government departments. Such an application would synthesize all of these data feeds into one place. The RCN has an application called GCI+, which gathers maritime information from a variety of unclassified feeds and is made available to a variety of government departments.¹³ This could provide the basis for developing an Arctic application that gathers all the sources of information discussed above into one location. The current design of the AOPVs is only intended for “sufficient situational awareness to ensure safety of navigation and flight operations,”¹⁴ but this seems insufficient given the government’s priorities stated in the recent defence review. However, as Dr. P. Whitney Lackenbauer states, “the military is expected to ‘lead from behind,’” as it is not the lead department or agency for most security issues, though it is often the organization with the most assets in the region.¹⁵ This state of affairs puts the burden of situational awareness squarely on the military’s shoulders, and it would seem to be an effective use of the AOPVs if their capabilities in this area were enhanced.

Charting

In the Arctic, the AOPVs offer one of the best platforms for charting the region’s sea routes. Only 15.8% of Canada’s Arctic waters have been surveyed, while mapping of the principal navigational routes is nearly half completed – measured as sufficiently surveyed for safe navigation.¹⁶ This is a critical deficiency, since 95% of all Arctic supplies and goods are delivered via ship. The AOPVs have long been seen as a potential tool towards improving Canada’s surveys; however, no sustained or concerted efforts have yet been made. The AOPVs are large ships that can be fitted with hydrographic survey equipment. Similar equipment has

already been fitted to the Maritime Coastal Defence Vessels (MCDVs), including HMCS *Moncton*, which assisted in the search for HMS *Terror* from the Franklin expedition.¹⁷ The AOPVs offer large, well-equipped platforms for the Canadian Hydrographic Service and an ideal test platform for the growing catalogue of long-range autonomous underwater vehicles (AUVs), which could ultimately increase survey efforts exponentially.

While hydrographic work is not an RCN mandate, the AOPV concept of operations has always been heavily weighted towards support to other government agencies. This survey work, while primarily scientific and civilian oriented, also has clear military applications. A better understanding of the seafloor would be critical if the RCN were to find itself hunting submarines in the region. It would also improve naval mobility by opening new routes and confirming the usability of others – which may have been charted generations ago with unreliable techniques.

Conclusions

The Arctic and Offshore Patrol Vessels represent a valuable new asset for the Royal Canadian Navy. For the first time since the 1950s, the RCN has a sustainable presence in the Far North. That presence is critical to enforcing Canadian law and jurisdiction and projecting power into a region that Ottawa does not want seen as a power vacuum.

Achieving their full potential, however, means making several strategic improvements. When these ships were designed, they were intended to have Naval Boarding Parties, helicopters, and the sensor systems needed for local safe navigation only. These initial targets should be met or exceeded. Standing up Naval Boarding Parties is an immediate and easy way to augment capabilities in the near term. The selection of the CH-148 as the helicopter for the AOPVs should be revisited and careful consideration given to using one of the two aircraft operated by the Canadian Coast Guard. The government has also identified situational awareness as a key regional priority, and the AOPVs could provide greatly enhanced capabilities by adding a variety of sensors, information systems, and charting equipment that would enable them to become mobile joint operations centres operating in the Arctic during the sailing season and feeding this COP to JTFN, higher military authorities, and other government departments (OGDs). Currently, the AOPVs are not being used to their full potential, but with some improvements, they could provide a greatly enhanced contribution to defending Canada's Arctic sovereignty and enhancing security in the region.

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Notes

¹ “Our North, Strong and Free: A Renewed Vision for Canada’s Defence,” Government of Canada (April 17, 2024)

² “Naval Boarding Party,” Government of Canada (October 28, 2021).

³ Todd Coyne, “Canadian navy’s Pacific fleet to accept first Arctic patrol vessel,” CTV News (April 12, 2024).

⁴ Oliver Johnson, “Better, Faster, Stronger: The Canadian Coast Guard’s new helicopter fleet,” *Vertical* (January 5, 2018).

⁵ “Construction Starts on Canadian Coast Guard’s Arctic Patrol Ships,” *The Maritime Executive* (August 8, 2023).

⁶ Johnson, “Better, Faster, Stronger.”

⁷ “Main characteristics list of the Bell Textron 412 EPI helicopter,” Government of Canada (February 12, 2020).

⁸ PO1 Troy McDonald, “Crew Perspective,” *Maritime Engineering Journal* (Fall 2022), 34.

⁹ Ibid.

¹⁰ Robert Fife and Steven Chase, “U.S. rebukes Canada over Chinese takeover of Norsat,” *The Globe and Mail* (June 12, 2017).

¹¹ Elinor Sloan, “Communications satellites in Canadian security policy: History and prospects,” *International Journal* 76, no. 2 (2021).

¹² Canada, “Our North, Strong and Free: A Renewed Vision for Canada’s Defence.”

¹³ M. Scott Syms et al., “Building a Maritime Picture in the Era of Big Data: The Development of the Geospatial Communication Interface+,” *2021 International Conference on Military Communication and Information Systems (ICMCIS)* (May 4-5, 2021).

¹⁴ Cdr. Aaron Malek and LCdr. Morgan Francis, “AOPS Concept of Operations,” *Maritime Engineering Journal* (Fall 2022): 12-14.

¹⁵ P. Whitney Lackenbauer and Adam Lajeunesse, “Beyond “Use It or Lose It”: Arctic Sovereignty, Security, and Canada’s Northern Strategy Under Prime Minister Stephen Harper,” *Mulroney Papers in Public Policy and Governance* No. 11 (June 2024).

¹⁶ “Arctic Charting,” Government of Canada (May 17, 2023), <https://www.charts.gc.ca/arctic-arctique/index-eng.html>.

¹⁷ The author was part of the crew on this expedition in 2016.

