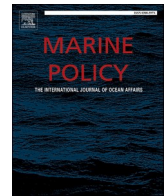




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## Canada's Arctic Offshore and Patrol Ships (AOPS): Their history and purpose

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## ABSTRACT

In 2020 the first Canadian Arctic and Offshore Patrol ship joined the Royal Canadian Navy (RCN), the first of six such vessels being built to sustain RCN operations in the country's Arctic Archipelago. These ships were announced by Prime Minister Stephen Harper in 2007 and, since then, have been the subject of considerable debate. Unlike anything designed for the Navy before, the ships fit awkwardly into traditional warfighting, provision, patrol, or icebreaking roles, with the result being criticism of their speed, range, and armament – culminating in widespread disagreement over their purpose and utility. This disagreement stemmed in part from uncertainty over what Arctic maritime security really looked like, and what an appropriate response might be. From armed-icebreakers to whole-of-government support ships, the AOPS evolved in lockstep with Canada's developing Arctic policy and the military's understanding of its role in the North. Thirteen years on from the government's official announcement of their construction, and with the first ship finally delivered, it is easier to look back at the AOPS development and the evolution of the Arctic security dynamic underpinning it. This article is a close examination of that programme: its origins and purpose and the capabilities that the ships now provide.

On July 31, 2020 the Royal Canadian Navy (RCN) took delivery of HMCS *Harry DeWolf*, the first of six naval Arctic and Offshore Patrol Ships (AOPS) being built under the National Shipbuilding Strategy. *Harry DeWolf* is the first major vessel to join the fleet since the Victoria-class submarines in the early 2000s, the largest naval vessel built in Canada since HMCS *Preserver* in 1970, and the Navy's first arctic-capable vessel since HMCS *Labrador* was transferred to the Coast Guard in 1958. The AOPS represent an important new capability and a milestone in the fleet's recapitalization, however they have also been subject to confusion and controversy. Unlike anything designed for the Navy before, the ships fit awkwardly into traditional warfighting, provision, patrol, or icebreaking roles, with the result being criticism of their speed, range, and armament – culminating in disagreement over their purpose and utility.<sup>3</sup>

In large measure, this debate stems from their broad mission and unusual design. From a politicized beginning and rapid evolution in form – from armed icebreaker to constabulary patrol ship – the AOPS began as a concept in search of a mission, a ship designed to address

anticipated rather than clear and present dangers. Those threats were also ill-defined. In recent decades, the effects of climate change have clearly altered the region's security dynamic. New challenges and dangers from across the defence spectrum have emerged and continue to evolve: from safety and security concerns to defence needs stemming from growing great-power competition. Yet, despite the obvious physical and geopolitical changes in the Arctic, the precise nature of the threats needing to be addressed – and the most effective way of doing so – remains contested.

This diverse and uncertain threat environment led to a ship design defined by its compromises. The AOPS merged multiple capabilities into one platform, creating what Department of National Defence Deputy Minister Robert Fonberg famously called the "Frankenboat" – a patchwork design meant to do everything, but nothing well.<sup>3</sup> There is some truth to that, but it overlooks the value of compromise, particularly for a smaller navy operating across a number of very different environments. The AOPS are neither the fastest patrol ships, nor the most ice-capable vessels in Canada's federal fleets, but they are a practical balance for a

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<sup>3</sup> David Pugliese, "DND says it can still meet a 2014 Delivery Date for the Canadian Navy's Arctic 'Frankenboat,'" *Ottawa Citizen* (December 2, 2009).

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forward-looking maritime strategy, designed to provide flexibility in a still evolving and uncertain threat environment.

The Navy's response to the broad spectrum of emerging Arctic threats is defined by the expeditionary nature of Arctic operations. An area stretching across hundreds of thousands of square kilometres, Canadian Arctic waters have some of the world's harshest environmental conditions and least established infrastructure, making access a serious challenge for both civilian and military agencies. These conditions both gave rise to the AOPS and precluded them from specializing. What was needed, and delivered, was a ship capable of a wide range of Navy and government tasks, from science and search and rescue to sovereignty assertion and defence. Meeting these requirements meant building what Rear-Admiral David Gardam called "a big empty ship" that can "embark doctors, dentists, scientists, marine biologists, police and fisheries officers, environmentalists, and many other personnel with an interest in, or a mandate for, the development and sustainment of Canada's north."<sup>4</sup> This whole of government requirement meant that a 'jack-of-all-trades' (and master of none) platform like the AOPS was the only realistic response to the country's Arctic requirements.

Thirteen years on from the government's official announcement of their construction, and with the first ship finally delivered, it is easier to look back at the AOPS development and the evolution of the Arctic security dynamic underpinning it. This article is a close examination of that project: its origins and purpose and the capabilities that the ships now provide. The intent is to offer a more comprehensive analysis of this \$4.3 billion procurement by understanding where these ships came from and by placing them within the context of Canada's evolving Arctic policy, the changing northern security environment, and the Navy's role in the Arctic.

## 1. The changing face of Arctic security

In the summer of 2002, two Kingston-class Maritime Coastal Defence Vessels (MCDVs), HMCS *Goose Bay* and *Summerside*, sailed into the Arctic for the Navy's first northern deployment since the end of the Cold War. The voyage was inspired by changing perceptions of the Arctic's value and its vulnerability, marking the beginning of what Rob Huebert described as a "renaissance in Arctic security."<sup>5</sup> Climate change was noticeably reducing the region's sea-ice, sparking debate over the possibility of new sea routes stretching through the Northwest Passage.<sup>6</sup> At the same time, sky-high resource prices sustained by China's phenomenal economic growth promised a resource boom in Arctic oil, gas, and minerals.

These developments focused the attention of many within DND, leading Canadian Forces Northern Area Headquarters (CFNA) to take stock of its Arctic capabilities in 2002.<sup>7</sup> The resulting *Arctic Capabilities Study* (ACS) painted a grim picture; Canada's ability to respond to threats in the region had atrophied to the point of irrelevance. While the Arctic faced no immediate military threats, these deficiencies remained a problem in light of what the study described as "many significant security/sovereignty challenges." CFNA assumed that this activity, if ignored, had "the potential to lead, in the long term, to an erosion of

Canada's sovereignty in the North."<sup>8</sup> There were also wider concerns that unregulated traffic could lead to environmental degradation, trespassing, illegal immigration, piracy, and even foreign exploitation of Canada's Arctic resources.<sup>9</sup>

The voyage of *Goose Bay* and *Summerside* was the Navy's first tentative response to the growing DND and public concern over Canada's Arctic vulnerabilities. Despite operating in the ice-free summer months, Exercise *Narwhal* (2002) took place as far south as a ship could be in the Arctic Archipelago. It was clear to all observers that non-ice-strengthened patrol ships were not well-suited to those waters. Vulnerable to ice and with insufficient range, the two ships had trouble with even mild ice conditions and were ordered to avoid heavy weather areas to mitigate the dangers of Arctic navigation.<sup>10</sup> This lack of ice-capability had limited Navy Arctic operations since 1958, when the service transferred its only icebreaker, HMCS *Labrador*, to the Coast Guard. Throughout the Cold War, the Navy deployed frigates and auxiliary vessels into the Northwest Passage, though always in the same short summer window and never with much operational flexibility. With ships constantly on the look-out for ice and hemmed in by limited operating areas, these deployments had tight operating windows and limited flexibility. The MCDVs, for instance, are typically excluded from areas with more than 3/10 ice coverage (water 30% covered by ice). For Halifax-class frigates the limitation is 2/10.

Recounting his 2006 Arctic voyage aboard HMCS *Montreal*, Commander Paul Dempsey noted that his ship could not survive impact with an iceberg, and that even smaller 'bergy bits' would have done "serious damage."<sup>11</sup> In 1989, the diving support ship HMCS *Cormorant* suffered that kind of damage, holing its bow while transiting through a 60 mile wide concentration of 6–9/10 ice.<sup>12</sup> Far from being able to access Canada's Arctic waters at will, the RCN's presence in the North was tentative, periodic, and cautious. In 1973, the Commander of HMCS *Protecteur* told the media: "we move about in ice like a porcupine makes love, very carefully."<sup>13</sup>

In the 21st century it was becoming clear that a more capable and sustained Arctic presence was needed. One year after the *Arctic Capability Study*, the Navy outlined its strategy for the next two decades. The natural emphasis of *Leadmark: The Navy's Strategy for 2020* was on the Atlantic and Pacific Oceans, but the document also described a need to extend the RCN's "reach" into the Arctic. That need was more of an aspiration, unaccompanied by any serious commitments, resources, or endorsements by the Chief of the Defence Staff, the Deputy Minister or, the Minister; still the region was on the Navy's agenda.<sup>14</sup> In 2005, Prime Minister Paul Martin's Liberal government released a foreign policy statement furthering that trend. *Canada's International Policy Statement* highlighted the emerging issues in the Arctic and called for investments in defence capabilities to meet the environmental changes and

<sup>4</sup> David Gardam, "The Admiral's View of the Arctic and Offshore Patrol Ship," *Canadian Naval Review* (February 12, 2012).

<sup>5</sup> Rob Huebert, "Renaissance in Canadian Arctic Security?" *Canadian Military Journal* 6:4 (Winter, 2005–2006), 17–29.

<sup>6</sup> This debate was epitomised by that between Franklyn Griffiths and Rob Huebert: Franklyn Griffiths, "The Shipping News: Canada's Arctic Sovereignty is not on Thinning Ice," *International Journal* 58:2 (2003) and Rob Huebert, "The Shipping News Part II: How Canada's Arctic Sovereignty is on Thinning Ice," *International Journal* 58:3 (Summer 2003).

<sup>7</sup> For the most comprehensive examination of the ACS see: Adam Lajeunesse and P. Whitney Lackenbauer, "Defence Policy in the Canadian Arctic: From Jean Chrétien to Justin Trudeau," *Canadian Defence: Theory & Policy*, Srdjan Vucetic et. al. eds. (Toronto: Palgrave MacMillan, 2019).

<sup>8</sup> Canadian Forces Northern Area (CFNA), "Arctic Capabilities Study" (2000), 9.

<sup>9</sup> These concerns are also evident in some of the earliest AOPS planning documents: "Arctic/Offshore Patrol Ship (AOPS)," Statement of Requirements (March 2009).

<sup>10</sup> Bruce MacLean, "MARLANT/CFNA Joint Exercise Directive Ex *Narwhal* 2002" (May 28, 2002).

<sup>11</sup> Paul Dempsey and Edna Keeble, "Dodging Icebergs and Talking Policy: HMCS *Montreal*'s 2006 Northern Deployment," *Canadian Naval Review* 2:4 (Winter 2007), 23.

<sup>12</sup> "Commanding Officer's Comments – NORPLOY 89 Report" (October 31, 1989), Library and Archives Canada (LAC), RG 24, file 3350-NOR 89.

<sup>13</sup> Lyndon Watkins, "Ship will Visit 13 Towns in Eastern Arctic to Conduct Research, Reinforce Sovereignty," *Globe and Mail* (August 1, 1973).

<sup>14</sup> Royal Canadian Navy, *Leadmark: The Navy's Strategy for 2020* (Ottawa: Directorate of Maritime Strategy, 2001), 66.

anticipated activity.<sup>15</sup> Those rhetorical ‘commitments’ were also made without much specificity or dedicated resources but they at least demonstrated a growing recognition that the Arctic could no longer be ignored.

## 2. Armed icebreakers

The first serious push for an Arctic naval capacity came from Conservative Party leader Stephen Harper in 2005. During the election campaign that December, Harper accused Prime Minister Paul Martin of talking “eloquently about defending national sovereignty” while allowing “our sovereign capability to defend our territory to crumble.” Accompanying this criticism was a promise that, as prime minister, he would invest heavily in defending the country’s North.<sup>16</sup> That included a pledge to build three armed icebreakers for the Navy.

Icebreaking was clearly not a Navy responsibility and assigning these ships to the RCN over the Coast Guard was a significant decision, made for both practical and political reasons. Stephen Harper’s early rhetoric from the 2005 election campaign focused heavily on sovereignty and defence threats to the North and, if these ships were to be tracking submarines and interdicting hostile craft, then the Navy was the clear choice. There were also likely political and functional reasons to go through the Department of National Defence. In the early-2000s the media had branded Prime Minister Paul Martin a “ditherer”<sup>17</sup> and Harper may have been anxious to come off as the “anti-ditherer.”<sup>18</sup> Part of that meant delivering on his promises, and fast. Harper wanted to avoid a lengthy procurement process and he felt that DND and Minister of National Defence Gordon O’Connor were best placed to provide that.<sup>19</sup>

After the Conservatives took office in February 2006, this sprint for quick results was manifest.<sup>20</sup> Exploratory work was undertaken into the armed icebreaker concept by the Assistant Deputy Minister (Materials) (ADM(Mat)) and a study was produced examining potential operational taskings and requirements. That study also surveyed various platforms that might be useful templates for a Canadian ship. The initial conclusions were that any Canadian icebreaker designed for sovereignty operations had to operate in the same areas, during the same times of year, as its contemporaries.<sup>21</sup> That meant something akin to the Canadian and American Coast Guards’ most powerful icebreakers. These were significant ships and the government wanted them yesterday. A draft procurement study from early August 2006 assumed that they could be built on a “greatly compressed timeline,” through a combination of “fast tracking and crashing,” a process thought possible because of the lack of complex weapons systems and associated command and control suites.<sup>22</sup> The push was on for heavy naval icebreakers and it was moving quickly.

In August 2006, Director General Maritime Force Development Ron Lloyd phoned the Director of Maritime Requirements. He asked for a Statement of Operational Requirements (SOR) for the ships, and he

needed it in two weeks.<sup>23</sup> An SOR is detailed guidance document for force development, outlining what the military needs from a piece of equipment to achieve an objective or solve a problem. Normally an SOR is preceded by the identification of a problem in a higher-level policy document and a thorough examination of options to solve it. The request for an SOR in advance of any serious discussion of the problem that the platform was meant to solve was unusual and, prior to this moment, there was no heralding of any official need, intent or plan to acquire Arctic naval ships in any national, DND or CAF strategies. While there was a recognition that the Arctic required more attention, there was no consensus on the precise nature of the threats, the urgency of the matter, or the best solution to the problem. Crafting the SOR remained, as always, the purview of Maritime Requirements (Sea), though without much input from the usual places. There was no justification for the procurement in any national or service strategies and little input from the Chief of Defence Staff or Force Development.<sup>24</sup>

In part, this was due to the fact that higher-level conversations about the Arctic and Canada’s defence requirements in general were taking place concurrently, with DND then working on its overall defence review – which would not be released until 2008. The Navy needed an SOR because the political pressure was on and the leadership did not want to be seen “ragging the puck” (Canadian slang for delaying).<sup>25</sup> Still, until DND could work through what it really felt it needed in the Arctic, it was loath to provide much direction or detail. The sudden need to embrace the new Arctic tasking also threw the Navy into the deep end of Arctic operations as the service had to rapidly assimilate an enormous amount of information. In short, the Navy had to “get smart” about ice and this took time. Comparing different ice conditions, types of ice, and hulls was a steep learning curve. Even figuring out how the International Maritime Organization’s “Polar Classes” converted to the Coast Guard’s “Canada Arctic Class,” or the *Arctic Waters Pollution Prevention Act*’s “Canadian Arctic Class” was terribly frustrating, since measuring equivalencies was a complex exercise that had to be done from scratch.<sup>26</sup>

Elements within the Navy were also confused and unsure of what to make of this sudden requirement. While the Commander of the Navy and the RCN’s staff in Ottawa were not opposed to the prospect of new funding and new ships, there was widespread scepticism from sailors serving on the coasts, who saw an Arctic mission as a diversion from the force’s *raison d’être*.<sup>27</sup> The project also came at a time when the Navy and the Materiel Group were having trouble advancing other over-due and under-budgeted naval procurement projects. These urgent priorities included the new Joint Support Ships, mid-life refits for the Halifax-class frigates, preserving the submarine fleet in the aftermath of the 2004 *Chicoutimi* fire, and starting up the Canadian Surface Combatants project.<sup>28</sup> It was an unheralded and unplanned addition to an already over-loaded plate of critical and over-due work. Still, the Arctic was important to the new Prime Minister and the response from the Navy had to be ‘ready-aye-ready.’

An idea of what the ships might have looked like can be found in unapproved, conceptual documents circulating in late 2006. They were meant to be Polar Class 3 icebreakers, able to break two to three metres of ice, ram six to ten metres, and undertake year-round operations in second-year ice with access to every part of the Canadian Arctic.<sup>29</sup> Their

<sup>15</sup> Department of Foreign Affairs and International Trade, *Canada’s International Policy Statement: A Role of Pride and Influence in the World - Overview* (April 2005), 7. Reproduced in: Ryan Dean et. al., *Canadian Arctic Defence and Security Policy: An Overview of Key Documents, 1970–2012*, Documents on Canadian Arctic Sovereignty and Security (Calgary: CMSS, 2017), 40.

<sup>16</sup> “Harper Stands up for Arctic Sovereignty,” address by the Hon. Stephen Harper (December 22, 2005).

<sup>17</sup> Nelson Wiseman, *Partisan Odysseys* (Toronto: University of Toronto Press, 2020), 120.

<sup>18</sup> See for instance: Don Martin, “The Anti-Ditherer Steps to the Podium,” *National Post* (January 27, 2006), A4.

<sup>19</sup> Interviews of two Royal Canadian Navy officers (August 10, 2020).

<sup>20</sup> Interview with Royal Canadian Navy officer (June 10, 2020).

<sup>21</sup> DMSS 2–3 Concept Design Group, “Preliminary Analysis of Canadian Forces Arctic Capability,” Report Number: DMSS-2–3–2006–003 (Reviewed By: Cdr MD Wood), March 2006.

<sup>22</sup> “Option Letter for Arctic Patrol Ship – DRAFT” (November 27, 2006) and “Concept of Employment: Ice Patrol Vessel,” (August 3, 2006).

<sup>23</sup> Interview with Royal Canadian Navy officer (June 10, 2020).

<sup>24</sup> Interview with Royal Canadian Navy officer (July 21, 2020).

<sup>25</sup> Email from Vice-Admiral (Ret’d) Ron Lloyd (August 29, 2020).

<sup>26</sup> Email from Vice-Admiral (Ret’d) Ron Lloyd (August 29, 2020) and interview with Royal Canadian Navy officer (June 10, 2020).

<sup>27</sup> Interview with Vice-Admiral (Ret’d) Ron Lloyd (August 10, 2020).

<sup>28</sup> Interview with Royal Canadian Navy officer (July 21, 2020).

<sup>29</sup> “Options Letter for Arctic Patrol Ship [Draft] (November 27, 2006) and “Ice Patrol Vessels: Concept of Employment.”



**Fig. Image 1.** APS with 57 mm render “APS ‘Fleet Week Brief’ render (Jan 2007)”.

range was meant to be roughly 37,000 km, with the ability to self-sustain for up to 200 days.<sup>30</sup> They were also to be well armed. A draft concept of employment stated: “it is a fundamental requirement that any vessel be equipped with large, medium and small calibre weapons so the CF [Canadian Forces] can meet its obligation to enforce the sovereignty of Canada. This must include a 57 mm gun as a minimum, and several mountings for machine guns, such as the 0.50 calibre weapons.”<sup>31</sup> A 57 mm gun is the same deck gun mounted on Canada’s frigates, used for point-defence, anti-air, and surface combat. Mounting such a weapon on a navy icebreaker would make some sense, after all Canada already had the munitions, training systems, and supply lines. It would also be a powerful statement. This was the tool that Prime Minister Harper envisioned when, in 2005, he called for “forces on the ground, ships in the sea.”<sup>32</sup> (Image 1).

Despite the prime minister’s enthusiasm for armed icebreakers, the project did not last long. It existed in a conceptual state for about half a year, without a formal statement of requirement and with no proposals or plans ever approved, or even reviewed. During 2006, the concept evolved as the RCN’s ongoing defence review and crash course in Arctic studies refined its understanding of Arctic requirements and highlighted the problems inherent in duplicating a Coast Guard responsibility. Ice-breaking is a highly specialized task, centred on support to commercial shipping not maritime security. Commodore (ret’d) Eric Lehre observed that the proposal was “awfully close to trying to improve highway safety by having the police drive the snowploughs.”<sup>33</sup> This was not the Navy’s job. It was also an expensive diversion that threatened to draw money and attention away from those other capital projects then consuming the RCN’s attention. It was particularly worrying that these icebreakers came with a lot of political support, but no clearly demarcated funding.

There was also resistance from the Liberal dominated Senate. In March, the Standing Senate Committee on National Security and Defence released its report, stating that it “would be a strange application of the Navy’s mandate, given that Canada’s northern sovereignty is not being threatened by invading navies.” “It would also be a strange application of resources,” the Committee continued, since “the Navy has not broken ice anywhere for half a century.”<sup>34</sup> There were few ardent

supporters of the project and a lot of scepticism.

The root problem with the icebreakers was that the government had settled on the *how* before figuring out the *what*. While the government and Canadians knew that the defence of the Arctic was the ultimate objective, there wasn’t a clear understanding of what exactly that entailed. Icebreakers were a tool – but what exactly were they meant to fix and against what threat were they to be deployed? The problem for the defence team was that the government had jumped the gun in naming its solution before fully fleshing out the problem and looking at all their options. As DND’s overarching defence review moved forward, *what* the Navy needed to accomplish was given a closer examination and the *how* started to evolve.<sup>35</sup>

### 3. Patrol ships

In the late Summer of 2006, shortly after being asked for an SOR for armed icebreakers, the Vice-Chief of the Defence Staff’s Director General Strategy sent an encrypted email to Maritime Requirements (Sea). The order was to “stop the game” on icebreakers and pivot to four to six Arctic capable patrol ships.<sup>36</sup> Where exactly that decision originated was unclear to the men tasked with developing the SOR. In one officer’s words, it didn’t seem to be “based on rational analysis of requirements and strategic necessity.”<sup>37</sup> It’s true that there was still no overarching policy direction reaching the project team; however important conversations were ongoing at higher levels, between the Navy, the Policy Group, Materials Group, Chief of Force Development, the Defence Staff, and the Deputy Minister – with external groups such as the Privy Council looped in.<sup>38</sup>

Still, the shift was sudden and there was some concern that lighter patrol craft would be incapable of responding to trespassers during the Arctic’s winter months. Indeed, a March 2006 icebreaker study, undertaken within ADM Mat, judged patrol ships to be “inadequate to serve in the Canadian High Arctic” because they were limited to summer shipping season.<sup>39</sup> Yet, one of the first things that was made clear to the Navy in its Arctic education was that even the Coast Guard’s icebreakers don’t spend the winter months in the Arctic and a ship with a six month Arctic deployment would find little to occupy it once the shipping season ended. As to what the Navy would do with trespassers entering areas inaccessible to lighter patrol craft, one officer recalled Commander of the Navy Drew Robertson’s response, that those trespassers may be there but “they’re not moving very fast!”<sup>40</sup> The unofficial thinking within the Navy was simple: if a real defence threat emerged it would be a slow moving one that does not need an armed icebreaker. The offhand advice from one Coast Guard officer to the AOPS project team was that the Air Force might as well just “bomb the hell out of em.”<sup>41</sup>

What the new patrol ships were supposed to look like, and what missions they were meant to accomplish, was initially left unstated. DND’s new defence strategy was being developed concurrently and there was little direction from the Vice Chief of Defence Staff, national policy, or DND.<sup>42</sup> Lacking that higher-level direction, the details were fleshed out “from scratch”<sup>43</sup> by a very small team, with what one

<sup>35</sup> Interview with Vice-Admiral (Ret’d) Ron Lloyd (August 10, 2020).

<sup>36</sup> Interview with Royal Canadian Navy officer (July 21, 2020) and Email from Vice-Admiral (Ret’d) Ron Lloyd (August 29, 2020).

<sup>37</sup> Interview with Royal Canadian Navy officer (July 21, 2020) and Email from Vice-Admiral (Ret’d) Ron Lloyd (August 29, 2020).

<sup>38</sup> Email from Vice-Admiral (Ret’d) Ron Lloyd (August 29, 2020).

<sup>39</sup> DMSS 2-3 Concept Design Group, “Preliminary Analysis of Canadian Forces Arctic Capability.”

<sup>40</sup> Interview with Royal Canadian Navy officer (June 10, 2020).

<sup>41</sup> Interview with Royal Canadian Navy officer (June 10, 2020).

<sup>42</sup> Interview with Royal Canadian Navy officer (July 21, 2020). This is also recounted in the marginal notes of a briefing from 2009: “Arctic/Offshore Patrol Ship,” PowerPoint brief (April 2, 2009).

<sup>43</sup> Interview with Royal Canadian Navy officer (July 21, 2020).

<sup>30</sup> “Ice Patrol Vessels: Concept of Employment” and DMSS 2-3 Concept Design Group, “Preliminary Analysis of Canadian Forces Arctic Capability.”

<sup>31</sup> “Concept of Employment: Ice Patrol Vessel Statement of Requirements” (August 2006).

<sup>32</sup> “Harper Stands up for Arctic Sovereignty,” address by the Hon. Stephen Harper (December 22, 2005).

<sup>33</sup> Eric Lehr, comment on “Broadships,” *Canadian Naval Review* (2007) cited in: Martin Shadwick, “Due North,” *Canadian Military Journal* 8:1 (Spring 2007), 103.

<sup>34</sup> Standing Senate Committee on National Security and Defence, “Canadian Security Guidebook: Coasts” (March 2007), 10. See also: Martin Shadwick, “Due North.”



briefing described as “some common sense” and “good discussion with folks who had experience in operating in the Arctic.”<sup>44</sup>

In September 2006, the project advanced to an initial SOR for what was then called the Naval Ice-Capable Offshore Patrol Vessel (NICOPV). These ships were designed to conduct armed seaborne surveillance of Canada’s waters (including the Arctic) and support other government departments while asserting and enforcing sovereignty.<sup>45</sup> No internal or external authorities sought an opportunity to shape the ship’s requirements and, out of concern for funding, the vessel’s requirements were kept to a minimum. Engineering and cost studies were ordered, and different configurations considered. The possibility of leaving off the helicopter deck was seriously entertained but the Coast Guard’s recommendations in favour of an aircraft were taken seriously and the capability was retained – with the flight deck even expanded to enable the larger Cyclone to land (for only \$2 million more per ship).<sup>46</sup> Every minimum requirement was examined and justified in an effort to keep costs low and ensure that the Navy could explain everything it was putting on the ship. That was an important consideration since the team knew that it would have to justify the final design not only to the government and the public but to the other services. As one AOPS project member recalled, there was envy in the Air Force and Army, which worried that the AOPS would not come from existing commitments. Combined with the Navy’s planned supply ships and frigates, it might “shanghai the vast majority of capital funds for the Canadian military for the next fifty years.”<sup>47</sup> While those numbers may have been an exaggeration, the sentiment is important.

By May 2007, the ships had been renamed the Arctic/Offshore Patrol Ships (AOPS) to highlight the vessel’s growing offshore role. The number of AOPS that the Navy could afford was debated for some months and it was generally concluded that five would work “if nothing ever went wrong.”<sup>48</sup> In February 2007 that number increased to six to eight to reflect the ships’ changing role from seasonal Arctic operations to year-round Arctic/offshore duties.<sup>49</sup> In July, the government formally announced their construction, hailing the ships as “the most effective way to assert Canada’s authority, independence and sovereignty” in its northern waters.<sup>50</sup>

From the very beginning, the AOPS was explicitly not a warfighting ship or an icebreaker. It was a compromise vessel that could satisfy the increasingly clear need for an Arctic presence while offering the Navy added capability in the offshore. The Navy had a mandate to patrol and defend Canada’s 5.6 million km<sup>2</sup> exclusive economic zone (EEZ) but lacked an effective platform for the task. It operated twelve MCDVs, but these were considered inadequate, owing to their slow speed and poor seakeeping ability.<sup>51</sup> The AOPS seemed to kill two birds with one stone and early designs highlighted that offshore role. Documents from early 2006 gave the proposed vessel an impressive 24 knots top speed and the seakeeping ability to work in the North Atlantic.<sup>52</sup> Unfortunately, that speed was unrealistic with an ice-strengthened hull and was cut to 20

knots by the end of the year.<sup>53</sup> Even that reduced speed was impractical and, after hull testing, the engineers informed the RCN that achieving even 20 knots was impossible at any reasonable cost.<sup>54</sup> An interim statement of requirement was drafted and approved in May 2008 with a top speed of 17 knots and a design philosophy described as “good enough.”<sup>55</sup>

Having little experience in ice operations, the process was an education for the project team, which spread out around the world, attending Arctic conferences and lectures, joining the Coast Guard on its Arctic voyages, and meeting Arctic allies like Denmark and Norway. Even the British and New Zealanders were consulted on their Antarctic ship designs and lessons learned. Support was also sought from industry leaders like Aker Marine to help the RCN understand the requirements of Arctic operations and determine what options were available.<sup>56</sup> In the early days of 2007–2008 different companies were also pitching their designs. The most bizarre was a prototype ice-strengthened catamaran, designed by Lockheed Martin, with major support from the US Office of Naval Research. A year of repeated calls from Lockheed to the AOPS team finally ended when the craft – eventually dubbed “the world’s most ridiculous ship” – was put into the water and proved terribly ineffective.<sup>57</sup>

Defining what even constituted ‘Arctic-capable’ was a challenge. The Navy had no corporate knowledge in the field and extensive consultations with the Coast Guard and the Canadian Ice Service took place while project members pored over the details of the *Arctic Waters Pollution Prevention Act* and academic work on Arctic shipping. Throughout 2006 and 2007 there remained a debate about how capable these ships really needed to be. Initially, the AOPS were tentatively considered Polar Class (PC) 7 ships – a very light ice rating.<sup>58</sup> This reflected a general uncertainty about what the ships were meant to accomplish, where they were supposed to operate, and what their mission would be. In September 2006 the consensus changed in favour of a PC 5 ship, capable of transiting first-year ice up to one metre thick with old ice inclusions. The impetus for the switch came from the Coast Guard and Canadian Ice Service, which strongly advised that PC 5 was the lowest (and cheapest) rating that could still work safely in Canada’s unique ice conditions. It helped that a PC 5 rating was only \$2 million more per ship (versus a PC 7 hull)<sup>59</sup> and that designation found its way into the first formal Statement of Requirement sent to the Assistant Deputy Minister (Material) in October 2007.<sup>60</sup>

Where to build these ships was naturally an important question. Canadian policy dictates that federal ships be built in Canada if competitive conditions exist and, as early as February 2007, the government concluded that relying on contractors not based in Canada for construction and support of these ships would create an “unacceptable risk to our national security.”<sup>61</sup> The decision to build in Canada was also driven by necessity. While several Arctic nations operated ice-strengthened patrol ships, there seemed to be no foreign designs that clearly met Canada’s needs. In spite of this, the Navy was still surveying the world’s fleets to find useful examples, potential designs, and even

<sup>44</sup> “Arctic/Offshore Patrol Ship (AOPS)” PowerPoint Briefing (April 2, 2009).

<sup>45</sup> “Naval Ice-Capable Offshore Patrol Vessel (NICOPV),” Initial Statement of Requirements [Draft] (September 2006).

<sup>46</sup> A helicopter requirement was added as early as September 2006: “Naval Ice-Capable Offshore Patrol Vessel (NICOPV),” Initial Statement of Requirements [Draft] (September 2006).

<sup>47</sup> Interviews of two Royal Canadian Navy officers (August 10, 2020).

<sup>48</sup> Interview with Royal Canadian Navy officer (June 10, 2020).

<sup>49</sup> “Naval Ice-Capable Offshore Patrol Vessel (NICOPV),” Initial Statement of Requirements [Draft] (February 2007).

<sup>50</sup> Steven Chase, “Myth Versus Reality.”

<sup>51</sup> “Arctic/Offshore Patrol Ship (AOPS),” Statement of Requirements (March 2009).

<sup>52</sup> “Arctic Patrol Ships,” Initial Statement of Requirements [Drafts] (February 2, 2006).

<sup>53</sup> “Arctic Patrol Ships,” Initial Statement of Requirements [Draft] (February 2007).

<sup>54</sup> Interview with Royal Canadian Navy officer (July 21, 2020).

<sup>55</sup> Brief to Chief of Defence Staff, “AOPS: Evolution of the Statement of Requirements” PowerPoint (February 9, 2010).

<sup>56</sup> Interview with Royal Canadian Navy officer (June 10, 2020).

<sup>57</sup> For background on the MV *Susitna* see: Mike Schuler, “A Borough in Alaska is so Close to Finally Selling the ‘World’s Most Ridiculous Ship,’” *GCaptain* (November 6, 2015).

<sup>58</sup> “Statement of Operational Requirement – Naval Ice-Capable Patrol Vessel” (August 2006).

<sup>59</sup> Brief to Chief of Defence Staff, “AOPS: Evolution of the Statement of Requirements,” PowerPoint (February 9, 2010).

<sup>60</sup> Interviews of two Royal Canadian Navy officers (August 10, 2020).

<sup>61</sup> LCdr J.A. Barnard, “Arctic Patrol Ship: Timeline,” (February 19, 2007).

options to buy under ideal conditions.

Of the foreign ships surveyed, the Norwegian patrol ship *Svalbard* was the closest to Canada's needs. Commissioned in 2001, *Svalbard* is a 6375 ton ice-strengthened vessel designed to operate in the Norwegian Arctic. Relatively large and able to transit through ice up to one metre thick, the ship was still dismissed as not up to the Navy's ice requirements. With an ice-rating equivalent to PC 6, it was incapable of safely operating in key sections of the Northwest Passage, in particular Peel Sound and Zone 6 of the *Arctic Shipping Pollution Prevention Regulations* Zone Date System.<sup>62</sup> The ship's advanced azipod propulsion system was a clever innovation but was actually seen as a liability since it had never been seriously tested in multi-year ice.<sup>63</sup> While *Svalbard* was capable traversing of the same level of first year ice as the eventual AOPS design, it was that multi-year ice which it was not designed for, and which was a persistent consideration in the Northwest Passage. That was certainly the message conveyed by the Commanding Officer of *Svalbard* when he remarked to one AOPS project officer, "*Svalbard* is a bit light for your kind of ice."<sup>64</sup> The types of ice in the different Arctics is important and even getting Canadians to understand that could be difficult. Admiral Lloyd recounted a meeting with senior DND/CAF officials where they had to be reminded that "our ice is different."<sup>65</sup> That statement was met with some disbelief but it's true and it played an important role in Canada's decision to reject off-the-shelf design.

The real attraction of *Svalbard* was its low cost, commonly cited at only \$100 million.<sup>66</sup> Yet that sticker-price was something of a mirage. Norwegian shipbuilding was heavily subsidized, resulting in an official price that did not reflect the true cost of the ship. That price also excluded the costs of supporting infrastructure, training, ammunition, spares, many onboard systems, and the huge contingency that are all parts of Canadian procurement projects.<sup>67</sup> In explaining the process of comparing the procurement options, Admiral Lloyd put it simply: "There are lies, there are damn lies, and there are statistics. I can guarantee you it's a mugs game trying to compare apples to apples."<sup>68</sup>

Even with a more realistic price, restarting production on a *Svalbard* line would have been difficult since the workforce, supply chains, and infrastructure used to build the initial ship in 2002 were long gone. These factors led the Parliamentary Budget Office to dismiss the notion that Canada could actually procure a *Svalbard*-class for that oft-cited price tag.<sup>69</sup> The Navy reached the same conclusion years earlier as Maritime Requirements was exploring foreign designs. In 2012, after requesting a price from the Norwegians, the Navy was told that there was no firm 'sticker price' and that it would take over a year to assemble a realistic quote.<sup>70</sup> One officer compared it to walking into a Honda dealership in 2020 and asking them to make you a 2005 model for the same price.<sup>71</sup> It wasn't a practical option and was soon discarded.

The second obvious comparison was the Danish *Knud Rasmussen*-class patrol ship, the first of which was commissioned just as the AOPS project was getting going in 2007. Seemingly cheap at only

\$70–80 million, it was a high-tech ice-strengthened vessel with a 76 mm gun, boats, and a helicopter deck that might suit Canada very well.<sup>72</sup> Chief of the Defence Staff General Walt Natynczyk was enthusiastic about the ship and RCN teams were sent to tour it and speak to the Danes.<sup>73</sup> Closer inspection took some of the shine off the idea. Like *Svalbard*, its price was based on the availability of heavy state subsidies with no reliable costing available.<sup>74</sup> The ship was also not designed for Canadian ice. Capable of traversing only 70 cm of new ice, the 1700 ton vessel was light and incapable of dealing with the multi-year ice that permeates the Arctic Archipelago. The size of the *Knud Rasmussen* was also a serious constraint. With a crew of only 17 (vs roughly 65 in an AOPS) the Danish ship can only sustain high-level operations for two days before the sailors need to rest.<sup>75</sup>

From November 2008 to April 2009 the AOPS project team worked on its own design with Canadian industry through a series of working groups and in May 2009 Public Works and Government Services Canada initiated industry consultation. Initially the intent was to follow past shipbuilding precedent, in which the Navy created a concept design laying out basic requirements and different firms used that concept to create competing designs through a funded project definition phase. In this case, however, the requirements were considered so specific and unlike any existing "off the shelf" product that ADM (Mat) decided to progress the initial concept design to something that industry could actually build - skipping the normal competitive design phase entirely. That design contract was awarded to BMT Fleet Technology and STX Canada Marine in 2008, using the basic design for *Svalbard*, purchased by the federal government for \$5 million.<sup>76</sup>

Initially conceived of as a stand-alone procurement, the AOPS project was soon rolled into the National Shipbuilding Procurement Strategy (now the National Shipbuilding Strategy). Announced in 2010, this was a coordinated, long-term project to renew Canada's federal fleet of combat and non-combat vessels. The NSPS was a visionary plan to re-establish sustainable shipbuilding in Canada, however it introduced a three-year delay into the AOPS project, putting paid to the government's initial hopes that it could be expedited. It was only in May 2012 that the NSPS was ready to proceed and Irving Shipbuilding of Halifax was selected as the shipyard for both the AOPS and the Canadian Surface Combatants. The Canadian Government awarded a \$9.3 million preliminary contract to Irving in July 2012 to review the design and specifications of the existing AOPS concept and, in March 2013, a definition contract worth \$288 million was signed for the completion of the design phase of the vessels. The final contract was signed for six to eight vessels in 2015 with construction of the first AOPS beginning that September.

While far removed from the government's initial 2013 target for the first ship commissioning, the procurement was actually quite fast. Experts have criticized that eight year wait - between the prime minister's announcement and construction - as excessive.<sup>77</sup> The wait was also costly as inflation steadily increased the price from the initial budget.<sup>78</sup> Yet, by historical standards, the timeline was actually very good. The Halifax-class was authorized in 1977, with construction starting ten years later. Other major Navy projects, such as the Joint Support Ships, took even longer. The AOPS were also a radically new type of ship,

<sup>62</sup> "Arctic Patrol Vessel Initiative," PowerPoint presentation to JCRB (November 6, 2006).

<sup>63</sup> Interview with Royal Canadian Navy officer (June 10, 2020).

<sup>64</sup> Interview with Royal Canadian Navy officer (August 31, 2020).

<sup>65</sup> Interview with Vice-Admiral (Ret'd) Ron Lloyd (August 10, 2020).

<sup>66</sup> Terry Milewski, "Shipbuilding Contract holds \$250M Mystery," *CBC News* (May 2013).

<sup>67</sup> Canada, Office of the Parliamentary Budget Officer, "Budget Analysis for the Acquisition of a Class of Arctic/Offshore Patrol Ships" (October 28, 2014), 25.

<sup>68</sup> Interview with Vice-Admiral (Ret'd) Ron Lloyd (August 10, 2020).

<sup>69</sup> Office of the Parliamentary Budget Officer, "Budget Analysis for the Acquisition of a Class of Arctic/Offshore Patrol Ships," 25.

<sup>70</sup> Interview with Royal Canadian Navy officer (June 10, 2020).

<sup>71</sup> Interviews of two Royal Canadian Navy officers (August 10, 2020).

<sup>72</sup> David Pugliese, "High-Tech Danish Arctic Ship Raises Questions why Canada Paying 10 Times the Cost for Similar Vessel," *Ottawa Citizen* (April 9, 2018).

<sup>73</sup> Interview with Royal Canadian Navy officer (August 31, 2020).

<sup>74</sup> Parliamentary Budget Office, "Budget Analysis for the Acquisition of a Class of Arctic/Offshore Patrol Ships" (October 28, 2014).

<sup>75</sup> This assessment came from the CO of the *Knud Rasmussen* in conversation with an RCN officer: Interview with Royal Canadian Navy officer (August 31, 2020).

<sup>76</sup> Terry Milewski, "Shipbuilding Contract holds \$250M Mystery."

<sup>77</sup> Rob Huebert, "The Royal Canadian Navy: Facing Rough Seas," *Canadian Global Affairs Institute Policy Paper* (January 2016).

<sup>78</sup> Ryan Dean, "Arctic Offshore and Patrol Ships: Adrift in Inflationary Waters," *Canadian Naval Review* 11:2 (2015).

requiring not only a new design but an entire education about what it takes to operate in the Arctic. Given the circumstances, they were actually moved forward very quickly.

#### 4. Sovereignty ships

When the AOPS project was conceived in 2006, the defence of Canadian sovereignty was at the heart of the endeavour. In announcing the ships, Harper told his audience that they will “begin to provide the Canadian Forces with the tools they need to enforce our claim to sovereignty and our jurisdiction over the Arctic.”<sup>79</sup> That notion is embedded in the ship’s 2015 Concept of Operations, which declares it “the RCN’s primary platform to exercise Canada’s sovereignty.”<sup>80</sup> While seemingly straightforward in a campaign speech, the role of a naval vessels in ‘defending’ sovereignty is far more complex.

The legal status of the Northwest Passage has long been disputed, most consistently by the United States. Canada claims the waters within the Arctic Archipelago as historic internal waters, defined by straight baselines drawn by the government of Brian Mulroney in 1986 to delineate an area that Canada has treated as its own since the 1800s. The United States disagrees and, since at least 1969, asserts that Canada’s legal claim is excessive and that its sovereignty ends with its 12-mile territorial sea, with an international strait running through the Northwest Passage. This is a disagreement stemming from different interpretations of certain key legal concepts, and the two sides have argued it for generations.<sup>81</sup> No vessel, regardless of its ice class or armament, will directly affect that legal argument. Nor is it realistic to expect the RCN to forcibly exclude American surface ships or submarines, as Harper intimated it would in 2005.<sup>82</sup> Really, the AOPS make little sense as floating flagpoles or as leverage with the United States.

The AOPS contribution to Canadian sovereignty is more nuanced than simply guarding the entrances to Canadian waters and ejecting trespassers. Rather, they reinforce sovereignty by demonstrating comprehensive and effective Canadian control, which includes situational awareness, effective governance, and delivery of services, while generally improving access to the area. That more holistic “stewardship”<sup>83</sup> approach is essential when the main threat is not military and where responsibility for exercising that sovereignty is divided amongst multiple civilian departments and agencies.

This reality was fairly quick to sink into the Harper government and, within its first two years there was a noticeable shift in how sovereignty was conceptualized. The 2009 Indian Affairs and Northern Development policy: *Canada’s Northern Strategy: Our North, Our Heritage, Our Future* and the 2010 *Statement of Canada’s Arctic Foreign Policy* moved away from sovereignty as protection from something to sovereignty exercised “through good governance and responsible stewardship.”<sup>84</sup> The AOPS contribute to that exercising of sovereignty by providing what the 2010

foreign policy statement called a “broad range of actions ... related to social and economic development, Arctic science and research, and environmental protection.”<sup>85</sup> Strategic and operational documents produced by DND echo this idea that sovereignty is strengthened not by force per se, but by effective governance, control, and the consistent application of Canadian law.<sup>86</sup>

From a legal perspective, exercising sovereignty means demonstrating Canadian control over its internal waters and ensuring foreign recognition of Canadian jurisdiction and the exclusive and effective exercise of Canadian control.<sup>87</sup> Such recognition does not have to be explicit and is best demonstrated by foreign operators complying with Canadian rules in Canadian waters. This, in turn, is something that the CAF encourages not simply through its presence, but by maintaining the capabilities needed to ensure compliance, while supporting other departments and agencies that actually have the legal mandates to monitor and regulate the region, enforcing regulations governing shipping, pollution, exploration, and resource exploitation.

To put specific missions to this broad objective, the Navy’s 2015 AOPS “Concept of Use” lists the following ship tasks: search and rescue; support for other government departments (OGD); maritime domain awareness; assistance to law enforcement; aid to civil power; logistical support to the CAF and OGD; and sovereignty protection.<sup>88</sup> The Navy’s revamped maritime strategy, *Leadmark 2050*, likewise envisioned the AOPS helping to “regulate our Arctic home waters as well as to monitor and respond to events, with responsibilities ranging from assuring the safety of mariners and responding to environmental disasters to confronting incursions against Canada’s sovereignty.” This effort includes “supporting the charting of still largely unknown Arctic waters for the safety of ocean shipping; contributing to ocean science, to improve Canada’s understanding of fragile but changing Arctic ecosystems; supporting our federal partners to manage and protect Canada’s Arctic resources; and supporting the Canadian Coast Guard’s annual resupply of isolated coastal communities.”<sup>89</sup>

#### 5. Leading from behind: whole of government ships

The AOPS contribution to sovereignty and stewardship in the Arctic fits into a whole of government security framework that the Government of Canada and the Canadian Armed Forces have been developing since the *Arctic Capabilities Study* in 2000. The term ‘whole of government’ refers to the mobilization of government resources across departments and agencies to achieve broad national objectives.<sup>90</sup> The assumption is that through cooperation and the sharing of sparse resources, a diverse set of stakeholders can create a whole greater than the sum of their parts.<sup>91</sup> In the Arctic that framework for cooperation is particularly important given the dearth of infrastructure and the high cost of operations. Most federal departments and agencies with a northern safety or security mandate lack the capacity to get around in the Arctic; the Navy

<sup>79</sup> “Speech: Prime Minister Stephen Harper Announces New Arctic Offshore Patrol Ships” (July 9, 2007). From: Ryan Dean and P. Whitney Lackenbauer, “Canada’s Northern Strategy under Prime Minister Stephen Harper: Key Speeches and Documents on Sovereignty, Security, and Governance, 2006–15,” *Documents on Canadian Arctic Sovereignty and Security* 6 (CMSS/CFPF/AINIA, 2016), 27–28.

<sup>80</sup> Royal Canadian Navy, “Harry DeWolf Class Arctic/Offshore Patrol Ship Concept of Use” (November 2015), 13.

<sup>81</sup> On the history of the dispute and these periodic crises see: Adam Lajeunesse, *Lock, Stock, and Icebergs: The Evolution of Canada’s Arctic Maritime Sovereignty* (Vancouver: UBC Press, 2016) and Elizabeth B. Elliot-Meisel, *Arctic Diplomacy* (New York: Peter Lang Publishing Ltd., 1998).

<sup>82</sup> “Harper Stands up for Arctic Sovereignty,” address by the Hon. Stephen Harper (December 22, 2005).

<sup>83</sup> Franklyn Griffiths, “Our Arctic Sovereignty is Well in Hand,” *The Globe and Mail* (November 8, 2006).

<sup>84</sup> Government of Canada, *Statement on Canada’s Arctic Foreign Policy* (2010), 5.

<sup>85</sup> Government of Canada, *Statement on Canada’s Arctic Foreign Policy* (2010), 5.

<sup>86</sup> See for instance: DND, *Arctic Integrating Concept* (August 2010), 7, 9, 26, 3 and Canadian Army Land Warfare Centre, *Northern Approaches: The Army Arctic Concept 2021* (2013), 65.

<sup>87</sup> For the best description of these requirements see: Donat Pharand, “The Arctic Waters and the Northwest Passage: A Final Revisit,” *Ocean Development and International Law* 38:1 (2007), 7.

<sup>88</sup> RCN, “Harry DeWolf Class Arctic/Offshore Patrol Ship Concept of Use” (November 2015), 11.

<sup>89</sup> Royal Canadian Navy, *Leadmark 2050* (2016), 14.

<sup>90</sup> For an in-depth WoG analysis of the CAF in the Arctic see: P. Whitney Lackenbauer and Adam Lajeunesse, “The Emerging Arctic Security Environment: Putting the Military in its (Whole of Government) Place,” *Whole of Government through an Arctic Lens*, P. Whitney Lackenbauer and Heather Nicol eds. (Antigonish: Brian Mulroney Institute of Government, 2017).

<sup>91</sup> Chief of Force Development, *Arctic Integrating Concept* (2010), 10.



meanwhile lacks the mandate – but has the capacity.

As such, the CAF provides transport, platforms, and human resources which allow other government departments to do their jobs enforcing Canadian jurisdiction in areas such as pollution prevention and response, poaching, fisheries protection, and law enforcement.<sup>92</sup> This approach was formally incorporated into the AOPS mission with the 2008 *Canada First Defence Strategy*, which described the ships as “effective platforms for the coordination of whole-of-government operations,” while highlighted the Navy’s role in “helping other government agencies such as the Coast Guard respond to any threats that may arise.”<sup>93</sup> Similar messaging came from the 2010 *Arctic Foreign Policy*,<sup>94</sup> the *Arctic Integrating Concept* (2010), the *Northern Employment Support Plan* (2012), and the *Army Arctic Concept* (2013).<sup>95</sup>

This comprehensive and holistic approach to Arctic security dominated DND policy at the time the AOPS were being designed and is thoroughly baked into their theory of use. That meant ships equipped with the largest cargo carrying capability of any vessel in the Navy (outside of replenishment ships) and the ability to embark six shipping containers (or more if a helicopter is not embarked), and which can carry supplies or be reconfigured to specific mission modules to provide water production, power generation, or waste disposal incinerators. There are also spare accommodations for extra personnel for police work, fisheries patrols, immigration checks, or disaster response.<sup>96</sup>

Outside of support to law enforcement and regulatory agencies, the AOPS has evolved to be one of Canada’s most promising tools for Arctic science. While the Navy is not expressly a research agency, the AOPS are designed to fill that same whole of government void in Canadian capacity, providing a useful platform to support government and civilian organizations undertaking northern research. Rear-Admiral John Newton (ret’d), former commander of Maritime Forces Atlantic and Joint Task Force Atlantic, noted that a “science package” and the ability to support other agencies was an important part of the design. It includes capacity for launching and recovering unmanned systems, carrying containerized labs, and dedicating connectivity and bandwidth for teams to plug into their own networks. With these ships, Newton said, “we are moving from an era of having a dedicated research ship for the navy – *Quest* – to a model like the AOPS which has the modular capacity, the cranes with the lifting capacity and the boom reach to do more than just launch a boat.”<sup>97</sup>

One of the most important research endeavours assigned to the AOPS will be the charting of the Northwest Passage – a component of Prime Minister Justin Trudeau’s *Ocean Protection Plan* (OPP). This plan includes the Low Impact Shipping Corridors, which were first established in 2014 by Transport Canada and the Canadian Hydrographic Survey to chart key sea lanes in the Arctic Archipelago. In 2020, 31% of the most frequently used commercial shipping routes have been surveyed, with an OPP target of 40% for 2023.<sup>98</sup> Normally, surveying is not the domain of the Navy, however that task was taken up by the RCN in the Arctic in 2013 with multibeam sonars mounted on MCDVs. The Navy was looking

to add value from its new Arctic presence and those were the assets in the region with the time to do the work.<sup>99</sup> The point of the whole of government push in the Arctic is to maximize the utility of what’s there. Mapping has been a slow process because private companies charge a great deal to work in the Arctic while the Coast Guard – which has several ships equipped with hydrographic sonars – normally conducts “opportunistic surveys,” namely mapping routes they are already travelling while attending to more pressing tasks. Because the Coast Guard is overtaxed, there have been few opportunities for more “targeted surveys.”<sup>100</sup>

While the AOPS are not survey craft, their capacity and availability make them an incredible asset.<sup>101</sup> A “rudimentary” multi-beam sonar capability, based on existing containerized systems, is written into the AOPS’ 2015 Concept of Use and there is obvious potential to expand into versatile new systems. Survey work is increasingly being done by smaller, autonomous craft that do not require a large ship moving along a set track. Experimental Underwater Autonomous Systems have already proven capable of operating independently for hundreds of kilometres under the ice, with one 2010 mission mapping seabed up to 1000 km from its base over a 12-day deployment.<sup>102</sup> An AOPS could easily serve as a mother ship, its crane and ample storage space making for an ideal launching platform.

The need for improved hydrographic surveys is closely linked to the increasing need for search and rescue (SAR). Maritime traffic in the Northwest Passage has tripled over the past 25 years,<sup>103</sup> with the melting ice attracting adventurers and cruise lines – some more prepared than others. For the first time, large passenger ships are travelling through these poorly charted waters, creating new safety issues. In 2017, the cruise ship *Crystal Serenity* (68,870 tons) brought 1500 passengers and crew to the region while *The World* (43,188 tons) transited with roughly 500 people in 2012 and 2019. While large ships like these are generally well managed and safely operated, a grounding would be a disaster. Indeed, there have been several near disasters. In 1996, MS *Hanseatic* went aground on a sand bar near Gjoa Haven, MV *Clipper Adventurer* ran into an underwater ledge near Kugluktuk in 2010, and *Akademik Ioffe* grounded near Kugaaruk in 2018. In each case a real crisis was averted, however it could have been far worse. With a speed of roughly six knots and fuel for four hours, cruise ship lifeboats can travel approximately 40–50 km (or less if towing inflatable rafts). If a ship were to sink more than 50 km from a community, hundreds or thousands of passengers would need to be rescued from the open ocean or the barren coastline. In a 2017 interview, HMCS *Harry DeWolf* Commander Corey Gleason pointed to this emerging danger, noting the utility of a big ship with a hospital on board and capacity for both air and open

<sup>92</sup> J.T. Sheahan and P.J. Gizewski, “Land Force Operating Concept 2021” (January, 2011), 1; Canadian Joint Operations Command, *CJOC Plan for the North* (January 2014), 6.

<sup>93</sup> DND, *Canada First Defence Strategy* (2008), 35, 8.

<sup>94</sup> DND, *Canada First Defence Strategy*, 3–4, 8, 14; Canada, *Statement on Arctic Foreign Policy* (2010), 6.

<sup>95</sup> Chief of Force Development, *Arctic Integrating Concept* (2010); CAF, *Canadian Forces Northern Employment and Support Plan* (2012), and Canadian Land Warfare Centre, *Northern Approaches: Army Arctic Concept 2021* (2013).

<sup>96</sup> J.D. Forbes, “AOPS Operating Outside the Arctic: Recommendations on Employing the Harry DeWolf-Class Arctic/Offshore Patrol Vessel beyond an Arctic Mandate,” Canadian Forces College, JCSP Paper (2016–17), 13.

<sup>97</sup> R. Deanna, “A New Era of Arctic Operations,” *Vanguard* (November 2014).

<sup>98</sup> See for instance: Fisheries and Oceans Canada, “Evaluation of the Oceans Protection Plan” (June 24, 2019), <https://www.dfo-mpo.gc.ca/ae-ve/evaluations/18-19/OPP-eng.html#Toc31>

<sup>99</sup> Rear Admiral (ret’d) John Newton, remarks delivered during “The Opening Arctic,” a conference at Dalhousie University, Halifax (March 2018).

<sup>100</sup> Canada, House of Commons, “Government of Canada Response to the Recommendations of the 24th Report of the Standing Committee on Foreign Affairs and International Development” (2019), 7.

<sup>101</sup> HMCS *Harry DeWolf* Commander Corey Gleason discussed the AOPS new hydrographic role in: Brett Ruskin, “How the Canadian Navy Plans to use its Newest Warship,” *CBC News* (August 16, 2017).

<sup>102</sup> Chris Kaminski et al. “12 Days Under Ice – An Historic AUV Deployment in the Canadian High Arctic,” *IEEE/OES Autonomous Underwater Vehicles* (2010). See also: Mark O’Donohue, “Autonomous Underwater Vehicles: A Future Capability for the RCN,” *Niobe Papers* (Naval Association of Canada, 2020).

<sup>103</sup> Jackie Dawson et al., “Temporal and Spatial Patterns of Ship Traffic in the Canadian Arctic from 1990 to 2015,” *Arctic* 71:1 (March 2018), 18–19.



ocean SAR.<sup>104</sup>

Increased traffic in the North means not only new safety concerns but security considerations, including the risk of crime and trespassing. While the RCN has no law enforcement mandate, it has a crucial support role to enable those that do. In the Arctic that is of particular importance, given how few government resources are available to cover so vast a space.<sup>105</sup> The importance of that kind of support was demonstrated in the fall of 2015 when an Environment Canada officer aboard HMCS *Shawinigan* learned of an unresponsive vessel off Akpait national wildlife area near Baffin Island – a marine park off limits to all but locals carrying out subsistence hunting. *Shawinigan* was sent to respond. In recalling that story, one Transport Canada official noted that being hailed by a warship (even an unarmed one) created an immediate “pucker factor” within the trespassing ship – which led to immediate compliance.<sup>106</sup>

Most of the time the presence of a warship will encourage that voluntary compliance, however, if that fails the AOPS are designed to go further. While not heavily armed, the ships can carry RCMP detachments for enforcing Canadian law, Department of Fisheries and Oceans teams to enforce fisheries regulations, Transport Canada or Coast Guard officials for pollution prevention, or even Maritime Tactical Operations Group if serious boarding operations are needed.<sup>107</sup>

While not combatants, the AOPS will also play a role in supporting conventional defence through support to defence science. This work is nothing new for the RCN in the Arctic. During the Cold War, the Coast Guard and Navy studied the acoustic properties of the Arctic waters and the unique nature of ice-coved seas, supporting the development of the US Arctic submarine programme and Canadian detection systems.<sup>108</sup> In the 1970s and 1980s, the Protecteur-class AORs spent years with teams of Defence Research Establishment scientists surveying choke points, laying cables, and testing hydrophones designed to track Soviet submarines moving through Canadian waters.<sup>109</sup> The AOPS are well suited to that kind of support work, covering a broad spectrum of defence science and technology with direct and indirect implications for Canada's national security.

## 6. Offshore patrol ships

While sold as an Arctic patrol ship, the AOPS will spend much of their time south of the Arctic circle in an offshore patrol function. That tasking lacks the excitement of dodging icebergs or the dash of deterrence patrols in the Baltic or Mediterranean seas, but it is an essential part of guaranteeing Canadian security and control over its maritime jurisdiction. For Canada, that presence is particularly important. The country boasts the longest coastline of any state, with an EEZ as large as nearly two-thirds of the country's landmass. Within that vast jurisdiction is a

rich fishery, oil and gas reserves, and the sea lanes of communication that link Canada to its allies and trading partners. Maintaining a Recognized Maritime Picture (RMP), or according to Peter Haydon, “know[ing] who is using [our] waters and for what purpose” is vital.<sup>110</sup> Despite this, Canada lacks the ability to build and maintain that picture efficiently.<sup>111</sup>

Neither the Coast Guard nor RCMP are armed or equipped to undertake that patrol or surveillance. The RCMP has no offshore platforms while the Coast Guard has never run an ops centre (outside coastal radar stations) and does not specialize in surveillance. These jobs can be conducted effectively from the Navy's current platforms, but not efficiently.<sup>112</sup> The RCN's current fleet of patrol ships – the MCDVs – were designed as minesweepers. With a flat bottom hull and poor seakeeping, they are not intended to operate far from shore.<sup>113</sup> Their inability to launch a helicopter has also proven a serious limitation. Canada's frigates can and do undertake offshore surveillance, however using a major combatant for that kind of work is overkill. A frigate costs up to ten times more to operate than an MCDV, they provide far more capability than required, and consume precious sea days that could be allocated to higher end activities.<sup>114</sup>

What is needed is a patrol ship more capable than the MCDVs and less expensive than a frigate. That concept was defined in the 2009 AOPS planning documents as “a more economical and mission-focused vessel capable of conducting year-round sovereignty patrols” to “fill this capability and capacity gap.”<sup>115</sup> This capability was a key component of the initial design and an important justification for the project. Its size and fin stabilizers offer the AOPS seakeeping that the MCDVs lack in the rough North Atlantic while its smaller crew and limited weapons make it cheaper to run than a frigate. The AOPS are also intended to take on a global role, filling constabulary and humanitarian response roles that frigates are ill-suited to. The ship's hospital facilities, sealift cranes, ample containerized storage space, and command and control capabilities were designed with those deployments in mind.<sup>116</sup>

Law enforcement operations abroad will continue to be an important mission for the RCN and the AOPS are excellent platforms. In the Caribbean, the ships will likely continue Canada's participation in Operation *Caribbe*, a long-standing mission interdicting illicit narcotics making their way into North America. Here, the AOPS offer valuable new capabilities in the form of a helicopter, sealift, boats, and command and control capabilities – all significantly superior to that of an MCDV. The vessels can support intelligence fusion with its multiple sensors to correlate, detect, monitor, and target suspect vessels while its

<sup>104</sup> Brett Ruskin, “How the Canadian Navy Plans to use its Newest Warship,” *CBC News* (August 16, 2017).

<sup>105</sup> On this support role see: Royal Canadian Navy, “Harry DeWolf Class Arctic/Offshore Patrol Ship Concept of Use” (November 2015), 15.

<sup>106</sup> This story was relayed to the author in 2018 by a Transport Canada official during a government working group.

<sup>107</sup> Corey Gleason speaking in Marcello Sukhdeo, “The Future HMCS Harry DeWolf,” *Vanguard* (March 2019), 15.

<sup>108</sup> Adam Lajeunesse, *Lock, Stock, and Icebergs*, 117, 218–241.

<sup>109</sup> Adam Lajeunesse, “Symbolism and Substance: Northern Deployments in the Late Cold War,” *Canadian Armed Forces Arctic Operations, 1941–2015: Lessons Learned, Lost, and Re-Learned*. Adam Lajeunesse and P. Whitney Lackenbauer eds. (Fredericton: Gregg Centre, University of New Brunswick, 2017).

<sup>110</sup> Peter T. Haydon, “Canada's Navy: A Good Workable Little Fleet?” *Canadian Naval Review* 1:1 (Spring 2005), 13 in: Scott Van Will, “Chasing the Leadmark: Is there a Place for the Offshore Patrol Vessel?” *Masters of Defence Studies*, Canadian Forces College (2008), 30.

<sup>111</sup> Navy Brief to CDB, PowerPoint (May 13, 2009).

<sup>112</sup> Scott Van Will, “Chasing the Leadmark,” 29.

<sup>113</sup> These ships have been used in the Caribbean and off the African coasts, however they were not built with such missions in mind.

<sup>114</sup> On the cost to operate see: Interview with Vice-Admiral Art McDonald Commander of the Royal Canadian Navy, *Canadian Defence Review* (August 19, 2020).

<sup>115</sup> “Arctic/Offshore Patrol Ship,” Statement of Requirements (March 2009).

<sup>116</sup> Sukhdeo, “The Future HMCS Harry DeWolf.”

helicopters and multi-role boats can support high speed pursuits and the rapid insertion of United States Coast Guard law enforcement (who have the legal authority to conduct such boardings).<sup>117</sup> Use of the AOPS for law-enforcement and surveillance also relieves the RCN's combat vessels of these duties. Since the mid-1990s the RCN has been actively involved in global maritime interdiction and boarding operations and the AOPS represent a "more balanced use of capability" than the traditional reliance on frigates.<sup>118</sup>

The RCN is also one of the country's most versatile assets for responding to disasters overseas. Following hurricane Katrina, the government deployed HMCS *Athabaskan*, *Toronto*, and *Ville de Québec* to the affected area – building on precedent set during hurricane Andrew when HMCS *Protecteur* was sent to Florida. Disaster relief following the 2010 earthquake in Haiti, likewise, saw the deployment of a task force (HMCS *Athabaskan* and *Halifax*), deploying first aid stations, food, and water in partnership with the Disaster Assistance Response Team (DART). Canada's warships have been given this humanitarian task, however their smaller size and limited storage capacity makes them tools of necessity. The larger hospital, cargo capacity, crane, boats, and operations centre purpose build for working with other government teams means that an AOPS can perform the same tasks better, for longer, and at a far more reasonable cost.

## 7. Strengths and weaknesses: the debate

The role laid out for the AOPS by the government and the Navy is an important one. Still there has been serious debate over the utility and efficacy of the ships themselves in delivering the required capabilities. Because they were designed to operate in radically different marine environments, undertaking a wide variety of different roles in support of safety, security, and defence objectives, the AOPS were destined to be compromise vessels. The question therefore becomes, were those compromises too much?

Criticism of capabilities and design arose early in the development process. In 2009, attacks by the federal New Democratic Party left the enduring term "slush-breakers" while DND Deputy Minister Robert Fonberg made headlines labelling the ships "Frankenboats:" a patched together monstrosity with limited utility as either an Arctic or offshore patrol craft.<sup>119</sup> That position was crystalized in a 2013 research paper by Michael Byers and Stewart Webb – *Titanic Blunder* – which became the authoritative work in that school of thought.<sup>120</sup> In it, the authors noted that the ships were too slow for open ocean patrol, too unstable, too lightly armed, and too limited in range and icebreaking power. Or, as one critic put it: "in typical Canadian fashion they were trying to be all things to all people and, in the process, they would not do either job all that well."<sup>121</sup>

The term "slush breakers" was a clever retort to the Harper government's movement away from proper icebreakers in 2007. The AOPS PC 5 hulls are not designed for icebreaking or working in high concentrations of old ice, leaving them unable to access the Arctic in the winter.

As such, the ships will offer a seasonal presence, with operations planned to take place between July and November.<sup>122</sup> This is a serious complaint for critics like Byers and Webb, who have pointed to the ships' limited icebreaking capability as a fatal flaw.<sup>123</sup> Liberal Senator Colin Kenny even suggested that that limitation hindered its ability to exercise Canadian sovereignty – a core AOPS mission. In Kenny's view, sovereignty is "best exercised by having the ability to get around." Icebreakers offer that kind of year-round (or nearly year-round) access. Buying ships that "don't break ice" was, according to Kenny, "just a dumb idea."<sup>124</sup>

There is some truth to the criticism since a more heavily ice-strengthened ship would be more useful in the Arctic. Still, it also misses the point. The AOPS were never intended to be icebreakers. Ice-breaking is a specialized skill that resides within the Coast Guard and the Navy was always careful to make the distinction between icebreaking and patrolling in ice.<sup>125</sup> As a patrol ship, the AOPS are designed to work in the North during the shipping season – which is precisely when they are needed. It is in the summer that commercial activity, cruise traffic, fishing, resupply, and cargo transport actually takes place. Maritime activity grinds to a halt during the winter and rarely occurs in areas of heavy ice – leaving little for an all-season icebreaker to do. This realization dawned on the Navy early in the design process and was one of the principal motivations for shifting away from the armed icebreaker, whose projected six-month (maximum) Arctic deployment would probably have left them with nothing to do for at least three months.<sup>126</sup>

If a lighter capability is needed in the Arctic the Coast Guard can provide that, yet there are clear operational reasons to favour the Navy. While the Coast Guard is capable of many of the AOPS' Arctic roles, the patrol and surveillance tasking is not their specialty. The level of intensity, the reporting processes, and the command networking that the AOPS were designed for – and that the Navy is comfortable with – falls well outside Coast Guard training. The RCN carries a combat operator doing vessel identification all day while Navy procedures, training, and equipment make them better able to contribute to a common operating picture, which combines different collection systems, fuses information, and facilitates analysis and dissemination to stakeholders in a timely manner. The Navy is also the group best positioned to bring command and control capabilities to organize a whole of government response in a crisis.

Buying sufficient icebreakers for the Coast Guard was also seen as a less efficient approach to surveillance and patrol. As has been pointed out, the Arctic's navigable season is only two or three months and, outside that timeframe, icebreakers are either breaking ice in the St. Lawrence or tied up alongside.<sup>128</sup> Ironically, in its 2006 justification for armed icebreakers, DND highlighted their fatal flaw as a naval platform, stating:

the onerous environment of operations for Arctic icebreakers, and their very specialized mission profile, dominates the design of such vessels. As a result, the design characteristics that lend themselves to effective icebreakers ... make them almost entirely ill-suited to other

<sup>117</sup> Royal Canadian Navy, "Harry DeWolf Class Arctic/Offshore Patrol Ship Concept of Use" (November 2015), 29–30.

<sup>118</sup> J.D. Forbes, "AOPS Operating Outside the Arctic," 21.

<sup>119</sup> "Canada Should Do More to Protect Arctic Sovereignty: Layton," *CBC News* (August 6, 2007) and David Pugliese, "Deputy Minister Robert Fonberg's 'Frankenboat' still in Development" (August 20, 2009).

<sup>120</sup> Michael Byers and Stewart Webb, "Titanic Blunder Arctic/Offshore Patrol Ships on Course for Disaster."

<sup>121</sup> "Time to Rethink Arctic Offshore Patrol Vessels (AOPS)," *Hill Watch* (January 21, 2017).

<sup>122</sup> RCN, "Harry DeWolf Class Arctic/Offshore Patrol Ship Concept of Use" (November 2015), 41.

<sup>123</sup> Michael Byers and Stewart Webb, "Titanic Blunder Arctic/Offshore Patrol Ships on Course for Disaster."

<sup>124</sup> Paul McLeod, "Arctic Patrol Ships 'Dumb,'" *Ottawa Citizen* (March 16, 2012).

<sup>125</sup> Interview with Royal Canadian Navy officer (June 10, 2020).

<sup>126</sup> Concept of Employment: Ice Patrol Vessel" (August 3, 2006).

<sup>128</sup> Interview with Vice-Admiral (Ret'd) Ron Lloyd (August 10, 2020).

operations. As such, icebreakers are NOT multi-purpose vessels.<sup>129</sup>

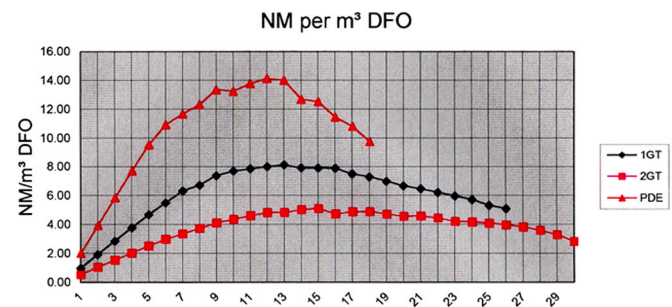
A good icebreaker would make for a very bad offshore patrol vessel.

Of particular importance, the Navy is also the only organization capable of actually fighting if need be. While it is unlikely that the AOPS will need to rely heavily on their guns, that threat of force needs to be available for them to do their jobs. And, as an early AOPS SOR explained, “while CCG ships can demonstrate presence (i.e. “show the flag”), they cannot take deliberate forceful action to discourage or prevent trespass into the Canadian Arctic by unauthorized commercial or foreign government vessels.”<sup>130</sup> In one senior officer’s words, while the Coast Guard is an essential component “looking after the safety, security, and defence of our great nation,” the simple reality is, “they don’t do guns.”<sup>131</sup>

Another of the most commonly levelled criticisms of the AOPS is their limited speed. The Navy’s initial desire for a patrol ship capable of 24 (and later 20) knots proved impossible to merge with an ice-strengthened hull at a reasonable cost, and that requirement fell to only 17 in December 2008.<sup>132</sup> Speed is typically very important in a patrol boat with an interdiction role and Byers and Webb phrased their dissatisfaction eloquently in a 2013 article, reminding readers that it took Stan Rogers’ *Antelope* “two whole days” to catch an American ship “broad and fat and loose in the stays ... [and] lay low down with gold.” The AOPS, they wrote, would have even less chance of catching today’s drug and people smugglers.<sup>133</sup>

This criticism of the AOPS speed misunderstands the ship’s basic patrol requirements and capabilities. In the Arctic, a trespassing vessel is inherently disadvantaged in making any kind of escape. There are only so many entrances and exits to the Archipelago and few places to go where new arrivals would not be noticed. An escaping ship could be monitored by air or located as it passed through any number of choke points. More often, the AOPS speed is criticized in the context of its offshore role – where it would clearly fail to catch fleeing drug smugglers and criminals.<sup>134</sup> Tim Choi demolished this argument in 2015 when he pointed out that no patrol vessel, operating at 17 or 25 knots, is going to catch a “go-fast” drug smuggler cruising at 65 knots. What can a helicopter. The US Coast Guard learned this lesson in the Caribbean, where helicopters are routinely deployed on US Coast Guard cutters for exactly that purpose.<sup>135</sup> While 20 knots would have been useful, a 17 knot patrol ship with a helicopter is just as good since the attached Cyclone is the real interdiction tool. As Admiral Lloyd put it: “once you put a helicopter on there, that three knots goes away in a hurry.”<sup>136</sup>

In an Arctic patrol ship speed has to be considered alongside the ship’s range. These two factors are intimately linked and to look at either



**Chart 1.** Fuel Consumption Rates, Halifax-class frigate. No such chart exists for the AOPS since it has yet to spend the needed time at sea to accumulate data. Source: Provided to the author while aboard HMCS *Charlottetown*, 2017.

in isolation is to misunderstand the design philosophy. Of the two, range is the more important factor. “Everybody harps on about speed and icebreaking” Rear Admiral Newton told *Vanguard* in 2019, “fundamentally the ships must be able to range freely and not worry about where they are getting their next load of gas from.”<sup>137</sup> The Canadian Arctic is vast and just getting to the Northwest Passage from Halifax is a 4000 km journey. Historically, finding and conserving fuel has been one of the most challenging parts of operating ships in the Arctic. In 2006, HMCS *Montreal* had to take what her Commanding Officer described as “extraordinary action to add extra fuel capacity.” Speeds are watched carefully and diesel is sometimes stored in the salt water ballast tanks, an awkward system since the tanks have to be thoroughly cleaned upon the ship’s return to Halifax.<sup>138</sup>

Even if it were capable of 25 knots it is unlikely that an AOPS would make frequent use of that ability since fuel efficiency decreases with higher speeds. On a Halifax-class frigate the distance travelled per cubic metre of fuel decreases by nearly 30% when moving from 13 to 18 knots. Moving faster than 19 knots requires shifting to gas turbine propulsion, which guzzles fuel at a prodigious rate. For comparison, a frigate travelling its optimal speed (12 knots) on its diesel engines can go 14.12 nm on a cubic metre of fuel; at 30 knots it travels only 2.8 nm on that same amount of fuel, a decrease of 80%. (Chart 1).

The AOPS’s range is also much better than is commonly assumed. Its official capability is 6800 nm (12,600 km), roughly half the range of a medium icebreaker.<sup>139</sup> Still, that number is misleading, since it is based on a continuous speed of 14 knots. Few of the AOPS Arctic taskings will be so time sensitive as to require higher speeds and most – like transits, patrol, research, and surveying – will be undertaken at much slower speeds. With improved efficiencies from lower speeds that range will extend dramatically; at 10 knots, for instance, the ships are capable of 18,500 nm.<sup>140</sup>

These concerns over speed, range, and icebreaking prowess led critics to suggest what they thought was a better approach: acquiring separate platforms for separate missions. That meant medium

<sup>129</sup> DMSS 2–3 Concept Design Group, “Preliminary Analysis of Canadian Forces Arctic Capability,” Report Number: DMSS-2–3–2006–003 (Reviewed By: Cdr MD Wood), March 2006.

<sup>130</sup> “Arctic Patrol Ship,” Statement of Requirements [Draft] (November 23, 2006).

<sup>131</sup> Interview with a senior Canadian Navy officer.

<sup>132</sup> Arctic/Offshore Patrol Ship (AOPS),” Statement of Operational Requirement (March 2009).

<sup>133</sup> Michael Byers and Stewart Webb, “Minister at Sea: Peter MacKay’s Latest Folly,” *The Tyee* (April 24, 2013).

<sup>134</sup> Byers and Webb, “Titanic Blunder,” 19.

<sup>135</sup> Tim Choi, “What the Critics Get Wrong: A Realistic Appraisal of Canada’s Arctic Offshore Patrol Ships,” *On Track* (CDA Institute, 2015), 51.

<sup>136</sup> Interview with Vice-Admiral (Ret’d) Ron Lloyd (August 10, 2020).

<sup>137</sup> Deanna R., “A New Era of Arctic Operations,” *Vanguard* (November 2014).

<sup>138</sup> Paul Forget, “Bridging the Gap: The Limitations of Pre-AOPS Operations in Arctic Waters,” *Canadian Naval Review* 7:4 (Winter 2012), 18.

<sup>139</sup> CCGS *Amundsen* has a range of 28,000 km while CCGS *Molly Kool* can travel 20,300. Department of Fisheries and Oceans, “CCG Fleet,” <https://inter-j01.dfo-mpo.gc.ca/fdat/vessels/3>

<sup>140</sup> Brief to Chief of Defence Staff, “AOPS: Evolution of the Statement of Requirements,” PowerPoint (February 9, 2010) and email to the author from Cmmr. Corey Gleason (August 17, 2020).

icebreakers for the North and fast patrol ships for the offshore.<sup>141</sup> Dispersing capabilities amongst specialized ship classes is the approach taken by many of Canada's allies as it provides navies with assets tailored to different missions. Canada's decision to tie multiple capabilities into one platform stemmed originally from politics but also a realistic assessment of costs and benefits. Having one platform saved money in design and short-run construction, simplified maintenance, and training, and generally made life cheaper and simpler. Purchasing separate classes would also have led to serious capability gaps. If funding was split between dedicated offshore and Arctic fleets, then both classes would be much smaller, meaning that the combination of regular maintenance and unforeseen problems could take an entire capacity out of service. By building a larger number of multi-purpose ships, the government builds in a buffer against surprises and essentially guarantees that it will never be entirely stripped of either its offshore or Arctic capability.

Building separate fleets would also have meant many different types of ships. In the AOPS, the RCN was not just combining an Arctic patrol craft with a fast interdiction ship, like the US Sentinel- or Australian Armidale-class that Byers and Webb held up as ideal,<sup>142</sup> but also a helicopter-carrying humanitarian and disaster relief ship capable of sustaining itself on long deployments overseas. Larger navies may be able to operate that diversity of specialized platforms but the RCN, lacking economies of scale, cannot make it economical.

Finally, the utility and suitability of the ship's armaments has been the subject of much debate. The AOPS is armed with a BAE made Mk 38 25 mm gun, a point defence weapon commonly used to defend against small craft. It is a long way from the 57 mm cannon considered for the armed icebreakers in 2007, and less than what most comparable Arctic patrol ships are equipped with. Russia's equivalent, the Ivan Papanin-class (laid down in April 2017) has many of the same mission requirements as the AOPS, but is armed with a powerful 100 mm foredeck gun as well as a stern-mounted weapons modules containing up to eight Kalibr-type anti-ship and/or land-attack cruise missiles. Denmark's Thetis-class frigates and Knud-Rasmussen patrol ships both carry a 76 mm guns, while Norway's KV *Svalbard* is equipped with a 57 mm naval gun and a surface to air missile system.<sup>143</sup> Even China is operating armed patrol craft capable of breaking a metre of ice. The two ships of the Hai Bing-class (commissioned 2015 and 2016) are used primarily in the Bohai and Yellow sea and boast twin 37 mm and four dual 25 mm cannon.

The difference in approaches to armament is stark, leading Robert Smol to compare the AOPS to "floating security guards."<sup>144</sup> Byers and Webb wrote that they are "under-armed for the patrol function," while Huebert made the case for a more robust combat capability to meet future high-intensity combat scenarios.<sup>145</sup> Yet, while the AOPS has much in common with its foreign equivalents, its light armament stems from a fundamentally different security environment. Russia's heavily armed vessels fit into a much larger defence strategy that prioritizes the protection of its near-seas 'bastions' – safe zones that preserve its nuclear

deterrent and shield the mainland from seaborne assault. Russian military doctrine highlights the dangers posed by NATO's Arctic military capabilities and official statements on the 'menacing' increase of NATO activity in the region are numerous.<sup>146</sup> Within this context, there is a clearly defined need to arm even coastal patrol craft for anticipated high-end warfighting in the Barents and Kara Seas. The Danish and Norwegian patrol ships have their own rationale for heavier armaments. Both must operate in close proximity to Russia and, as such, an increased consideration for self-defence is ever present. Even the Chinese ships, which have never entered the Arctic, operate in a space where combat against peer adversaries is a possibility. The Canadian Arctic is a very different environment. Even as the ice melts there is little reason to anticipate foreign warships operating off Arctic North America and few conventional threats to the Canadian coastline are anticipated. While perhaps not quite the "fireproof house" that Raoul Dandurand once celebrated, Canada's privilege geography does allow it more leeway to focus its patrol ships on unconventional security, while purpose building frigates for combat deployments.

The possibility that this security dynamic might change underpinned Huebert's call to futureproof the ships by designing them for (but not necessarily with) high-end combat systems. Yet, that would miss the point of the ships. From the beginning, the AOPS design specifically excluded combat as a mission. The threat environment from constabulary duties was assumed to be small-arms fire or man-portable weapons (and maybe being rammed).<sup>147</sup> In theory that might change, however adding vertical launch systems and integrated fire control radars would have been an expensive luxury. This is more obvious from the historical context: the RCN was keeping costs low to free up money for the Canadian Surface Combatants – the ships purpose built to provide the Navy with an uncompromised combat capability.

Criticisms from individuals like Byers and Smol also misunderstand the mission of the vessel. While it lacks heavy armament, the 57 mm guns from the initial armed icebreaker project would have been overkill. As Tim Choi argued: "the point of having a patrol vessel is not to sink or destroy a violator but to deter violations by the threat of force." In this context, a 25 mm cannon is more than sufficient to induce a civilian captain to comply.<sup>148</sup> That was certainly the opinion of one RCN officer involved in choosing the weapon. Recalling a conversation with a colleague from the Army about the effect it would have when fired at a large, slow moving target from 3000 yards; the response was simply: "oh baby, you'll just tear stuff up."<sup>149</sup> The AOPS armament is not designed for high-intensity combat; it was chosen for a whole-of-government, constabulary mission and that was both a cost-effective and appropriate choice.

## 8. Conclusion

Canada's naval policy, *Leadmark 2050*, states that "building a navy is a series of 40- to 50-year investments, each one of which ... determines what future governments will have at their disposal to respond to events that can be scarcely imagined when a class of warships is on the drawing board."<sup>150</sup> In the Arctic, the pace of change and the unpredictability of

<sup>141</sup> Byers and Webb, "Titanic Blunder," 19.

<sup>142</sup> Byers and Webb, "Titanic Blunder," 19.

<sup>143</sup> *Svalbard's* combat capability is often over-stated. Its heavy gun has a very limited auto load capability, after which rounds need to be loaded manually. This severely limits its utility in high-end combat.

<sup>144</sup> Robert Smol, "Canada's New Arctic Patrol Ships Little More than Floating Security Guards," *iPolitics* (April 11, 2018).

<sup>145</sup> Byers and Webb, "Titanic Blunder," 21; Rob Huebert, "The Case for a More Combat-Capable Arctic Offshore Patrol Ship," *Canadian Naval Review* 10:3 (2015), 4.

<sup>146</sup> Pavel K. Baev, "Threat Assessments and Strategic Objectives in Russia's Arctic Policy," *The Journal of Slavic Military Studies* 32:1 (January 2019), 26.

<sup>147</sup> "Arctic Patrol Ship," Statement of Requirements [Draft] (November 30, 2006).

<sup>148</sup> Tim Choi, "What the Critics Get Wrong; A Realistic Appraisal of Canada's Arctic Offshore Patrol Ships," *On Track* (CDA Institute, 2015), 49.

<sup>149</sup> Interview with Royal Canadian Navy officer (June 10, 2020).

<sup>150</sup> Royal Canadian Navy, *Leadmark 2050* (2016), x.



events makes Canada's efforts to prepare for the future even more uncertain and early investments even more important. The AOPS are one of the largest such investments, designed to address real and perceived threats spanning the defence and security spectrum from search and rescue, poaching, and disaster relief to surveillance and support for law enforcement.

In a sense the project was a paradox. On the one hand it exemplified the long-term thinking called for in *Leadmark*, identifying an emerging vulnerability and preparing to meet it proactively. On the other, the process by which the government initially sought to meet that challenge stemmed from political expediency and lacked the careful strategic analysis that normally accompanies a decades long procurement project. The early uncertainty surrounding the AOPS (and its armed-icebreaker predecessor) reflected competing visions of Arctic security and a threat environment that no one fully understood. As federal, DND, and CAF policy progressively de-emphasized Harper's early 'hard security' approach, the AOPS concept came into its own, embracing a more nuanced whole of government mission.

That broad-based approach to security was a rational, even unavoidable, choice for a country with limited capacity in the North and multiple ocean environments to patrol. Yet, the resulting compromise nature of the design inspired fierce debate as critics challenged both the

utility of the platform itself and the unconventional security focus that underpinned its design. Tied as they were to the Conservative Party, and under attack from many sides, one AOPS project officer recalled, "I always said to myself if the Conservatives lost an election AOPS was doomed."<sup>151</sup>

The ship survived the onslaught of negative press and partisan criticism and its value has become apparent to both the (initially sceptical) Navy and the now governing Liberals. While its compromises are very real, the ship has fulfilled that fundamental requirement set by Navy planners in the project's early days: it's "good enough." A superficially flippant description, what that really meant was that, while the ship may not be a high-end icebreaker, patrol craft, or combatant, it has all the capabilities needed to perform its assigned missions, without the added costs of capabilities that offer only a minimal return on investment. A versatile jack-of-all-trades, the AOPS gives Canada what it needs most in the Arctic and the offshore, providing new capabilities and preparing the country for a wide array of real, emerging, and potential threats.

#### CRediT authorship contribution statement

Adam Lajeunesse is the sole author and responsible for all elements of this paper.

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<sup>151</sup> Interview with Royal Canadian Navy officer (June 10, 2020).