

Canada in Extremis

Rebalancing the Canadian
Armed Forces and Rebuilding
the Canadian Navy



Naval Association of Canada
May 2024

Foreword

All mariners are familiar with the term, “in extremis.” In essence, it means that a ship is in dire peril. A collision or grounding is imminent and the consequences will be catastrophic. Today, it is the assessment of the Naval Association of Canada (NAC) that Canada is very close to being “in extremis.” The threats to our national security from state and non-state actors are growing while the nation’s ability to defend itself has atrophied. Continuing in the present direction will take the country into dangerous waters.

This paper outlines the NAC’s assessment of Canada’s current situation and offers a clear-eyed evaluation of what is required to chart a more prudent course. The proposed actions are not merely band-aid solutions, they are consequential. Defence funding must continue to expand but, beyond that common panacea, real reforms as well as tangible rebalancing in favour of core priorities must be considered. The NAC recommends that the Government of Canada consider the observations and conclusions contained herein and factor them into the implementation of Canada’s recently updated defence policy. The time for action is now.

Yours Aye,



Tim Addison,
Director of Naval Affairs
Naval Association of Canada



Executive Summary

For much of its history, Canada has deprioritized defence. Surrounded by vast oceans and with great power protectors, this policy decision was understandable – if not necessarily responsible. In the 21st century, however, the world has grown smaller and less predictable. Threats to Canada and its interests are more pressing than at any point since the 1962 Cuban Missile Crisis. These threats have also grown more dynamic and varied. China's rise has added a second great power competitor, while piracy, terrorism, and non-state security threats are proliferating in scale and growing in capability. The world is now smaller and more dangerous than ever before.

Facing this new, rapidly evolving, and unstable security dynamic, Canada's consistent inability to reconstitute and modernize its military can only be described as a failure. Military strength sits at the heart of deterrence and, as the war in Ukraine has shown, is the last line of defence between democracy and tyranny. Deterrence requires capability, capacity, and a willingness to use force when necessary. It must be viewed by adversaries as credible, consequential, and its intent well communicated in ways an adversary must take seriously. In this regard, Canada's contribution to collective defence and deterrence has severely waned, and now fails to meet expectations for a G7 ally and partner in the North American Aerospace Defense Command (NORAD) and the North Atlantic Treaty Organization (NATO). Indeed, Canada lags its adversaries and allies alike in generating the necessary integrated joint forces needed as a first line of defence.

Sitting on the northern half of our continental island, Canada's defence requirements are different from those of its European allies. For Canada, the maritime domain is not peripheral; the seas are our moats and highways and central to our security. The Navy is one of Canada's premier tools for below the threshold deterrence through its inherent flexibility in maneuver, persistent presence, and versatility in constabulary duties, diplomacy, and combat. The Navy is also typically among the first to be projected forward in any conflict.

Conflicts in Canada's past have required a multi-faceted response, including naval, air, and land deployments. Present and future conflicts, however, are set to become more decisively pan-domain affairs with a heavy dependence on successful command of the maritime domain. China, for instance, poses a military threat that would most likely be countered on the seas and in the skies of East Asia, with heavy reliance on air, space, cyber, and information domains. Canada's role in countering any Russian assault on NATO would require an immediate response, drawing on the entire range of Canadian Armed Forces (CAF) capabilities, of which the Navy would be amongst the first to deploy. Likewise, non-state threats, now proliferating around the world,

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are principally being met by our allies on, or from, the sea. These shifting strategic dynamics should be met with a re-evaluation of not only Canada's defence spending but its priorities as well, with new questions asked about who and how Canada might fight – and what tools it really needs to do so.

Whether it is the defence of North America, support for our allies overseas, or the enforcement of Canadian jurisdiction at home, naval power sits at the tip of the (increasingly blunt) spear. Rebuilding that capability means re-establishing the Navy's ability to achieve outcomes that have long been taken for granted. To address the situation, the authors of this paper propose five immediate actions:

First, the Government must recognize that modern defence threats demand a rebalancing of our operational focus; hence, the Department of National Defence (DND) budget must privilege CAF capabilities likely to be deployed in conflict and most used in peacetime. This means that the forces operating within the international commons to guard peacetime trade and allied lines of communication in wartime must be the priority.

Second, Canada must reshape its procurement system with a suite of strategies tailored to agile procurements of technology. It must also immediately operationalize the Continuous Capability Sustainment (CCS) initiative in the Defence Policy Update (DPU) in a more aggressive approach to reconstituting and sustaining the fleet in being, through acceleration of the latter half of the Canadian Surface Combatant

(CSC) Project and the acquisition of new conventional (non-nuclear) patrol submarines.

Third, Canada must better integrate the Arctic approaches into a proper strategy for continental security, as indicated in the DPU. This must include the capabilities and resources necessary to enforce jurisdiction in peacetime and meaningfully contribute to continental defence in conflict.

Fourth, Canada must invest in recruiting and retention to grow the Navy and ensure the long-term sustainment of human resources. This subject is not addressed in this paper but will be examined in future NAC writings.

Finally, given the present and anticipated threats to global peace and security, Canada must resource and support the reconstitution, modernization, and construction needed to reshape the present fleet and infrastructure into the future fleet and support capabilities required for combat.

These immediate requirements and longer-term strategic shifts are outlined in more detail throughout this report. Ultimately, what we seek to convey is that the threats facing Canada today are existential and must be met with a new seriousness of purpose and commitment. Deterring – or prevailing against – these threats is an all-domain affair, addressed in a pan-domain approach, where success will be heavily depended on forces projected on, above, and underneath the sea.



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Introduction

In November 2023 the Naval Association of Canada (NAC) and the University of Calgary hosted a workshop on the future of the Royal Canadian Navy (RCN). The subject matter was wide-ranging, from broad strategic analysis of the evolving maritime threats facing Canada to the budgetary considerations and operational reforms needed today and in the near future.

This report is one outcome of the workshop. It is an assessment of the global threat environment and Canada's current predicament. As a nation, we have allowed our armed forces to decline in capability and readiness to a point where the state's ability to defend itself and project power is close to the point of collapse. In particular, Canada can no longer meet the challenges facing it on, above, and underneath the world's oceans. Responding to current and future threats requires significant reform and recapitalization extending beyond today's shipbuilding programs. This report identifies current threats, examines Canadian strengths and weaknesses, and offers thoughts on how to achieve a more robust navy by adjusting the defence budget and implementing sensible reforms. Additionally, it concludes with an assessment of the naval capability that Canada will need in order to contribute to allied deterrence and defence over the long term.

Canada's current defence policy is *Strong, Secure and Engaged* (SSE) (2017), recently updated with *Our North, Strong and Free: A Renewed Vision for Canada's Defence* (commonly referred to as the Defence Policy Update (DPU)). Canada's naval doctrine is contained within *Leadmark 2050* (2016), which provides a more focused look at the challenges and requirements of the Navy in particular. These policies define how the country's naval power will be used and, while the DPU addresses global security

from a 2024-perspective, *Leadmark* and the core of *SSE* are both clearly out of date. As such, Canada's defence policy fails to address the emerging and continuously evolving doctrinal shift toward all-domain, pan-domain warfare, where control of the international commons has become increasingly critical. What is required to address this is institutional, technological, and doctrinal change – all of which are far beyond the ambition and resources provided in the recent DPU. What Canada needs is nothing short of a paradigm shift in how it approaches national defence.

The authors of this document include a core of former naval officers with many years of involvement in Canada's naval defence, augmented by a distinguished group of academics, who have devoted their careers to maritime affairs. Many of the former naval officers were involved in the development of the Navy's strategic guidance documents through the 1990s up to the very recent past. We recognize that we are on the outside of an institutional world where the loss of currency occurs at a rapid pace. However, being outsiders allows us to focus and communicate our experienced views constructively, yet objectively, in ways those who continue to serve cannot, particularly when examining the health and effectiveness of the RCN, the capabilities needed to meet its mandate, and the resourcing to deliver on that mandate.

Our intent is to provide clarity on how the Canadian Armed Forces (CAF), and particularly its maritime forces, should evolve to support the safety and prosperity of Canadians. As a democracy, we recognize that Canadian governments should and do engage with Canadians. We offer this document in that spirit and hope that it will spark further discussion and action.

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**UNIVERSITY OF
CALGARY**

Canada's Strategic Vulnerability

“Freedom is never more than one generation away from extinction. We didn't pass it to our children in the bloodstream. It must be fought for, protected, and handed on for them to do the same.”

- Ronald Reagan

The world has always been a dangerous place and Canada has traditionally sheltered itself under a great-power protector – be it Great Britain or the United States. In that comfortable shade, governments in Ottawa have deprioritized defence for many decades. In the aftermath of the Cold War, a desire for a ‘peace dividend’ decimated an already sclerotic defence budget. These cuts were, at least, somewhat rooted in geopolitical reality. In recent years, however, Canada has singularly failed to adjust its priorities to match changing global realities. This decline has reached a point where Canada’s allies and friends now openly question its reliability and seriousness as a partner. Former Deputy Prime Minister John Manley once likened Canada to the miser that left the table whenever the waiter arrived with the bill and, more recently, lamented that Canada has become more adept at pointing fingers than engaging on the international scene when it is needed most.¹

This abdication has real dangers for the country’s sovereignty, prosperity, and future. Canada has a role and interest in defending its own – as well as collective – economic prosperity and security on the seas to preserve the rules-based international order, from which it has derived so much of its safety and prosperity. As part of a broader group of allies and partners, Canada also has an obligation to contribute to mutual defence and deterrence efforts, which often play out on, above, and underneath the world’s oceans. That security obligation is now more urgent than it has been in a generation. Canada is no longer – as Senator Raoul Dandurand once famously declared – a fire-proof house, far from inflammable materials; its citizens now watch fires rage around them, while

their ocean moats shrink in the face of new adversaries and technologies.

Only in recent years have realistic performance indicators around operations, readiness, and availability been incorporated into public reports such as the Departmental Plans and Departmental Results Reports. This has helped raise government and public awareness into the true state of the CAF, and particularly the RCN, where readiness of the fleets has deteriorated in a disturbing trend year over year. While the recent release of the country’s DPU: *Our North, Strong and Free*, has provided some fresh momentum towards rebuilding Canadian capabilities, the country still appears locked into a decades-long tradition of deferring and deprioritizing its own security, with few significant investments and even less of a sense of urgency. Indeed, that absence of a true sense of urgency is most telling, because the situation has become truly critical.

The full-scale Russian invasion of Ukraine certainly made clear the hazards facing Europe. This war has highlighted the reconstituted Russian threat to NATO allies and a clear end to the post-Cold War peace that was built on assumptions of the West’s ability to work with Russia as a responsible (or at least predictable) state actor. Russian submarine activity in the North Atlantic is returning to Cold War levels and NORAD is taking that threat very seriously. This is a danger to the homeland of which few Canadians are aware.²

China is the most pressing long-term threat to the Western democratic world and has built the world’s largest navy. With that fleet, and through hybrid

forces, it is seeking to slowly choke free access to the vital sea lanes of the South China Sea. Beijing's threatened invasion of Taiwan and its conflicts with the Philippines, Japan, and even Vietnam are all primarily maritime in nature. China's enormous distant waters fishing fleet, likewise, presents a substantial threat to a country like Canada, which has experienced the economic and social consequences of collapsing fish stocks in the past. Fisheries surveillance and enforcement will only grow in importance.

Below the threshold of armed conflict exists a continuous threat to the rules based international order. This set of codified and implied rules and relationships between states and international institutions has defined acceptable behaviour since the end of the Second World War and has facilitated growing prosperity and security for generations. Canada has benefitted enormously from the stability and freedom provided by the effective governance of the world's oceans. At the heart of this structure is the UN Convention on the Law of the Sea (UNCLOS). This international framework has come under stress in recent years as states like Russia and China seek to reinterpret elements of the law of the sea to better suit their interests. In the South China Sea, China has advanced an ambiguous but aggressive claim to ownership of waters clearly within the Exclusive Economic Zone (EEZ) of neighbouring states, or within the category of international waters. In the Arctic, Russia has likewise advanced legislation which illegally seeks to limit foreign transit through its EEZ.

These threats have not been ignored by the DPU. However, Canada's defence policy remains an incomplete vision. In particular, there are several areas where a more definitive statement on the acquisition of critical maritime capabilities (most notably replacement submarines) was expected. Furthermore, while the fiscal plan commits to a large increase in defence spending – projected to meet 1.76% of Gross Domestic Product (GDP) by 2029/30 – it fails to set a timeline to reach the NATO agreed minimum threshold of 2% of GDP. This metric should be viewed beyond simply a number that satisfies our NATO allies. The difference in spending equates to funding that would build resilience into the force, provide contingency for funding shortfalls, and address critical and enduring weakness. Likewise, the

authors of this report look with some suspicion at the government's seriousness towards the list of items which it intends to "explore."

All that said, the DPU is at least a positive step forward, particularly its emphasis on certain core issues tied to maintenance and sustainment of naval fleets, military equipment, infrastructure, and ammunition, where longstanding funding shortfalls are being addressed immediately. Newly announced investments in the defence of North America (including the Arctic), are also welcome, which further underscore the priority for recapitalization of credible naval and aerospace forces, supported by the requisite cyber, space, and information related capabilities and capacity. It is critical the Canadian government follows through on this policy and continues to progress naval revitalization by accepting the fact that the global threat to Canadians is real and likely to intensify.

The risks of failure are not theoretical. Canada's sovereignty, security, prosperity, and even its political freedoms depend on the ability to control the approaches to our homeland and ensure safe passage on the world's oceans. For Canada, seaborne commerce represents 23% of total international trade. Valued at \$345 billion, this trade also maintains 28,400 direct Canadian jobs.³ Imports of vital goods flow through the country's ports to provide Canadians with one of the world's highest standards of living. However, the domination of the world by autocracies, combined with the growing capacity of malicious non-state actors, has begun to erode Canadians' comfortable way of life. If these behaviors are not countered, the country's trade-based economy will contract. As a G7 nation and a subscriber to the rules based international order, Canada has a responsibility for the protection of seaborne commerce around the world. Maritime arteries do not just carry physical goods, our vital digital communication links to the rest of the world run through undersea cables. Pirate attacks off Somalia and Houthi missile strikes in the Red Sea have already increased the cost of shipping in a preview of the economic cataclysm that would accompany a war against a major maritime and trading power like China – or a country like Russia with the ability to interdict that trade. The cost of a war itself would be even greater – as the world is seeing in Ukraine today.

Maintaining the freedom to trade and preventing an economically and physically devastating conflict requires deterrence. It was the collective strength of the NATO alliance which prevented the Cold War from spiraling into direct conflict. Today, that strength has prevented Russia from expanding its war to NATO states. In Asia, the deterrent effect of strong military partnerships has tempered China's burning desire to conquer Taiwan. The maxim of 'peace through strength' has been tested and proven by history.

While Canada faces a multidomain threat environment, the critical vectors remain the sea and the air. Geographically, Canada is the northern half of a continental island. Conventional threats must approach us across the seas, and we project power the same way, with increasing reliance upon cyber and space joint enablers. The seas are our moats and highways; they are the most critical environment to our security and to our ability to contribute to the security of our allies. The Navy is, therefore, Canada's first line of defence. Responding to the radically worsening global security environment must start with rebuilding the RCN. Russian and Chinese threats to allies and partners require a robust, integrated persistent presence serving as a deterrence. This is most easily and effectively achieved by rotating naval and air forces, postured for a quick response to escalation. When done in a joint or combined force, the deterrence effect is magnified as the resolve of multiple nations is clearly communicated, backed by credibility through interoperability and integration.

Unfortunately, our Navy with which Canada must meet these challenges is in a "critical state." That is the official assessment from the country's top admiral.⁴ A perfect storm of budgetary constraints, poor recruiting and retention, and procurement challenges have combined to catch the RCN in a downward spiral of diminishing capabilities. With the long overdue replacement of the major surface warships and submarines delayed into the next decade, the prospects for meeting global challenges are not good.

The seas are our moats and highways; they are the most critical environment to our security and to our ability to contribute to the security of our allies.

Rebuilding the RCN and reconsidering Canadian defence strategy will not be cheap or easy but these are necessary measures to protect everything that the country has fought so hard to build and protect over generations. Around the world, our allies have already come to this conclusion and, increasingly, are willing to point to our failure to do the same. The time has come for Canada to stop pretending that it is either safe or secure.

To address the situation, the NAC proposes five immediate actions:

First, the Government must recognize that modern defence threats demand a rebalancing of our operational focus; hence, the Department of National Defence (DND) budget must privilege CAF capabilities likely to be deployed in conflict and most used in peacetime. This means that the forces operating within the international commons to guard peacetime trade and allied lines of communication in wartime must be the priority.

Second, Canada must reshape its procurement system with a suite of strategies tailored to agile procurements of technology. It must also immediately operationalize the Continuous Capability Sustainment (CCS) initiative in the DPU in a more aggressive approach to reconstituting and sustaining the fleet in being, through acceleration of the latter half of the Canadian Surface Combatant (CSC) Project and the acquisition of new conventional (non-nuclear) patrol submarines.

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Fourth, Canada must invest in recruiting and retention to grow the RCN and ensure the long-term sustainment of human resources. This subject is not addressed in this paper but will be examined in future NAC writings.

Finally, given the present and anticipated threats to global peace and security, Canada must resource and support the reconstitution, modernization, and construction needed to reshape the present fleet and infrastructure into the future fleet and support capabilities required for combat.

These are aggressive suggestions; however, circumstances have rendered old ways of thinking obsolete. Ultimately, what we seek to convey is that the threats facing Canada today must be met with a new seriousness of purpose and commitment. Deterring and prevailing against these threats is an all-domain affair, where success will be heavily dependent on forces projected on, above, and underneath the sea.



The Navy Today

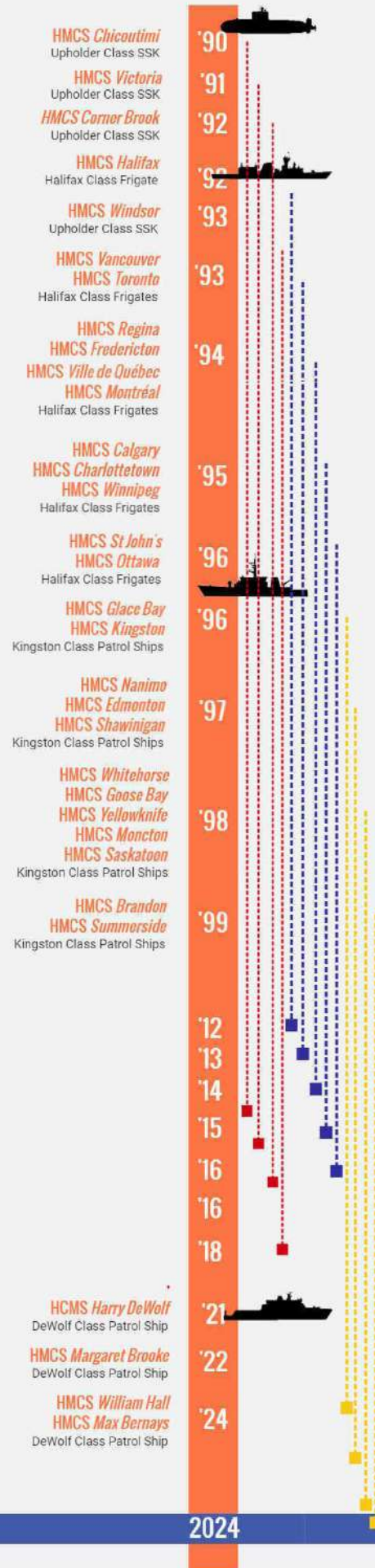
Largely designed during the Cold War, Canada's Navy was built with a focus on anti-submarine warfare (ASW) and defence of the Atlantic Seas Lines of Communication (SLOCs). Built to fight the Soviets, the fleet is now past or rapidly approaching its designed life expectancy. Indeed, while most of Canada's warships possess relatively modern combat systems, their armament and communications systems are largely inadequate while marine systems have largely deteriorated. They have reached a point of obsolescence and are now suited only to peacetime and low-intensity operational deployments where threats are mitigated through integration with other states' more robust maritime forces. Indeed, deploying one of its warships into a theatre of conflict would likely mean accepting serious risk to the vessel, its crew, and the mission. This risk is further exacerbated by obsolescent communications and tactical data links, which are increasingly incompatible with allies, which have moved to more modern systems. While Canada's front-line ASW capabilities are adequate, the current capabilities of the major combatants are not sufficient for modern anti-air warfare (AAW), or surface (ASuW) threats, especially when accompanied and amplified by space-based or cyber capabilities. This jeopardizes Canada's ability to participate in multi-national task forces or assume command of multi-national naval task groups, which to this point had been a proud Canadian tradition.

Following several decades of underinvestment, RCN capabilities have atrophied, and the fleet can no longer deliver many of the options and capabilities that governments have long counted on. The fleet's age means that maintenance cycles have significantly extended, and ship availability has fallen precipitously, as can be seen in successive DND Departmental Results Reports. Every major vessel class (apart from the Arctic and Offshore Patrol Vessels (AOPVs)) has exceeded its design life,

Ship Commissioning and Intended Service Life Before Refits

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significantly impacting operations and the capacity to meet government commitments to NATO and to support the new *Indo-Pacific Strategy*. The Halifax-class frigates alone are now consuming 20% of the National Procurement (Vote 1 Operations and Maintenance) funding allocated for maintenance, sustainment, and improvement for all CAF fleets and major equipment. Even this has not been enough to meet demand. The deep maintenance requirement for a Halifax-class was initially 100,000 work hours but has grown to over 1 million hours – and is projected to double soon. It is noteworthy that the recent DPU committed to improving the sustainment of naval fleets, however the Navy’s ability to extend these ships’ lives remains uncertain.

The lack of a plan for renewal and investment after the end of the Cold War led to a continuing reduction in the size of Canada’s naval order of battle. From 23 combatants in 1980, the RCN has been reduced to twelve combatant warships and four submarines, albeit far more capable than their predecessors. Warships are often deployed together, normally in groups of three or four combatants, both to provide mutual support and to generate the collective combat power needed to deter aggression or successfully carry out and survive a combat mission. This grouping of ships, called a High Readiness Task Group, also includes a resupply ship capable of carrying ammunition, food, fuel, spares, and helicopter support to enable extended missions beyond coastal waters. With the fleet reductions over the past 40 years and the decreasing availability of the Halifax-class due to maintenance requirements, the RCN’s ability to deploy a High Readiness Task Group has been lost and its ability to sustain single or two ship deployments, or to deploy in multiple theatres concurrently, has been severely curtailed. Aggregation of assets from the two coasts into a Task

Group in the event of a crisis or conflict is problematic due to the distance between Halifax and Esquimalt.

While surface ships augmented by maritime air and space assets can perform a degree of sea control, sea denial is very much dependent on subsurface capability. With a concerning downward trend in availability of the patrol submarines in recent years, there has been a significant impact on crew training and overall submariner proficiency. The gap between combatant warships and patrol vessels has also widened and is now out of balance. Today, over half of the surface force is comprised of patrol vessels geared towards constabulary duties, possessing no significant armament. The size of the fleet is barely sufficient to ensure that a small number of surface vessels are available for core deployments. In the event of high-intensity combat, this small fleet size would not permit the RCN to sustain losses and remain operationally effective.

Notwithstanding the fleet reductions, it remains vitally important that the RCN continues to train to task-group level to ensure its combatants can integrate into multi-national formations, such as Standing NATO Maritime Groups (SNMG) 1 or 2, participate in major exercises such as Rim of the Pacific (RIMPAC), or in coalition operations such as Commander Task Force (CTF) 150 under the US-led Combined Maritime Forces (CMF) in the Middle East. Furthermore, the credibility required to command a multi-national formation is difficult to maintain if the RCN cannot generate senior officers experienced in these operations. Here, command requires an enhanced skillset based on experience in multi and cross-domain operations – something that Canada has lost.



A CH-148 Cyclone helicopter over the Atlantic Ocean (Photo: Braden Trudeau CAF)



HMCS Regina, a Halifax-class frigate (Photo: DND)

The Halifax-Class Frigates

Traditionally an ASW-focused force, the RCN's core platforms continue to prioritize this tasking. The Halifax-class frigates (FFH) remain adequate submarine hunters and have global deployment capabilities, but only in a low-intensity threat environment. With the loss of the volume coverage provided by the MK 41 missile launchers in the RCN's former Iroquois-class destroyers, the Navy is severely limited in capacity and capability owing to the frigates' short-range point defence missile system that cannot be reloaded at sea. The ships' loss of area-air defence has also reduced its ability to escort other vessels and effectively manage the surrounding airspace. The frigate also lacks communications capacity to support command and control in a busy air environment. Survivability in a high threat environment would be doubtful if targeted by a peer or near-peer adversary.

Replenishment Vessels

Support ships are critical to a globally deployable navy. With the retirement of the two 1960s vintage Protecteur-class auxiliary oiler replenishment (AOR)

vessels, and after a period of leasing arrangements with the Chilean Navy, Canada now relies on the leased M/V *Asterix* to provide an at sea resupply capability for the RCN. This interim solution, while so far effective, means accepting only a limited blue water capability.

The Victoria-Class Submarines

The RCN's submarine assets represent Canada's one strategic deterrent. The Victoria-class patrol submarines (SSK) are the fleet's most capable asset for monitoring, controlling, and fighting in the under-water domain. In wartime, a subsurface presence has proven the most effective means of exercising sea denial and limiting an opponent's options for operating in contested space. It is also an exceptional platform for covertly projecting special operations forces ashore and retrieving them in the littorals. The Falklands War, for instance, demonstrated the ability of British submarines to drive Argentinean surface forces out of the conflict zone quickly and effectively. During peacetime, Canada's submarine presence has, likewise, proved a critical security asset for monitoring its ocean spaces

and deterring malign activity. During the 1990s ‘Turbot War’ with Spain, Canadian submarines were used to deter and de-escalate the crisis. However, the small size of Canada’s submarine force limits its ability to deploy globally. Indeed, the country acquired four submarines not because that was a strategically appropriate number, but because that was all there were to be had at the time. Today, with four submarines on two coasts, the RCN can at best guarantee only a single operational submarine presence on one coast.

The Kingston-Class Patrol Vessels

Canada’s Kingston-class Maritime Coastal Defence Vessels (MCDV), built in the mid-1990s, have served Canada well. However, they are all nearing the end of their useful service lives. While not front-line warships, these dozen vessels have played a critical role in Canadian security by taking on lower-risk constabulary missions and training tasks more efficiently than the larger frigates. Their smaller size also means a smaller crew complement – a significant advantage for the overstretched RCN. However, the Kingston-class was not designed with the range and seakeeping to undertake the overseas missions that they are now repeatedly tasked with, such as capacity building in the Gulf of Guinea, participating in NATO’s SNMG1, and counter-narcotics operations in the Caribbean. The RCN’s ‘can-do’ attitude has allowed the fleet to stretch these vessels’ capabilities, but that can only last for so long.

The Harry DeWolf-Class Arctic and Offshore Patrol Vessels

The Harry DeWolf-class AOPV were designed to operate in an Arctic security dynamic defined by unconventional threats in and to the North, while providing the RCN with a globally deployable patrol ship to undertake tasks below the threshold of armed conflict in the Arctic off-season. In the North the ships operate in collaboration with other government departments to enforce Canadian jurisdiction and



HMCS Windsor (Photo: Trevor Ackland, CAF)

maintain situational awareness. Their presence in remote Canadian waters also serves as a deterrent to prevent malign state and non-state actors from perceiving the region as vulnerable to illegal or damaging activities. Built to commercial standards and with minimal armament (a 25mm gun), these ships cannot engage in combat against an enemy warship, submarine, or aircraft.

Naval Air Assets

Naval air (referred to by the Royal Canadian Air Force (RCAF) as “maritime aviation”) assets are key enablers to naval operations, whether they be ASW, surface warfare, sanctions enforcement, or simple sovereignty and security operations. As an airborne

sensor platform, the CP-140 Aurora Maritime Patrol Aircraft and embarked CH-148 Cyclone helicopters significantly extend the RCN’s surveillance and ASW reach and capability. This capability will grow as the country takes possession of a new fleet of P-8A Poseidon multi-mission aircraft.

While Canada’s maritime aviation is growing, it faces foreseeable challenges. The Cyclone helicopters, for instance, are one of Canada’s many ‘orphaned fleets’; meaning that Canada is the only state operating the aircraft, resulting in the loss of any international economies of scale that would make maintenance cheap or easy. One of the reasons the Sea King helicopters remained in service for over 50 years was that the airframe was flown by many nations. Hence, spare parts and maintenance were readily available.



HMCS MARGARET BROOKE during Operation Nanook (Photo: Cpl Kuzma, CAF)

Strategic Reforms

Re-Balancing the Canadian Armed Forces

Throughout its military history, Canada's most well understood and celebrated contribution to allied security (and to its own defence) has been in the land domain. This national memory may not fit perfectly with historical reality; Allied operations in Europe during both world wars could not have taken place without the hard-fought control of the seas and airspace, without which the Army could not deploy and be sustained. Still, it was the country's massive contributions to allied operations in Europe during the First and Second World Wars, and to its Cold War deployments in Korea and Germany, that have long defined Canadian strategic thinking and culture.

Canada's continued focus on land warfare is therefore an understandable one, stemming as it does from generations of doctrine and embedded assumptions about war and deterrence. While the debate over defence budgets is a persistent feature of political conversation, rarely if ever is that underlying assumption ever addressed. Yet, the global security dynamic has changed dramatically since the end of the legacy conflicts which still define our thinking. The Russia of today is not the Soviet Union of a generation past. While more unpredictable than ever before, it is a rump version of its former strength. It can no longer raise or finance the mass forces of the 1980s. NATO's European states now outnumber the Russians seven-to-one in population and four-to-one in defence spending. Having slowly awoken to the Russian threat, the

Europeans are rebuilding their forces and, over the next several years, NATO's ability to deter and defeat Russia will be a result of political will, not numbers or mass reinforcement from North America.

China has also fundamentally reshaped Canada's security dynamic. Now considered the "pacing challenge" by the US Department of Defense, China is the most significant and dangerous long-term threat to Canada and its allies.⁵ While Russia represents the most acute danger in 2024, it is China that possesses the economic and technological leverage to fundamentally overturn the liberal rules-based international order. Once unthinkable, conflict with an increasingly authoritarian and aggressive China has grown into a real possibility. In every meaningful respect, war with China would be a predominantly maritime conflict. There is no realistic scenario whereby either Canada or its allies would deploy ground forces to China. In this critical theatre, against what is now defined as the most dangerous long-term threat to Canada and its allies, naval and air power will be paramount.

Below the threshold of major war, Canada's defence and security needs have also shifted increasingly to the sea. Successive governments in Ottawa have clearly chosen to distance the country from its peacekeeping past, meanwhile small wars of regime change have become toxic to the voting public. Rather than large-scale land deployments, Canada's most likely response to hybrid security threats has shifted offshore. The Houthi attacks in the Red Sea, piracy off West Africa and Somalia, state-backed sabotage of pipelines and communication cables, and

The global security dynamic has changed dramatically since the end of the legacy conflicts which still define our thinking

illegal fishing have all catapulted from nuisance to serious danger. For Canada (if not necessarily for all its allies), responding to safety, security, defence, hybrid threats, and even major war has shifted from a purely land environment to a multi-domain environment in which the maritime domain dominates.

In consequence, the current diminished state of the CAF offers the opportunity to re-balance the priorities of our defence allocations to meet the modern threat dynamic. Rather than focusing on legacy threats, growth in defence funding should prioritize the defence and control of the international maritime commons; the area most essential to Canada's national security and where integrated pan-domain capabilities can have the most effect in supporting broader allied defence. This means a significantly enlarged navy and air force capabilities. Re-balancing must entail recognition of the different, unique, and complex operational environments of both the RCN and the RCAF, tailoring CAF support, recruiting, and human resources, and adjustment of government procurement policies to meet their different needs.

Rather than focusing on legacy threats, growth in defence funding should prioritize the defence and control of the international maritime commons, the area most essential to Canada's national security.

Continental Defence

On August 14th, 2021, the Canadian and American defence chiefs released a joint statement reaffirming shared commitments to “modernize, improve, and better integrate the capabilities required for NORAD to maintain persistent awareness and understanding of potential threats to North America in the aerospace and maritime domains.”⁶ Those threats have understandably grown as Russia has rearmed and tested a wide array of new long-range cruise and hypersonic weapons. Russian submarines have steadily increased their operations in the Arctic Ocean adjacent Canada's northern coast. Terrence J. O'Shaughnessy (former Commander NORAD) and Peter M. Fesler (NORAD's Deputy Director of Operations) issued a clear warning in a 2020 paper, highlighting the fact that Russian “submarines now frequently conduct mission rehearsals for strikes on the United States and Canada.” The North, a region that was formerly a moat, has become a “means of approach.”⁷

Historically solely focused on aerospace, NORAD has taken on an increasing maritime character in the 21st century. In large measure, this stems from the growing Russian (and potentially future Chinese) operations off the coasts of North America. A meaningful contribution to continental defence

requires modern naval power. This is not only an essential contribution to Canada's own security but a political necessity if the country is to retain a meaningful say in the defence activities taking place

in our own backyard. The defence of North America has become a critical American priority and something of a litmus test for Canada's contribution to joint defence. Failure to contribute quickly and meaningfully will likely see the United States take more unilateral decisions. Whether from a genuine interest in our own security or simply a political recognition that Canada must pursue “defence against help” – as Nils Øvik phrased it – Canada must make (and be seen to make) a meaningful contribution.⁸

From a maritime perspective this requires, at minimum, a modern submarine capability able to operate along the approaches to North America. While Canada is highly unlikely to acquire the nuclear-powered vessels that will enable a true Arctic presence, modern conventional submarines offer essential capabilities along the ice-edge.⁹ This is an important consideration given Russia's practice of stationing its ballistic missile submarines (SSBN) under ice. With Arctic sea ice retreating most rapidly on the Russian side of the Arctic Ocean, Russian SSBNs, SSGNs (cruise missile firing submarines), and their escorting attack submarines (SSNs), will move ever closer to the North American side of the Arctic. This threat has grown in the past decade as Russian submarine launched cruise missiles have improved and are now demonstrating their significant land-attack capability in Ukraine.

While a Canadian attack submarine may not have the endurance margins to safely transit the ice-covered archipelagic waterways, it will be able to monitor such Russian assets from the more open waters on the west side of Greenland or in the Bering Sea. These

choke points favour Canada and enable meaningful surveillance and presence in the Arctic, without the need to enter the ice. Submarines looking to transit the Canadian Arctic must travel through these narrow choke points and that means surveillance of Canadian waters can be undertaken by watching the gateways – in partnership with the United States Navy (USN) and the RCAF’s maritime patrol aircraft. While only a partial solution at the operational level, this capability would provide strategic effect. Even seasonal access to the area, and regular operations around the ice-edge, would enable Canada to deny its enemies the use of the archipelago as a transit route while providing reliable surveillance of who was entering the region. As Phil Webster wrote in the *Canadian Naval Review*, “the mere presence of a Canadian submarine operating in ... the chokepoints in the Northwest Passage, can have a significant impact in assessing underwater activity and the operations of non-Canadian submarines transiting or operating in these areas.”¹⁰

The Arctic

Canada is a three-ocean country with 162,000 kilometres of Arctic coastline. The region is one of the most dynamic in the world, with sea-ice melt driving economic growth and opportunity, as well as safety, security, and defence concerns. The RCN has operated in the North since the 1950s and, with the addition of the AOPV, is well positioned to maintain a strong presence throughout the shipping season and deter malign activity in the region. As the RCN's AOPV fleet reaches full operational capability, the need for frigate and MCDV deployments will correspondingly decrease.

The RCN’s presence and purpose in the North is framed by the nature of potential threats, which can be best defined as threats *in*, *to*, and *through* the region.¹¹ Threats *in* the Arctic fall within the safety and security end for the defence spectrum. This

includes safety and security considerations in which the RCN provides vital support to other government departments but is not the lead agency. Cooperation with the Royal Canadian Mounted Police (RCMP), Fisheries, Transport, the Canadian Coast Guard, and other civilian agencies will be vital to responding to crises ranging from search and rescue and environmental protection to community relief in crisis. In this role the Navy is a supporting actor where the capabilities of the AOPV enable other government departments to fulfill their roles and responsibilities.

Threats *to* the Arctic originate from outside the region. These include trespassing vessels, illegal fishing, unauthorised marine scientific research, and other actions by state or non-state actors which threaten the region or challenge Canadian jurisdiction and sovereignty. In meeting these threats, the RCN works in collaboration with bodies such as the RCMP and other regulatory enforcement agencies, however the enforcement power offered by armed vessels is central to Canada’s ability to project authority and enforce jurisdiction.

Threats *through* the Arctic are largely state-based perils moving across the region. These include hostile submarine transits and aerospace threats that are entirely the responsibility of the CAF to deter and defeat. These high-impact threats are unlikely to be a specifically Canadian concern, and the RCN will counter and deter such threats in partnership with the United States military through NORAD, as it has since the early Cold War.

In the defence realm, cooperation with the US has long been at the heart of Canadian Arctic defence and must continue to be so as both Canada and the US leverage NORAD Modernization to substantially boost capability and capacity to deter and respond to threats. The North American Arctic is a single, interconnected theatre and siloing it into uniquely Canadian and American regions is counterproductive.



HMCS Harry DeWolf during Operation NANOOK-NUNAKPUT (Photo: Simon Arcand, CAF)

As the Canadian and American maritime presence in the region increases, bilateral cooperation must grow in lockstep. Likewise, the RCN envisions increased cooperation with other NATO partners seeking to expand their own Arctic capabilities and able to contribute to broader allied security in the region. This includes joint surveillance, improved information sharing, under-ice detection, and even response. Canada is mindful of the long-standing differences of opinion surrounding the legal status of the Northwest Passage; however, this disagreement is well managed and will not interrupt vital collaboration. This all must be integrated into a proper strategy for continental security.

Canadian Procurement Policy

Rebuilding the RCN will require not only significant resources, but a refined approach to procurement. One of the most damaging structural flaws in Canada's approach to defence has been to tie (and even subordinate) vital questions of security to more politically saleable matters of industrial development and employment. Rarely does an announcement of a defence contract cite operational requirements or address the military necessity for delivering new capabilities. The focus is jobs (employing inflated numbers), economic benefits (with similarly inflated dollar values), and regional development equity. Each of these elements (jobs, industrial strategy, and regionalism) increases the costs and time to reach decisions, as well as the complexity of the procurement. While this is an unavoidable political and social impact reality, the urgency of the current security environment demands that governments begin rebalancing their priorities, placing more emphasis on results and deliverables, and less on the optics of spending.

Efforts to make procurement more efficient should also lead to radical shifts in Canadian purchasing rules and requirements. While Public Services and Procurement Canada (PSPC) is mandated to ensure procurement is fair and competitive, history has

shown that its traditional approach does not work on complex warships, comprised of sophisticated weapons, sensors, and power generation systems, that demand total system of systems integration. Rather, history has shown that a great deal of time and expense can be saved by purchasing Military-Off-The Shelf systems that are identified by the end-user. This process breaks with established government practice since many of these systems may not be the lowest priced solution, though their immediate availability and established supply chains offer lower risk, guarantee price, and deliver solutions quickly – often leading to lower costs in the long run.

Improving defence procurement also means prioritizing speed. In March 2024, former National Security Adviser Richard Fadden made the point that public servants should be encouraged to recommend certain procurement projects be exempt from some or all the red tape that typically governs government purchasing.¹² This suggestion best addresses the conundrum of the current Industrial and Technological Benefits (ITB) policy (often referred to as offsets) which should, at a minimum, be critically reviewed and radically downscaled. ITBs were designed to leverage defence and security

History has shown that a great deal of time and expense can be saved by purchasing Military-Off-The Shelf systems that are identified by the end-user.

procurement to create jobs and economic growth, in very specific areas called Key Industrial Capabilities. Notably, they were *not* designed to procure the best equipment and services in a timely manner. The ITB policy requires companies awarded defence contracts to do business in Canada equal to the value of their contracts and forms a significant part of bid assessment alongside technical evaluation and costing. However, because Canada has a limited military industrial complex – as the national demand is insufficient to support this industry – that means high tech military equipment, which is prominent in warship design and construction, is necessarily procured from outside Canada.

The offset policy, administered by Innovation, Science & Economic Development Canada (ISED), is further complicated by Canadian Content Value (CCV) calculations that are part of the policy, whereby a smaller Canadian owned and operated company can only offer a maximum of 100% in CCV. Whereas larger (mainly foreign) corporations can use cash investments (with multipliers) to substantially increase their offset portion of the bid, in reality, bidding 100% of contract value is insufficient to be competitive where the ITB portion can frequently represent 20% of the overall bid assessment and is often the determining factor in the winning bid. Bids reflecting offset commitments as high as 500% of contract value are not unheard of, which essentially requires the engagement of corporations with substantial financial resources, not the Canadian Small Medium Enterprises (SME) the policy was supposed to champion. This was certainly the conclusion of the Parliamentary Budget Officer in his 2022 annual report of contractor obligations.¹³

The travesty for Canadian companies (particularly SMEs) supposedly supported by this policy is that, from the ISED perspective, this is a win for Canada as they are ‘achieving’ multiples of the contact value in investments. The fact that this policy delays the procurement process and significantly inflates the cost of the goods and services being procured (as industry must recover costs) is simply not a concern for ISED. This sad state of affairs demands immediate corrective action.

Even with a reformed set of requirements and priorities, DND will need to enhance its ability to move programs quickly and efficiently through the system. To begin with, DND must expand the ranks of procurement experts, which are currently depleted.¹⁴ This procurement capacity must be strengthened outside of DND as well, since defence procurement in Canada is a whole of government process, with three key departments – DND, PSPC and ISED – effectively having an equal say in the process.

In this process, DND is represented by both the military and civilian branches of the department. In naval procurement the Commander RCN sets the requirement as the Project Sponsor and the Assistant Deputy Minister (Materiel) conducts the procurement as the Project Manager, normally through a dedicated



*An MTOG conducts a boarding exercise during Operation Projection
(Photo: Lynette Ai Dang, CAF)*

project management office (PMO) for large capital projects. PSPC supports the PMO as the contracting authority for Canada and is mandated to obtain the best price for goods and services by using a competitive bid process whenever possible. Finally, ISEDC is tasked with ensuring the winning bidder commits to conducting business in Canada equal to the value of the contract. This process is lengthy and involves significant coordination by the DND PMO, as all three departments must agree for a project to proceed.

In 2014, with considerable fanfare, the Government of Canada announced the Defence Procurement Strategy, a government-wide initiative to improve defence procurement involving four federal departments (DND, Department of Fisheries and Oceans, as the owner/operator of the Canadian Coast Guard, PSPC and ISEDC). Many specific objectives were established – but in the main, most have failed to advance. There have been challenges in bringing projects to fruition, no improved understanding of available industry solutions, unrealistic defence industrial objectives, an absence of meaningful dialogue with industry, and the failure to create a true risk sharing framework.

Funding Methodology

Major naval ship procurements are complex investments made over several decades. Unlike most other large purchases (as most people understand them), the funding methodology used in naval procurement covers both capital acquisition (the ships) and recurring operating and maintenance costs. Once these programs begin to deliver ships, the Operations and Maintenance component of funding addresses what is called in-service support (ISS), which includes docking work periods, maintenance (beyond any ISS coverage), and the supply of parts and ammunition. As new vessels – such as AOPV, CSC, Joint Support Ships (JSS), and eventually submarines are introduced, a shift toward a more effective multi-year operating and maintenance cash flow mechanism is necessary to build a more reliable and efficient system – what is called improved programme integrity. DND's Departmental Results Reports show a disturbing downward trend in the

Rapid Adaptation to New Technologies

A radically reformed procurement policy is made necessary by the global strategic environment, but also by the pace of technological change. Military innovation, and naval technology more specifically, are changing at a rate unseen in history. Today, the most critical developments are in persistent high bandwidth battlefield networks, artificial intelligence/large-data processing systems, autonomous vehicles, persistent satellite constellations, hypersonic missiles, and directed energy weapons. Many of these innovations are interrelated and combine to dramatically enhance a ship's lethality. For example, large numbers of autonomous aerial, surface, and subsurface vehicles are being networked together, thereby aggregating their sensor data into a large pool that is then analyzed by advanced processing systems to provide an unrivalled view of a battlespace. These advances have led to new doctrines to harness these developments.

The RCN, PSPC, and ISEDC must craft and implement coordinated strategies, doctrine, and procurement management approaches that take into account the rapid pace of innovation. This means identifying new technologies early and maintaining a broader command-level adaptability to change. In particular, the RCN must adapt to software-enabled capabilities.

Bespoke software that has traditionally been updated only during major modernization is no longer appropriate. Military systems must adopt commercial upgrade cycles, an essential feature as capabilities become increasingly connected. In short, industry, not defence, is driving innovation and change, which the procurement process must echo. The current process reflects 1980s policies and must be brought into the future today.

readiness and availability of fleets – especially naval fleets. Simply put, the Navy is rusting out owing to chronic underfunding. Further aggravating this situation are critical process issues. At the end of the fiscal year, all unused operating and maintenance funds are returned. The result is that the Navy has difficulty committing to long-lead major maintenance contracts with industry beyond the horizon of the current fiscal year. This places managers in an awkward position, where approving future requirements could result in serious consequences should budgets shift and funds fail to materialize.

These factors contributed to the decision to retire the Iroquois-class destroyers and the Protecteur-class fleet replenishment ships and have resulted in the near-demise of the Halifax-class frigates and Victoria-class submarines. The artificialities of the ‘fiscal year’ framework – applied to multi-year projects – confuses and overcomplicates contracting around ship and weapon systems maintenance and often results in “opportunity spend” of precious operations and maintenance funds on non-priority items, simply because they are readily available at year-end.

As the Navy builds new classes of vessels, develops a ‘digital navy’, and a refreshed modern naval institution, Canada must improve its mechanisms surrounding the management of ‘Vote 1’ operations and maintenance funding. A more flexible methodology, based on a multi-year model that is stable, predictable, and absolutely dependable must be developed. Long lead commitments, such as dockyard work periods, that were part of the lifecycle costing at time of project implementation approval, or new funds to sustain naval fleets approved under the DPU, should be considered as approved programme components to enable military planners and industry to manage fleet availability and readiness. Addressing these collective issues requires policy change outside the purview of DND and should be a prominent element of the ongoing Defence Procurement Review.

Shipbuilding

The decision to build Canada’s federal fleets at home, rather than procure them abroad, was an important one, with significant economic and strategic ramifications. Canada’s revitalized yards provide thousands of jobs and significant economic benefits; however, they also represent an underappreciated strategic asset. Across the NATO alliance, shipyards are now operating near capacity, with clear implications for the alliance’s ability to rearm in the face of Russian aggression and Chinese threats. Even the United States has only two shipyards that produce

Canada must shift from its current priorities of minimizing immediate costs to maximizing productivity and economies of scale.

major surface combatants (soon to increase to three). This means that Canada should possess roughly 25% of North America’s high-end surface combatant shipbuilding capacity by 2030.¹⁵ This capability is essential not only for building but also maintaining complex warships. As the Covid pandemic showed, a domestic capacity for strategic goods is vital in a crisis, as even close allies will prioritize domestic needs before allowing exports.

The National Shipbuilding Strategy (NSS) made solid economic and strategic sense at the time it was released, but it now needs to be adapted to changing global strategic dynamics. The world is a more dangerous place than it was when the program was launched, and Canada must shift from its current priorities of minimizing immediate costs to maximizing productivity and economies of scale. Most shipyards build in batches or ‘flights’ of three or four ships. The Canadian Patrol Frigate Project (twelve Halifax-class frigates) was built in two batches of six, with the first split between Saint John Shipbuilding in New Brunswick and MIL-Davie in Quebec, and the second in Saint John. The third batch of six was subsequently cancelled due to cost

concerns. Even though this particular split among the shipyards decreased efficiency and increased cost, the multi-ship build strategy in general allowed the buyer to secure better prices when purchasing equipment, particularly long lead items, as well as leveraging work force efficiencies in continuous build programs.

With the CSC, however, Canada has chosen to build in much smaller flights, extending the build schedule to maximize employment and spread costs over an unprecedented 33 years. While a slower build will realize some cost savings in the short term, it makes the program more expensive in total. A case in point is the British Queen Elizabeth-class aircraft carriers,

preserve jobs prior to an election. By delaying the ships for about three years, the government effectively doubled the price. The solution is a continuous build to keep yards at maximum efficiency (usually about one ship delivery per year, while the presently planned Canadian program aims for one every two years). The advantages of this more aggressive build schedule are well demonstrated by the highly efficient Japanese and Korean shipbuilding program today. Additionally, government needs to start considering what will be the follow-on approach to the NSS in order to maintain the shipbuilding industry as a long-term contributor to Canadian economic stability.

MV Asterix conducts a Replenishment at Sea with HMCS Montreal (Photo: Braden Trudeau, CAF)





CSC illustration (Photo: Lockheed Martin)

The Future Fleet

This paper has made the strategic argument for a balanced and combat capable Canadian Navy. While the precise composition of that fleet remains uncertain, the core elements of the fleet currently in delivery are clear and are summarized below.

Canadian Surface Combatants

The CSCs are the planned replacement for Canada's now retired Iroquois-class air-defence destroyers and the current fleet of Halifax-class frigates. The requirements to defend the sea approaches to North America and operate interchangeably with allies in a sea control mission anywhere in the world drive the capabilities of the CSC. As a result, they are the most complex and expensive element of the NSS, and the intent is to procure fifteen of these vessels. For a small, general-purpose navy, a single class of vessels using one design provides flexibility in mission planning, training, crewing, and ensuring operational readiness. There are also clear supply chain advantages and economies of scale achieved by having fleet commonality.

These ships must be capable in all warfare areas, including area air defence against cruise and ballistic missiles, anti-submarine warfare against the most modern enemy submarines, and anti-surface warfare to deny enemy ships the ability to project power. They must also possess electronic warfare capabilities to ensure survival in a modern theatre of war, cyber warfare assets to leverage the activities in other domains, and precision strike capability to enable Canada to project power from the seas. Such ships need to be at the cutting edge of technology and large enough to operate for extended periods far from home on the open ocean. Additionally, to have all these capabilities on board and to provide room for upgrades as new threats emerge, the CSC demand a growth margin to allow for the addition of new capabilities to ensure continued relevance.

These vessels will require a long-term maintenance cycle to ensure the availability of the ships throughout their service life. Cutting any of the current in-design capabilities or the planned numbers would be ill-advised in that such actions would limit even the minimum response capability and impact Canada's commitments to NATO and in its plans to achieve some core objectives of the *Indo-Pacific Strategy*.

Canada has chosen to build the CSC over an inordinate length of time, 33 years. To ensure that current Halifax-class does not reach the point of unserviceability due to system obsolescence and rust out, the CSC build should be accelerated such that delivery of the final ship occurs no more than fifteen years after the first.

Submarines

Modern submarines bring a flexible mix of capabilities to a state: Intelligence, Surveillance and Reconnaissance, area denial, strategic ASW, and the ability to counter hostile surface and subsurface intruders. They are also the only strategic capability in the Canadian arsenal, given their ability to control the water column through their very existence. Because they cannot be easily detected, the presence (or assumed presence) of a submarine serves as a deterrent to potential adversaries, altering that opponent's decision-making across an entire maritime theatre.

In peacetime, submarines can monitor large undersea areas for other submarines and detect and track surface vessels at great distances. This ability makes them exceptional surveillance assets and, in times of conflict, they are Canada's most effective means of countering enemy submarines or surface craft to ensure the safety of Canada's coasts. They are also the best platforms for operating in dangerous environments where surface combatants would be at risk from air- or ground-based missile attack.

Presently, the RCN is exploring options to replace the current fleet of Victoria-class conventional submarines. Canada has two coasts on which to simultaneously maintain a submarine capability and vast distances to travel to Arctic operating areas as well as overseas deployments. The RCN also operates independently and as part of an alliance. These geographic and operational realities dictate fleet sizes and vessel design requirements. The following section outlines what the NAC considers necessary to effect timely delivery of a new fleet of diesel-electric submarines to meet Canada's requirement.



HMCS Corner Brook departs its maintenance shed in Esquimalt (Photo: James Charsley, BCI)

Canadian Submarine Requirements

Propulsion

Nuclear propulsion has been advanced as an option to provide Canadian submarines with maximum range and endurance as well as a true under-ice capability. While offering significant benefits in both speed and endurance, nuclear submarines are not a realistic choice for the RCN. The recent Australian decision to acquire a fleet of nuclear-powered attack submarines, for a projected budget of \$368 (AUS) billion, is instructive and almost certainly represents an over-reach in the RCN's resource-constrained environment. Nuclear propulsion also entails longer build times in nuclear-capable shipyards, which are currently incapable of meeting Canada's finite twelve-year window. Moreover, it would also require continuous political support, spanning many governments, to put in place the necessary nuclear infrastructure to support these submarines. As such, Canada's next generation of submarines must be conventionally powered vessels.

Size

Canadian submarines must have the range to travel great distances, without access to support facilities, to patrol Canadian areas of responsibility – notably the approaches to the Canadian Arctic. This demands an ocean-going vesselable to transit roughly 3,500 nautical miles, patrol for three weeks and return without refuelling. Moreover, Canada has made it clear that it will follow IMO Polar environmental guidelines that preclude any discharge within 12nm of ice, demanding the ability of a patrolling submarine to store waste for prolonged periods. This requires a larger ocean-going submarine design that, heretofore, was the domain of nuclear-powered submarine.

Mature Design

Canada's procurement of the Victoria-class submarines from the United Kingdom was the result

of necessity, as the RCN acquired these vessels as an essential stopgap to maintain a vital capability. One of the lessons drawn from the Victoria-class was the difficulties of operating an 'orphan' class of vessel. With only four of them in the world, the submarines could not benefit from economies of scale for training, maintenance, or supply. This was in stark contrast to the previous Oberon-class, which was operated by several allies – from which Canada drew shared operational experiences and engineering knowledge, while benefiting from a healthy global supply chain.

This vital lesson must be applied to the ongoing submarine replacement program. The next generation of Canadian submarines must come from a mature design, with an established supply chain that can sustain Canadian operations efficiently and affordably and be in operational service with another Navy (not a stand-alone export variant). In practice this will require overseas procurement of an existing design.

Interoperability

In almost any scenario involving high-intensity combat, Canadian submarines will fight alongside allied forces. This requires RCN vessels to be interoperable with key allies, most importantly the US Navy. Communications and combat systems should be fully interoperable with the US Navy and, ideally, the Five-Eyes community.

Numbers

To maintain an operational submarine presence on both the Atlantic and Pacific coasts, the RCN requires, at a minimum, eight submarines. Typically, four submarines are required to produce one operationally available vessel, with three in various states of readiness, including one in deep maintenance, at any given time. This, however, is a minimum number to maintain a threadbare capability. Notably, in the recent DPU, in addition to committing

to the renewal of the submarine fleet, the policy implies fleet expansion; specifically, more than a one for one replacement of the four Victoria-class. This is significant in that the RCN requirement is for eight to twelve submarines, of which at least eight submarines are necessary to maintain simultaneous availability on the East and West Coasts, while twelve allows for the deployment to all three oceans.

Procurement

Canada does not have the domestic shipbuilding capacity to build submarines, nor is it feasible to establish that capability in a timely and cost-effective manner. As such, Canada must procure its next submarine fleet from an allied shipbuilder based on a mature in-service design. Options for Canada are not plentiful given that its requirements for a larger ocean-going conventional submarine are limited. Most European allies build smaller submarines suited to littoral Mediterranean and North Sea operations which are tailored to meet national requirements. Canada does not have the time – nor would it be efficient – to design and build a new class of submarines from scratch (or near scratch). The recent Australian experience with an *ab initio* design process for their Attack-class submarines (from a French design, now cancelled) has shown this process can be inordinately lengthy and costly.

While limited, there are existing options that can be modified to Canadian requirements. Considerations of speed, cost, long-term sustainability, and supply chain also dictate that changes to existing designs be minimal. While the available design options may not fit Canadian requirements perfectly, history has shown that the costs inherent to Canadianizing designs is often significant. Given the timeline to the Victoria-class retirement, speed and efficiency in procurement should be prioritized.

In short, Canada must accelerate the submarine replacement process by selecting an in-service submarine design that can meet Canadian requirements, without significant modifications, and be delivered by a proven ‘on time’ submarine builder. It is evident that there are limited options available to Canada in both design and delivery time.

The use of a rapid Invitation to Qualify process to determine the best option for Canada should be followed by immediate procurement action. These actions would not only expedite the replacement of an aging capability with a new submarine designed to meet national requirements, as articulated in the DPU, but also free up precious fiscal resources dedicated to maintaining an ever increasingly expensive legacy fleet.

Operations in the Ice

As the Arctic security dynamic changes, Canada’s future submarine capabilities will play an important role in regional security. While much of the Russian naval threat to NATO remains centred on the European High North, Russian submarines have steadily increased their operations in the Arctic Ocean. In spite of this, a true under-ice capability is beyond the reach of modern conventional submarines, and the RCN must recognize that it will not have the ability to work freely in the Arctic. In spite of this, the Navy should increase its coordination with allies in the region and pursue its next generation of submarine with a limited under-ice capability in mind in order to monitor activity from the more open waters that form a natural maritime chokepoint in the Labrador Sea and Davis Strait and south of the Bering Strait.

Propulsion technology has advanced to the point where Canadian diesel-electric submarines can operate more effectively in this area, with developments in non-nuclear Air-Independent Propulsion (AIP) technology now providing a conventional submarine with extended submerged endurance of multiple weeks without the need to snort (snorkel). A Canadian submarine presence along the ice edge will guard the entrances and exits to the Arctic Archipelago, to provide unmatched situational awareness and integrate subsurface surveillance into NORAD’s all-domain awareness.

Arctic and Offshore Patrol Vessels (AOPV)

The AOPV concept of operations remains valid and appropriate to the Arctic. However, as great power competition has increased, and the threat to Canadian interests and security have grown in recent years, the capabilities of the AOPV fleet should be reconsidered. While structural design modifications to the class would be inappropriate at this juncture, the RCN should consider increasing the ships' combat capabilities to bring them more in line with comparable allied Offshore Patrol Vessels (OPV). This would entail the addition of containerized anti-shipping missile systems and enhanced sensor suites to enable the class to function as minor warships, able to counter state-based hybrid threats in peacetime and defend Canada's coastline in conflict. Assuming this is an in-service missile system there will necessarily be a requirement for appropriate sensors that are not envisioned for this class of ship.

Given their commercial specifications, the AOPV will never be frontline warships. However, a more robust capability would expand their purpose to encompass a wider swath of the security spectrum, from pure constabulary safety and security operations to the defence of North American waters from hybrid threats and – in an extreme crisis – even engaging hostile vessels and tracking submarines. While the ships themselves are not acoustically groomed, a towed array and embarked helicopter can offer a reasonable sonar capability to act as a tripwire for other assets. The ships will always be constabulary patrol vessels, but strategic upgrades can help them to carry out that role in a more contested environment. The recent DPU commits to acquiring specialized maritime sensors for the DeWolf-class, as well as exploring options to enable these AOPVs to operate

The next generation of patrol ships should be built as combatants with a limited combat capability to augment front-line naval forces in increasingly contested seas

CH-148 Cyclone maritime helicopters at sea. These are positive steps towards improving the utility of these vessels.

Offshore Patrol Vessels (OPV)

In 2023, the Director of Naval Requirements began an 'investigation' into a patrol ship renewal, examining the RCN's replacement options for the Kingston-class. While a lower priority than either the CSC or submarine replacement projects, a new fleet of patrol ships will be vital to maintaining the RCN's long-term ability to provide sea days and effectively train crew while undertaking patrol and constabulary missions.

This replacement program will also be an opportunity to increase the RCN's combat capability in line with the growing emphasis on great power competition. The next generation of patrol ships should be built as combatants with a limited combat capability to augment front-line naval forces in increasingly contested seas. And, unlike the Kingston-class, these ships should also be built with a global deployment capability. It is noteworthy that a replacement project for the MCDVs was not addressed in the recent DPU. This shortcoming needs to be addressed in the first quadrennial review of defence policy expected in 2028. By that time, naval requirements for this capability will have progressed and be much further refined.

Replenishment Vessels

As mentioned above, Canada relies on the leased M/V *Asterix* to provide replenishment at sea capability while the RCN awaits delivery of the two JSS. This arrangement has proven flexible but also very expensive. A longer-term and more sustainable solution should involve the expansion of the new Protecteur-class. The ideal (and still realistic) number of AOR to support peacetime operations is four vessels with two per coast (assuming one always in a state of lower readiness or undergoing maintenance). Seaspan Shipyards currently has a hot production line

and long-term savings can be realized with more vessels as costs are amortized over a multi-ship build with a common supply chain. The DPU rather mutely commits to “preserving the RCN’s interim at-sea replenishment capability.” To be more direct, it is critical that Canada retain M/V *Asterix* for the foreseeable future until – at least – the second AOR achieves full operational capability.

Training Vessels

While public attention on RCN procurement has understandably centred on the more dynamic and costly CSC and submarine programs, the fleet’s training vessels are a more mundane – but vital –

capability in need of renewal. The RCN’s Orca-class training vessels will eventually require replacement as they are at midlife now. These training vessels have been in service since 2006 and are undergoing their second refit. The hulls and equipment aboard the vessels are of an advanced age. The average lifespan of a ship is 25 to 30 years. As such, the RCN should begin the planning phase of procurement for the future fleet of training vessels to ensure the Orca-class is replaced by 2036. An effective training fleet not only ensures that RCN personnel are prepared for service but offers a far more cost-effective training tool than relying on larger warships. Savings from the use of patrol ships (as opposed to new training platforms) is a false one, given the higher operating cost of the Kingston-class MCDVs.

HMCS Moncton (front) and HMCS Glace Bay (back) sail off the coast of Haiti during Operation Globe (Photo: Bryan Underwood, CAF)



A Fleet for Deterrence and Conflict



As outlined in this paper, naval power offers Canada its most versatile response across the threat spectrum. To be strong at home, Canada requires naval forces that can backstop the efforts of other agencies and departments mandated to protect our territorial seas and EEZ from economic, criminal, and terrorist threats. To be secure in North America, Canada needs forces that can deny potential enemies the use of the seas and the airspace above them. To defend allies and deter enemies abroad, Canada needs forces that can exercise sea control and project power, in concert with its allies, anywhere in the world. Thus, the *most basic* capabilities required by naval forces to accomplish these three missions include:

- Large, globally deployable surface platforms in sufficient numbers and capable of interchangeable operations with allies anywhere in the world, able to contribute to the maintenance of the rules-based international order in any crisis up to and including a great power conflict.
- Submarine forces that can operate in all of Canada's maritime areas to deny potential enemies the ability to threaten North America from the sea and deploy abroad in support of allied deterrence and combat operations.

- Support ships that allow the RCN to deploy globally and support allied and coalition task groups' operations.
- Lightly armed vessels designed to support the joint force and other government departments in exercising sovereignty, safety, and security mandates as well as enabling military operations in the littorals from the sea.
- Robust clearance diving capabilities postured to address legacy and modern day underwater non-submarine threats.

Though we characterize these as the most basic elements, the capabilities themselves require a high degree of sophistication. They must be interoperable and integrated into the pan-domain doctrine of the broader CAF joint force construct, noting modern day operations are occurring more and more in a complex, often contested operational environment. Success in the maritime domain is becoming highly dependent upon our combined advantages in the space, cyber, air, and land domains plus the information environment. Wherever possible across the assigned mission set, these capabilities must be interchangeable with the peer capabilities of our closest allies.

A Conceptual Fleet for an Age of Great Power Competition

To note: the expanded fleet requirements discussed below are based on the reality that, for a Navy to deploy one warship it needs at least four hulls: one deployed on operations, one returning from deployment (normally six months for major surface and subsurface platforms), one preparing to deploy, and one undergoing maintenance.

As outlined above, Canada is in the midst of recapitalizing its Navy in an age of renewed great-power competition. The RCN is expecting a fleet of modern, highly capable destroyers and eventually (in theory) eight to twelve submarines by the 2030s. While this building program will be one of the most expensive in Canadian history, if completed in accordance with current government direction, the number of surface combatants will still only provide Canada with a limited maritime response, essentially a peacetime navy.

The risks of not having the capacity to defend North America, the Canadian EEZ, the global sea lines of communication and, if necessary, project power against an enemy, are obvious. With only twelve (current) to fifteen (future) surface combatants, Canada will be limited in its ability to generate and maintain High Readiness Task Groups from both coasts to deploy for international operations. Moreover, based on the four to one ratio, Task Group deployments will only be possible for two rotations; in other words, insufficient capacity to participate in a protracted, multi-year conflict. This situation will worsen if casualties result.

In a period of conflict, an increase in crewed or uncrewed offshore patrol vessels will be required to maintain a continuous at sea presence in Canada's coastal waters and EEZ. Without an increase in replenishment ships local patrol operations and force generation activities will be hamstrung by the requirement to resupply from ashore. Additionally, any High Readiness Task Group deployment will have to rely on allied support, which cannot be guaranteed. Finally, without a fourfold increase in

numbers to the submarine force, it will be severely constrained in its ability to maintain its readiness, while at the same time achieving a continuous at sea presence to meet both international and domestic requirements.

Given the above, the NAC recommends that the Government of Canada consider expanding over time the RCN's fleet size to deal with domestic maritime security requirements and provide the ability to contribute to an allied response to a serious, long term international conflict in a meaningful way.

First, given the current and emerging threats and the possibility of concurrent conflict in both the Atlantic and the Pacific Oceans, each coastal command should possess the capability to deploy a High Readiness Task Group of three to four combatants accompanied by an AOR. Therefore, the number of major surface combatants required would be twelve to sixteen per coast for a total of twenty-four to thirty-two. Surface combatants that are operational but not part of the High Readiness Task Group could be employed at force generation (training) activities.

Second, given the flexible nature of their deployments, each coast should also have a second AOR to support local operations and a third at a lower degree of readiness, or in maintenance. Thus, optimally, there should be three replenishment vessels per coastal command for a total of six AOR vessels in the fleet.

Third, with respect to submarines: deployments are normally undertaken alone, but during times of conflict, vessels will combine to achieve high-priority missions. Canada's small fleet of four submarines has demonstrated the danger of maintaining such limited capacity; single deployments are difficult while larger, combined missions have become nearly impossible. At a time of heightened tension or conflict, each coastal command should be able to deploy at least one submarine in national waters and one internationally, simultaneously. Employing the four to one ratio, this leads to a submarine force of sixteen, with eight submarines stationed on each coast.

Finally, for local, constabulary patrols, given the size of Canadian Arctic internal waters and our coastal

EEZ, two crewed or uncrewed patrol ships (either AOPV or OPV) should always be at sea, with two additional vessels operating in the Arctic during the navigable season. Thus, the requirement is sixteen to twenty lightly armed vessels in the RCN to complement and provide security for those vessels of other government departments, for Arctic patrols, and for other taskings suited to the size and capabilities of these vessels.

The NAC recognizes that the current fiscal situation in Canada and other pressing priorities, combined with the existing human resource challenges within the CAF, make expansion of the Navy along the lines suggested an unrealistic goal in the short or medium term. However, it is the NAC's opinion that failure to acknowledge the risks and take corrective action as outlined above has the potential to impact the lives of Canadians in very consequential ways for generations to come.

Summary

For much of its history, Canada has lived with a 'fire-proof house' mentality. Protected by geography and great power partners, Ottawa has felt too comfortable underfunding and ignoring its own security, and that of its allies. In many respects, the country has escaped real consequences; however, we are now at a clear inflexion point. Modern technology and weapons proliferation have made non-state actors a new threat, while great power competition has become more unpredictable and dangerous than ever before. New weapon systems have removed much of Canada's geographic shield, and both Washington and our NATO allies are becoming less tolerant of Canadian freeloading.

Canada has long relied on Task Groups of multiple combatants supported by a replenishment vessel to deploy as self-sufficient elements of national power. However, the NAC assesses that fifteen CSC will only permit the RCN to keep from three to four ships (divided between the Atlantic and the Pacific) ready

to deploy at short notice, and available for regular deployments to critical theatres of operations in peacetime. This capability will be insufficient to meet the needs of Canada in the event of an international conflict in both the Atlantic and the Pacific. Should global conflict materialize along the lines of the threats outlined in this paper Canada will require a substantially larger fleet.

The conceptional fleet described above, while admittedly well beyond the government's current defence budget, provides an estimate of what Canada would need for a Navy capable of going to war and achieving success in the 21st century. To achieve this outcome the NAC proposes that the current NSS be followed by a second phase of continuous domestic shipbuilding that will provide the numbers required to give Canada the maritime capability it will need to respond to long term international conflict, while at the same time keeping Canada safe. All this means that a radical shift in Canadian thinking about defence needs to take place. New resources are required and a re-balancing of the defence budget towards expanded naval and aviation capabilities is an option that deserves serious consideration.

This report has made the case for more concentrated naval and aerospace investment, with a commensurate investment in the supporting domains and the information environment. Given the naval background of its authors, this is hardly a surprising bias, yet the case for increasing the maritime focus is clear. Rebuilding Canada's naval capabilities will take decades of concerted action and dedication. Structural reforms are needed to the systems that Canada uses to procure and maintain systems and crew its ships. Underpinning all of this must be a shift in political willpower. Defence can no longer be seen as an expensive luxury or a vehicle for industrial or employment policy. The risks of inaction are serious and have the potential to worsen in the coming decades. The defence of Canada – and its allies – is an existential requirement and must be treated as such.

Notes

¹ Catherine Lévesque, “Former Liberal foreign minister says Canada no longer ‘useful’ in world affairs,” *National Post* (January 16, 2024).

² For the best description of these threats see: Terrence J. O’Shaughnessy and Peter M. Fesler, “Hardening the Shield: A Credible Deterrent & Capable Defense for North America,” The Canada Institute, Wilson Centre (September 2020).

³ Transport Canada, “We all rely on international shipping—here’s what Canada is doing about it,”

⁴ Sarah Ritchie, “Canadian navy in critical state, could fail to meet readiness commitments: commander,” *CBC News* (November 29, 2023).

⁵ US Department of Defense, “National Security Strategy,” (2022).

⁶ “Joint Statement on Norad Modernization,” DND (August 14, 2021), cited in Adam Lajeunesse and Troy Bouffard, NORAD Modernization: Next Steps,” *Vanguard* (January 2021).

⁷ Terrence J. O’Shaughnessy and Peter M. Fesler, “Hardening the Shield: A Credible Deterrent & Capable Defense for North America,” Wilson Center (September 2020), 5, 7.

⁸ Nils Øvik, “Defence against help: A strategy for small states,” *Survival*, 15.

⁹ Norman Jolin, “Canadian Submarines – Whither the Arctic?,” *Vanguard* (September 2020).

¹⁰ Phil Webster, “Arctic Sovereignty, Submarine Operations and Water Space Management,” *Canadian Naval Review* 3:3 (Fall 2007), 14.

¹¹ Whitney Lackenbauer, “Threats Through, To, and In the Arctic: A Framework for Analysis,” NAADSN Policy Brief (March 2021).

¹² Richard B. Fadden and Guy Thibault, “Three ways

to improve defence procurement in Canada,” CDA Institute (April 6, 2022).

¹³ Albert Kho and Christopher Penney, “The Industrial and Technological Benefits Policy: An Analysis of Contractor Obligations and Fulfillment,” PBO (May 12, 2022).

¹⁴ “Military procurement chief wants defence firms to stop overpromising, underdelivering,” *CBC* (April 19, 2023).

¹⁵ Timothy Choi, “Strategic and Operational Considerations for Canadian Naval Shipbuilding,” Naval Association of Canada (2022).