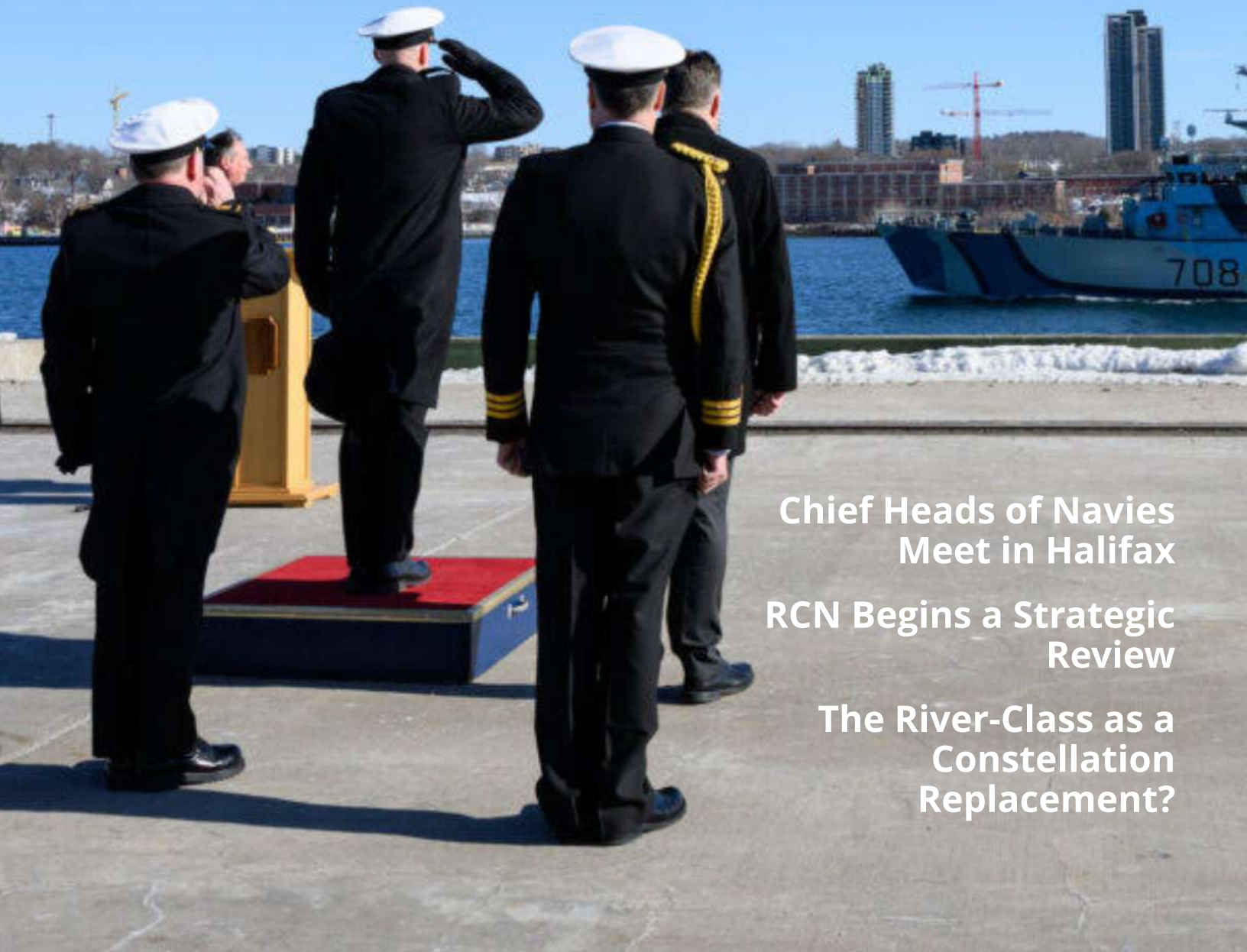
STARSHELL

WINTER 2026 | ISSUE 104

NAVAL ASSOCIATION OF CANADA

| The 35th Anniversary of Operation Friction |



Chief Heads of Navies Meet in Halifax

RCN Begins a Strategic Review

The River-Class as a Constellation Replacement?

HMCS Charlottetown transits the Mediterranean Sea while deployed on Operation REASSURANCE (Image: Gregory Cole, CAF)

Starshell

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Cover Image: Sail past as part of the 35th Anniversary of Op Friction Ceremonies (Dick Budge)

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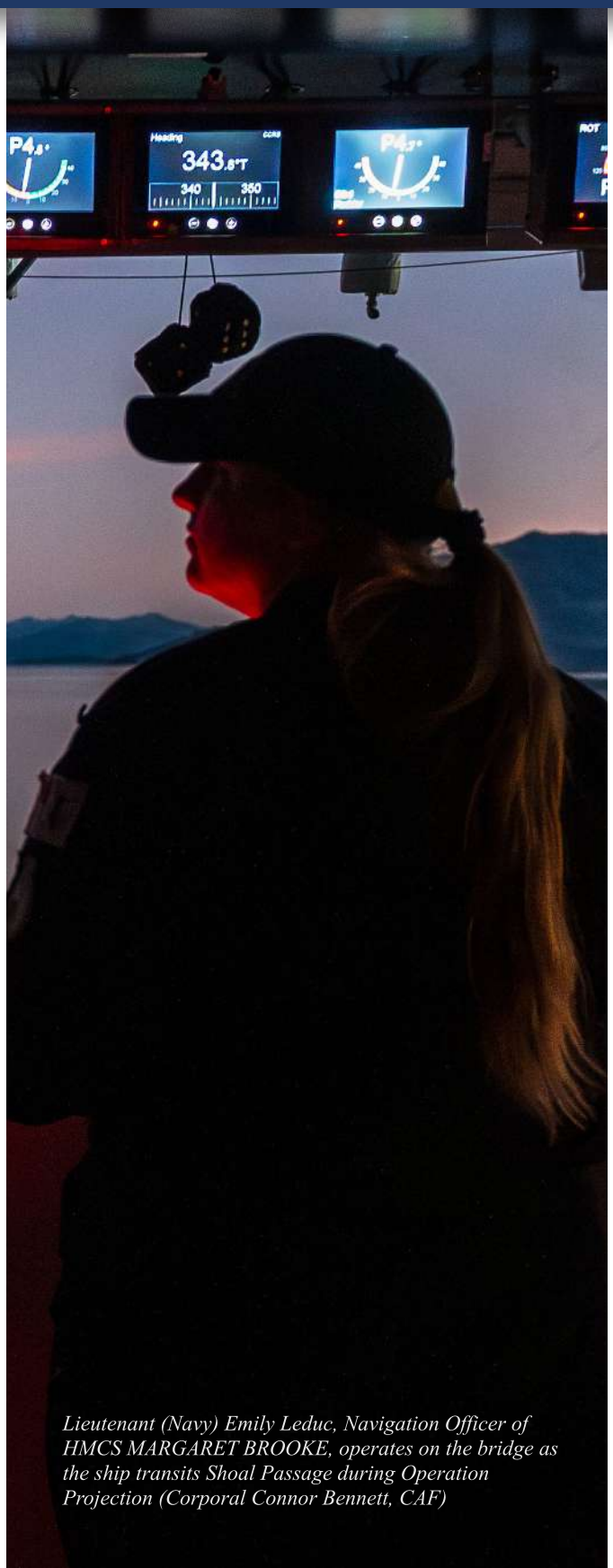

Lieutenant (Navy) Emily Leduc, Navigation Officer of HMCS MARGARET BROOKE, operates on the bridge as the ship transits Shoal Passage during Operation Projection (Corporal Connor Bennett, CAF)

WHEN FLEET COMMONALITY DEFINES OUTCOMES,
CMS 330 ADAPTS TO YOUR MISSION.

AHEAD OF READY

LOCKHEED MARTIN

From the Bridge

Steve White
President (NAC)

D'Ye Hear There!

Although I write this as the President of NAC, please let me reiterate our editor's disclaimer that these thoughts are exclusively my own, and not necessarily those of our organization.

My previous rendering of "From the Bridge" drew attention to upcoming changes in a number of issues affecting the World, Canada, DND, and the RCN. Over the past few months, it would appear that this change is not only continuing, but the rate of change and number of variables are increasing. I am hoping that the Canadian public will understand the potentially costly measures that will be required to overcome decades of static inertia and support efforts to improve our land, sea, and air defensive postures on all three coastlines. Closely affiliated with this notion are the global economic initiatives that are being led by Canada that will allow a greater freedom by middle power countries from existing and emerging global hegemonies. Canadians have successfully overcome geopolitical and economic pressures and difficulties in the past and should be prepared for dealing with a similar situation in the near future.

This issue highlights comments by several of the "Chief Heads of Navy" or their representatives on the topic of "Shifting Geopolitics." Interesting to note how naval and maritime issues are closely connected with the economic picture of both maritime and non-maritime nations. The narrative of the panel discussion that was held in Halifax is detailed, but well worth "hoisting-in!"

Considering issues closer to home, the effect of rapidly changing external tensions concerning Canadian sovereignty, defence of our arctic and upcoming changes to our future fleet are also well presented in this issue.

I have noted a recent incident reported in the media where a member nation had forgotten, or didn't understand, that NATO is purely a defensive alliance and must be continued to be treated as such by all members if it is to continue functioning as it has in the past decades. One must remember that Article 5 does not apply in an "offensive" operation initiated by a member against an outside party or (unbelievably) between members.

In fact, I think that NATO should be expanded, or paralleled by a similar group, to include like-minded nations around the globe, not just by those with ties to the North Atlantic area.

Lastly, I consider it imperative that those of us with current or background experience and knowledge in military and naval affairs share our thoughts with our civilian counterparts. I would also have you suggest that they join the NAC!

Yours aye,

Steve
Commander K. Steven White, BSc, CD, CAF/RCN (Retired)

National President

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Canada in Alliance

Maritime Security in a Changing World

Dates: April 29, 2026
Location: Hotel Halifax, Halifax NS

One of Canada's greatest historical strengths has been its web of alliances and partnerships. These structures have long framed its defence policy and, today, global tensions have only increased their importance. How Canada engages with partners and how it contributes – in both war and peace – are therefore of vital importance.

This one day-conference brings together defence experts, CAF personnel, and policymakers to examine Canada's part in collective security at sea. Participants will provide insight into how Canada works with partner navies and coast guards and how it operates within, and benefits from allied frameworks. The intent is to provide new insights into how Canada can leverage its position and how it can do more to contribute to global security.

Key Objectives

- To assess Canada's strategic value and position within allied naval operations and planning.
- To discuss how Canada can support and reinforce allied efforts in both war and peace.
- To identify what allies expect from Canada in terms of capabilities, support, and leadership.
- To explore opportunities for joint innovation, interoperability, and readiness in maritime defence.

For more information

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The Naval Association of Canada is a national, non-profit organization that promotes informed public discussion on naval and maritime security issues.

From the Ops Room

Tim Addison, Director

As in the past, I'm going to lead off with some comments on international security developments. We are all getting a daily barrage of information on the US-Israel-Iran War, so I am not going to go there other than to say, what a mess. The Russia-Ukraine War also continues to drag on with no end in sight. Instead, the focus is on the Asia Pacific and events that are not in the mainstream news but are worthy of awareness.

First, China has developed a new high-power microwave system to counter drones. Its developer, state-owned defence contractor Norinco, has disclosed some details of the weapon system and has stated that this system reportedly has a longer range than its US military equivalent. The truck-mounted Hurricane 3000 was showcased during China's huge military parade last September. Its effective interception range exceeds 3km [1.86 miles] against light and small [unmanned aerial vehicles] and drone swarms, placing it at the forefront of similar systems both domestically and internationally.

In late February it was revealed by CNN that U.S. intelligence agencies believe China is developing a new generation of nuclear weapons and has conducted at least one covert explosive test in recent years. Reports also suggest China is developing low yield tactical nuclear weapons, a capability it has not previously produced, which could potentially be deployed in regional conflict scenarios, including tensions over Taiwan.

Also in February, China launched its first next-generation Type 095 nuclear-powered attack submarine (SSN), according to satellite imagery analysed by defence experts. Images captured between February 9th and 12th showed the vessel being fitted out at the Bohai Shipyard in Huludao, Liaoning province, according to Janes and Naval News. Defence analysts have said that imagery revealed a new design with advanced acoustic stealth and strike capacity. The most prominent visual feature of the new submarine – NATO code name Sui-class – is its X-tail rudder configuration. It is the first Chinese nuclear submarine to feature this design, which improves maneuverability. It also appears to be equipped with a pump-jet propulsor, which is critical for reducing a submarine's noise signature. This has already been used on the Type 093B – the latest variant of the Chinese navy's existing Shang-class submarines.

Beijing is also reportedly on track to have the fissile material necessary for more than 1,000 nuclear warheads by 2030. Beijing has also been testing its 155 mm (6.1-inch) naval gun to boost the PLA Navy's land-attack firepower. The weapon would be the biggest in the People's Liberation Army's naval arsenal and could be useful in an amphibious operation against Taiwan. Photos of the massive weapon mounted on the bow of a test vessel have recently emerged on Chinese social media.

There are reports that the PLAN may be

preparing to launch a new type of guided missile nuclear submarine (SSGN). This submarine would improve PLAN undersea warfare capabilities and enhance the PLAN's ability to restrict the movements of enemy surface fleets in the western Pacific as part of operations to take control of Taiwan. China has also invested heavily in undersea cables and sea-floor mining, potentially undercutting the US lead in undersea warfare. The PLAN has also taken into service two additional Type 903-series fleet replenishment oilers (AORs). Imagery circulating on social media last week shows the two auxiliaries wearing their hull numbers, docked at a PLAN naval base.

China's maritime militia was deployed in "record-high numbers" across the disputed South China Sea in 2025, according to a US think tank report. The fleets consisted of both professional militia and civilian members of the "Spratly Backbone Fishing Fleet", a state-subsidized maritime militia consisting of hundreds of large fishing vessels with a near-permanent presence in the South China Sea. Recently the fishing fleet was observed conducting military like maneuvers, with the vessels formed up in extended north – south lines hundreds of miles long, perhaps another drill in support of a possible Taiwan invasion.

Meanwhile North Korean leader Kim Jong Un has continued to rattle his sword. He claimed his nuclear-armed country could "completely destroy" South Korea if its security were threatened, reiterating his refusal to engage with Seoul, state media said earlier this year.

In response to this deteriorating international situation, Canada is expanding the navy. Ottawa is moving forward with its purchase of up to 12 conventionally powered submarines to replace the VICTORIA Class, starting no later than 2035. I've been following this closely and note that there already has been a lot of commentary out there over the past year. Indeed, we have covered this project extensively in STARSHELL, but not in this edition so I'll take the opportunity to add my two cents.

Most will also know that last August there was a down-select by the Government of Canada from the five potential bidders (a sixth, Japan, had already

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declined to participate) to two. In mid-Nov 2025 the two qualifiers were sent a "proposal preparation instruction", a 40-plus page doc which outlined the evaluation criteria - 20 per cent of the decision on the platform, 50 per cent on sustainment, 15 per cent on the company's financial wherewithal and the remaining 15 per cent on economic benefits that can be offered in relation to the contract.

On 2 March the competition moved into a new phase after the two finalists submitted their final responses to the federal government. I understand that over the next several weeks (up to 6 April) Canada has reserved the right to communicate with the two bidders to ask questions and get clarifications on their submissions. There may be presentations by the bidders on their responses, including sustainment plans and economic benefits. From there the expectation is that the preferred partner will be selected by mid-June and contract negotiations will commence. Should an impasse occur, Canada has reserved the right to negotiate with the other qualified bidder.

This is an incredibly fast procurement as compared to the historical norm. It is now in the hands of the newly created Defence Investment Agency (DIA), which is currently a Special Operating Agency, part of Public Services and Procurement Canada (PSPC) headed by Secretary of State Stephen Fuhr. According to the Government of Canada website "the DIA will consolidate procurement processes – removing duplicative approvals and red tape, accelerating defence procurement, and providing industry with greater clarity and certainty. With a centralised process of review and approval, procurements will advance faster. Specialised staff at the agency will have expertise in defence acquisitions, ensuring focused planning and execution." I am told a number of staffers from DND and PSPC have been moved over to DIA to execute all these large (over $100M) defence procurement projects.

Getting back to submarines, option one under consideration is the Jangbogo-III (KSS-III Batch 2) submarine built by South Korea's Hanwha Ocean which features a hydrogen fuel-cell Air-Independent Propulsion (AIP) system with lithium-ion batteries. At

4000 tons dived displacement these submarines are very close in size to the old USN Sturgeon class SSNs – they are big boats. Yes, they also are designed with in-hull vertical launch missile systems in addition to standard torpedo tubes. This is obviously a South Korean government requirement given their location next door to the ever-threatening regime next door. Keep in mind these compartments can be modified to launch other types of munitions, including land attack missiles.

Hanwha submitted an unsolicited proposal early last year, which included costs, outlined plans for training and sustainment capabilities in Canada and stated they can deliver 4 submarines by 2035, based on a contract award of 2026. A delegation of more than 20 Canadian companies, including partners such as Algoma Steel, MDA Space, Telesat, Ontario Shipyards, Irving Shipbuilding, Seaspan Shipyards, Davie, Gastops, Hepburn, Boreal Energy, CAE, Babcock Canada and L3 Harris Canada, visited the Hanwha shipyard in Geoje, South Korea in early February.

On 25 February, the Canadian Government and South Korea signed a defence agreement related to the exchange and protection of classified military and defence information. No doubt this agreement will have connections to the submarine deal if Hanwha wins.

Sustainment will be a huge component of the overall cost of the Project. Hanwha is teamed with Babcock Canada who is responsible for VICTORIA Class in-service support. Hanwha has also engaged numerous Canadian companies as potential sub-contractors for in-service support once the boats are in delivery and they have signed multiple strategic memorandums of understanding with Canadian companies - Algoma Steel, Telesat, MDA Space, Cohere, and PV Labs - to establish an industrial cooperation network linked to the submarine deal. Hanwha has stated it intends to use Algoma steel in both Hanwha's vessels and in the construction of the CPSP maintenance facilities, should it land the submarine deal. Hanwha also held a Partners event in Ottawa on 5 March where their new CEO in Canada, Glenn Copeland, a former shipmate of yours truly, was introduced. Their high-level Korean partners KTE and LIG did briefs and Hanwha and those companies signed MOUs with GeoSpectrum, Ultra Marine, JSquared, Safran Canada, and AKA Energy Systems at the event.

The second option under consideration is the Type 212CD (Common Design) submarine being built by the German shipbuilder ThyssenKrupp Marine Systems (TKMS) in partnership with Norway. The new Type 212 CD submarines will share the low signatures of the Type 212 boats in service with the navies of Germany and Italy but will have extended range, speed, and endurance to allow worldwide operations, according to TKMS. The Norwegian government has announced its intention to procure a total of six submarines and the first vessel is expected to be delivered to the Royal Norwegian Navy in 2029.

TKMS opened a new website (https://team212cd.ca/) dedicated to the CPSP. They also signed an agreement with Seaspan on 28 January to establish a maintenance facility for the new submarines. The company said the facility is a critical part of Canada's strategy to have as much work on the program, estimated to be between $20 billion to $24 billion, done by Canadian companies. TKMS has also held several receptions in Ottawa over the past few weeks targeting government officials and RCN personnel. TKMS has stated that if selected they will deliver their first boat to Canada by 2032.

There was a third design which got some consideration by Canada because it was for a submarine already in the water, that being the Spanish S-80 built by Navantia. Reportedly Navantia executives were planning an industry day last fall when they were caught off guard by the announcement that they were eliminated from the competition. This is understandable given that their proposed design was already in service with the Spanish navy.

The expectation is that the CPSP will move from Options Analysis into Project Definition by the end of this spring. At recent industry events senior RCN officers stated that an award announcement will take place likely in mid-June 2026 prior to the House of Commons rising for its summer recess. Subject to negotiation between Canada and the preferred partner, contract award, which was anticipated for early 2027, could now occur in the Fall this year. Depending on the winner, delivery could commence in 2032 but not later than 2035 to meet the planned pay-off of the first of the VICTORIA Class.

The Commander of the RCN, Vice-Admiral Topshee has made it clear that his preference is to see a

Military off the Shelf, or MOTS procurement process. This is to avoid a long, drawn-out implementation process where the chosen submarine undergoes significant redesign to accommodate specific Canadian requirements. However, as I see it some degree of Canadianization will nonetheless occur at some point. It's a question of how much and whether it will occur during the build, just after delivery, or during the in-service phase of the submarine life cycle. Hanwha seems to be preparing for this possibility by engaging a number of Canadian/Canadian based equipment suppliers of various systems, including sonars, electrical distribution components and periscopes. This would enable Hanwha to accommodate a shift towards Canadian content during the build process, through build under license arrangements or a shift to Canadian suppliers after the first three or four submarines are delivered.

TKMS on the other hand appears to be waiting for the selection process to play out before engaging subcontractors. Their trump card appears to be the ability to score a political win based on Canada being more comfortable engaging a NATO ally for a project of this size and significance. Regardless of which submarine is chosen, there will be a continuous upgrade process as the submarines are delivered in batches of 3 or 4 over the life of the project and their service lives. The question remains, and this is a government of Canada Cabinet-level decision, will Canada choose the submarine supplier which can adapt to some level of Canadian content at some point in the build process, or choose to stick with the original design and add Canadian content after the first batch of submarines are delivered.

I will leave it there. There are a lot of other insightful articles in the edition. Read on!

Tim Addison, Director Naval Affairs

Alliances and Partnerships

Chief Heads of Navy Visit Halifax

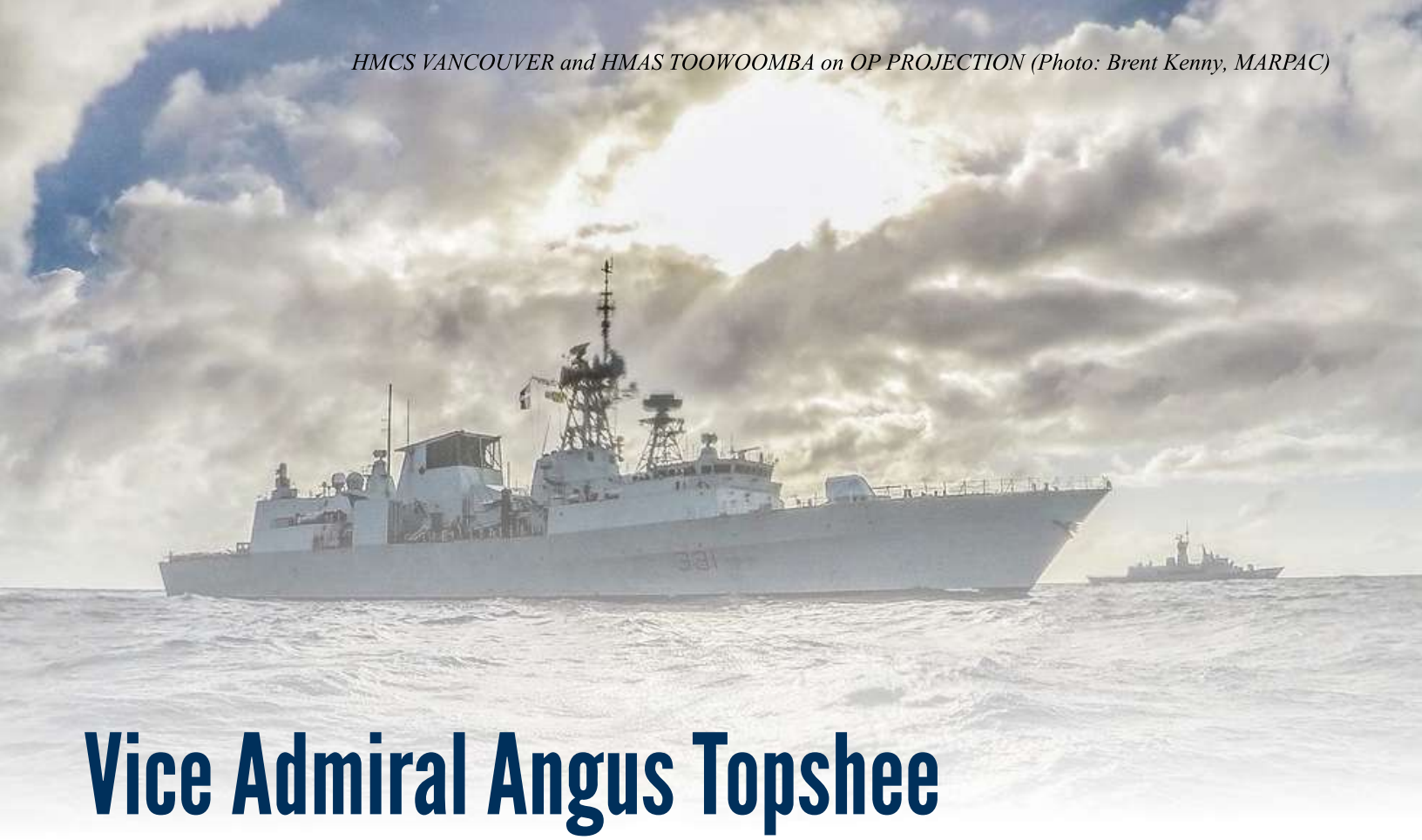
In October 2025 the Royal Canadian Navy hosted visiting Chiefs of Navy of allies and partners from around the world. As part of the trip the Admirals engaged in a public day where they shared their visions and concerns about global maritime security and the importance of alliances and partnerships in a world of shifting geopolitical landscapes.

The focus of the event was on the rapid transformation of the international system; including great-power competition, gray-zone operations, threats to undersea infrastructure, and disputes over maritime law - all of which are reshaping the security environment across the Atlantic, Indo-Pacific, and Arctic regions.

By convening leaders from countries with diverse strategic positions, from NATO allies to non-aligned maritime states, the event illuminated how a variety of partners interpret shared challenges differently and pursue different approaches to partnership, capability development, and strategic autonomy.

The dialogue underscored a key lesson: safeguarding the rules-based international order and the freedom of the seas requires sustained cooperation, intelligence sharing, and credible maritime capabilities.

These addresses show how Canada and a diverse set of partners are planning on dealing with these challenges and how middle powers and regional partners can work together to manage geopolitical uncertainty while maintaining the stability upon which global trade and security depend.



HMCS VANCOUVER and HMAS TOOWOOMBA on OP PROJECTION (Photo: Brent Kenny, MARPAC)

Vice Admiral Angus Topshee

Chief of the Royal Canadian Navy

I mentioned in advance about the fact we come to maritime security with different perspectives. And so, what I wanted to focus on today is the unique thing about Canada, which is our proximity to the United States. For much of our history, it has been a blessing. But if you think back to Confederation, the discussions between our provinces began in 1864 in response to the American Civil War. It was clear that, in a period of great conflict and distress in the US, they were potentially going to threaten Canada, and that what we needed to do was to come together collectively as provinces and form a union that would ensure that we could defend ourselves and our interests. The first things that we did, if you look at the history of that, were ensure that the network of coastal fortifications that the British had built were all aligned and still ready to go, and we defended our border against the Fenian raids and everything else. And fortunately for us, you know, that relationship soon shifted to one of close allegiance**.**

We are now very close allies, where it is impossible to defend Canada without also defending the US, and it's impossible to defend the US without also defending Canada. And you see that reflected in the North American Aerospace Defence agreement. You know, because the two people who were responsible for the air defence of Canada and the United States in 1957 looked at the problem and realized that the Soviet bombers that the American commander had to defeat before they reached Washington were going to fly across Canada. And he worked with his good friend from the Second World War to ensure that we basically erased the boundary from the point of view of air defence, because it didn't make any sense for us to maintain these air boundaries when it came to defending the continent. We created the only binational alliance in the world where the use of force can be ordered by either nation to actors from either nation, so a Canadian can give an order to an American plane to shoot down a target and vice versa. There are no red cards. It's a shared common foe that's been extended to the maritime domain because of that recognition that a submarine approaching the

coast of the United States is going to come through Canadian waters. How we share in that with the United States is through an integrated undersea surveillance system that they built, and Canadians at both Norfolk and on Whidbey Island, Washington, are a part of the monitoring of that system. Again, something that happens below the radar. There are 75 Canadian sailors stationed in the United States between NORAD Norfolk and Washington, monitoring the skies, monitoring the waters every day to make sure that these threats are detected and that we coordinate our response to them beforehand. And this is the value of that type of strategic partnership, one that is driven by geography but has also come from an alignment of interests.

Today, it's clear that some of our interests don't align completely when it comes to trade and other issues, but the fundamentals of our defence have not changed. That makes it very interesting for us. We keep a lot of what is happening below the radar, but the military-to-military cooperation is still quite strong. We still work with the Americans around the world in many things, but we're also monitoring carefully what's going on and wondering if their posture in the Caribbean is changing – and their willingness to use force in circumstances that we may not agree with. Will that drive a change to how we manage our cooperation in the Caribbean, their embarkment of US Coast Guard (USCG) and law enforcement detachments? So even in a close alliance, you still must make sure your interests align

Vice Admiral Angus Topshee, Commander of the Royal Canadian Navy (left); Vice Admiral Mark Hammond, Chief of the Royal Australian Navy (centre); and Vice Admiral Erwin Aldedharma, Vice Chief of the Indonesian Navy (right).

across all the issues. But the greater good of us working together is still quite clearly there, and the fundamental alignment of values is still there. We share an interest in peace, prosperity, and security. We may disagree on the definitions and the methods to get there, but nothing has changed in all of that. It has also reminded us in Canada that sometimes, it's good to have other allies.

You can see the importance the Prime Minister has attached to NATO and our moves to join ReArm Europe to make sure that we are firmly connected to that alliance. It's also driven by recognition that NATO is more about defending Europe than it is about defending all 32 Alliance members. In fact, almost all the NATO war plans are focused on Europe and the North Atlantic. There isn't one for Canada and North America. It's an interesting reflection of the fact that this has historically been a very Eurocentric alliance, which was designed to keep North America engaged in European security, not designed to have Europe engaged in North American security. I think now that we recognize the one-way nature of that alliance, it's driving a change and an expectation on our side, that should we be more demanding of NATO? Should we be asking that they look to support some of the infrastructure that we require here in Canada, that they do more exercises, that they develop plans to defend North America? That is not something NATO is terribly interested in, as it remains very European focused. I think in Canada, we need to be realistic about how much we will contribute to NATO in a conflict, because we still need to preserve our capability to defend ourselves.

Back here in Canada, we're also looking to the Pacific. One of the most successful things the Government of Canada has done recently is the Indo-Pacific Strategy, committing to send ships on a nearly persistent basis there, contributing to understanding in the region, working with allies and partners to enhance security. That has been very successful for us. It comes with a diplomatic uplift. We've added policy advisors and defence attachés to several countries in the region, and we're seeing benefits from that presence in a better understanding of the region and more confidence, in members in the region, that Canada will be there when they need it. I think that's a sensible investment on the part of the Government of Canada to build a broader network of allies and partners to represent our interests more globally. I look forward to discussion on all of that and how that shaped our differences. Geography drives a lot of these decisions. We will never be away from the fact of the proximity to the United States. How we balance the weight of that ally against the rest of the world is one of the challenges for all of us. And I think lately, the Government of Canada has made some sensible choices about how we find the best balance to protect our interests.

Vice Admiral Mark Hammond

Chief of the Royal Australian Navy

Thank you, and good morning. Good morning again. Angus, thank you again for your hospitality. Erwin, it's great to share the stage with you. Where to start? Let me start here, seeing as we're talking about allies and partnerships. A few years ago, I worked in the Pentagon as Australia's liaison officer to General [Joseph] Dunford, during the first year of the first Trump presidency. Something that Joe Dunford said to me has stuck in my head ever since, that the US derives its strategic advantage on the world stage through its ability to achieve results with and through allies and partners. The world's changed a little bit since those days, but that statement rings true for Australia in every single way. In fact, my philosophy on leadership has grown from that statement. I believe that leadership is about achieving results with and through our people. When I talk about maritime security for a nation like Australia, which is a

three-ocean island trading nation of about 25 million people, with the third-largest exclusive economic zone on the planet, that sits between the Pacific Ocean – the largest ocean in the world, whose surface covers more than the entire land mass of the world – and the Indian Ocean, which conveys two-thirds of the oil and fuel transport around the globe and one-third of bulk cargo, and is home to about one-third of the world's population... For me, there is no way that our small population, our small nation, can exist peacefully and continue to enjoy the benefits of economic security without strong maritime security. In fact, our economic well-being is derived from access to the sea, and in that context, access to the sea is an existential issue for our nation, and it has become the foundational plank for our national defence strategy. There is no economic security or national security for Australia without strong maritime security.

And as we all know, our tenure as Chiefs of Navy is defined by external factors. It's very rarely defined by the things we wish to be defined by. We are shaped by the policies and priorities of government. But in a way that I hadn't perhaps anticipated coming into this job, it is absolutely shaped by world issues in the context of Australia's experience of allies and partners. I came into this job just as the government was kicking off a national defence strategy, which very, very quickly reinforced the view that strategic warning time is a thing of the past. There is no such thing as strategic warning time, and my tenure has been characterized by a focus on accelerated preparedness, on optimizing the forces that we currently have and preparing for conflict. And I hope you'll excuse me for saying this, but I don't have the luxury of a strategy of hope our nation expects. I assume the worst and prepare for the worst whilst our diplomats and every other arm of government work to avoid conflict.

I have three pillars: diplomacy, deterrence, and defence. Now, diplomacy is all about allies and partners. We have several multilateral relationships in the region, and we enjoy good relations with almost every country in the region. In fact, I would offer that the Royal Australian Navy has become a partner of choice for so many of our neighbours. Garin and I – the ANZAC leaders, if you like, of our navies – are renewing our focus on strategic partnership. We don't talk about defence of the homeland in terms of Australia or defence of the homeland in terms of New Zealand. We're now talking about defence of the ANZAC homeland.

Just recently, Australia's signed a treaty with Papua New Guinea. If that doesn't tell you that there's a strong focus now on allies and partners, nothing will. That's the first treaty we've signed in over 70 years, and the relationships we enjoy across the Southwest Pacific are just as critical to us [as ANZAC]. We refer collectively to our Pacific family, and our relationship with Indonesia, I would argue, has never been closer. We enjoy bilateral cooperation, particularly between our navies, that is unprecedented. And one of my best friends in the region is Erwin's boss, the Chief of the Indonesian Navy.

So in the context of a world where access to the sea is no longer guaranteed, and for a nation that is entirely reliant upon it for our economic well-being, that has become an existential issue, which is driving government policy in a way that I've never experienced before. It is very rare that a Western government, when faced with a choice of buying either seven frigates or 11 frigates and a 4,000-ton reference design – very rare that they'll actually turn around and go, "Actually, yeah, it'll be 11, and there'll be those 6,200-ton frigates that Japan's building, and we want the first one in three years." That is the context within which we are serving direction to double the size of the surface combatant force as fast as humanly and legally possible, a direction to transform from a conventional submarine capability to a conventionally armed, nuclear-powered submarine capability as quickly as possible.

Last year, we rolled out the Tomahawk Land Attack Missile, the Naval Strike Missile, and the Standard Missile-6 and conducted successful test firings of all three of those in a six-month period across two classes of warship. That's unprecedented. War shot. Sea mines are also in inventory now – hundreds of them. In the context of this panel discussion around allies, partnerships, and maritime security, we could not have achieved any of those things without the support of our allies and partners. And old alliances

seem to be back in vogue. A lot of people don't realize that when our ANZAC troops sailed across the Indian Ocean in World War I, our 10,000 troops on the first convoy were escorted by an Australian warship and a Japanese warship. Everybody thinks about the relationship between Australia and Japan through the lens of World War II. But in World War I, our Navy was deployed to the European theatre, and a squadron of Japanese warships, at the Australian government's request, was based out of Sydney Harbour to defend our access to the sea whilst our Navy was deployed with our allies and partners. Now, the relationship with Japan is one of our closest and most important in the region, and in the context of the Indo-Pacific, the reality is there is a lot of anxiety.

A foreign minister of defence said to me the other day, about two weeks ago, that the Chinese circumnavigation of Australia earlier this year created anxiety in the population of Australia, but it created anger in that nation's population. We are living in a time where we are seeing unprecedented actions, unprecedented disregard for the rules and norms that have underwritten peaceful access to the sea for so many years. We are partnering now with the Philippines in a way that we haven't before. A lot of people ask me why. Why, given that the Philippines is such a long way away from Australia? Well, like Canada, we are the custodians of one of the largest exclusive economic zones on the planet. And our rights, our sovereign rights, that arise from that incredible privilege are enshrined in the United Nations Convention on the Law of the Sea. Our rights are the same as the great nation of the Philippines, but theirs are being denied to them because one actor has decided to interpret or disregard the international rules-based order in a different way. In that context, our national interest is acutely engaged, and the outcome of that competition will ripple across the globe. If one nation's rights in the maritime domain are no longer valid, and they are denied due to one nation's behaviour, then that applies to every single one of us.

So be in no doubt that the strategic competition that is occurring across the globe right now, highlighted in several acute pockets, whether in the South China Sea, the Red Sea, Ukraine, or the Black Sea, are not isolated events. Everything is connected these days, and the outcomes of those competitions will affect the well-being and the experience of our children and generations to come. So back to my opening statement. Our tenures as chiefs of service are shaped by external factors. The external factors right now have strategic implications, and our bulwark against the negative impacts that arise from that is very much

Vice Admiral Angus Topshee, Commander of the Royal Canadian Navy (left); Vice Admiral Mark Hammond, Chief of the Royal Australian Navy (centre left); Vice Admiral Erwin Aldedharma, Vice Chief of the Indonesian Navy (centre right); and Dr. Rob Huebert (right).

enshrined in our alliances and partnerships, which we are doubling down on. The implications for all of us are significant if we get it wrong. The benefits for all of us are huge if we get it right. For those in uniform in the room, can I just say thank you for your service? I honestly believe that service in uniform right now matters more than it has at any other time that I've been wearing this uniform in the last 39 years. It's a cliche to say that we serve in interesting times. I think it is a fact to state that we are serving right now during a very, very consequential period, and we must value every single person in uniform, every single set that we have, and every single second, because it seems to me like there's not enough money, there's not enough time, there's not enough people, and we will all be stronger if we stand together and weather the storm that is coming. My final comment: Angus, to you and your team, thank you so much for hosting this activity, for your generous hospitality, but most importantly, for your partnership on the world stage and for bringing so many of us together to talk about this very important event.

Vice Admiral Erwin Aldedharma

Vice Chief of the Indonesian Navy

A very good morning to you all. While my other fellow speakers delivered their speeches from their seats, allow me to deliver my speech from this podium, because this is the way I practised delivering the speech. So please spare me, and thank you to all my staff that have been working so hard in preparing my speech. They also accompanied me in practising, because I couldn't do it otherwise.

Admiral Topshee, Admiral Hammond, our moderator, ladies and gentlemen. Today, I would like to address the critical dimension of Indonesia's naval modernization strategy that transcends the acquisition of platforms and speaks to the very foundation of our national defence sovereignty. Indonesia needs to examine strategic industrial partnerships and understand how these collaborations will shape Indonesia's future as both a maritime power and a defence industrial nation. In this instance, the scope is within the development of our submarine force. Indonesia stands at a critical juncture in our defence industrial journey. President Prabowo [Subianto] has given directions to embrace the new era of industrial cooperation in pursuing the vision of Golden Indonesia 2045, commemorating our independence centennial. The cooperation focuses on strategic value, long-term transformation, and national resilience.

Hence, Indonesia is transitioning from being primarily a defence consumer to becoming a defence producer to help expedite the transition. Indonesia needs external assistance and requires a fundamental shift in our approach to major execution. Indonesia's traditional defence-related overseas procurement creates long-term dependency on foreign suppliers, limits operational flexibility, and constrains strategic autonomy. Industrial partnerships, by contrast, create genuine capability that endures and generates self-sufficiency beyond any single platform or program. Through strategic collaboration, Indonesia expects to achieve technology transfer and knowledge absorption that will move us from just licensed assembly toward domestic technological mastery. Partnership frameworks provide Indonesian engineers and technicians with hands-on experience in platform design, systems integration, and advanced manufacturing processes. Thus, this knowledge underpins future indigenous development and establishes an advanced Indonesian defence industry. In relation to that, building warships and other defence platforms requires an entire ecosystem encompassing metal production, electronics

manufacturing, advanced welding manufacturing capabilities, and sophisticated supply chain management by participating directly in the processes at Indonesia's state-owned shipyard, PT PAL Indonesia.

Indonesia is supposed to develop capabilities that, in turn, cascade across both the defence and commercial sectors. All requirements, which include precision manufacturing standards, quality control systems, and project management disciplines, will be a positive trigger to our entire industrial sector. Regarding operational sustainability, industrial partnership is critical for Indonesia to establish domestic maintenance, repair, and overhaul facilities, which will significantly reduce long-term operational costs, and ensure rapid turnaround times that maximize asset availability for operational tasks. Looking outside our immediate national requirements, Indonesian development creates substantial economic opportunities while establishing a prominent defence industry within Southeast Asia. This makes Indonesia not only a capable operator but also an enabling partner for regional security.

Distinguished ladies and gentlemen, it cannot be denied that our maritime domain challenges has seen a significant shift, particularly in the Southeast Asia region, where the underwater domain has been interconnected by critical undersea infrastructure, which sustains economic affairs for over 650 million people. Consequently, the region must possess resources to overcome those challenges – for example, submarines. Hence, submarine capability is not optional. It is existential to our sovereignty, our economic security, and our role as a stabilizing force in Southeast Asia. Submarines represent far more than weapons platforms. They are strategic assets that enable us to protect critical undersea infrastructure from both conventional threats and the emerging challenges of hybrid warfare tactics. They allow us to secure exclusive economic zones spanning millions of square kilometres across our archipelago. They provide credible sea denial capabilities that deter aggression with rapid responses and will enable us to project strategic influence in an increasingly contested maritime environment.

The Scorpène Evolved submarine is more than an advanced underwater platform. It symbolizes a new paradigm in how developing nations can acquire sophisticated defence capabilities while simultaneously building indigenous industrial capacity, despite its advanced technological capabilities. It is the partnership model that we want more of. It offers a pathway from dependency to capability, from consumption to production, and from isolation to a growing regional industry. Although some argue that Indonesia's status as a developing nation restricts its defence industry development, we have high confidence that our flexibility and adaptability enable us to implement best practices and innovative methodologies from the outside, which is unburdened by legacy systems. We possess a motivated and capable workforce eager to acquire advanced skills and drive innovation in new sectors. Indonesia's growing economy and expanding defence requirements make it an attractive long-term partner for technology providers seeking sustained collaboration, instead of just one-time deals. Due to our strategic geographic position, Indonesia is an ideal regional service hub, offering shorter transit times and lower costs for regional partners requiring maintenance and support services. What we require from potential partners is a recognition of advanced collaboration, which is more than just a transaction but a long-term strategic investment in mutual capability development and shared security interests. We seek partners who understand that building Indonesian capacity strengthens regional security architecture and creates enduring relationships that serve both parties across multiple dimensions.

Realizing this vision requires sustained commitment across multiple stakeholders. From our international partners, Indonesia needs genuine technology transfer, rather than heavily licensed production arrangements. We need comprehensive training programs that create genuine experts capable of advancing technology, not simply operators who can follow procedures. We need industrial cooperation agreements structured to build lasting capacity, rather than creating assembly lines that are dependent on foreign input. Indonesia also urges our domestic industries to be willing to invest in facilities and workforce development to make sure that the quality

standards meet the requirements of foreign partners, and to prove their commitments in support of that, the Navy will be delighted to share its operational requirements. Also, we understand that we can not rush industry, which must focus on proper development and therefore prevent the compromise of long-term outcomes. With the industry's commitment, the Navy is ready to accept near-term compromises for greater results. Ultimately, consistent government policy frameworks are the key foundation that provide other stakeholders with confidence to realize such ambitious aspirations.

Distinguished guests, ladies and gentlemen, the Scorpène Evolved submarine program and, more broadly, industrial partnerships denote far more than fleet modernization. They are catalysts for industrial transformation, pathways to genuine defence sovereignty, and prove that collaboration is essential for collective security efforts. Our strategic partnerships are guided by a clear purpose – not merely to acquire defence platforms but to build an enduring defence ecosystem that strengthens Indonesia's capabilities. Through this, we safeguard our critical infrastructure, secure our vast maritime domain, and master the underwater dimension to uphold our role as maritime guardian. And to conclude, for Indonesia, given our strategic position and commitment to sovereignty, this transformation is not optional. It is imperative. Its success is a matter of national interest.

Vice Admiral Erwin Aldedharma, Vice Chief of the Indonesian Navy

Admiral Naveed Ashraf

Pakistan Chief of Naval Staff

Ladies and gentlemen, good morning. It is a real pleasure to be here at the university, and it is always great to be in Canada, as well, especially for exchanging the views on things that matter to all of us. I am truly grateful to Admiral Topshee for being a very considerate and gracious host for the last two days. I admire his leadership, which is very conscious of the change that we witness these days, and his agency to bring some of us here this morning to see what we can do altogether. Admiral, thank you. Thank you for this, for everything you have done so far. It has been great, once again, to be here. And Dr. Lajeunesse, thank you for the warm welcome and for conducting this event this morning.

I would like to present on the shifting geopolitics, as we see it from the Indian Ocean, using some well-known determinants as a frame of reference. My purpose is to evaluate the impact of this shift on maritime security, and what can we do to make it even more robust? I would decipher geopolitical

construction and its dynamism through three determinants, and these are alignment, polarity, and lateralism.

First, the alignment. I believe the alignment has always mattered, be it pre– or post–Cold War and post-9/11. The idea of being non-aligned has been around, but for small and middle powers, it may not actually work. The current structure of the world may not be based on defensive realism, as conflicts and rivalries suggest power maximization and the expression of expansionist tendencies. Israel and Russia are the cases in point. No one wants a security dilemma, which makes having some sort of alignment a compulsion and not a choice for powers like Pakistan. Now the question becomes, what kind of alignment truly works in an environment of shifting geopolitics? Is it a unilateral or multilateral ideology? The answer is complex.

Our geography demands seeking multiple issue-specific alignments grounded in mutual respect and shared maritime goals, rather than pursuing a single ideological pattern. We are guided by the principle of inclusive security, where I think alignment is a tool for regional stability and not a mechanism for concentration.

Speaking of polarity, we have moved past the rigid lines of unipolar and bipolar systems. Today's global order is arguably multiplex, a term that suggests not just multiple centres of power but also multiple layers of interaction, and that can't be contained by simple labels. The Indian Ocean is the perfect laboratory for this multiplexity, because there are state-level centres, multifarious non-state actors, and global challenges that include climate change, pandemics, and illegal fishing. This dynamism means that no single power can guarantee security in the Indian Ocean. This requires a networked, cooperative response that leverages the strengths of all regional and extra-regional players.

The challenge for middle powers is not to choose a pole but to master the art of navigating this complex, multi-layered environment. Nations choose to interact through uni-, mini-, or multilateralism. The situation in Eastern Europe, the Middle East, and South Asia is indicative of the UN's failure.

And I guess unilateralism is too destabilizing. The practical trend we are witnessing is the rise of "minilateralism" – in some cases, "microlateralism" as well – which is a small, flexible, and often ad hoc grouping centred on specific issues or geographical zones. I feel minilateralism is the answer to the least-integrated Indian Ocean region. The Pakistan–Saudi defence agreement could be one example of microlateralism, in my view, which we may expect to grow further in the region. While I fully endorse participating in large multilateral frameworks, the complexity of the Indian Ocean requires pragmatic, region-centric, minilateral mechanisms that allow us to share maritime domain awareness, coordinate search and rescue missions, and address nontraditional threats quickly and effectively. Lateralism must be inclusive; otherwise, mini- or microlateral arrangements risk becoming exclusive blocks that undermine the regional trust.

[After] the analytical framework of alignment, polarity allows us to identify four critical shifts defining the Indian Ocean currents. Firstly, the cross-domain effect, as seen in the aftermath of the Palestine–Israel war. The US and Israeli strikes against Iran led to the disruption of merchant traffic in the Red Sea and Bab-el-Mandeb, causing a significant stress on the global supply chain. Similarly, because of Israeli aggression against Iran, it could have led to the seizure of the Strait of Hormuz, which might have impacted substantial merchant traffic. These primarily land-based conflicts suggest a consistent, potent, and tremendous spillover into the sea, threatening maritime security in the Indian Ocean region.

Secondly, the geopolitics–geoeconomics bimodality will somehow see an upward trend, because the Indian Ocean is a theatre for both. Statistics can vary, but the Indian Ocean carries two-thirds of the world's seaborne oil and over one-third of the world's bulk cargo, with China's predominant dependence on the Indian Ocean and its sea lanes. The Sino-US rivalry is likely to be over the control and resilience of the supply chains. Resultantly, it compels nations to align with influential players to protect their specific access routes. This shift has already attracted a significant number of naval vessels in the Arabian Sea, some as part of the CMF (Combined Maritime Forces) and

some as independent deployers in the region. For Pakistan, our development of Gwadar Port – and its connection to the China-Pakistan Economic Corridor – provides a crucial, resilient, and short-haul trade artery for the region. Our goal is to ensure that this economic growth translates into regional stability or ensuring all vital sea lines remain free and open.

Thirdly, the emergence of the blue security imperative, which means that climate change is a security destabilizer. Extreme weather, resource scarcity, rising sea levels, and the corresponding mass migration will not merely be environmental footnotes. They are geopolitical disruptors. This represents the ultimate challenge of multiplexity. I feel this is one domain where our navies will have to take the lead. Our conventional roles in warfighting and protecting the sea lines will no longer be sufficient. Blue security demands an integration of naval vessels with environmental monitoring, humanitarian assistance, and disaster relief efforts and the protection of the blue economy. I would like to mention here that I see a great opportunity for partnership with Canada, a nation with deep experience in addressing vast ocean and climate-driven challenges to developing cutting-edge maritime domain awareness and surveillance tools.

Fourthly, the erosion of maritime norms, which implies that the pursuit of influence has led to a decay of established international norms, particularly those qualified in the United Nations Convention on the Law of the Sea. The potential drift towards unilateral assertiveness, in my view, is perhaps the most dangerous of all violations of maritime norms for any maritime nation. Its behaviour at sea must be consistent and predictable while adhering to international law. The unprovoked interception of shipping under the garb of inspection has caused serious concerns in many parts of the world.

As we sit and hear each other this morning, I believe we can use every dialogue, every exercise, and every regional forum to reaffirm that the maritime order is only stable when it is mutually respected and legally enforceable. Pakistan stands firm on the principle that diplomacy and dialogue, not coercion, must resolve the disputes. After having seen our ocean for over four decades of my naval career, I feel that it is surely undergoing a tectonic geopolitical shift, driven by the changing dynamics of alignment. The future stability of the globe, its commerce, its energy, and its climate will be determined in these waters. I believe that unilateralism must pave the way to cooperation.

Admiral Naveed Ashraf, Pakistan Chief of Naval Staff

Speedily changing geopolitics will deeply impact maritime security in the Indian Ocean, and Pakistan, through its regional maritime security patrols and initiatives, offers platforms – not just for the regional nations but extra-regional players, as well – to team up, understand the environment, and be prepared for a future at sea that could be highly uncertain and profoundly turbulent.

Rear Admiral Oliver Berdal

Chief of the Royal Norwegian Navy

Well, first, a big thank you to Admiral Topshee and the Royal Canadian Navy for inviting both me, representing the Norwegian Navy, and all the other Chief of Navies here. It's my first time in Canada ever, and you are very fortunate. You have a fantastic country. And I would also like to thank you for what you did for Norway during the Second World War. We had lots of sailors here in Halifax. We also had a lot of pilots being trained on fighter jets prior to returning to the European theatre in Canada. And there's a place in Canada called Little Norway, and that's where we trained a lot of our fighter pilots. Thank you so much for that.

I'm going to talk about the North Atlantic, and I understand that the main topic of the panel now is shifting geopolitics. Many of you have been out in the North Atlantic. I don't know if you've been close to the island of Jan Mayen, but somewhere in the North Atlantic, there's a volcano coming out of the ocean. It's the only volcano that's Norwegian. It's a very small island. There is no port on that island. There is no pier. The only way to get things ashore is basically to come by ship and put things in a small boat and get it ashore or to land with a rough airplane on a dirt strip. The last time we had a military presence on that island was in the Second World War. A month ago, we had Norwegian soldiers and American soldiers – and equipment – flown in, just to demonstrate that, if necessary, we can put stuff on that island as well. Not necessarily to defend the island, because nobody's living there, except for the fact that it's a meteorological station. There are 15 or 20 people working there, but it sits in the middle of the North Atlantic, and it's a very strategic location.

I am going to speak about the North Atlantic, and I'll just give you a couple of reminders of why the North Atlantic is important. The North Atlantic was crucial for Allied success in the First World War. It was also crucial for Allied victory in the Second World War, and it was also crucial for avoiding World War III during the Cold War.

The world is changing, and geopolitics are shifting towards Asia, because that's where most people live. However, the North Atlantic is still very important. Fortunately, the North Atlantic is very peaceful. There are no wars around the North Atlantic. And there's a good reason for that. That's because most of us are in an alliance that is very beneficial to all of us, and that is NATO. And I would argue that NATO is more important than ever before, even though there are some politicians that have been arguing against it. NATO has kept us safe for generations and hopefully will continue to do so in the future. And the future is uncertain, because I would say, I would argue, that we live in the time of the biggest change humanity has ever seen.

That change is not going to be a physical change, as most of the revolutions that we had in the past – the Industrial Revolutions, the Agricultural Revolution, etc. – [were]. This time, it's a cognitive revolution. Whether you like it or not, artificial intelligence (AI) is just around the corner, and I think it's impossible not to use it, because there will be somebody that will be using AI. And our AI is fundamentally going to change our society. It's going to fundamentally change the workforce. It's going to fundamentally change the militaries. And for those of you who don't like robotic warfare, it's here already. That's the way things are moving.

I think it's more important than ever before to stay together and make sure that we can avoid war, because, as mentioned in the former panel, humanity cannot afford large-scale warfare between the great powers. As I argued in the question to Admiral Topshee, Canada and the US – North America – you've got the best natural defences in the world with the North, with the Atlantic Ocean, the Pacific Ocean, and the Arctic. It gives you something that not many nations have. It gives you strategic depth, and it gives

Rear Admiral Oliver Berdal, Chief of the Royal Norwegian Navy

you warning time.

And I would argue that the best defence of your homeland and your interests is forward defence. I wish we had that. Unfortunately, our young soldiers are conscripts, because we have mandatory conscription in Norway, both for males and females. It's unfortunately necessary. When you border Russia, they [our soldiers] are looking right across the border, and they are looking at the nation that has never invaded Norway, but it's invaded all its other neighbours throughout history. You could argue that, well, Norway has nothing to fear because we've never been invaded. Well, when we look across the border, what do we see?

We look at Russian naval infantry. We look at huge maritime, huge military activity in the naval domain. In the air, we see GPS jamming that is affecting our civilian aircraft up north – even, also, if you're a tourist driving a car at some point in northern Norway, you will drive into a GPS jam bubble. But what we're also seeing is that 70% of the naval infantry that was on the other side of the border no longer exists because they were sent to Ukraine, and they never returned. Neither did their materiel.

In Europe, even though NATO is not involved, even though we live in a deep peace, it's impossible to look away from the fact that Russia did invade its neighbour, and it was just not a small country. It was a country of 44 million people. There are more than six million refugees now spread all over Europe. Russia has taken enormous casualties, as has Ukraine, and as I said during my question to the panel, this war is not about to end. I hope it ends tomorrow, but unfortunately, I don't think so.

What's the challenge with the North Atlantic being a peaceful place? Well, it's very hard to disregard the fact that Russia is the largest nuclear power on the planet, and it's also hard to disregard the fact that Russia and the most important part of Russia's strategic military power is put on the submarines. And I think that's the biggest headache for the US, and it will also be the biggest headache for us in the Pacific, as more nations get submarines, and as China and North Korea are more successful at making their submarines even more stealthy and putting advanced nuclear weapons onboard their submarines in greater numbers.

It's important that Canada and the rest of NATO are good at monitoring the activity of the Russians and that we are good at finding and, if necessary, neutralizing submarines. However, once again, we're not at war. We're not planning to go to war, but we need to be prepared for it. One thing that many military people sometimes forget, and our societies also forget, is that... when we talk about the funding of our armed forces, people often ask me the question, "So why do we put money into all these expensive systems? We're not going to use them anyway." Well, I say, I'm very glad that we hopefully don't need them, because even as a naval officer, I don't want us to use them. The sole purpose of having a military is

to avoid war, not to fight, because the best way to win is never to fight.

Deterrence is crucial, and we are at the point in history where Canada, Norway, and all the members of NATO are increasing their budgets. For the Norwegian Navy, we're going to increase the money by 50% over the next 12 years. 40% of the investment budget of our Armed Forces is going to go to the Navy. We are building new submarines. We just decided on the UK as a strategic partner for new frigates. We're going to build a lot of new ships, not because we want a shiny Navy – because this is going to affect funding for schools, for hospitals, for roads and many other things – but because it's necessary to avoid war. However, people argue that we are already in war, in a way, because we are seeing sabotage.

According to open sources, there were 40 Russian sabotage attempts in Europe last year. Some of the worst ones, luckily, didn't succeed, because that would have been bad for air traffic. But some did succeed. And in Norway, without pointing the finger at any specific nation, we are seeing break-ins into communications infrastructure. We've seen fibre optic cables being tampered with, being cut both at sea and on land. We've seen acoustic cables ripped apart several times. And for those of you who have been watching, the Baltic Sea pipeline between Estonia and Finland was ripped apart [by a] Chinese ship with a Russian captain. Of course, just an accident, but the same ship was dredging the anchor for 140 kilometres along the seabed. So it ripped apart some fibre optic cables as well. And this has happened many times in the Baltic, but it hasn't happened during the last six months. There's been a NATO operation called Baltic Sentry with a lot more presence, and for some reason, there were not any unfortunate incidents over the last six months. I'm not saying that there's a connection, but many people in Europe feel that we're in a grey zone. We're seeing hybrid warfare. We're seeing sabotage, and in the recent weeks, air traffic has been grounded in Denmark, in Norway, and in several other European nations due to cyberattacks and due to drones operating above the airfields. It's challenging, and the reason why it's challenging is because we are being tested in areas where we are soft. It's not our militaries that are being challenged. It's our laws; it's our legal system. And there's a saying that when it comes to the Russians, the Russians will push you and see where you are soft, and they will start pushing even harder where you are soft.

Critical infrastructure is vital. And you could argue that there's a lot of critical infrastructure that a nation depends on, but there are three things that I think it's very important that we as naval officers understand. And I would like to do a comparison with a human being. What is the most important part of your body? People in the room might disagree, but I would argue it's your brain and your central nervous system. I can live without my arms. I can probably live without my legs. I can go without food for a couple of weeks, but if my central nervous system fails, I'm useless.

I would argue that the fibre optic cables that [connect] the modern global world economy, the continents, are the most important thing that we have. 98% of all communication travels through this, and even though we all have cell phones, they also rely on it. You cannot make a phone call on your cell phone without fibre optic cables, because the signal through the air just travels a couple of kilometres or miles before it basically moves on the ground and goes into fibre optic cables. This, ladies and gentlemen – that's the central nervous system of the world, and that's crucial. If somebody were to tamper with it, whether it's just small parts of it affecting one single nation or affecting continents, that's going to really shake the whole system. In addition to that, you could argue that gas and oil pipelines are also very important. I understand that the US had an incident some years ago where large parts of their fuel systems were shut down. It was a cyberattack, but still, it was successful.

Just outside the coast of my country, there're 9,000 kilometres of oil and gas pipelines supplying 30% of the natural gas needs of Europe. Is it possible to tamper with it? Well, somebody blew up a couple of pipelines in the Baltic Sea three years ago, so it's vulnerable. And last, but not least, the green revolution taking place with regard to the production of electricity with offshore wind, with solar, etc. It all

depends on electrical interconnectors connecting nations. And at least, in our part of the world, in Europe, a lot of these electrical interconnectors are cables on the seabed, connecting countries, providing cheap energy, green energy, between nations, depending on the wind direction and where it's produced. All very important.

My last comparison with the human body would be global transportation. We all know that 90% of all trade, all global transportation, takes place with ships, simply because it's the cheapest way to move a lot of goods between nations and continents. But once again – this is the most important thing – it's the most vulnerable part. It's the easiest part to do something about, and it's the hardest part to protect.

I said that we live in a time of great change. There's a lot of emergent technology that is out there. There are a lot of companies competing, and that's good. Innovation is always good. And of course, after three-and-a-half years of warfare in Ukraine, everybody's talking about drones. That's natural. Earlier this year, the Ukrainian production of drones was 2 million drones. To me, that's an enormous number. Last time I checked, it was 3.5 million. And if Ukraine gets the funding and supports it needs this year, it will produce 5 million drones this year alone. And drones, that's something up in the air. They're also producing unmanned vehicles in great number on land, on the surface and subsurface. Ladies and gentlemen, this is what I would call robotic autonomous warfare, and the ongoing war has accelerated this. And when you put AI on top of this, the man or the woman will be out of the loop, and that's going to happen as we're all alive and working. And it's not going to happen 10, 15, 20 years from now. It's already happening, and that's fundamentally going to affect all of us, because a lot of the legal discussions that we've had within our nations and military over the last couple of decades are basically human in the loop, ethics, etc. That has already changed.

There's one thing that I think that for Canada in particular, but also Norway, is very important for us, and that is freedom of navigation. And because you have the Northwest Passage just north of Canada, or part of the Northwest Passage. It's probably more appropriate to say here, on the other side, we are looking at the Northeast Passage, which would cut the distance between Europe and Asia by 40%. It would mean a lot to transport. And we all know, unfortunately, the ice is melting, and the ice is melting fast. What I'm hoping is that we will not see the same up in the North as we are seeing in the South China Sea, where China is building out islands and militarizing parts of the South China Sea.

But what we are seeing is that Russia is militarizing the Northeast Passage. How they will use this in the future is hard to say, but now, there's not a lot of ship traffic going through there, first, because of the climate and ice. But I think that the current war in Ukraine does not make it very attractive to ship owners to really start sending a lot of traffic through the Northeast Passage. But I think that, as I said in the former panel, a rules-based international order is one of the things that we should really stand up for, and it's going to be more important than it's been for generations to work hard for that in the coming years, because if the rules and the respect for the rules start falling apart, we're going to see problems in all different areas. It's important to contribute to freedom of navigation, whether that's in the South China Sea or it's up in the High North.

I'm coming slowly towards the end here, but I'll do this. There's one thing that I think is very important between like-minded nations. We've always been good at cooperating and coordinating activities. But I would argue that, in the future, or even at present, when information is moving at the speed of light and weapons are increasingly moving at hypersonic speeds, you don't have time for meetings. You don't have time to talk. You don't have time to send an urgent email or a flash signal. Our systems need to talk to each other, in real time, and the only way to achieve that is to integrate.

I would argue that between close friends and allies, to have the successful defences of the future, we need to integrate even closer. That's the only way to be able to match our future opponents. The advantage of, for instance, NATO is that there're a lot of like-minded nations that are staying together. If we can stay

together, and if we can also integrate much more than we have so far, we will not be challenged. Because if you look at the North Atlantic, and take Russia as an example – how many ships do they have out in the North Atlantic on any single day? How many red dots are there up there? And how many blue dots do you see? And how many blue dots do you not see because they don't pop up on your maps, because they're underneath the surface? Conventionally, no match at all. We just need to make sure that we utilize our advantages to the benefit of our nations.

Finally, for Canada, I know that you're going to grow your Armed Forces significantly. I know you're going to grow and modernize your Navy. That's not going to be easy, but it's a positive challenge, and it's a positive challenge that all of you really should embrace. As Chief of the Norwegian Navy, I just work increasingly because there's so much to do. There're a lot of important decisions to be made, and you need a lot of energy, but it's all positive challenges.

I know that you're looking into procuring new submarines, and I know that you have very good options. And this is, of course, a decision for Canada to make. I spent 10,000 hours of my life working on our future submarines and basically putting in place the strategy for it and giving advice about who we should partner with. I think for Canada, the most important decision that you will make is not which submarines to buy, but it's basically what strategic partnership are you seeking and what total benefits can you get out of that partnership. I'm hoping that the German–Norwegian submarine cooperation, where we will produce 12 submarines on two production lines, is attractive to Canada, because if you jump on board in that partnership, it's going to be the biggest building of conventional submarines in several generations. And I think that will make Canada stronger underneath the waves. And as also mentioned in the former panel, there are only two places to hide. Mark Hammond, from Australia, would probably say there's only one place to hide. But right now, with satellites basically being able to pick up anything moving on the surface of the planet, whether it's because they have radars, because they have good optics, or because they're basically sniffing at electronic signals, there's nowhere to hide a surface ship anywhere on the planet. And I would argue, there's [nowhere] to hide as a human being as well – with one exception, deep below cities, as we unfortunately have seen in Gaza. It's deep down in the oceans, deep down beneath cities. [Those're] the only two places left to hide, and that's why submarines are so important. And I wish Canada had a good look with the very important decisions that you're going to make with that.

Rear Admiral Garin Golding

Chief of the Royal New Zealand Navy

[In Māori] I acknowledge our Creator, the land that sustains life, and the importance of people. I remember those who have fallen, and I greet you all.

It is an honour to represent the New Zealand Defence Force (NZDF) at a time when our strategic environment is undergoing rapid and complex change. The Indo-Pacific, and particularly the South Pacific, is no longer a peripheral concern. It is now a focal point of geopolitical competition, climate disruption, and evolving security risks. Rising competition and tensions in the wider Indo-Pacific are playing out in New Zealand's immediate region, which spans from Antarctica to the South Pacific.

New Zealand views the world through a lens of increasing strategic uncertainty, where climate change, regional instability, and global competition

intersect and challenge our national resilience and sovereignty. Our Defence Force is responding by investing in adaptive, integrated, and sustainable capabilities designed not only to protect New Zealanders but to contribute meaningfully to regional stability and global security. We are shifting from a reactive posture to one that is proactive, agile, and future focused, ensuring that our people, platforms, and obligations to our security partnerships are ready to meet the demands of a more contested and complex world. Our strategic environment underscores a sobering reality: distance is no longer a buffer. The South Pacific is increasingly exposed to the ripple effects of global instability, from the illegal war in Ukraine to the rising tensions in the Middle East and the Indo-Pacific. Strategic competition between major powers, particularly China and the United States, is now manifesting directly in our region.

In 2024, the People's Liberation Army (PLA) conducted a ballistic missile test over the South Pacific, terminating within the South Pacific Nuclear-Free Zone and in contravention of the spirit of the Treaty of Rarotonga. These tests, as described by New Zealand, were unwelcome and concerning. They also made us question Beijing's rationale for selecting this region as a splashdown site and their intent in this provocative demonstration. In early 2025, the PLA Navy task group executed live-fire drills in the Tasman Sea, directly beneath a major commercial air corridor between Australia and New Zealand. The exercise forced the diversion of 49 commercial aircraft. The drills witnessed and reported by HMNZS *Te Kaha* were conducted with minimal notice and tangibly affected the norms in the region.

Domestically, the New Zealand Security Intelligence Service (NZSIS) has warned that foreign interference and espionage are active and escalating. The 2025 Security Threat Environment report identifies China, Russia, and Iran as key state actors targeting New Zealand's democratic institutions, intellectual property, and diaspora communities. The NZSIS has confirmed cases of transnational repression, malicious cyber activity, and covert influence operations, including attempts to exploit individuals within public and private sector organizations. Together, these developments reflect a strategic landscape where New Zealand's sovereignty resilience and regional partnerships are increasingly tested. Pacific nations, including ours, face growing pressure to navigate complex diplomatic and security relationships, often with limited bandwidth and under increasingly external scrutiny.

In response, New Zealand's approach is principled, committed, and deliberate. We engage widely but align with partners who respect sovereignty, uphold international law, and share our democratic values. This includes closer alignment with Australia's regional security initiative, such as the Pukpuk Treaty with Papua New Guinea and the Nakamal Agreement between Australia and Vanuatu, which aim to bolster Pacific resilience and counter destabilizing influence. While New Zealand has not formally joined these treaties, consultations are ongoing, and our defence capability plan and foreign policy settings reflect a growing interest in codifying strategic trust with Pacific partners, ensuring that regional security arrangements are Pacific-led, transparent, and respectful of sovereignty.

New Zealand's engagement in the South Pacific is grounded not only in strategic interest but in deep respect for the region's diverse cultures, histories, and identities. We recognize that cultural intelligence is essential to meaningful partnership. Whether supporting disaster response, maritime security, or regional development, our Defence Force prioritizes listening, learning, and building trust. We work alongside Pacific partners in ways that [honour] local leadership, uphold shared values, and reflect the unique social and cultural fabric of each nation. In doing so, we strengthen not just cooperation but enduring relationships built on mutual respect and understanding.

Climate change remains the foremost security concern for our Pacific island partners. Rising sea levels, intensifying cyclones, and resource scarcity are not only distant threats, but they are also present and escalating. For the NZDF, this translates to [the need for] enhanced humanitarian assistance, disaster relief capabilities, persistent maritime surveillance, and prepositioned assets for rapid response.

We are committed to Pacific-led approaches. Our partnerships, such as the Duavata Partnership with Fiji and bilateral arrangements with Tonga and Papua New Guinea, are co-designed and grounded in mutual

respect. We do not impose. We support the South Pacific. The vast maritime domain is increasingly contested. Illegal, unregulated, and unreported fishing, transnational organized crime, and maritime sovereignty disputes are growing in scale and complexity. The New Zealand Navy plays a pivotal role in safeguarding our exclusive economic zone (EEZ), conducting interdiction operations, and supporting regional partners.

HMNZS *Te Kaha*'s recent deployment to the Arabian Gulf, as part of the Combined Maritime Forces' Task Force 150, demonstrated our operational reach and commitment to collective maritime security. While deployed, *Te Kaha* contributed to the interdiction of narcotics shipments linked to transnational criminal networks, with intelligence assessments indicating that some of these drug routes not only supported the Houthis but also extend towards New Zealand, Australia, and the South Pacific region. This underscores the reality that regional maritime security is directly connected to global criminal supply chains and highlights the importance of forward engagement and persistent presence. There is little doubt that potential conflict in the Taiwan Strait would have profound implications for us all. For the South Pacific, disruption to global trade routes, increased military activity, and presence in regional alliances would directly affect New Zealand's security and economic interests.

My Navy is preparing for such contingencies through capability renewal and strategic integration. Our investment in uncrewed surface vessels, enhanced strike capabilities, and maritime helicopter replacement ensures we remain agile, credible, and ready. Our frigates, aircraft, and future missile systems provide credible deterrence and operational flexibility. Integration with Australia as part of a more cohesive ANZAC force ensures that we can respond collectively to regional instability while maintaining our independent foreign policy.

New Zealand remains a staunch defender of the international rules-based system. We recognize that prosperity and security are indivisible. Defence forces have a critical role in upholding international law, including freedom of navigation and deterring actions that undermine collective security. We are active participants in multilateral forums within the South

Rear Admiral Garin Golding, Chief of the Royal New Zealand Navy

Pacific and the wider global stage. These forums are not ceremonial platforms. They are a mechanism for coordinated action, regional resilience, and strategic dialogue.

In closing, the South Pacific is no longer a strategic backwater. It is a contested and consequential space. The NZDF is transforming to meet this reality. We are investing in capability, deepening alliances, and reaffirming our commitment to Pacific-led security.

New Zealand may be a small state, but we are not a small voice. Through deliberate action, principled engagement, and strategic foresight, we will navigate the challenge ahead and contribute meaningfully to regional and global security. I'd like to finish with just thanking you, Angus, for putting on this [event] and being a wonderful host throughout the week. It's been great to see you again.

Fireside Chat with RCN Chief of Naval Capability

RAdm Jason Armstrong

The Naval Association's year end 'fireside chat' style meeting featured Rear-Admiral Jason Armstrong, the RCN's Chief of Naval Capability as the guest speaker. Jason's role includes the supervision and development of major crown projects, such as the River Class Destroyers and future submarines, and ensuring the Royal Canadian Navy's (RCN) readiness for both conflict and peace. He provided updates on naval force development, including organizational changes and progress on various shipbuilding projects such as the Joint Support Ship (JSS), River Class Destroyer (RCD), and Continental Defense Corvette (CDC) programs. The discussion concluded with insights into the Royal Canadian Navy's integration of unmanned systems, shipbuilding capabilities, and plans for patrol vessels, while addressing concerns about personnel shortages and the importance of defense innovation.

Naval Force Development Reorganization and Integration of the Canadian Coast Guard

After a brief introduction by NAC Naval Affairs Director Tim Addison, Jason began the session with an explanation of the reorganization of naval force development structure, which now falls under one roof. The new structure includes his position as Chief of Naval Capability and three directors-general, with responsibility for force development and training, major crown projects, and infrastructure. Tim inquired about the integration of the Canadian Coast Guard (CCG) into DND and responsibility for the CCG's future requirements. Jason noted that the Canadian Coast Guard's return to the Department of National Defence is proceeding smoothly, with regular meetings and coordination on infrastructure and requirements. He explained that while the Coast Guard will not become warfighters, they are working to enhance their intelligence, surveillance, and reconnaissance capabilities to contribute to the defence of Canada.

Naval Projects Progress Update

Jason discussed the progress and requirements for various naval projects, including the JSS program, the RCD, and the upcoming CDC. He highlighted that the JSS program is progressing with JSS2 ahead of schedule, while JSS1 is slightly delayed. He emphasized that requirement for the Navy is actually

five joint support ships and that there are plans to upgrade the RCN's Arctic Offshore Patrol Vessels. The RCD is nearing its comprehensive design review, with collaboration among multiple stakeholders.

Jason also mentioned the need for fifteen river-class destroyers and the goal of transitioning from the Halifax class to the new class of ships. Regarding the CDC, Jason explained that as compared to the original concept of a multi-mission corvette, CDC will be more of a light frigate with a focus on range, ice capability, and lethality, built in Canada with Canadian content. The Navy is defining the CDC's requirements, with an industry day planned for early next year.

Continental Defense Corvettes Acquisition Plan

The discussion shifted to acquisition of CDC, with Jason indicating that the number of ships to be acquired is under options analysis, but currently the number is 8 to 20. Tim inquired about the National Shipbuilding Strategy, and Jason suggested that it might be time for a refresh to include more Canadian shipyards. They also discussed the need for 4-5 replenishment ships, potentially all based on the Berlin class (used for JSS 1 and 2), and the importance of refueling capability in the Indo-Pacific region. The conversation ended with an update on the Canadian Patrol Submarine project, which has moved quickly through the down-select process to two potential builders: Thyssen Krupp of Germany and Hanwha Ocean of South Korea.

Navy Shipbuilding and Resource Planning

The discussion focused on shipbuilding capabilities, with an attendee raising concerns about building thirty ships in a timely manner given the limited number of shipyards. Jason explained that the Navy aims to transition from the Victoria class to new Canadian patrol submarines by 2035, while maintaining the Victoria class until a critical mass of new submarines is achieved. Also discussed was the status of minor capital projects, noting that increased funding has allowed more projects to move forward, though human resources remain a limiting factor. Jason also provided an update on the Naval Experience Program, which has exceeded expectations with 277 positions filled, and mentioned plans to increase the intake to 425 positions this year.

RCN Patrol Vessel Modernization Plans

Jason explained that the RCN is exploring options for replacing aging training vessels like the Orca class, including the building of an "Orca Plus" variant with enhanced capabilities. He noted that while these vessels would primarily serve a training role, they

Joint Support Ship (Image: Seaspan)

would also contribute to maritime security and intelligence gathering in strategic waterways like the Great Lakes and St. Lawrence Seaway. Tim inquired about the new Defense Innovation Secure Hub in Halifax, to which Jason responded that it aims to rapidly develop and integrate innovative technologies into the fleet within 1-3 years, rather than the traditional 10-15-year procurement process. The discussion concluded with a question about the role of sea drones in the RCN's capabilities, which was left open for further discussion.

RCN Unmanned Systems Integration Discussion

The discussion then moved to the RCN's integration of unmanned systems across various operations, including mine detection, Arctic missions, and border surveillance. Jason highlighted the importance of uncrewed systems in enhancing naval capabilities and mentioned ongoing experiments with the Coast Guard and Transport Canada. Tim raised concerns about personnel shortages for managing future ship projects, to which Jason responded optimistically about the Navy's recovery efforts and recruitment drives. From a question from the audience, the conversation also touched on the RCN's support for defense research, with Jason emphasizing the collaboration between DRDC, the Navy, and industry, particularly in underwater warfare capabilities.

River Class Destroyer Test Facility

Jason mentioned the land-based test facility being built at Hartlen Point in Dartmouth, NS for the River Class Destroyer, emphasizing its importance for testing combat systems before the first ship goes to sea.

Conclusion

Jason expressed his intention to stay in his current role until 2027 to help advance the Canadian Patrol Submarine Project and finalize the comprehensive design review for Batch 2 of the RCD. Tim thanked Jason for his contributions and leadership, while Jason expressed gratitude for the mentorship and guidance he received over the years from members of the Naval Association. Tim wrapped up the session with closing remarks, including a reminder on the upcoming Ottawa Branch Pre-Christmas luncheon on 17 December in Ottawa.

River-class test facility (Image: RCN)

ONTARIO SHIPYARDS

CONSTRUCTION TO BEGIN 2026

A River Runs Through It

The River-Class as a Option for the US Navy

This paper is an updated and expanded version of an original published by **Jonathan Cassels** on December 14, 2025

The announcement in late 2025 that the US Navy's Constellation-class frigate (Constellation-class) program would be cancelled, rather than rescued, was initially met with a mix of déjà vu, relief, and frustration. Déjà vu, because once again a supposedly affordable, risk-reduced shipbuilding program had spiralled into delays and cost overruns. Relief, because the fate of the Littoral Combat Ship, which continued to consume American treasure and time long after it was recognized as a failure, was avoided. Frustration, because the United States Navy has not commissioned a new, unambiguously successful, class of surface combatant since the first Arleigh Burke-class destroyer (Burke-class) entered service in 1991.

Even in the cancellation announcement, the Navy made clear that an alternative design was wanted quickly, and that it would not wait for a "blank-sheet" design to be developed. Less than a month later, a ship in service with the US Coast Guard, the National Security Cutter (NSC), was selected as the base design for a new class of frigate – one that will be significantly smaller and less capable than Constellation-class had been envisioned to be. Despite those limitations, it is not surprising that the NSC was chosen.

The United States' recent history of surface-combatant design is not an enviable one. Multiple projects have been launched only to be abandoned during the design process, including at least two cruiser concepts. If the Defiant-class "battleship" program proceeds as recently described, they may soon be joined by DDG(X) which, until late 2025, was intended to replace the Burke-class.

In fact, so far this century the US Navy has only had three new surface combatants actually touch water. One is the Zumwalt-class destroyer, which displaces roughly twice as much as Constellation-class was planned to. The other two are the Freedom- and Independence-class Littoral Combat Ships, each less than half Constellation-class's displacement. With

size serving as an imperfect but useful proxy for capability, and all three classes having suffered from major structural, engineering, or mission-system issues which led to early retirements or abbreviated production runs, none of these offer a compelling alternative to Constellation-class.

Of course, they could not have done so. Constellation-class was conceived specifically to address the failures of recent US Navy shipbuilding programs. This means there's no US Navy ship design which could be used as a substitute for the Constellation-class, leaving only the NSC and foreign options. But the experience with the Constellation-class itself discourages most foreign options.

As developed, the Constellation-class was intended to be a full-spectrum surface combatant, capable of contributing meaningfully across the Navy's mission set. Where the full capacity of a Burke-class was unnecessary, Constellation-class ships were meant to be a less resource-intensive option that could operate independently, freeing Burke-class ships for more demanding tasks. When independent operations were not required, Constellation-class ships could augment task groups built around Burke-class ships and other high-end assets. It was, in effect, a "mini-Burke."

From the outset, the plan was to adapt an in-service parent design to meet the US Navy's needs. In 2020, the French-Italian FREMM design was selected based on its maturity and broadly aligned capabilities. It was initially expected that only 15-percent of the design would need to be altered, which promised reduced risk, cost, and development time.

Reality proved otherwise. By the time the program was cancelled, only 15-percent of the original FREMM design remained unaltered - a reversal of the original ratio. As redesign cascaded, costs rose and schedules slipped, ultimately leaving the program at least three years behind schedule.

Constelation class (US Navy)

There's a popular narrative that Constellation-class's massive redesign was created by choice. A self-inflicted wound by meddlesome (read: stupid) admirals endlessly tinkering with a perfectly good foreign design. While this caricature contains a kernel of truth (some project requirements were changed later than best practice would suggest) it ignores the fact that rational, and sometimes unavoidable, constraints are part of large scale redesign and poor outcomes do not require institutional or individual caprice. Ultimately, this narrative is misleading more than helpful as it reduces complex industrial and engineering problems to a morality play.

In hindsight, the notion that only 15-percent of the FREMM design would need modification should have been treated as an extraordinary claim requiring extraordinary evidence. A 15-percent redesign was an extremely optimistic floor for even the bare minimum level of modification the design required to be built efficiently by the American industrial base. By the time combat systems were modified, even to the extent needed to use US weapon stockpiles, the 15-percent claim was extremely unlikely. Planned modifications always went deeper than this.

Redesigns have a way of cascading, with each forcing another. Once a project crosses a certain threshold of modification, the final scope of redesign cannot be known in advance. It can only be discovered – often painfully – in execution. It should have been realized that the Constellation-class project was above that threshold from the start, but the project was never given the resources, infrastructure, or time necessary to manage that scope of work. That is why the project struggled and was, ultimately, cancelled.

Given this experience, it is unsurprising that the US Navy was reluctant to pursue another design from overseas. While the correct lesson of Constellation-class is not "do not choose foreign designs," but rather "do not underestimate redesign – especially when time is scarce", any option from overseas – whether Spain's F-100 design, Japan's Mogami-class, or South Korea's Daegu or Chungnam-classes – would require significant time for redesign. After decades of failed programs, time is one resource the US Navy does not have.

Yet, just north of the border, outside the traditional American field of view, there is a ship that doesn't require redesign – either to begin construction in American shipyards, or to be compatible with US Navy systems – that comes remarkably close to delivering what the US Navy wanted from the Constellation-class. Canada's long-delayed but now accelerating surface-combatant replacement effort has reached full-rate production on the River-class

destroyer (River-class).

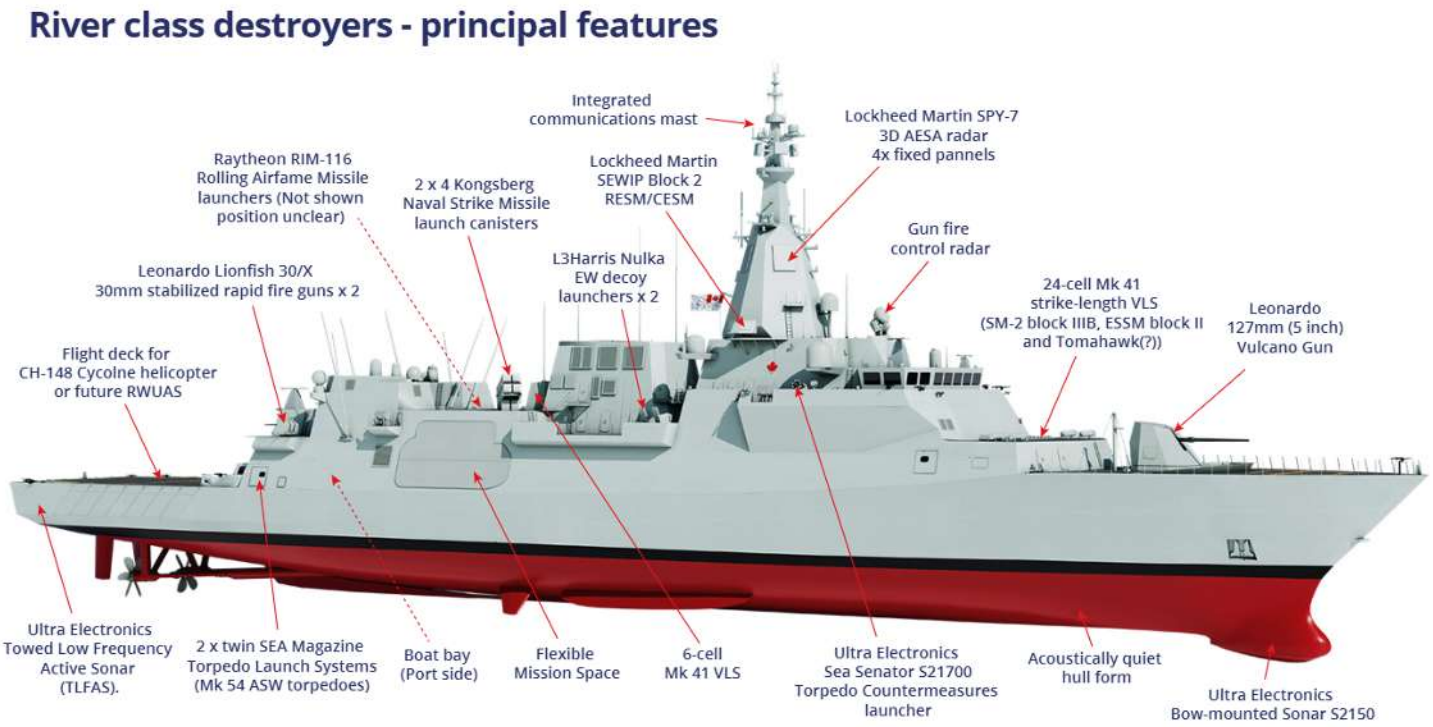
The River-class is a derivative of the Royal Navy's Type 26 frigate, which was originally conceived as an anti-submarine-warfare-first, general combatant, to complement the Type 45 air-defence destroyer. Canada, however, used the design's generous growth margins to pursue a more ambitious goal: to create a surface combatant with credible capabilities across the full spectrum of naval warfare.

The result reads like an aspirational statement for the Constellation-class program. The River-class is an approximately 8,000-ton warship capable of over 28 knots, with advanced anti-submarine, anti-surface, and anti-air capabilities, including ballistic-missile defence and true area air defence. Comparable in displacement to early-flight Burke-class ships, it trades some missile magazine depth for strengths in areas where the Burke-class is weaker, while requiring a significantly smaller crew – a non-trivial advantage for a navy struggling to man and sustain a growing fleet.

Its combined diesel-electric and gas propulsion system also generates substantially more electrical power than the Burke-class can sustain, while being more fuel-efficient. Together with the smaller crew, this will translate into appreciably lower operating costs over the ship's lifetime.

The River-class's advantages over the NSC as a Constellation-class replacement are substantial. That said, there are reasons the US Navy might prefer the NSC. From the beginning of what became the Constellation-class program, there was debate over whether the best complement to the Burke-class was the full combat spectrum approach the Constellation-class eventually followed (sometimes called the "mini-Burke-class" concept) or if a much smaller and even lower cost option was best, even if it could only assume a much more limited subset of the Burke-class's missions.

History gives some insight into this conflict. In the late 1980s, a period many today would identify as a time that the navy got its fleet mix "right," the US Navy was building three surface combatants simultaneously: First was the 9,800-ton Ticonderoga-class cruiser (Ticonderoga-class), the fleet's premier air-defence ship and a capable task-force flagship. Second was the 8,000-ton



early-flight Arleigh Burke-class destroyer, a full-spectrum combatant with less capacity and cost than Ticonderoga, usable independently to free Ticonderoga-class ships for more demanding missions or in task groups alongside them. (This should sound familiar). Third was the 4,600-ton Oliver Hazard Perry-class frigate (Perry-class), a far smaller and cheaper ship with limited air-defence capability, optimised for specialized missions, like anti-submarine warfare, or for cases where capability beyond basic self-defence was unnecessary.

This three-tier structure served the US Navy well through the 1990s and into the 2010s. Since then, the Perry-class has left service, replaced inadequately by the smaller, less capable, and deservedly maligned LCSs – which have now also ended their production runs. Meanwhile, most of the Ticonderogas have been retired, with the few remaining expected to leave service by 2029. Only the Burke-class remains in production. Superficially, this suggests gaps at both the high and low ends of the fleet. But the Burke-class itself has changed dramatically. In its Flight III configuration, it now displaces roughly as much as the Ticonderoga-class and has assumed its role as the US Navy's premier air-defence platform.

This implies room for two designs "below" the Burke-class in capability. One to replace the Perry-class as a smaller, specialised combatant, and one to fill the niche the early Burkes once occupied, as a less resource-intensive complement to the premier air-defence ship. The NSC is a plausible starting point for the former; the River-class makes sense for the latter.

Needing both, and needing ships quickly, it might seem intuitive to prioritise the smaller, less capable, combatant as the lower risk program. All else being equal, those should be easier to build. However, the specific practical issues of these two designs invert this logic. The challenge with the NSC returns, again, to redesign. The NSC in service with the US Coast Guard is not a frigate. At the very least, it needs better sensors and more significant armament to fill the role even of a specialized combatant. This upgrade poses a significant challenge. Even though the NSC was originally marketed as being "designed for, not with" additional weapons and sensors, and there are even concept designs of it with more significant armament, in practice these claims and designs are based on very rudimentary examinations of the available growth margins in the ship's buoyancy, power, and physical dimensions. They do not indicate that the detailed engineering work needed to discover and solve the issues inherent in redesign has happened. In the case of the NSC, it's not even clear that the original margins still exist.

The original NSC design was structurally under engineered. Post commissioning analysis of the first ships suggested an expected service life of just three years. Extensive reinforcement was required, consuming buoyancy margins that might otherwise have supported combat systems. Even if the margin technically still exists to add combat systems, those systems will increase its weight further, potentially driving a need for additional reinforcement and cascading into more redesign.

Electrical margins present another challenge. Modern combat systems impose demands far beyond what was envisioned when the NSC was designed nearly two decades ago. The NSC has capacity for more systems than the US Coast Guard installed, but perhaps not for all those the US Navy would wish. Installing more electrical capacity is a major undertaking.

Survivability standards pose a third challenge. The Navy can waive these requirements, as it did for the LCSs, but it is understandably reluctant to field ships that cannot absorb damage without becoming combat-ineffective. These challenges create the temptation for, and some of them may require, deeper redesign than the US Navy's current timelines permit.

To credit the US Navy, it does not appear to assume the NSC redesign will be simple or quick. The apparent plan is to bolt on whatever systems can be added to the NSC with minimal modification and to begin building ships otherwise "as is" following the US Coast Guard design. More deeply modified, and capable, ships will only be built when redesign work is complete at an unknown point in the future. This plan may get hulls into the water quickly, but, the usefulness of these modified hulls, might be questionable.

In practice, this approach will initially deliver ships with capabilities similar to the in-service LCSs. Such NSC frigates may be sufficient to retire some additional LCSs, something the US Navy could welcome, but it is unlikely to meaningfully free up Burke-class ships from their present duties. The threat environment in most places where the Burke-class are used today is simply too significant for what LCSs or a similarly equipped NSCs can handle. As an example, only Burkes, not LCSs, played a role in the US response to the Red Sea Crisis of 2023-25 – precisely the sort of low-intensity littoral conflict LCSs were designed for – because the threat in that setting has evolved past their capabilities. More capable NSC variants are presumably possible, but their maximum potential capability is currently unknown, and they will only exist after a risk-prone redesign of uncertain duration.

Contrast this with the River-class in the mini-Burke role. Not only does it already have combat systems beyond what an NSC is likely to ever have, the systems that form its combat backbone are ones that are sourced from America. That includes an AEGIS combat system incorporating the US Navy's Cooperative Engagement Capability, a Lockheed Martin AN/SPY-7(V)3 radar, and Raytheon's AN/SLQ-32(V)6 electronic-warfare suite. No system changes are necessary.

This is not because the River-class avoided redesign entirely. Its Type 26 parent design includes none of the aforementioned systems. The difference is that the River-class has already passed through that redesign phase. It sits on the far side of the risks that doomed the Constellation-class and threaten to delay or skuttle the NSC and, indeed, any other options.

The River-class also benefits from its British heritage. The Royal Navy's survivability standards, shaped by its Falkland War experience, are among the world's most demanding. While metrics differ, the outcomes align closely with US Navy priorities: ships that

remain afloat and fightable after damage, and crews that come home. This removes another source of redesign pressure which exists in the NSC program, and would exist for most other foreign designs.

The River-class does include some non-American subsystems, but these are either UK systems for which Canada has already resolved supply-chain issues to build using them within the deeply integrated North American industrial base, or, Canadian systems which, while they might be new to the US Navy, are products of the joint US/Canadian manufacturing base. This means the River-class does not rely on electronic widgets or raw materials which are not available to US manufacturers. This gives the River-class a fundamentally different risk profile from other non-American designs.

Ships are designed around the materials, components, and fabrication practices of the industrial ecosystem in which they are built. When a design is transferred to a different industrial ecosystem, some of those solutions cease to be available, forcing redesign.

In some cases, these changes are manageable. Substituting a slightly different steel plate thickness may require analysis but, assuming the thickness provides the needed strength and is within the ship's buoyancy allowances, little else.

In other cases, the consequences cascade. A specialized component made from an unavailable alloy may present a tremendous challenge. Importing the component, or the raw materials to make it, might be an option if America is willing to accept the higher costs and supply chain risk. But it also might not be an option at all, if the country of origin doesn't have the slack manufacturing capacity to meet the need, and no manufacturer in America has the experience needed working with the material to create a component to the necessary tolerances. This can force redesign, altering dimensions and interfering with

adjacent systems, which in turn require redesign themselves. Many mechanisms can cause this and it is how the scope of redesign can grow unpredictably.

It runs counter to the ‘meddling (read: stupid) Admiral’ trope, which is blamed for the failure of the Constellation-class. But many of Constellation-class’s redesigns began this way, with additional tinkering only happening once some level of redesign was required. Any non American design originating outside the US industrial base must successfully navigate this process before construction can begin in American yards. And that takes time.

Canada is the exception. It’s a somewhat shallow demonstration, but Canadians buy two-by-fours, not 50 by 100 millimetre lumber - even though Canada officially uses metric measurements. Why? Because doing otherwise would make it harder for Canada to trade goods to and from the United States.

This mundane example reflects a deeper reality: For all practical purposes, the Canadian and American industrial bases are one and the same. There are effectively no raw materials or industrial components available in Canada that are not also available in the United States, and vice versa. This means American industry can freely “copy Canadian homework” in ways that do not apply to designs from elsewhere because a design which can be built in Canada can skip the redesign phase when building in America too.

And that’s what the River-class represents. Like the Constellation-class, it derives from a foreign parent design. It required redesign. However, it’s already in full-rate production, a milestone the Constellation-class never reached, which means that the scope of the River-class’s required redesigns is known, and largely complete.

This does not quite mean the US Navy could adopt the design tomorrow and begin construction in Wisconsin the next day. Even transferring a proven

USS Roosevelt, a Burke-class destroyer (US Navy)

design between American shipyards requires some engineering work. But that work is fundamentally different – faster, cheaper, and far less risky than redesigning the ship itself.

Some have proposed bypassing redesign altogether by waiving the requirement that US Navy ships be built domestically, allowing designs like the Mogami class to be constructed overseas. Two issues exist with this: One is that this merely moves the problem. Unless the United States is prepared to rely on foreign shipyards for maintenance and modernization throughout a ship's service life, the redesign work still has to be done in order to maintain the ships. Second, it only reduces the amount of redesign, it doesn't eliminate it. Even just changing the voltage and shape of crew-accessible electrical outlets to work with US electronics is a redesign project that can cascade and grow in scope.

While all of this means that the River-class bypasses some of the issues the Constellation-class encountered, and other foreign designs would encounter as well, none of this should allow us to ignore the River-class's weaknesses. Cost being the most obvious. Canada's Parliamentary Budget Officer estimates the acquisition of 15 River-class ships at over C$80 billion: roughly C$4.6 billion per ship. Understanding this figure requires knowledge of its accounting assumptions, for example, it includes taxes paid back to the government – something government estimates frequently omit. However, adjusting for this, and converting to US dollars, still gives a cost estimate of over US$3 billion per ship.

Yet, looking a little deeper, there are costs built into that number which wouldn't be reflected in a US program. Prior to the River-class, Canada hadn't laid down a true warship in over 30 years. This lack of experience has direct impacts on cost that won't be a factor in US shipyards, which have significant and much more recent experience. This gap in production

also meant no Canadian yards could begin construction on the River-class before being largely rebuilt. Rebuilding yards is incredibly expensive and much of that cost, which also won't be duplicated in the US, was built into the River-class project's budget.

Accounting for all that, however, a River-class built in America would still likely have an acquisition cost similar to a Burke-class: around US$2.5 billion. That raises a legitimate question: why build a mini-Burke for the price of a real one?

Lifecycle cost is part of the answer. Fuel and crew dominate lifetime expenses. Acquisition cost is a relatively small fraction of the total. The River-class's propulsion system is more efficient, and its crew of roughly 200 is far smaller than the Burke-class's 300-350. Over decades, the savings from just those two factors will be significant.

But even that defence of the River-class's price tag is shallow. To begin to explore it more fully, we need to acknowledge another one of the River-class's perceived shortcomings: The fact that it has an underwhelming 24 VLS cells. This statistic is sometimes used in a misleading way when comparing to European designs. The River-class's Mk 41 VLS cells can each carry one large missile or four small missiles but are frequently compared on a 1:1 basis with VLS systems that can only carry one small missile. Many ships also rely on their VLS cells to hold their point defence and anti-ship missiles, both of which the River-class has dedicated launchers for. However, compared to the Constellation-class's planned 32 Mk 41 cells, with dedicated point-defence and anti-ship launchers, it is a reduction.

Yet the Constellation-class failed precisely because it tried to do too much within too tight tolerances without having the time, resources, or infrastructure to make it work. Expecting an alternative to achieve everything the Constellation-class sought isn't realistic.

All the same, the Royal Canadian Navy has acknowledged this shortcoming in the River-class, and stated that it too would prefer more VLS cells on the platform. However, the time crunch created by the looming retirement of the Halifax-class, Canada's only in-service and rapidly aging surface combatant, has convinced the Royal Canadian Navy to proceed with building its first River-class "as-is" and invest the time spent building them to do the design work properly for a "Flight II" version with more VLS cells.

With its own time-crunch, this is an approach that the US Navy could emulate. Begin construction now on an available design which meets most of the force's perceived needs – much more so than the base NSC design – and use the cushion of time created by those ships to properly complete the redesign that's required to create an ideal variant for the future.

There is ample room within the River-class to support that evolution. While it is too early to know for sure, Canada's Flight II River-class will likely have between 30 and 36 Mk 41 VLS cells. This relatively modest increase over the 24 VLS cells in the base configuration isn't an inherent limitation of the River-class's design. The Royal Canadian Navy is extremely enamoured with the River-class's "multi-mission bay", which is a reconfigurable space directly forward of the helicopter hangar which can be used to increase the ship's capacity for helicopters or unmanned aerial vehicles, deploy unmanned underwater vehicles or large boats, or carry cargo and support humanitarian and relief efforts, among other things. Keeping this space puts a limit on how many VLS cells can be added to the design.

There's an argument that this is an excellent feature for the US Navy as well. Especially given the rapid changes in drone technology, and the impact they're having on warfare, as well as the expectation that this ship will be used for taskings the Burke-class is overkill for, like humanitarian work. However, if VLS cells are the sole priority for the future, there are concept designs (based on the Type 26 parent design, not the River-class specifically) which suggest that replacing the multi-mission bay could allow for as many as 96 Mk 41 cells (matching the Burke-class), or even 128 cells if the main gun were sacrificed.

These upgunned versions of the River-class are concepts. But their existence shows that the Type 26 has the basic space, buoyancy, and power requirements for this to work. Realizing these concepts would require extensive detailed design work, exactly the type of work this piece cautions

against relying on going smoothly in the near-term. It is also possible that engineering challenges would be discovered that make the practical limit for VLS cells somewhat lower than this theoretical maximum. But the fact that such growth is plausible underscores an important point.

The River-class isn't limited to being a "mini-Burke". The flight I design the Royal Canadian Navy is building can be built as-is by the US Navy in order to fill the "mini-Burke" role, saving money compared to operating the same number of Burke-class ships, but that's not the limit of the design. It is really more accurate to think of the River-class as a Burke-class with different priorities, and with a modern systems architecture that leaves room for a broad range of configurations and whatever advancements the next 30 years of naval warfare bring.

This is important, because the Burke-class is at the absolute limit of what can be integrated into its 1980s architecture and it too needs replacement in the relatively near future. In mid-2025, the Burke-class's replacement plan appeared to be to bring in the Constellation-class to take on some of the Burke-class's lower-demand taskings, and to aggressively pursue a project for the DDG(X) destroyer, which could take on the "premier air-defence" taskings from the Flight III Burke-class in the future.

After the cancellation of Constellation-class, and the selection of the NSC, a significant gulf was left in the US Navy's future fleet mix. The NSC is a 4,600-ton ship which, as a frigate, may grow to around 5,500 tons. The Constellation-class was going to be a 7,200-ton ship. The Burke-class is currently being built as a 9,800 ton-ship. The DDG(X) is set to be a 13,000-ton ship. Without Constellation-class, and with Burke-class nearing the end of its economically viable production life, the US Navy may soon be building an (at most) 5,500 ton frigate and a 13,000 ton destroyer. Nothing in between.

The DDG(X) program itself, as a blank-sheet design, comes with many risks. But, to complicate this situation further, the White House and US Navy recently announced a plan to build a 35,000 ton "battleship" known as the Defiant-class (Defiant). While Congress will have a say before this plan can go ahead, it is notable that the plans put forward for the Defiant quietly proposed cancelling the DDG(X).

To prevent an outcome where the US Navy is building just a 5,500 frigate and a 35,000 ton "battleship", the stated intention behind the battleship plan is to keep building Burke-class ships into the indefinite future. But this is simply not feasible. There is a limit to what new systems can be patched onto old frameworks, and changes in industrial practices will continue to inflate the Burke-class's production costs. Eventually the Navy will have no choice but to stop building the Burke-class and, without something else, will be left with an enormous unfilled gulf in its construction plans. The River-class can be that "something else".

This returns this discussion to the topic of cost. The River-class is a more modern, more adaptable ship with room for future growth. It also has the latent capacity to become a direct successor to the Burke-class. As such, it should not be surprising that its cost is similar to the Burke-class. That is simply the price of a survivable, full spectrum surface combatant in an era of drones, hypersonic weapons, and dense sensor networks. These high capital costs should not be viewed as an impediment to pursuing such ships, where there is a need, especially for the United States whose President has recently foreshadowed up to a 50% increase in US Military spending, most of which will, initially, be available for capital projects.

That is not to denigrate smaller specialized combatants with even lower costs, like what the NSC may become after it has been redesigned. Those ships are useful. But they require full-spectrum combatants to complement them, while a fleet of just the most premium combatants is difficult to build at scale.

More to the point, all the shipbuilding plans the US Navy has for the future have significant risk. Whether discussing the risk inherent in the NSC's redesign, or the possibility that the "threat floor" will become higher than its "capability ceiling"; the likelihood of the Burke-class's age creating an industrial cost spiral, or the chance of new threats appearing that its systems can't be adapted to counter; or enormous capability gulfs being left in the US Navy's force structure by

decisions and developments in the DDG(X) or Defiant programs – the River-class provides an alternative which derisks all of those programs.

The case for the River-class is not that it is perfect, cheap, or tailor-made for the US Navy. It is that it can be built now, meeting urgent fleet needs, while preserving the option to pursue greater ambition later. It offers the US Navy a way to satisfy many priorities in one low-risk project instead of having to pursue multiple high-risk no-fail projects at once. This case for the River-class is an appealing and unique proposition. And it is enough to ask whether the best future for the US Navy is one where a River runs through it.

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Potential future US battleship - (Image: Naval Systems Command)

Interview with Director of Naval Strategy

Captain(N) Rob Watt

This February the Naval Association of Canada (NAC) hosted a speakers evening featuring Captain(N) Robert Watt, the Royal Canadian Navy's Director of Naval Strategy, who discussed the development of a new naval strategy document. Captain(N) Watt explained that the current strategy development is a bottom-up initiative addressing the need for updated guidance given recent geopolitical changes and increased defense spending. He outlined the challenges of limited resources and personnel while emphasizing the importance of balancing new capabilities with existing commitments.

The discussion covered various topics including Arctic operations, unmanned systems, and the role of the Canadian Coast Guard in maritime security. Participants asked questions about specific capabilities, threats, and strategic considerations, with Captain(N) Watt providing insights into how these factors will shape the future RCN strategy.

RCN Strategic Outlook Discussion

Tim Addison, the NAC's Director of Naval Affairs, explained to the audience that the evening would proceed with an interview format followed by questions from the audience, following the Chatham House Rule of Non-Attribution. He then introduced Captain(N) Robert Watt, RCN's Director of Naval Strategy, and invited him to make some opening comments on the RCN's strategic outlook. Capt(N) Watt highlighted the need for an updated strategy to address emerging technologies, geopolitical changes, and increased defense spending. He emphasized the importance of articulating the Navy's needs to Canadians and parliamentarians, as well as addressing the challenges of staffing new projects.

RCN Strategic Planning Initiative

The meeting focused on the need for a clear grand strategy for the RCN to guide its operations and resource allocation. Rob emphasized that while the RCN has faced cycles of ambition, constraint, and reinvention, the current lack of a comprehensive strategy hampers effective decision-making. He also highlighted the importance of defining strategic interests, capabilities, and priorities, while acknowledging the constraints of personnel, infrastructure, and bandwidth. The team is taking a consultative approach to develop a new strategy,

drawing inspiration from other countries' documents and conducting writing exercises to generate feedback.

Key questions discussed included the target audience for the strategy, the identification of threats, and the need to address attrition and casualties, which Rob noted would be challenging for Canadians to accept.

Canada's Maritime Strategy Development

The interview focused on Canada's naval strategy development, with Rob explaining that the initiative is a bottom-up effort from the Navy to address changing world conditions and upcoming critical projects. The discussion covered various strategic considerations, including threats to Canada, the role of the Canadian Coast Guard, and the need to balance NATO commitments with domestic defense. Rob emphasized that while the strategy will be platform-agnostic, it will identify crucial capabilities needed for Canada's maritime operations, acknowledging that platform decisions have already been made but must be supported by a coherent strategic framework.

Maritime Defense Strategy Development

The discussion centered on creating a maritime defense strategy with a 3-to-5-year outlook, noting that earlier strategies were designed for longer periods. Rob explained that while the Canadian Coast Guard would be included under the Department of National Defence (DND) umbrella, they would maintain their distinct role and not be armed, though they would play a crucial part in maritime domain awareness, particularly in the Arctic.

The conversation highlighted challenges in the Arctic, including limited ice-free ports and the need for improved hydrographic surveys, while emphasizing the importance of balancing Arctic presence with other strategic priorities. The discussion also touched on the potential use of unmanned and autonomous systems in naval capabilities, drawing lessons from Ukraine's success against Russia's Black Sea Fleet.

Royal Canadian Navy Strategic Evolution

The discussion focused on the RCN's strategic direction and capabilities. Rob explained that while the Navy is moving towards unmanned systems and autonomous technology, there are challenges with staffing new projects due to limited personnel. He noted that the Canadian Surface Combatant (River Class Destroyer) project will have an ASW focus but will also include capabilities for ballistic missile defense. The Navy is developing its strategy in parallel with the Canadian All-Domain Defense Plan, which may become the grand strategy for the CAF. Rob also mentioned that the new Canadian Joint Forces Command will not significantly impact the Navy's work, as it will continue to operate in step with Canadian Joint Operations Command.

RCN Modernization and Arctic Strategy

The discussion covered several key topics related to the DND’s maritime oriented acquisition projects. Rob explained that the transition from CP140s to P8 platforms and the management of the frigate decommissioning and new ship arrivals are being carefully planned to maintain operational capability.

He also noted that Arctic Offshore Patrol Ships (AOPS) are already being used for various roles beyond traditional patrol duties, including intelligence gathering and special forces support. Rob also clarified Canada's position on the Northwest Passage as national waters and discussed the importance of hydrographic surveys in the Arctic, potentially moving the Hydrographic Services Office under DND or the Navy. Regarding the Naval Reserves, Rob mentioned the establishment of a new directorate under Captain(N) Hingston to address future workforce needs, including plans for the Future At-Sea Sovereignty Training Vessel (commonly referred to as FASST-V project to replace the Orca Class) to enhance reserve unit capabilities. Finally, Rob expressed support for the Defense Industrial Strategy, emphasizing the need for sustained naval shipbuilding to develop a robust domestic capability, while acknowledging the challenges of industry investment in expensive locations like Vancouver.

Maritime Strategy and Naval Capabilities

The discussion then focused on strategic maritime considerations and naval capabilities. Capt(N) Watt discussed the Russian naval situation in the Black Sea and historical lessons from past conflicts, emphasizing the need for careful analysis rather than knee-jerk reactions. The group explored questions about autonomous systems, mine warfare capabilities, and the Royal Danish Navy's new mine-laying system.

Q & A summary

Naval Strategy Development Process

Tim: Who or what will be defined as the threat or threats to Canada in your document?

Capt(N) Watt: There's debate about whether to name specific countries as threats (like Russia and China) as the British have done in their documents. We were surprised when the 2022 Indo-Pacific Strategy named China as a disruptive power. We could alternatively refer to "powers challenging the rules-based international order." The threat assessment also includes specific technical threats like submarine-launched cruise missile ranges, and the growing uncertainty about dependability of allies.

Tim: Is anyone from within government being consulted before you set pen to paper?

Capt(N) Watt: Not really. This is a bottom-up initiative from the Navy looking at itself. As the project develops and gets reviewed up through Kraken, the minister, and ADM Policy, we'll start getting feedback and guidance.

Tim: How do you see capabilities transforming into platforms?

Capt(N) Watt: Ideally, we would identify threats, determine what the Navy needs to do, write the strategy, conduct a fleet mix study, and then decide on platforms. We're doing it somewhat backwards as

decisions on platforms have already been made. The strategy will be platform and system agnostic - we won't talk about River Class Destroyers but about "full-spectrum combat capable surface combatants." We won't talk about Tomahawks but about "precision strike capability."

Tim: Are you looking at a specific time frame for the strategy?

Capt(N) Watt: The common approach is to write a strategy for 15 years, but realistically most strategies have a 3-5 year shelf life given developments. With senior people saying we need to be "preparing to fight tonight," we need to look at a much shorter horizon.

Coast Guard and Arctic Operations

Tim: Will the Canadian Coast Guard be factored into this document?

Capt(N) Watt: Absolutely. The Navy will articulate its portion of maritime defense, but there's greater appreciation that defense includes more than just DND. The Coast Guard falling under DND has been welcomed within the Coast Guard. They will form a critical part of our maritime domain awareness, especially in the North. We need to iron out mechanisms for sharing information and secure communications.

Tim: What do you see as the RCN's future role and mandate in the Arctic Ocean and Northwest Passage?

Capt(N) Watt: It's part of Canadian territory, and "you get the sovereignty you're willing to defend." We need to improve maritime domain awareness and hydrographic surveying (currently only about 14% of the Arctic is surveyed for safe navigation). However, we need to be wary of the Arctic becoming a distraction at the expense of other strategic priorities. Most of our critical infrastructure is in the south, and we could risk throwing the entire Navy budget at the North while still not covering it adequately from a defense perspective.

Tim: Will Nanisivik be included in the commentary of the document?

Capt(N) Watt: Nanisivik won't be named specifically. The reality is it doesn't really meet Navy needs - it's too isolated, we can't put a usable jetty there, and it's not necessarily where we would need fuel. We need to realistically look at having resources where we need them without causing more environmental problems than we solve.

New Technologies and Capabilities

Tim: Are uncrewed surface and underwater platforms under consideration as new capabilities?

Capt(N) Watt: Not just in the North - autonomous or semi-autonomous, AI-enabled or optionally crewed systems will absolutely play a part in our future strategy. The Ukrainian defeat of the Russian Black Sea Fleet using unmanned systems was unprecedented. The Royal Navy's First Sea Lord has given guidance of "unmanned wherever possible, manned only when absolutely necessary." Mine hunting operations have been progressively moving toward unmanned systems. The challenge is that we only have limited personnel for projects, and developing entirely new capabilities is more difficult than updating existing ones.

Tim: Will the RCN remain an ASW Navy or take a broader approach?

Capt(N) Watt: ASW will remain our specialty as it makes sense given our geography. However, the River Class Destroyers will have Mark 41 vertical launchers, Aegis, and SPY 7 radars, giving them ballistic missile defense capability. This puts the Navy in a different league. We'll need to determine whether NORAD would be the force employer for BMD duties. Currently, there's no plan to put SM3 missiles on our ships, so we would primarily serve in a queuing role for ballistic missile defense.

Force Development and Personnel

PD: How are you factoring force development into strategic considerations given the gaps in available personnel?

Capt(N) Watt: There will be tough decisions to make. The Canadian Forces are extremely short of

personnel, with the Navy being the most short by a wide margin. We need to prioritize rebuilding our naval training system. We're starting to catch up on recruiting, but that's just moving the problem up one level - now we have people awaiting training, sometimes for 1-2 years.

Sealift and Support Capabilities

JC: Does the Navy have any appetite for a sovereign sealift capability beyond the JSS, or would it prefer to assume sealift is available from other sources?

Capt(N) Watt: Apart from the US, almost no navies maintain a true sealift capability - most rely on ships taken up from trade or contracted. Building grey hull sealift would drain off critical personnel and design/project capabilities. Sealift doesn't need to be a Navy solution.

Tim: Are we thinking about a support vessel for submarine activities?

Capt(N) Watt: The submarine project team is looking at all options, but the priority now is getting the project down-selected to the actual design and country. The phrase "submarine tender" has been discussed, but those decisions will be made further down the line.

Acquisition and Industrial Strategy

LC: How aligned do you feel with the Defense Industrial Strategy, and how can Canadian industry help the RCN?

Capt(N) Watt: The DIS is fresh off the press, but it's encouraging. From the strategy point of view, we see value in broadening and deepening the commitment to naval construction. These commitments allow industry to invest in capabilities. Naval power comes not just from ships but from the depth and sustainability of the naval shipbuilding industry.

KL: Given the need to "fight tonight," are there contingency plans to accelerate acquisition of off-the-shelf capabilities?

Capt(N) Watt: There are some, but we've already found all the quick wins possible. Treasury Board thresholds and PSPC requirements haven't been lessened, limiting what can be done quickly. We've achieved some quick wins with new diving equipment, ROVs, and autonomous underwater vehicles, but until the acquisition process is streamlined, we're constrained by the existing architecture.

Lessons from Recent Conflicts

LC: What lessons have you learned from Ukraine's defeat of Russia's navy, and how vulnerable is our fleet?

Capt(N) Watt: We're looking at it carefully. We need to be careful about drawing too many lessons, as factors like poor maintenance and training of Russian ships contributed to their vulnerability. The Russians were also forced to operate close to shore in the Black Sea. Every country is studying these lessons, and there's ongoing debate about drones, UAVs, and semi-submersible autonomous systems. For weaponized autonomous systems, we'll need to address the difficult question of when we would allow AI systems to release weapons.

DL: Would we consider using a mine laying system like the Danish "The CUBE" as a deterrence in the Northwest Passage?

Capt(N) Watt: We would have to look hard at new capabilities the Canadian Navy hasn't traditionally used. Mine operations seem easy to countries that don't do them, but they're amazingly complex and would require new training resources. Countries with mine laying capabilities typically have specific geographic reasons for them. We would need to consider what strategic effect we're trying to achieve by mining the Northwest Passage, and whether the Canadian public would understand the difference between naval mines and land mines.

The Navy's Strategic Review

In 2026 the RCN is reviewing its doctrine and strategy in the face of rapidly evolving global security dynamics. In support of this initiative the Naval Association of Canada is assembling prescriptive briefing notes to feed advice and recommendations directly into the process.

These notes cover a wide array of topics and are drawn from NAC members and outside experts. They are intended to present the Navy with ideas and arguments that could shape how the RCN defines its priorities and adapts to the changing geopolitical environment.

An Arctic Operating Concept

Building for Specialized Operations in the North

Adam Lajeunesse

As the RCN adjusts to sustained Arctic operations and a growing Government of Canada focus on the region, it will have to decide on a force composition which either builds a niche Arctic capability into specific ships or extends a limited Arctic-capability across multiple platforms.Specifically, the Navy must decide on whether to design and equip future corvettes, submarines, and other craft with ice-strengthening and Arctic specialization, or delegate that task to Arctic and Offshore Patrol Vessels (AOPVs) and other Arctic-focused platforms and systems.

Background

The RCN is planning its future fleet structure amid heightened Arctic security concerns and the need to modernize aging platforms. The AOPV fleet has entering service with hulls and systems specifically optimized for Arctic constabulary operations. Simultaneously, discussions are ongoing regarding future corvette designs which Admiral Topshee has suggested should be Polar Class 6. Likewise, recent comments suggest that the RCN is examining upwards-facing sonar and other systems for the future SSK fleet.

The need for greater Arctic capability is an important part of Canadian Defence Policy and has been highlighted repeatedly by government as a critical consideration. Activity in the region is also increasing, with commercial shipping (tourist and resupply) expanding and Chinese government/quasi-government activity growing exponentially in the Western Arctic. American threats to Canadian sovereignty may also spill over into the Arctic as the long-dormant Northwest Passage dispute represents a possible future crisis point. As such, Canada will require presence and capacity to address all these growing friction points.

Analysis

Threat Environment

Historically, Canadian efforts to project power into the Arctic have conflated political and military threats in an unhelpful manner. Questions of ‘sovereignty’ and general insecurity about state control in the area, have led governments to deploy, or seek to deploy, combat power on the false assumption that this translates directly into ‘sovereignty.’ This is not accurate for a variety of reasons. Rather, combat capability should be developed to meet real or likely threats and, in the Arctic, there has often been a mismatch between those threats and plans.

Kinetic operations are unlikely to take place in the Canadian Arctic and the adjacent seas. In war, high-intensity combat involving Russian or Chinese forces would most likely occur in the North Atlantic and North Pacific – not deep within the Arctic or in ice covered areas. Russian (or potentially Chinese) submarine operations are possible in the region, however, hunting these SSN is beyond Canadian capabilities. Submarine detection in ice-covered waters would be impossible from a moving vessel. There are also no targets of strategic importance in the region that require persistent defence (with Pituffik being

the one exception).

Critically, an ice-strengthened surface combatant would be ineffective in the region against submarines. A corvette is also unnecessary for such tasks since ASW helicopters, integrated into seabed listening systems could more easily be launched from AOPV, CCG icebreakers, or airfields ashore.

Surface vessel incursions into the Canadian Arctic or surrounding seas are also unlikely. The Canadian Arctic offers constrained and ice-infested waters – all within easy range of Canadian and American fighters. ASuW would therefore be far easier to prosecute by air than from surface combatants.

Even Canada's planned SSK fleet may be overemphasizing under-ice capability. These vessels will not have the ability to safely operate for long periods under the ice. Nor will they have to. During wartime, enemy submarines under the ice would present no serious danger to Canada. There is little that such a vessel could do to damage Canada or its allies in the region – there is no shipping in the ice-covered Arctic and nothing of military value to strike. At most, the Canadian Arctic could be used as a transit route to open waters. As such, the Canadian SSKs should be developed for ice edge operations – operating in open waters with a limited under-ice capability to guard the entrances and exits of the Arctic, not the Arctic itself.

Overbuilding warships to include an ice capability is expensive and would require tradeoffs in capability. A PC6 corvette will require heavier hull plating and closely spaced framing (especially the ice belt), a stronger bow, ice-capable propellers, shafts, and rudders. All of that adds mass and drag. Speed and maneuverability will be compromised, ship weight may lead to lighter mission modules as well as reduced margins for future proofing. Arctic capability would also add

significant costs – resources that could go into procuring additional hulls.

Arctic Requirements

While Arctic security threats are proliferating, the region is not the center of gravity for great power competition. Where that competition is taking place, it does so in the form of hybrid and grey zone tactics. These threats are better met with a constabulary capability, not warfighting platforms. Chinese research vessels conducting unauthorized surveys, fishing fleets operating in Canadian waters, potential cable-cutting operations, and grey-zone activities designed to establish presence without clear accountability are the most realistic scenarios Canada must address.

These threats are precisely what the AOPV fleet was designed to counter. With their 25mm guns, boarding capabilities, extended endurance, and ice-strengthened hulls, AOPVs provide appropriate capability for enforcing Canadian laws, deterring malign activity, and providing persistent presence. The vessels can operate during the navigation season in Arctic waters and conduct constabulary missions in southern waters during winter, maximizing utilization. During winter, CCG icebreakers will be sufficient to meet any foreign icebreaker presences.

AOPV and icebreakers will also be adequate for 'political' missions. This could involve shadowing Chinese or American trespassers, or boarding quasi-state actors embarked on hybrid missions. These missions would require large vessels with minimal armament, not the heavy weapons of a surface combatant.

Where additional capability is required to address evolving hybrid threats, the solution is an upgrade to the AOPV to "constabulary+" platforms. This entails containerized weapons systems, point defence, and enhanced sensors. Such modular upgrades provide the flexibility needed to respond to grey-zone challenges while maintaining the AOPV's core constabulary mission and avoiding the massive costs of universal Arctic capability.

Recommendation

Canada faces existential threats from peer adversaries. The RCN must field surface combatants and submarines capable of operating effectively in high-intensity conflict alongside allies. Degrading the performance of future corvettes and surface ships to provide an unnecessary Arctic capability represents poor strategic resource allocation. Submarines will operate at the ice edge but caution should be exercised not to over-emphasize (and over-spend for) a true under-ice role that has more political than military value.

The AOPV fleet provides appropriate, carefully tailored capability for the actual and likely future Arctic threat environment. Along with CCG assets, these vessels represent sufficient capacity for sovereignty patrols, domain awareness, hybrid threat response, and constabulary enforcement – all without compromising the RCN's ability to field competitive warfighting platforms for high-intensity scenarios in primary theatres.

Canadian naval strategy should clearly divide Arctic and non-Arctic roles and rely on specialized craft for the Arctic. If a broader Arctic capability is deemed necessary, strategy must make it clear what threat this is being developed to meet and why that threat cannot be more appropriately met by AOPV or RCAF assets.

Preparing for the New Navy

Improving Command and Control in the Arctic

Doug Theedom

The Royal Canadian Navy (RCN) has ambitious plans to transform our current fleet of warships into a modern fighting force capable of blue water, littoral, and subsurface warfare. These efforts are in response to the deteriorating international situation which demands that individual states look after their own interests instead of relying on the old coalitions led by the United States. Canada must be able to pursue its own interests and defend its territory, particularly the Arctic, against a variety of foreign actors including Russia and China. New ships are needed but there are institutional and capability gaps that must and can be addressed now to prepare the way for the future fleet.

Analysis

The Canadian Patrol Frigates (CPFs) are past their useful lives, most mine coastal defence vessels (MCDVs) have been decommissioned, and the RCN has only one operational submarine out of four. This leaves the Arctic Offshore Patrol Vessels (AOPVs) to pick up the slack until the Canadian Surface Combatant (CSC), the new corvettes, and submarines are in service. The first submarine could be delivered by 2032 and the first CSC by the early 2030s. There is no contract in place yet for an MCDV replacement.

All these ships are intended for modern warfare, which is network-centric and relies on a robust communications backbone. This backbone is currently supplied by U.S. military satellites from which the Canadian Armed Forces leases time. This system operates well below the Arctic Circle but once an RCN vessel proceeds north of that line, there is little to no coverage. Most of the Canadian archipelago lies north of it. The RCN's partners, the Canadian Coast Guard, use Starlink which works well, but is unsecure and cannot be used to share classified data. Canada's Enhanced Polar Communications Satellite project promises to rectify this issue by 2035 at the earliest. The European company Eutelsat owned by the British and French governments have offered the Canadian government access to their existing constellation of low earth orbit polar satellites. This would be a secure network that can be completely controlled by Canada, and it could be enabled within months.

While not warships, i.e. not capable of engaging in combat at sea, the AOPVs will have to conduct more sovereignty patrols and act as command ships. This will require additional capabilities, some such as an embarked Naval Boarding Party (NBP) and helicopter the AOPVs were designed to possess, but others are new. Having an NBP would allow the vessels to conduct cooperative Maritime Interdiction Operations (MIO) in international waters and provide a light security organization for forces operating ashore. The CH-148 has proven to be unreliable as a naval helicopter and AOPVs cannot embark one for an entire deployment. To be able to act as a Command ship requires additional secure satellite and radio communications and IS systems. The current communications and IS suite are inadequate for this task.

Maritime security within Canada is the responsibility of Transport Canada, with the RCN playing an important, but subordinate role. Other prominent organizations include the Royal Canadian Mounted Police (RCMP), Canadian Coast Guard (CCG) and the Canadian Border Services Agency (CBSA). All these organizations belong to the three Maritime Security Operations Centres (MSOCs) in Halifax, Victoria and Niagara, ON but their presence is in some cases on an ad hoc basis (including RCMP and CBSA) nor is there a means of sharing classified information between them. Since many maritime security incidents will involve a law enforcement

component it is of particular concern that there is significant reluctance on the part of the RCMP to share information. Finally, no organization is responsible for the MSOCs.

Recommendations

The Canadian government should pursue the offer by Eutelsat as a matter of urgency while it waits for the Enhanced Polar Communications Satellite project to have an operational constellation of satellites in orbit. The fact that the RCN's primary Arctic vessel has ineffective communications capability within most of the Canadian Arctic Archipelago is a very serious shortcoming which impedes all its other operational functions. The future fleet will also need reliable polar communications.

The AOPVs must be given the additional sensors (including additional radar) and classified Command Management System (CMS) required for proper maritime domain awareness (MDA). They should also have crew members trained as NBP. The AOPVs require their own helicopters, not the CH-148s, but either of the shipborne helicopters used by the CCG. There should also be a means of sharing classified MDA information with the CCG who would require secure communications onboard their vessels. The CCG is the primary government maritime agency in the Arctic and information gathered by their ships should not be ignored.

Control of the MSOCs must be centralized with an organization responsible for their operations. There should be a common standard of information gathering and sharing between all three, a 24/7 watch that includes not only RCN and CCG but also the RCMP at a minimum. All watch members should have security clearances and a common classified information sharing network must be developed and implemented.

During OPERATION CARIBBE, HMCS MONCTON transits through the Atlantic Ocean (Photo Braden Trudeau)

Costing Methodologies

The Need to Move Beyond Life-Cycle Costing

NAC

Life-Cycle Costing aggregates all actual and projected costs associated with a platform across its entire lifespan, including options analysis, design, testing, acquisition, personnel, operations, maintenance, infrastructure, and disposal. This methodology is mandated by Treasury Board policy and its use is not at the discretion of DND.

Problematically, LCC presents extremely high-cost estimates from procurement projects and these figures are routinely presented in public discourse without sufficient context. This leads to frequent and inappropriate comparisons with foreign naval programs that report only acquisition or sail-away costs. As a result, Canadian-built vessels are often perceived as dramatically more expensive than comparable allied platforms, despite similar or identical capabilities.

Analysis

Life-cycle costing has emerged as a poor tool for providing accurate and meaningful cost measurements to decision-makers and the public, undermining rather than enhancing transparency in naval shipbuilding. The fundamental weakness of LCC lies in its reliance on long-range assumptions that extend three to four decades into an inherently uncertain future. These projections depend heavily on speculative variables including fuel prices, personnel costs, inflation rates, operational tempo, and maintenance cycles, factors that resist reliable prediction even over short timeframes.

The international dimension of LCC comparisons compounds these problems. Most allied navies do not publicly report LCC costs for major platforms, relying instead on acquisition costs. Canada's use of LCC therefore creates systematic "apples-to-oranges" comparisons that make Canadian programs appear more expensive than its foreign counterparts. This methodological inconsistency fuels misleading narratives of incompetence, inefficiency, or waste – narratives that persist even when the underlying procurement performance may be good. The result is a self-inflicted wound that undermines public confidence.

Perhaps most damaging, the inflated headline figures associated with life-cycle costing have contributed to persistent public skepticism regarding RCN shipbuilding programs. When cost announcements routinely reach into the tens of billions of dollars they generate shock and opposition. This erosion of public confidence undermines political support, complicates funding approvals, and increases program risk through heightened scrutiny and political interference. Ironically, this dynamic raises actual costs through delays and the resulting inflationary erosion of program budgets.

Continued reliance on life-cycle costing as the primary public-facing metric for naval procurement risks long-term damage to the credibility of DND acquisition processes and public confidence in naval recapitalization efforts. While LCC may retain value as an internal planning tool for long-term budgeting and resource allocation, its use as the dominant narrative framework for communicating program costs to parliament, the media, and the public is counterproductive. A fundamental reconsideration of cost communication strategies is necessary to restore clarity, enable meaningful comparisons, and rebuild the public trust essential to sustaining Canada's naval modernization over the coming decades.

Recommendation

DND does not control this costing methodology but it should aggressively push to have these Treasury Board processes changed. DND should push to harmonize its methodologies with allies and partners to provide a more accurate comparison of program costs. This approach would improve transparency, bolster public support for defence spending, while enabling more meaningful international comparisons.

Arctic Refueling and Reprovisioning

Robert A. (Bob) Rutherford, CD

The Nanisivik Naval Facility was designed and constructed during a period when defense budgets were severely constrained. The result is a minimalist facility that remains incomplete and which, once finished, would barely fulfill its primary mission: refueling government vessels. The facility features a single alongside berth dedicated exclusively to fueling operations. This means that only one vessel can be serviced at a time. There is no capacity for a patrol ship to secure alongside for maintenance, crew rest, or resupply operations. When multiple vessels require service (an increasingly common scenario as Arctic operations expand) ships will have to anchor and wait their turn, burning fuel and losing operational time.

The facility's fuel storage capacity of 7,500 tonnes is adequate only for limited operations and, critically, must be emptied each winter. This requirement creates a critical vulnerability in regional logistics. RCN Auxiliary Oiler Replenishment (AOR) vessels are not ice-capable and cannot operate in Arctic waters. Commercial tankers serving northern communities operate on tight schedules dictated by the brief navigation season and cannot be diverted to fill naval fuel tanks on demand. A single AOPV can also consume a significant portion of the facility's fuel capacity during extended patrol operations. Multiple vessels operating simultaneously could drain the tanks entirely, leaving subsequent arrivals without fuel and forcing them to abort their missions.

Essential Infrastructure Improvements

While the facility is brought online, the RCN must address its most glaring deficiencies. A second alongside berth capable of accommodating an AOPV should be added, allowing the ship to conduct maintenance and take on stores while another vessel uses the fueling pier. To achieve this, a finger pier extending perpendicular from the shore would provide excellent access and minimal interference with existing operations. However, the bathymetry of Eclipse Sound presents significant challenges. A more practical solution is a quay constructed parallel to the shoreline, positioned east of the existing fueling pier. This design works with the natural contours of the coastline, requires less extreme engineering, and provides sheltered berthing space. The parallel orientation also offers better protection from prevailing winds and wave action. In addition to the second pier, the facility requires at least two offshore moorings. The moorings must be designed for Arctic conditions with substantial buoys visible in poor weather, and hardware capable of withstanding ice formation.

The facility's operational model must balance cost-effectiveness with readiness. A fully-staffed naval base in the High Arctic would be prohibitively expensive and unnecessary given the seasonal nature of Arctic navigation. During the navigation season (roughly July through October) a small team from Arctic Bay would handle routine maintenance, security, and readiness tasks. The use of local personnel provides employment in a region where opportunities are limited, builds community connections to the facility, and ensures staff with genuine Arctic experience and cultural knowledge.

When a vessel requires fueling or support, additional personnel would be called in as needed. This on-call system allows the facility to surge its capability when required while avoiding the expense of maintaining a large permanent staff during quiet periods. The core team ensures that equipment remains operational, fuel systems are monitored, and the facility is ready to respond when ships arrive.

Nanisivik (Photo: Wikipedia)

A Dedicated Arctic Support Vessel

Infrastructure improvements at Nanisivik address some deficiencies but do not solve the fundamental problem: reliable fuel supply and comprehensive logistical support across the Arctic. The solution requires a purpose-built vessel designed specifically for Arctic naval support operations. For this, the RCN needs a new AOR vessel with Polar Class 5 (or better) ice-strengthened hull construction. The vessel's primary cargo capacity must include a minimum of 7,500 tonnes of fuel – enough to completely replenish the Nanisivik facility's storage tanks in a single delivery. This ensures that even if the tanks are drawn down by multiple patrol vessels, or if they must be emptied for winter, the facility can be rapidly brought back to full capacity at the start of each navigation season or whenever stocks run low.

The vessel must carry containerized deck cargo including stores, provisions, spare parts, and equipment needed both at Nanisivik and by patrol vessels. Heavy-lift cranes enable the vessel to load and offload cargo independently, without relying on shore-based infrastructure that may not exist at remote locations. The Arctic AOR would operate on a regular shuttle schedule during the navigation season. At the season's start, it would fill Nanisivik's tanks and deliver containerized cargo. It would also remain in the Arctic to provide fuel capacity elsewhere in the passage.

Recommendations

The improvements proposed here include expanded infrastructure at Nanisivik and a dedicated Arctic support vessel. These represent significant investments, however, they are investments in capability that will serve Canada for decades. The current Nanisivik facility, built to minimum standards during lean budget years, cannot support the level of operations the RCN is now envisioning. The infrastructure improvements outlined here correct immediate deficiencies and provide the foundation for expanded operations. The Arctic AOR transforms that foundation into genuine capability, ensuring the RCN patrol vessels have the fuel, supplies, and support they need to maintain sustained presence throughout the navigation season.

Naval Fire Support

Force Generating A Canadian Naval Surface Fire Support Capability

Alec Rembowski

With the first River-class destroyers now under construction, the Royal Canadian Navy (RCN) stands on the threshold of a transformative leap in maritime combat power. These vessels will enable the RCN to deliver naval surface fires with unprecedented range and precision. Yet, despite this technological advancement, the CAF and RCN remain unprepared to fully leverage the firepower these platforms will bring to bear. The critical gap lies in the absence of dedicated units and coordination mechanisms capable of integrating fires from the maritime domain and land-based operations.

The CAF has demonstrated its commitment to cross-domain fire coordination through substantial investment in its Joint Terminal Attack Controller (JTAC) program, which effectively synchronizes air-to-ground fires. However, no parallel effort has been undertaken to establish comparable coordination capabilities between the RCN and land-based fire control elements, particularly the Royal Canadian Artillery (RCA) and Canadian Special Operations Forces Command (CANSOFCOM). This asymmetry in capability development represents a significant operational shortfall.

Developing a robust naval surface fire support (NSFS) coordination capability would yield two benefits. First, it would substantially enhance the CAF's effectiveness as an integrated, joint force capable of multi-domain operations. Second, it would ensure Canadian operational sovereignty by eliminating reliance on allied militaries – most notably the United States – that currently maintain this specialized expertise. NSFS operations can be conducted along any littoral where RCN assets operate, providing the CAF with a potent means of projecting lethal force from beyond the visual horizon and outside the immediate threat envelope of coastal defenses.

Analysis

For land forces conducting amphibious operations or maneuvering in coastal regions, NSFS frequently represents the only available means of concentrating sufficient weight and volume of fire to achieve tactical objectives. Despite participating alongside allies in numerous coalition operations, Canada has never committed to developing or maintaining a comparable capability.

Canada's current NSFS capacity is both minimal and entirely dependent on relations with the United States military. The RCA occasionally addresses this gap by sending personnel to the United States Marine Corps (USMC) Expeditionary Warfare Training Group Pacific (EWTGP) to complete the Naval Gunfire Liaison Officer (NGLO) course. However, once these personnel return to Canada, no institutional mechanism exists to continue practicing these specialized skills or to develop operational proficiency. This ad hoc approach produces individually trained personnel without generating sustainable organizational capability.

The development of a national NSFS program should be a coordinated partnership between the RCN, RCA, and CANSOFCOM to force develop the capability to effectively coordinate NSFS between the maritime and land forces. This joint force does not enhance the RCN, RCA, or CANSOFCOM in isolation, but strengthens the entirety of the CAF as a joint all-arms team.

The operational relevance of this capability is obvious given the geographic context of current and likely future CAF operations. Several ongoing operations are taking place in regions where the battle space could be shaped by naval fires, including Latvia and substantial portions of the Indo-Pacific Region. In each of these operational theaters, the ability to

coordinate precision fires from maritime platforms with land-based maneuver forces would provide Canadian commanders with enhanced operational flexibility and a significant force multiplier unavailable through other means.

Recommendations

The RCN should collaborate closely with the RCA and CANSOFCOM to establish a robust and credible NSFS capability. Such an initiative would not only expand the CAF's operational toolkit but would also significantly diminish – or eliminate – Canada's dependence on the United States for training CAF personnel in fire support operations. Moreover, developing indigenous NSFS capacity would bolster confidence among the CAF and allied partners in Canada's ability to deliver precision fires effectively across the full spectrum of multidomain operations.

RCN missile firing (Image DND)

RCN Electromagnetic Spectrum Superiority

Ensuring the Navy's Access and Maneuver Within the Electromagnetic Operating Environment

Michael Cabral

For the last 30 years, Western forces have had near-unrestricted access to the electromagnetic spectrum (EMS) to support pan-domain superiority in allied operations. However, with the return of great power competition, Canadian and allied forces will have to operate in a more contested EMS environment, demanding more adept offensive and defensive electromagnetic warfare (EMW) capabilities. Simultaneously, the electromagnetic operating environment (EMOW) is becoming more complex due to commercial demands for increased network capacity, which risks military access to higher-frequency bands.

With nearly every modern weapons system reliant on the EMS to function, access to and freedom of maneuver within the EMOE will be fundamental components of allied forces achieving superiority in the air, land, sea, space, and cyberspace domains. Therefore, in the face of competitors' advanced capabilities and escalating consumer demand for spectrum, the CAF will need to establish more proficient means to articulate the vital importance of its access to spectrum. In particular, given the RCN's reliance on the EMS to support SATCOMS, IAMD, and safety of navigation, the Navy should consider taking on a more proactive role in ensuring its spectrum needs are recognized and considered during the development of Canada's spectrum policy.

Analysis

The PRC and Russia have recognized Western reliance on the EMS and have been studying, investing in, and fielding offensive and defensive capabilities to challenge Western dominance in this area. The PLA fields a growing array of EMW assets to jam relevant areas and survey allied communications and radar transmissions. In the event of conflict, PRC leaders will rely on this Reconnaissance-Intelligence system to locate allied forces, predict their actions and position, and target them with long-range precision strikes. Similarly, in its war on Ukraine, Russian forces have honed their EMW capabilities, showcasing their ability to jam GPS, disrupt drone signals, and deny Ukrainian access to spectrum over vast distances.

Meanwhile, fifth- and sixth-generation telecommunications networks (5G/6G) are seeking access to higher-frequency bands in the 3–9 GHz range to support consumer demand for faster speeds and the introduction of advanced technologies in critical industries. This demand will soon pressure the CAF to vacate or share critical bands, which will reduce the number of EMS assets that can be hosted in a geographic area and increase the effectiveness of enemy offensive EMW capabilities. For the RCN, commercial stakeholders will seek access to the 3.3 – 3.45 GHz range, 4.0 – 4.2 GHz range, and the 7.125 – 8.4 GHz range, the loss of which would disrupt the Navy's future electronic attack capabilities (AN/SLQ-32 V6), Air and Missile defence (LM Spy-7) and satellite connections and communications (ESCP-P).

These factors compound to complicate the EMOE for the RCN, both at home and abroad. At home, the RCN will face increased pressure to vacate or share bands critical to both the mission of continental defence and domain awareness across the Arctic and

Canadian Archipelago. Abroad, the RCN will have to operate in more EMS-constrained environments, requiring a greater ability to avoid detection and disrupt enemy EMW capabilities. Moreover, the RCN also faces the risk that neutral countries in key regions will reallocate spectrum for 5G/6G, thereby causing harmful interference to radars and communications and reducing the RCN's effectiveness. In the face of these risks, it is a strategic necessity for the RCN to proactively raise awareness of EMW's importance in Canada.

Recommendations

The RCN should consider emphasizing, in its internal and public-facing documents, the importance of access to and freedom of maneuver within the EMS. Similar to the Canadian Army, RCN documents should identify the importance of being harder to detect, target, and destroy in the EMS. However, the RCN should consider going further and emphasizing the vital importance of effective spectrum management to limit commercial interference in key military frequency bands. In particular, the RCN should consider articulating that, due to the physics involved, any attempt by ISED to reallocate or reduce the CAF's bandwidth in the 3.1 – 3.45 GHz range would entail unacceptable risk to both military effectiveness and international strategic stability.

Additionally, the RCN should also consider new methods to improve awareness of the EMS within the branch, across the government, and among the Canadian public. New methods could include more frequent training seminars for RCN officers hosted by DND Federal Spectrum Management Heads or advocating for the Government of Canada to follow the UK's lead and require all public users of spectrum to maintain up-to-date records of their existing and future spectrum needs. Finally, given the data-intensive nature of future RCN activities, the Navy should consider how 5G and 6G could enhance its military effectiveness through their use in smart ports, allied operations, and for data-intensive communications with harbour commands and HQ. With this focus, the RCN should also consider identifying areas of cooperation with allied forces to ensure security within its network supply chains.

The Up-Gunned AOPV

Arming the AOPV for continental defence

Adam Lajeunesse

The AOPV program was designed to deliver constabulary vessels for whole-of-government Arctic operations, armed only with a 25mm gun suitable for civilian traffic monitoring. This design philosophy reflected the low-intensity Arctic threat environment and the RCN's need to concentrate resources on the Canadian Surface Combatant (CSC) program. However, with CSC (now River-class) delivery not expected until the early 2030s and the RCN facing expanded responsibilities including longer forward deployments, capability gaps are emerging. The AOPV fleet represents large, capable platforms with significant deck space and power to support enhanced capabilities without fundamental redesign. While the AOPV will never be proper combatants, an increase in armament could allow them to undertake continental defence tasks to free front line warships for tasks in more contested environments.

Enhancements to the AOPV would reflect both the urgency of the RCN's need to field more advanced capabilities against hybrid threats to the continent as well as the government's demand for enhanced Arctic capability. While the platform was not designed for such tasks, enhancement would also be in the RCN's tradition of 'make-do' resourcefulness which has defined Navy practice since the deployment of corvettes in the Second World War.

Analysis

NATO faces an openly expansionist Russia and more aggressive China, requiring broader understanding of AOPV mission parameters beyond Arctic constabulary duties. Government budget constraints necessitate creative approaches to enhancing RCN capability. AOPV offer a cost effective way of relieving frigates of patrol duties, enabling forward deployment on higher-risk missions. In extended great power competition, AOPV would primarily serve support and patrol functions rather than frontline combat, but enhanced capabilities would enable "constabulary+" operations across a wider security spectrum. The primary value of an enhanced AOPV fleet lies in their ability to interdict hybrid threats such as ELINT vessels, surveillance trawlers, mine-laying vessels, and cable-cutting operations, providing cost-efficient alternatives to frigates for extended patrol and interdiction duties.

Surface warfare enhancements through containerized weapons systems offer significant potential without requiring major hull modifications. Naval Strike Missiles and similar anti-ship weapons offer over-the-horizon strike capability, while modular Mk 41 Vertical Launch Systems in four-cell containers could be adapted. The Russian Navy's Ivan Papanin-class patrol ships already deploys Kalibr-K cruise missiles in standard containers while the US Navy's new frigate class will be based largely on modular launch cells. For defensive systems, SeaRAM point-defence missile systems could counter limited missile attacks from hybrid vessels with minimal sensor additions. This would be suitable for relatively uncontested North Atlantic and Pacific waters where hostile combatants are unlikely to materialize. Of note, AOPV would remain unsuitable for warzone deployment due to commercial construction standards and limited damage control capability.

Anti-submarine warfare capabilities present both limitations and opportunities. The AOPV's17-knot maximum speed and poor open-ocean maneuverability limit effectiveness as submarine hunters, with a hull form optimized for ice operations rather than ASW. The vessels have no organic torpedo capability, are built for but not with the RAST/HHRSD systems needed to operate ASW helicopters above sea state three. Equipping the vessels with that capability would significantly augment them as ASW platforms for domestic waters.

Beyond helicopter-enabled ASW, HMCS Harry

DeWolf has demonstrated a Towed Reelable Active-Passive Sonar (TRAPS) during Operation Nanook 2021. Autonomous Underwater Vehicles, with 2,000+ km range, could also be deployed via the 20-ton crane, creating distributed sensor networks allowing AOPV to serve as hubs for AUVs, recovering assets and transmitting data to other allied platforms.

Recommendations

The RCN should consider integrating containerized ASuW weapons, point defence missiles and improved ASW capability – centered on embarked helicopters. This retrofit would include RAST/HHRSD systems to enable full ASW helicopter operations in higher sea states, with increased aviation fuel capacity and accelerated AUV program development for distributed sensor networks.

The RCN should develop doctrine and training for "constabulary+" operations, defining when and how enhanced AOPV capabilities would be employed while clarifying that AOPV remain unsuitable for warzone deployment. Crew augmentation plans and training programs for containerized weapons systems operators should be developed, considering rotating specialist teams rather than permanent crew expansion given current personnel constraints.

A CH-148 Cyclone Helicopter flies alongside HMCS HARRY DEWOLF (Photo: Corporal David Veldman,

The 35th Anniversary of Operation Friction

The End of the Persian Gulf War

Ian Wood and William Gard - RCN Retired

Halifax, NS — February 25 to March 1, 2026

Veterans of the Persian Gulf War gathered in Halifax to honour their service during Operation Friction. Over four days, veteran delegates from across Canada took part in a series of events designed to remember, reflect, and reconnect. The events were attended by the Honourable Jill McKnight, Minister of Veterans Affairs and Associate Minister of National Defence along with the leader of the Canadian Gulf War Veterans Association Harold Davis and his tireless organizing committee. Gulf War Veterans held similar gatherings in various locations across Canada.

Day 1

The commemoration opened with a welcome dinner at the Prince George Hotel, offering veterans and guests an opportunity to reunite and share memories.

Day 2

A wreath laying ceremony at Fairview Branch Legion No. 142 began the day's program. The Fairview Legion has inscribed Persian Gulf on their Memorial and the Association has urged the Government to have that inscription on all National War monuments

Photo (Dick Budge PG Vet)

including the one at the Halifax Grand Parade. After the Legion visit participants moved to the Halifax Naval Museum for the unveiling of a new exhibit highlighting Canada's contribution to the Gulf War.

After the museum reception delegates attended an Acknowledgment and Recognition ceremony at the NS Provincial Legislature, where they gathered for a group photo.

The evening featured a documentary screening of "Canada Remembers our Heroes" by Anthony J Towstego at the Scotiabank Theatre. This event was followed by a thoughtful panel question and answer session, including three senior retired Veterans of the War, namely VAdm Dusty Miller, Canadian Senator RAdm, the Honourable Rebecca Patterson and RAdm Girouard.

Day 3

Delegates toured the Shearwater Aviation Museum and then proceeded to Government House for a lunch reception with the Lt Governor, their Honours Mike and Darlene Savage.

A wreath laying ceremony at the Grand Parade Cenotaph followed lunch, with a reception at City Hall hosted by the Mayor Andy Filmore and Councillors. The day concluded with an Open Mic musical evening at the CFB Halifax Juno Tower, courtesy of the Chief & Petty Officers'/Warrant Officers' Mess.

Day 4

One of the main signature events was a ceremony at the Halifax Dockyard, overseen by Commodore Jake French (Commander Maritime Fleet Atlantic), which included a sail past by HMCS MONCTON and EDMONTON a fly past by a RCAF CP140 and a CFB Halifax marching contingent. An indoor ceremony followed at HMCS SCOTIAN, where the Stadacona Band and the Halifax Military Wives Choir gave a stirring musical tribute to the Veterans and their families, including the Choir's new song "Bring them Home". Also at the Scotian event, Silver Cross Widow Natasha Mohr gave a moving speech in tribute to her husband Petty Officer Mohr who passed away from medical issues attributed to the Persian Gulf War.

Thereafter delegates attended a lunch at the Fairview Royal Canadian Legion that led into a Gratitude and Recognition ceremony, and the commemoration concluded with a farewell dinner at the Prince George Hotel. Delegates departed Halifax the next morning after a full program.

Photo (Dick Budge PG Vet)

When Canada committed a naval contingent to the Gulf War, the Royal Canadian Navy responded with remarkable resolve. With a little over two weeks' notice, HMCS PROTECTEUR, HMCS ATHABASKAN, and HMCS TERRA NOVA were readied for the deployment. The teams at the Fleet Maintenance Facility FMF CAPE SCOTT worked tirelessly—day and night—to ensure the ships were ready. Their effort was not only technical; it was an act of service in its own right, reflecting the quiet professionalism that defines the naval community.

The naval mission that followed was carried out with discipline, valour, and a deep sense of duty. Three ships, three crews, united in purpose. They served far from home, in uncertain waters, and they returned safely because of their training, their teamwork, and their unwavering commitment to one another.

This recent commemoration, hosted by VAC, honoured that service with the respect it has long deserved. Veterans Affairs Canada has promised to promote more awareness of the Gulf War and have committed to conduct commemorative events every 5 years.

And yet, a solemn question still remains. Thirty five years after their deployment, will the Government of Canada finally recognize these men and women as war veterans? Their service put them in harm's way, their courage was genuine, and their contribution along with their families was undeniable. Recognition is not simply a designation—it is an affirmation of their place in Canada's military history. It is time.

HMCS TERRANOVA Captain and Crew (Dick Budge)

Jill McKnight, Minister of Veterans Affairs with Vets (Dick Budge)

Delegation at the Nova Scotia Legislature (Veterans Affairs Canada)

Vice-Admiral Nigel Brodeur
A Life of Service to the RCN and Canada

This article is an in-depth interview, conducted by Tim Addison with Vice-Admiral Nigel Brodeur in 2025. Broken into four parts, it will appear in the April 2026 edition of *Salty Dips*. It is also being printed in *Starshell*, serialized into four parts.

In this interview with 'Old Salt' (OS), Vice-Admiral Nigel Brodeur reflects on his family's three generations of service to the Royal Canadian Navy and his own Cold War-era naval career. He discusses his role in shaping the Canadian Patrol Frigate program, his involvement in deep submergence projects, and NATO operations. Brodeur also offers his assessments on Canada's naval procurement and strategic planning, advocating for shipbuilding capabilities and increased defense spending.

Interview with Tim Addison (Part 3)

OS: Nigel before our short break we were talking about your time as Commander, Fifth Destroyer Squadron on the East Coast and being the Orange Force in a major NATO exercise. Your assessment as I understand it was that overall, that being Orange Force was a signal from the Americans that they were looking for ships with more firepower and Canadian warships were getting pretty long in the tooth?

Yes, my ships were the Improved Restigouche-class [IREs] and they were getting long in the tooth, but nonetheless everybody got good value out of it. I mentioned Mike Boorda and I mentioned the US Navy and the Royal Navy ship HMS Juno. We were able to pull off a successful exercise as the Orange Surface Force, but we would not have been able to do it just with Canadian ships, because we wouldn't didn't have the firepower or the up-to-date potential enemy capabilities.

OS: And were more senior officers in those days starting

Vice-Admiral Nigel Brodeur

to realize this?

Oh yes, I think they certainly were.

OS: I wasn't involved in those days because I was too junior, but I know various projects were started and discussed, regarding the replacement of the steamers. We eventually got the Canadian Patrol Frigates but there were a lot of other points in time when there were other projects initiated, and then they fell by the wayside, and to my mind, it was all because there was no money. Is that a fair assessment?

Yes, the basic assessment was that there was not going to be funding available. I should mention that after I left the Fifth Squadron, I went to the National Defence College (NDC), and I was out of the picture there for a year. After NDC I returned to Ottawa, now on the operator side as DMRS, the Director Maritime Requirements Sea, and then stayed on in that job for quite some time and then was promoted [to commodore] and was Director General Maritime Doctrine and Operations again in the same branch, and then to Chief of Maritime Doctrine and Operations.

OS: So you're right in the thick of it in those days I'm sure.

Yes, right in the thick of it.

OS: Were there basically a lot of rice bowls in those days and everybody was protecting their bowl?

Sorry, in response to your previous question, this is where I was able to inject on the operational side to the General Purpose Frigate program as well, with my staff. This was the operational requirement. And then I went to NATO. I was promoted to rear-admiral in 1980 and named Chief of Maritime Doctrine and Operations, and in 1981, I was chosen by NATO to be the Chairman of the NATO Naval Armaments Group. That was quite a job too. That took me abroad quite a lot, the meetings of the national NATO Armaments Group, and then I went to SACLANT.

OS: How did the NATO, other countries and particularly the Americans, down in SACLANT, how did they treat us Canadians? How did they look upon us with, in those days, a pretty obsolete navy?

In those days they looked upon us pretty well. They realized that we were doing pretty d*** well with what we had. And in my three years in SACLANT … well, I've got a page [a list] of admirals in the United States Navy that I knew. I trusted them and they trusted me.

*OS: Well, I think we are always looked upon as an ASW navy and pretty d*** good at it.*

Yes, we were. I was in Europe 33 times in three years, for exercises, NATO meetings - lots of travel, but the DCOS Ops and Chief of Staff jobs in SACLANT were very rewarding. And of course you dealt with all the navies, not just Canada – US.

OS: And in those days Russia, the Soviet Union was still very much the enemy. There was no talk about glasnost, or anything like that. There was no chance that the cold war was going to end in the near future. But still at the same time, did you get the impression that the political realm in this country just didn't get it when it came to requiring capabilities, and I think I picked up from one of your speeches, deterrence?

I'll give you another interesting sideline. The commander of Supreme Allied Command Atlantic, when I was there was, Admiral Wesley McDonald and Wes McDonald called me into his office just shortly before I was about to leave, and he said Nigel, he said that I have been putting you up for the United States Legion of Merit award. And he said I have just learned that the Canadian government will not allow you to wear it. And I said, Admiral, I'd be happy to accept the write up, (chuckle), and I will post it on my wall next to the Legion of Merit awarded to my father by President Truman.

OS: Nice to see that recognition.

Yeah, so I guess I did satisfactorily in that time in CINCWESTLANT. And as I said, it is nice to still be in communication with some of those officers from that time down in Norfolk.

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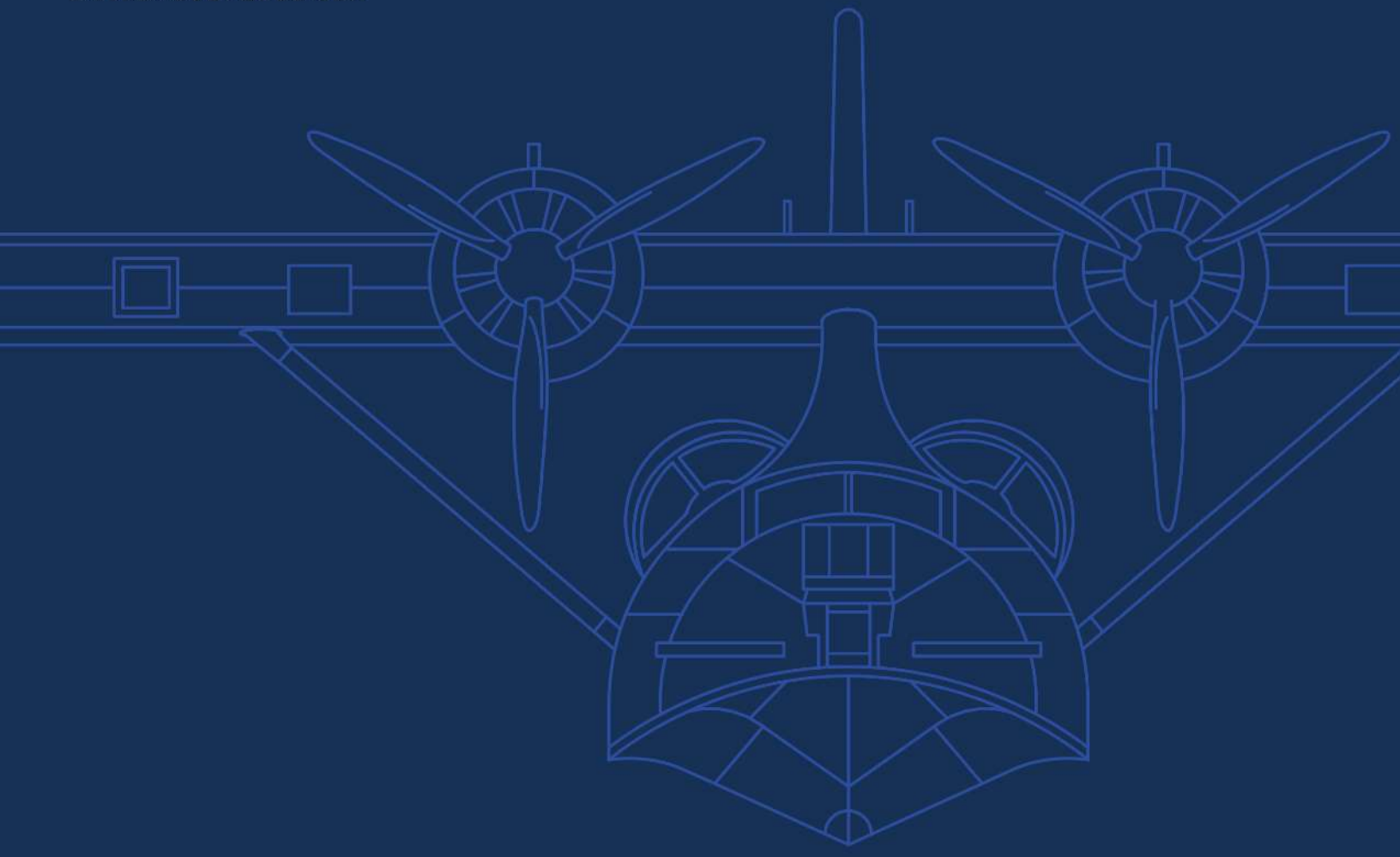

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OS: Well, I'm sure you did and I'm sure it's nice to have those lifelong friendships, particularly from our allies.

Yeah, I'm not sure, but I think it was [Hugh] McNeil who followed me down in SACLANT, but today they [Canadians] don't hold that position. They are down in COMSECONDFLEET [U.S. Navy 2nd Fleet].

OS: Yes, they've pretty much reorganized a lot of the way they do business down there. They called it Transformation Command for a few years. So just to go back to the question that I posed a few minutes ago. I was asking about in your time as DGMDO and CMDO, did you get the impression that the politicians just weren't getting it? You know, we were still in a Cold War. We still needed to provide a credible deterrence. We still needed to contribute to NATO.

Well, I'll be honest. I'll tell you, I thought [Minister of National Defence] Perrin Beatty was superb. I thought Perrin Beatty understood the problem, but the government [of the day] fell just at the wrong time.

OS: I wanted to ask you about the 1987 White Paper and the submarine project as well.

Well, you will have noticed that the submarines and the general purpose ships proposed in the 1987 White Paper are the same that we are proposing nowadays. I was DCDS for that White Paper and that White Paper was really very much involved with the Deputy Chief of Defense Staff organization.

OS: Yes, I recall I read your remarks to the closed-door session you had with the Group Principals [in NDHQ] and I honed in on [the sense that] it was not a happy situation to be in, in those days?

Well, it wasn't quite 24/7, but it was d*** close to it. I guess we just switched over [with the new government]. I guess there was an election right in

there. Perrin Beatty had gone. I was holding a briefing one day and the next Minister of National Defense, a liberal it was - he was known as a pretty hard nut - he was talking about the submarines. He probably saw the expression of my face, because I was remembering the past. When I came back from SACLANT we have excellent relations. [Admiral] Bud Kauderer was COMSUBLANT [Commander, Submarine Force Atlantic] and Bud Kauderer, he was more than happy to see Canada get into the nuclear submarine business.

I didn't hear a single argument from SACLANT or COMSUBLANT or COMSUBACLANT [Commander Submarine Allied Command Atlantic] or anybody that they didn't want Canada involved [in nuclear submarines]. And there's been a tendency to blame the failure for Canadians not getting involved, on the Americans. I'm sorry, at that time, that would have been untrue, because they were supportive. I never met [Admiral] Rickover so I don't know, but Rickover's influence was waning a little bit at that time.

So, you know, towards the end of my turn as DCDS, we still had support, I thought. Well, we have to have [had] support, or Perrin Beatty wouldn't have tabled that White Paper and he wouldn't have had me, along with the Chief of Defence Staff in the Speaker's Gallery for the occasion.

OS: So, in those days, the White Paper really emanated out of the DCDS Group, did it?

It emanated out of the DCDS Group with the ADM Pol[icy] Group working on it as well. Things looked good, but I realized that we weren't as far along the course, that we could escape if a new government came in and said we don't want nuclear [submarines]. I knew we weren't quite far enough along.

Anyway, I was present at the closed session, along with the CDS and the Vice Chief and DCDS and met with the Minister we talked about submarines, and he saw the look of my face and he said, what's the matter Nigel? Doesn't the navy want nuclear submarines? And I said yes, Mister Minister, the navy does, but I said we've been this way twice before and Canada dropped the ball on each occasion. I was just trying to get them to acknowledge that and pick up the ball, and to run with it faster, and he thanked me, and that was the end of that. But I retired very shortly after.

OS: There's been a lot of discussion about nuclear submarines, and I'm going to try to delve into this a little bit with a few other senior officers who are involved at the time to try to get to the bottom of it. I have a plan to meet with John Anderson at some point and ask for his thoughts on it.

He is key, because he was [directly involved] about that time, and he has never spoken much about it.

OS: In any event, was this a purely political decision at the end of the day to not push that project any further?

Well, the anti-nuclear movement was really strong in Canada. And to be quite to be honest with you, the Liberals didn't have the guts to carry on. There might have been, there probably would have been a financial problem because we had not progressed far enough along the path that we knew all the details. We should have been further along the path to the point where it would be very difficult for a government to say no. But we weren't. There is a tendency to blame the Americans as shutting us off at that point. I don't [blame them]. I think that that happened later on because certainly, the American navy people I knew at that time were not anti.

OS: As you said, it seems to be that's been generated as somewhat of a convenient excuse.

That's my gut feeling. I could be dead wrong on it, but that's my gut for you.

OS: I wanted to come back to a comment that you made in an address in 1985 - the 75th anniversary of the RCN, in Halifax. You advocated for building ships in Canada and revitalizing this strategic capability of shipbuilding. Do you feel that we've achieved that with what Canada has done with the National Shipbuilding Strategy?

I don't know … I'm afraid to say, no, we have not. We had on one occasion, the capability to build the destroyer ship, perhaps not a submarine, but certainly a destroyer, although I should mention, as you probably know, that in World War I, Canada built ten H-class submarines. We once had that ability on both coasts to build at least a ship(s), and to consider seriously building submarines because that was part of the 1987 White Paper. Chuck Thomas and his people had a pretty thorough look at the potential to build submarines in Canada. I can't pretend to recall any of that, literature or conversation, but we did look at it, and it seems to me that, with the difficulties in rapidly transiting from one coast the other, that it's almost absolutely essential in times of serious military situations to have the ability to build a ship and the submarine if possible, on each coast. You really have to look at how long does it take to transit? If we can't transit, who's going to do it for us? Well, the tendency has been in this country to say, well, the US are going to do it for us. I'm sorry the US are not going to be able to do it for us, not that they wouldn't want to, but they are not able because of their own requirements and their own shortfalls nowadays in shipbuilding and submarine building capabilities. So it was, it just seems to be absolutely essential that we have this capability on each coast. How it is to be acquired, I don't know. There was a time when we thought that we would have a submarine capability. I mentioned Jim McFarland. Jim McFarland worked for me in Ottawa in DMSC 3, and he subsequently retired early to take over as the President of International Submarine Engineering, ISC, in Vancouver. He retired from the navy and took over the presidency and he was a submarine naval architect. There weren't many around.

OS: I wouldn't think so. No.

So unfortunately, we dropped that ball. I'm not fully aware when I heard exactly how, but I am advised by various people I've spoken to that they do not think that we have the capacity to build a submarine in Vancouver, or perhaps even a warship.

OS: That's a good question and it's a pretty sensitive one, in terms of the capability out here. There has been warship building in west coast yards in the past, but with the exception of Seaspan building the Joint Support Ships, over the last 25 odd years I would suggest that it's been mostly the tug - barge [business].

Yes, and they are front and center in the tug and barge business.

OS: Certainly, they're (Seaspan Shipyard) building coast guard vessels for us. The Joint Support Ship hull number one was launched just before Christmas. Could they take on a Canadian Surface Combatant as another yard? Certainly, I wouldn't recommend that, given that the CSC are all going to be built in Halifax by Irving and opening a second yard would not achieve any savings, in terms of money or time.

Yeah, or a submarine.

OS: Well, I think submarines are definitely a bridge too far for Canadian industry.

Yes, well if you're going to build a submarine, there's a lot of calculations that have to take place. It's not just the mere construction. It's during the process of its building. Where is it going to be built? Is it going to be built locally, is it going to be built elsewhere? If it's going to be built elsewhere, how are you going to [deal with] the coordination of efforts, the problems of situations between the builder and the navy? How are you going to go back-and-forth?

I'm very dubious about the concept of building submarines in South Korea for the simple reason that's a hell of a long ways [from Canada]. I listened to a discussion on the internet with the Captain of the submarine building facility in South Korea. He didn't speak any English, he understood English a bit, but I mean, that's very fundamental. The language of communication, and let alone the fact that South Korea happens to be fairly close to North Korea and North Korea doesn't necessarily happen to be the best of friends.

OS: Yes, certainly. From what I know there are six potential builders. Canada wants a submarine that's already operational - in the water. That narrows the field down pretty quickly. But then, when you get into what happened in South Korea just before Christmas, and other factors, I don't know where the RCN or where Canada is going to go with this one. It'll be interesting to see which yard ultimately gets chosen.

It's also interesting to see where parts are going to be made. As far as I could understand the parts with all this, it's not just the parts for the initial construction, but parts [required] if you go in a refit. As far as I could see they were to be built in South Korea as well. You know, somebody really has to put their head on straight and say, what's involved in all this? Am I going to buy a car? If I have to go 5000 miles to get spare parts for that car and a car is simple, compared to a submarine!

OS: Well yes, and those parts are going to be really expensive.

Yes, they're going to be expensive, and they may not be accessible if there is a question of hostilities. Not even just a question of hostilities, but a question of something like deciding that they're going to have a go at the vessel that's transporting the parts across the ocean to us, you know.

OS: Good point.

The whole thing has to be thought through very, very carefully. So, you say, well, I'm going to go somewhere else. If you're going to go somewhere else, are you going to get a submarine which I suspect has to be a minimum displacement of 3000 tons in order to handle the Arctic situations? Even something as minimal as two feet of Arctic ice, you know, it's a question that requires very, very serious examination and yet there is a need, because if you cannot have a surface deterrent capability, you should at least have a good subsurface deterrent capability and as far as the number is concerned, yes I think it's still 12. It was 12

back in 1987, and it's still 12 now, and logically by my calculations, you put six on each coast, and that means that you're going to have two available on each coast at a time. That's one in three, and that's pretty good. That's probably realistic.

OS: Had those numbers actually been arrived at back in the 1980s?

I think we thought that back then.

OS: Certainly, they do make sense. Our paper "In Extremis" we pushed even further, we said sixteen, eight on each coast.

Well, that's even better. That assures that you have facility for two [operational on each coast] and on occasion facility for three, and it also ensures that you always have a submarine available [on each coast] for training.

OS: Well, that was our thought ... a secondary mission and also concurrent training.

Very important. Now, you can work up to that fortunately.

OS: So, you were CMDO in the days when the money was starting to dry up. It seemed like the government had no cares at all about the military. There were frigates on order, being built eventually, but there didn't seem to be any thought, for a follow-on navy, like the navy after next concept.

The only thought that we really had was those general-purpose frigates and the submarines. Now I can't remember if we had any [thoughts on] mine warfare vessels, mine countermeasures vessels. I think the MCDVs (Maritime Coastal Defence Vessels) played in that game as well.

OS: Well, certainly we ended up with 12 [MCDVs]. Not being having been in that world, they seem to come literally out of the woodwork to me. It was a project that just popped up quite quickly and all of a sudden, they're building MCDVs for the Naval Reserves.

Yes, the first one was produced in about 1997. My wife was the ship's sponsor for HMCS Nanaimo, I think. I can't remember if it was the first or second [built]. In fact, all her papers are over there, I have the manual that was donated to her by the ship's builder. The ship was built on the East Coast.

OS: The first one was Kingston; hence they are known as the Kingston-class. They were advertised as a training vessel [fleet] for the reserves under the Total Force concept and to replace the Gate Vessels and the mine sweeping and countermeasures capabilities that we once had. Obviously, those vessels were long overdue to be replaced.

Well, and also the MCDV was considerably larger than the mine sweeping vessels that we had, and I noted at one stage that we actually sent an MCDV on an international mission, of which we would normally have sent a destroyer on, and they were away for some months and they did a good job.

OS: And that's happening a lot. Admiral Topshee will tell you they've done yeoman service for the navy. They've been great assets.

I like to say that I served 38 years, and my wife served 30 years, because up until the time she was hospitalized in 2023, she was still liaising with the vessel (Nanaimo), with the captain, the coxswain, on behalf of the crew. I haven't even opened the correspondence that she had with them. I have just loaned the album that was given by the builders to my wife, to the museum for reproduction. In Nanaimo there is a gentleman, Ron Hopper, he owns or did own the jewelry store there and right from the beginning, he became Anne's assistant. There were many invitations to go up there [to Nanaimo]; more times when the ship was in port. I found it very interesting at her funeral Admiral Robinson was there, the Commodore was there and seven of the former captains. Ron Hopper has asked me to write something for the 24th of January on behalf of my wife, which will be read at the recommissioning of HMCS Nanaimo.

OS: She's coming out of a refit, is she?

Yes, coming back into service. I don't know how many of them are going to [remain operational] nor do I know for how long. I don't think many.

Honoring Captain(N) (Ret'd) William H. Wilson, a Legacy of Service and Leadership

Lt(N) John Foster

Captain(N) (Ret'd) William "Bill" H. Wilson, OMM, AOE, CStJ, MSM, CD, exemplifies the ideal of a Canadian citizen: humble, dedicated, and tireless in his service to both the country and the Royal Canadian Navy. Born in Winnipeg, Manitoba, in 1924, his life has been one of remarkable dedication, both in wartime and in peacetime. His career is a testament to the values of sacrifice, leadership, and commitment to his community and country.

I have had the distinct pleasure of meeting Captain(N) Wilson on several occasions, and each encounter has deepened my admiration for him. One of the most memorable was at the Hometown Heroes event at The Military Museums in Calgary, hosted by Parks Canada. I had the honor of being his driver for the day while working as the Regional Public Affairs Officer for the Western Regional Staff. Despite his numerous accolades and achievements, his humility was one of the most striking aspects of his personality. His presence commanded immense respect, and I was in awe as they recounted his contributions, including his participation in the Normandy Landings on D-Day and his co-founding of the very museum where he was being honoured that day.

During this event, I had the opportunity to have a casual yet insightful conversation with Captain(N) Wilson and his lovely wife, Phyllis. As we drove to and from the event, he shared a mischievous anecdote about leaving an anchor on the lawn of Commodore (Ret'd) Orthlieb, which revealed a playful side to his

personality. At one point, he looked over to me and said, “I’m too much of a rebel for the Regular Force,” a lighthearted comment that underscored his commitment to the Reserve Force. His comment, though humorous, spoke volumes about his deep connection to Canada’s part-time sailors and his service in the Naval Reserve.

The Sacrifices of our veterans

Captain(N) Wilson’s life has been profoundly shaped by his experiences during World War II, particularly his service during the D-Day landings in France on June 6, 1944. At just 18 years old, he enlisted in the Royal Canadian Naval Volunteer Reserve (RCNVR), determined to follow in the footsteps of his father, who had served in the Great War. Serving as a seaman gunner aboard HMCS Ottawa, he found himself in the heart of some of the most significant naval operations of the war, including convoy duty in the Atlantic and the Normandy landings. The scale of the Normandy invasion was unprecedented, involving thousands of ships and hundreds of thousands of men in a meticulously planned and executed operation. As historian Stephen E. Ambrose (1994) describes in D-Day, June 6, 1944: The Climactic Battle of World War II, the landings represented a turning point in the war and showcased the determination and bravery of Allied forces. Captain(N) Wilson’s personal recollection adds a deeply human perspective to what Ambrose (1994) termed "the climactic battle of World War II."

In a later interview with Valour Canada (2014), Captain(N) Wilson reflected on the magnitude of D-Day, describing the sheer scale of the operation: “We had no idea of the magnitude of the operation, and the amount of detail that had gone into the planning… By 5:30 in the morning, we weren’t quite sure what we were going to see. And what we saw had never been seen by any man on this earth before… No one had seen that many ships before. You’d stand there with your mouth open. And it was never-ending.” Despite being “too young to be scared,” his focus was purely on doing the job that had been drilled into him and his fellow sailors (White, 2014). His words reflect not only the awe of that historic day but also the quiet courage of those who participated in it. The sacrifices he and his shipmates made are almost unimaginable to those of us living in Canada today. These brave young men left behind their families, their homes, and their futures to defend the freedoms that we now take for granted. His story, along with the stories of countless other veterans, serves as a stark reminder of the price that was paid to secure the peace and liberty we enjoy today.

In comparison, life for young Canadians today is vastly different from the lives of those who served during the war. The challenges we face, while significant, are often ones of personal growth and opportunity rather than survival. We have the privilege of pursuing education, careers, and personal interests in a society that is safe and free. This freedom, however, is a direct result of the sacrifices made by those who served in the days of war, heroes like Captain(N) Wilson who risked everything to ensure a better future for the generations to come.

My own life in Canada has been profoundly shaped by the opportunities that have been afforded to me, including my career in the Royal Canadian Navy Reserve. Serving in the Naval Reserve has given me a deep appreciation for the sacrifices of those who came before me, and it has allowed me to connect with remarkable individuals like Captain(N) Wilson. His service is a reminder of the responsibility we have to preserve the freedoms we enjoy and to honor the legacies of those who fought to protect them.

In addition to the external freedoms, we must also recognize how their sacrifices have shaped the way we relate to each other in contemporary Canada. Today’s generation is more focused on equality, diversity, and human rights than ever before. These are freedoms that extend beyond borders, shaped by the very same spirit of protection that Canada’s veterans embodied. People like Captain(N) Wilson didn't just preserve physical territories; they laid the groundwork for a society that values compassion and justice. As Canadians today, we are part of that living legacy, and our society thrives because of their contributions.

A Personal Reflection

Another memorable encounter with Captain(N) Wilson took place the following spring when I had the privilege of driving him to another event at The Military Museums with Vice-Admiral Topshee, Commander of the Royal Canadian Navy. This day holds particular significance for me, as I was promoted to Lieutenant(N) at the event. Having him personally congratulate me on this achievement was an honor I will never forget. He also offered me a piece of advice that I have carried with me ever since: "Don't lose touch with the lower decks." This simple yet profound statement serves as a guiding principle for me, not only in my career but also in life. As I advance in rank and take on more administrative responsibilities, his words remind me to stay grounded in the fundamental purpose of leadership: to serve and support the people under my command. His focus on people, whether sailors in the Navy, colleagues at Canadian Pacific, or members of his community, has been the key to his success, and it is a lesson that applies far beyond the military context. Leadership, at its core, is about caring for others and never losing sight of the human element in any endeavor.

As Canadians, we have a duty to remember the sacrifices made by his generation. The ceremonies this year commemorating the 80th anniversary of D-Day are an important reminder that the veterans of World War II are now very close to being 100 years old, and soon, we will no longer have the opportunity to hear their stories firsthand. It is up to us, the younger generations, to keep their memories alive and to ensure that the lessons of the past are not forgotten.

The freedom and peace that we enjoy today were hard-won, and it is our responsibility to honor those who made it possible. As Captain(N) Wilson has demonstrated throughout his life that

service to your country is not confined to a single moment in time; it is a lifelong commitment to the values of duty, honor, and sacrifice. We must continue to share the stories of veterans, to educate future generations about the cost of war, and to instill in them the importance of remembering the sacrifices made by so many.

A Message to All Canadians

In reflecting on the life and legacy of Captain(N) Bill Wilson, I am reminded of the words he shared with me: "Don't lose touch with the lower decks." His advice speaks not only to the importance of leadership in the Navy but also to the broader responsibility we all share as Canadians. We must never lose touch with the sacrifices made by those who fought to protect our freedom, and we must never forget the lessons of the past. As we approach Remembrance Day this year, I encourage all Canadians to take a moment to reflect on the lives that were given so that we could live in peace. Let us honor the memories of those who served by continuing to uphold the values they fought to protect. And let us ensure that the sacrifices of his generation are never forgotten, so that we may never have to make them again.

Captain(N) Wilson represents the very best of Canada—a citizen who has dedicated his life to service, to leadership, and to his community. His legacy is one that should inspire us all to give back to our country, to honor our veterans, and to never take for granted the freedoms we hold dear.

OPS Update

Every month the RCN produces a handy "Ops Update" to keep the public informed of the Navy's major deployments and other significant events. This section is a quick summary of the most important ship news. Stay up to date with *Your Navy Today* by subscribing to receive these updates directly. To subscribe email:

navypublicaffairs.affaires@forces.gc.ca

HMCS Charlottetown's in the Mediterranean Sea while deployed on Operation Reassurance (Image: Aviator Gregory Cole, CAF)

On January 19, HMCS *Ottawa* commenced training with Sea Training Pacific, operating along the British Columbia coast and through Barkley Sound. During this period, which extended through February 6, the ship completed Basic Single Ship Readiness Training and Intermediate Air Sea Readiness Training. The vessel also conducted sea trials on upgraded sensors and made a port visit to Port Alberni.

On January 21, HMCS *Yellowknife* departed Halifax to begin a seven-week deployment in support of Operation CARIBBE. The ship proceeded to the Caribbean Sea and eastern Pacific Ocean to conduct counter-narcotics operations alongside the United States Coast Guard. Yellowknife's mission involved detecting, monitoring, and interdicting suspect trafficking vessels. Canadian Armed Forces personnel aboard conducted Rigid Hull Inflatable Boat drills and maintained interdiction readiness throughout the deployment. The ship was scheduled to return to Halifax on March 12.

On January 26, HMCS *Frédérick Rolette*

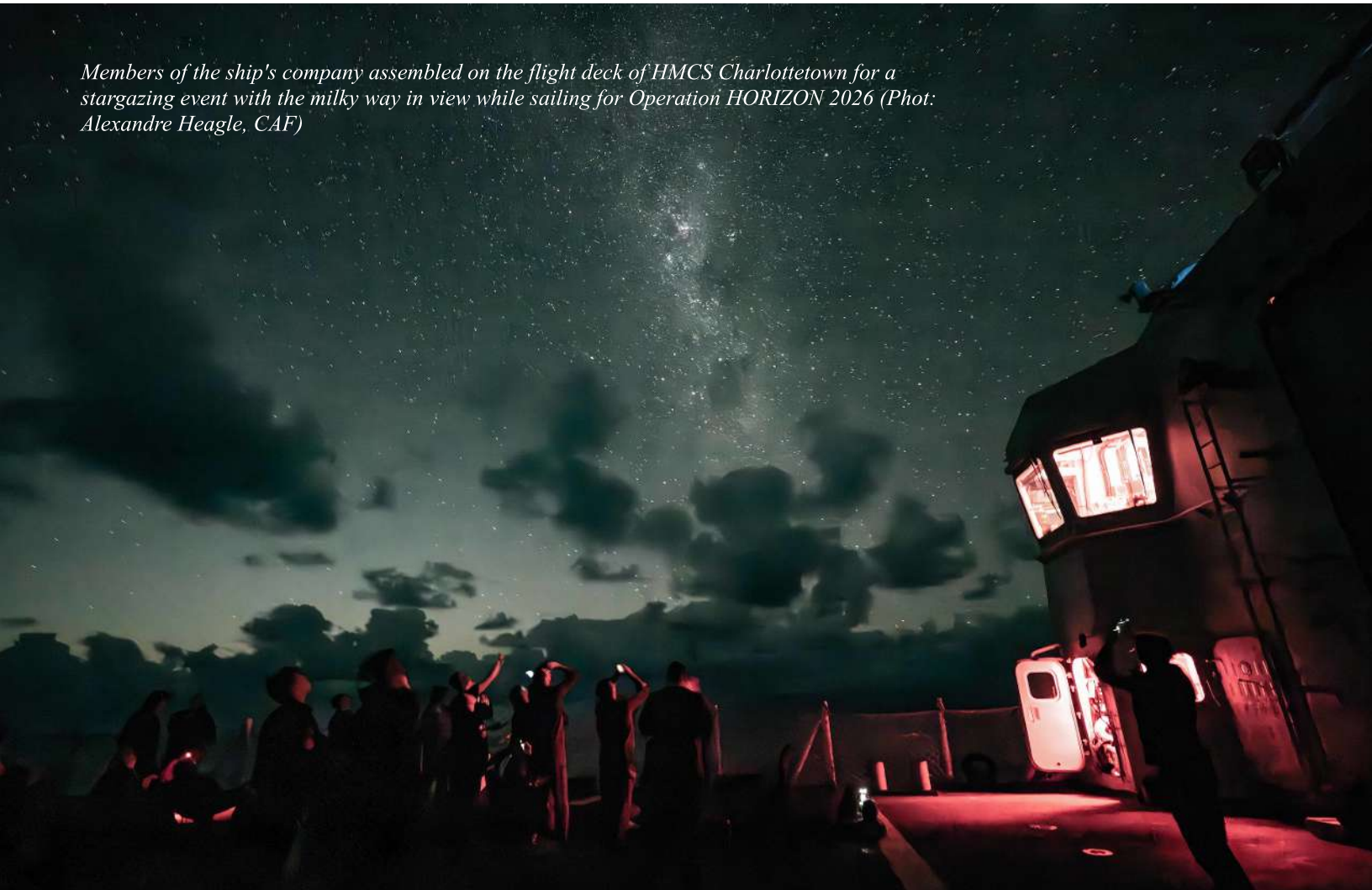
departed Halifax to conduct cold weather trials. The vessel operated in medium first-year ice to test integrated systems performance under extreme Arctic and sub-Arctic conditions, including very low air temperatures, near-freezing seawater, and ice-affected waters.

On February 1, HMCS *Charlottetown* departed Halifax for a six-month deployment to the Indo-Pacific region in support of Operations HORIZON and NEON. The ship was scheduled to participate in multinational exercises and cooperative engagements with regional allies and partners.

On February 2 to 4, HMCS *Regina* conducted live firings of the Mark 54 lightweight torpedo at the Canadian Forces Maritime Experimental and Test Ranges off Vancouver Island, north of Nanaimo. The firings marked the first time an RCN ship had conducted such tests, evaluating system integration, target detection, weapon preparation, and launch procedures against a stationary underwater test target.

On February 16, HMCS *Charlottetown* completed transit of the Panama Canal, navigating the lock system that raises vessels approximately 26 metres.

Concurrently, HMCS *Frédérick Rolette* and HMCS Robert *Hampton Gray* conducted cold weather trials and ice operations training in the Northumberland Strait between Prince Edward Island and New Brunswick. HMCS *Robert Hampton Gray* participated in icebreaker familiarization training with Canadian Coast Guard Ship Jean Goodwill in Chaleur Bay, observing backing and looping techniques. HMCS *Frédérick Rolette* continued ice navigation trials with embarked scientific personnel measuring ice thickness and environmental conditions.



Members of the ship's company assembled on the flight deck of HMCS Charlottetown for a stargazing event with the milky way in view while sailing for Operation HORIZON 2026 (Phot: Alexandre Heagle, CAF)

The Admirals' Medal 2025

Dr. Rob Huebert

The Naval Association of Canada is pleased to announce the Dr. Rob Huebert has been chosen as the recipient of the Admirals' Medal for 2025.

Dr. Rob Huebert is one of Canada's leading academic experts in maritime security and one of the most influential media commentators on the subject. Since the 1990s, he has trained students in defence and maritime affairs and, today, leads the Centre for Military and Security Studies at the University of Calgary, one of the most significant Canadian academic centres dedicated to hard security affairs.

Dr. Huebert has had a direct impact on the Canadian defence conversation for many years. One of his primary areas of expertise is Arctic maritime security. In the early 2000s, before the importance of the region gained traction in national (or government conversations), Dr. Huebert was highlighting the risks posed by the melting ice and foreign interest. In debates that defined the field for a generation, Dr. Huebert and colleagues Whitney Lackenbauer and Franklyn Griffiths framed the Arctic maritime security discussion in ways that directly impacted Government of Canada and Canadian Armed Forces policy and doctrine for years to come.

Today, Dr. Huebert's scholarship and academic engagement continue to define the field. Behind the scenes, Dr. Huebert has been more directly engaged in policy discussions. In the last 20 years, he has offered testimony to government and defence audiences 41 times, including multiple appearances before different House of Commons committees, DND/CAF policy groups, US and international audiences, and other relevant defence-focused groups. In addition, he has presented to 153 academic and professional conferences and workshops, helping to shape expert opinion and define critical debates for years.

Despite all this, Dr. Huebert's true impact on the field can only be fully understood when one includes the impact of his teaching and supervision as it echoes through his students. Over his 30 years of teaching, he has supervised 12 PhDs, 31 Masters students, and 31 Undergraduate honours students, in addition to the thousands of others that have passed through his classes. His Masters and PhD students have gone on to accomplish great things and amplifying the impact that he's had in the field.

Dr Huebert holds many awards for his work in defence scholarship. These include the UofC's 'best supervisor' (2015), the Navy League of Canada's Annual Award for a Civilian (2009), and multiple awards for teaching excellence.

In many ways Dr. Huebert's impact echoes past award winner Dr. Marc Milner, whose historical scholarship has done so much to defined Canada's understanding of our contributions to the Second World War. While Dr. Milner defined the RCN's historical contributions Dr. Huebert's work and public engagement goes a long way towards defining contemporary maritime security risks, opportunities, and realities. He does this through his teaching, his engagement with government, as well as the general public.

This latter element is certainly important. Since 2000, Dr. Huebert has published 52 opinion pieces in popular media. This commentary has had a wide readership and influenced public opinion in a way that supports DND and Canada's defence community.

In a democracy, government support for its navy is only as strong as the popular support underpinning it, and as capable as its expert class engaged with it. Over three decades, Dr. Huebert has consistently built and maintained that foundation in ways that are sometimes imperceptible, but always consequential.

Vice Admiral Angus Topshee, Commander of the Royal Canadian Navy (left); Vice Admiral Mark Hammond, Chief of the Royal Australian Navy (centre left); Vice Admiral Erwin Aldedharma, Vice Chief of the Indonesian Navy (centre right); and Dr. Rob Huebert (right).

From the Branches

Endowment Funds Used for New Instruments and the Cadets

From the Montreal Branch

The Montreal Branch of the Naval Association of Canada, represented by Catherine Flemming, presented on February 13, 2026 a donation cheque to RCSCC 337 Kateri of Ste-Catherine, Québec. These funds, which were awarded by the Endowment Fund of the Naval Association of Canada to its Montreal Branch, will be used to purchase musical instruments for Kateri's newly-formed music band. This is only one of many examples of the support given by the Endowment Fund to the Cadets and other members of the Naval Community of Québec.

On January 24, 2026, several cadet corps of the western part of Montreal participated in a games competition, featuring such sports as basketball and dodge ball. RCSCC Trafalgar and RCSCC Victory representing the navy cadets competed along with army and air force cadets units. The Montreal Branch of NAC, with the support the Naval Association of Canada Endowment Fund, financed the production of medals, for the worthy winners of the competition. NAC Montreal Branch President, Anthony Colucci handed out medals to the many happy and proud participants, as well as the overall winning unit trophy.

The Chisholm Sword Presented

From the Vancouver Island Branch

Sub-Lieutenant Kayvan Aflaki was presented with the Merritt Chisholm Sword for Esprit de Corps and Perseverance by retired commander Rod Hughes of the Vancouver Island Branch of the Naval Association of Canada and with the Captain David W. Groos, RCN Memorial Shield by Hillary Gross on November 4 at HMCS Venture, the Royal Canadian Navy's leadership training centre.

The sword, with a Naval Association of Canada book prize, is presented at the Naval Warfare Officer Basic Course graduation. Nominated by their peers, the recipient is determined to have contributed to their fellow trainees by generating course morale, team support, comradery, inclusion, conflict resolution, perseverance, adaptability and resilience.

The Groos Shield is awarded to the student who displayed excellence at sea, including strong leadership and officer-like qualities.

A graduate of the University of Toronto with a master's degree in epidemiology, Sub-Lieutenant Aflaki enrolled in the Royal Canadian Navy in March 2023. After completing Basic Training at St. Jean, Quebec he began Naval Warfare Officer training at HMCS Venture in Esquimalt, B.C.Between training phases, he volunteered with the Royal Canadian Marine Search and Rescue Station 35. The son of Zory and Mahmood Aflaki of Etobicoke, Ontario, he is assigned to serve in His Majesty's Canadian Ship Calgary.

Sub-Lieutenant Adriel Elaydo was also presented with the Merritt Chisholm Sword for Esprit de Corps and Perseverance by retired vice-admiral Jean-Yves Forcier, Chairman of the Naval Association of Canada Endowment Fund and member of the Vancouver Island Branch. Also in the photo is Commander, Malorie Aubrey, the reviewing officer, Commanding Officer, HMCS Vancouver.

Last Post

Compiled by Pat D.C. Barnhouse | Starshell Obituaries Editor

Kindly forward all obituaries to Pat at:
535 Kenwood Avenue, Ottawa, ON K2A 0L7
or by email: pat.barnhouse@sympatico.ca

NAC MEMBERS

LCdr Henry Irvine HARE CD*, RCN(Ret'd)

NACVI, 100 in Victoria 04/10/25. Jn'd as CHAP CLII in'55 (sen. 18/05/54) thence *Stadacona* 01/09/55, *Algonquin* 01/02/57, *Huron* 13/05/58, *Cornwallis* 29/06/59, *Naden* 23/08/63. Prom CP P3 25/08/64 – LCdr upon CF Unification. Also srv'd in NDHQ. Ret'd in 1979. Silver medallion 2000. (RH)

Capt Edward James KELLY, CD*, RCN(Ret'd)

NSNAC, 85 in Lunenburg NS 15/10/25. Jn'd *Venture* as Cdt 01/09/58. Prom A/S/Lt 01/09/60 thence *Stadacona* 11/60 and *Iroquois* 05/61. Prom S/Lt 01/09/61 and Lt 03/09/52 fll'd by *Lanark* 25/10/62 and *Columbia* 07/64. Prom LCdr 01/07/71, Cdr 01/01/75 and Capt 01/01/81. Also srv'd *Assiniboine* (i/c) and *Iroquois* (i/c). Ret'd in '84. Later Director of Canadian Coast Guard College and Town Manager Lunenburg. (WG)

Richard SHORE

Winnipeg Branch, 93 in Winnipeg 24/09/25. Bronze Medallion 2013. (*Winnipeg Free Press*)

OTHERS

Cdr(Ret'd) Robert D. ALCE, CD*

67 in Victoria 24/06/25. Jn'd as Cdt at RMC 09/76, prom S/Lt 01/05/80, Lt 01/01/83, LCdr 01/01/89 and later Cdr. Ret'd circa 2003. (RD)

Cdr Robert Hugh BOWMAN, CD, RCN(R)(Ret'd)

91 in Ancaster, ON 25/01/26. Jn'd *Star* as UNTD Cdt 02/01/56 thence *York*, and rls'd in '68. Later rejoined *Star* as S/Lt (sen 02/10/62), prom Lt 02/10/64, later LCdr and Cdr in '79. CO *Star* 1988-82. Ret'd in '82. (WC)

S/Lt Richard Uldis BORTSS, RCN(R)(Ret'd)

83 in Peterborough, ON 16/11/25. Jn'd *Prevost* as UNTD Cdt 01/62. Prom S/Lt in '64 and straight to the Ret'd List on the decommissioning of *Prevost*. (WC)

LCdr Michael Paul BOWEN, CD*, RCN(Ret'd)

Former Member, 86 in Kingston ON 07/01`/26. Jn'd *Venture* as Cdt 03/09/57, prom A/S/Lt 01/09/59, S/Lt 01/09/60, Lt 01/12/64 and LCdr 01/07/73. Srv'd *Stadacona, Fraser, New Glasgow, St Laurent,* 4th Cdn Escort Sqn., SACLANT, CFS Shelburne (i/c) and NDHQ. Ret'd in '84. (*Citizen*)

LCDr(Ret'd) Derek Michael BRAKE, CD**

58 in Ottawa 17/12/25. Jn'd as an OS in 1986, later

commissioned and promoted LCdr. Srv'd *Calgary* and in the Golan Heights, Kosovo, Japan and Hawaii. Ret'd in 2020. (RD)

Cdr Robert Campbell BROWN, CD*, RCN(Ret'd)

Former Member, 98 in Brockville ON 14/09/25. Jn'd *Royal Roads* as Cdt 30/08/44, prom Mid 03/08/56, A/S/Lt 03/11/47, S/Lt 01/11/47, Lt 01/03/50, LCdr 18/03/58 and Cdr 01/07/66. Qual "P" and "TAS". Srv'd RN for trg., *Magnificent, New Liskeard, Scotian, Shearwater, Resolute* (XO), *Stadacona, New Waterford* (i/c), *Nipigon* (i/c), *Cornwallis* and CDLS(W). Ret'd in 1971. (*Citizen*)

Lt Douglas Frederick Shirley COATE, RCN(R)(Ret'd)

94 in Oakville, ON **01/11/25.** Jn'c *York* as UNTD Cdt 15/01/50, prom S/Lt 01/09/52 and A/Lt 01/09/54. Also srv'd *Carleton*. To Ret'd List in '56. (WC)

Lt(N)(Ret'd) William Earle CORN, MMM, CD**

76 in Halifax 03/10/25. Jn'd as OSSG in '69 rising to CPO1. Later CFR'd as Lt(N). Srv'd, inter alia, *Iroquois, Huron,* CFB Halifax (Base CPO), Maritime Forces Atlantic (Formation CPO) and Area Sea Cadet Officer. Ret'd in 2004. (WM)

LCdr Douglas Edward David DRYSDALE, CD, RCN(Ret'd)**

79 in Riverport NS 02/01/26. Jn'd *Venture* as Cdt 01/09/64, prom S.Lt 03/07/66, Lt 03/09/69 and LCdr 01/01/80. Srv'd *Cape Scott, Bonaventure, Skeena, Yukon, Huron,* NDHQ, MARCOM, CDLS(L) (Exchange *HMS Dryad*), Bahrain (1st Gulf War), Cambodia (Peacekeeping) and Pearson Peacekeeping Centre. Ret'd 1997. (WM, AC)

Lt(Capt[PLT]) Angus William DUNCAN. CD, RCN(Ret'd)**

84 in Dartmouth ns 24/09/25. Jn'd as OSFC in '59, tsf'd to RCAF in '63, thence *Venture* as Cdt 01/09/65. Prom S/Lt 08/07/67 and Capt[PLT] 01/09/69. Srv'd *Cayuga, Athabaskan,* RCAF Centralia, *Shearwater, Bonaventure,* MARPAC HQ, CFB Comox, CFFS, CFB Shearwater, VS-880, VU-32, VU-33 and 420 (Air Reserve) Sqn. Ret'd in '93. (RD, Canada's Naval Aviators.

LCdr(Ret'd) George Rodney ELLISON, CD*

78 in Annapolis County NS 28/09/25. Jn'd as DEO A/S/Lt 30/05/69, prom S/Lt 39/05/73 and LCdr 01/01/83. Srv'd various ships and shore establishments. Ret'd in '95. (WM)

Capt James Bryan ELSON, KCMGM, OMM, CD, RCN*Ret'd)**

Former Member, 91 in Dartmouth NS 12/01/26, Jn'd Royal Roads as RCN(R) Cdt 09/51, thence RCN Cdt 19/09/52. Prom Mid 01/09/53, A/S/Lt 01/01/55, S/Lt same date, Lt 01/11/56, LCdr 01/07/68, Cdr 01/01/76 and Capt 01/01/84. Srv'd *Ontario, Niobe* (RN for Trg., thence RN S/M Trg. and service - *HMS/M's Aeneas, Alderney, Ambush, Excalibar, Explorer, Osiris, Seraph, Sidon*) , *Restigouche, Thunder* (i/c), *Skeena* (i/c), *Fraser* (i/c), CFSC, *Protecteur,* Deputy Director Naval Reserves and CO CFB Halifax. Ret'd 1989. NAC Gold Medallion 2014. Author three naval/maritime related books. (WM, HS)

Lt Bernard Joseph Guy GAREAU, CD, RCN(Ret'd)**

93 in Dartmouth NS 04/10/25. Jn'd in 1950 as OSNS. Cfr'd as S/Lt 17/04/70 and prom Lt 17/04/73. Srv'd, inter alia, *Bonaventure* and UNEF.Egypt. Ret'd in '86. (WM)

Lt Charles Andrew GUNN, RCN(R)

87 in Halifax 05/12/25. Jn'd *York* as UNTD Cdt

02/01/58, prom S/Lt 01/03/61 and Lt 23/06/63. A long time supporter CNMT Sackville. (WC)

Cdr(Ret's) Roger Duane HEIMPEL, CD**

63 in St John NB 07/08/25. Jn'd as OS in '61 thence UTPNCM as Cdt 09/87, prom S/lt 01/05/91 and later Lt, lCdr and Cdr. Srv'd *Saskatchewan, Terra Nova, St John's, Fredericton*, NETE, Sea Training Atlantic and Fleet Tech Officer. Ret'd in 2015. (SP)

Capt(N)(Ret'd) John Kevin KEATING, CD

74 in Kentville NS 19/08/25. Jn'd as A/S/Lt (Medical Officer) 21/08/78, prom S/Lt 10/06/81, Lt 01/01/82, LCdr 01/01/87 and later Cdr and Capt(N). Srv'd, inter alia, *Provider*, NDHQ, Bosnia, CFB Borden (CO Medical School) and CO Formation Health Services MARCOM. (WM)

Lt(N)(Ret'd) Christopher William George LANG, MMM, CD.**

74 in Halifax 28/11/25. Jn'd as Boatswain in '68. Later CFR'd as Lt(N). Srv'd, inter alia, *Protecteur, Terra Nova, Iroquois,* Sea Training Atlantic, *Algonquin, Saguenay* and *Fraser*. Ret'd in 2005. (WM)

LCdr John Franklin LITTLE, CD*, RCN(Ret'd)

81 in Ottawa 07/01/26. Jn;d Royal Roads as Cdt 01/09/62 thence RMC 09/64. Prom S/Lt 01/09/66, Lt 01/09/68 and LCdr 01/01/81. Srv'd, inter alia, various ships, CFFS(H), CFFS(E) and NDHQ. (*Citizen)*

LCdr Ronald Irvine LYSELL, CD*, RCN(Ret'd)

85 in Guadalajera, Mexico 12/09/25. Jn'd *Discovery* as ROTP Cdt 01/09/58 thence tfs'd to RCN(R) as A/S/Lt 01/07/61. Rejoined RCN in '63 at *Naden* (Instructor Branch) as S/Lt (sen. 09/02/61). Prom Lt 09/08/65 and LCdr 01/01/78. Srv'd, inter alia, *Ste Therese, Mackenzie* and *Qu'Appelle*. Ret'd in '84. (WC)

LCdr James Yule MacPHERSON, CD*, RCN(Ret'd)

83 in Kamloops BC 24/06/25. Jn'd *Discovery* as ROTP Cdt 01/09/59 thence RMC in 1960. Prom S/Lt 01/05/64, Lt 29/10/66 and LCdr 01/07/72. Srv'd, inter alia, *Assiniboine, Grilse* and *Protecteur*. Ret'd in 1990. (RD)

Cdr(Ret'd) John G. R. F, MILLER, CD

82 in Victoria 01/08/25. Jn'd as Cdt at Royal Roads 09/71 thence RMC 09/73; prom S/Lt 01/05/75, Lt 01/01/78, LCdr 01/01/84 and Cdr 01/01/90. Srv'd, inter alia, *Qu'appelle, Mackenzie,* CFCSC (Course 15) and CFB Esquimalt (Command Comptroller). (RD)

LCdr Allan William MORRISON CD, RCN(Ret'd)

90 in Perth ON 11/05/25. Jn'd RMC as Cdt(CE) 09/09/54, prom A/S/Lt(CE) 01/05/58, S/Lt(CE) 01/01/59, Lt(CE) 01/06/59 and LCdr 09/04/66. Srv'd *Bytown* (NSHQ) and *Niagara*. Ret'd in 1972. (e-Veritas)

S/Lt Ivan Edmund MORRISON, RCN(R)(Ret'd)

89 in Stratford, PE 11/04/25. .Jn'd *Scotian* as UNTD Cdt(E) 02/01/53 and prom A/ S/Lt(E) 01/09/54. To Ret'd List in '60 as S/Lt. (WC)

LCdr Michael James Anderson MUIRHEAD, CD, RCN(R)(Ret'd)

84 in Victoria 17/01/26. Jn'd *Malahat* as UNTD Cdt 01/60, prom A/S/Lt 01/07/62, S/Lt same date, later Lt and LCdr . Srv'd *New Waterford*, CDLS(W) (Panama

City diving) and NDHQ (Arctic diving- Franklin search). Ret'd in 1980. (IK, WC)

Lt Roger de Chaunac NANTEL, LVO, CD. RCN(Ret'd)

Former Member, 94 in Trois Rivieres 22/01/26. Jn'd CMR as Cdt 12/09/52. Prom Mid 30/08/54, A/S/Lt 30/08/56, S/Lt(P) same date and Lt(P)30/11/57. Srv'd *Shearwater, Bonaventure* and AdeC to Governor General (1961-64). Ret'd in '64. (WM, Canada's Naval Aviators).

Lt Ralph Lamarre NELSON, CD*, RCN(Ret'd)

87 in Ottawa 06/09/25. Jn'd *Venture* as Cdt 09/09/56, prom Mid 01/09/58, A/S/Lt 01/05/59, S/Lt same date and Lt 01/10/62. Qual "P" and later "S". Srv'd, inter alia, *Niagara* (USN Flight Trg.), *Shearwater, Bonaventure, Margaree* and NDHQ. Ret'd in '85. (RD, Canada's Naval Aviators)

Surg Lt Maxwell Charles PATTERSON, RCN

95 in Burlington, ON 13/02/26. Jn'd in '56 as Surg Lt (sen. 91/06/53), srv'd *Shearwater* and *Bonaventure*. Rls'd 30/06/59. (WM)

Capt(N)(Ret'd) Colin W. PLOWS, OMM, OStJ, CD*

In Victoria 10/09/25. Jn'd as Cdt at Royal Roads 09/74, prom S/Lt 01/05/78, Lt 01/01/81, LCdr 01/01/90 and later Cdr and Capt. Srv'd, inter alia, *Gatineau* (XO) *St John's* (XO), *Halifax* (t/c), CRCN (COS), Former Yugoslavia (EU Monitoring Mission) and Korea. Ret'd in 2004. (RH, WM)

Capt Christopher Gratix PRATT, OMM, CD, RCN(Ret'd)**

101 in Victoria 06/01/26. Jn'd *Royal Roads* as Cdt in '42, prom Mid 15/08/43, A/S/Lt 15/08/45, Lt 01/09/45, LCdr 01/09/53, Cdr 01/01/63 and Capt 01/01/67. Srv'd RN (Subs Cse's, *HM Ships KG5* and *Anson*), *Crescent, Royal Roads* (Staff), *Niobe* (qual "N"), *Naden, Haida* (Korea), *Stadacona*, NSHQ, *Crusader* (i/c), *New Waterford* (i/c), *Niagara* (SACLANT), NDC, MARCOM (A/COS/Plans), *Kootenay*(i/c), CFMWS (i/c), JSSC and Director Naval Reserves. Ret'd in '78. (WM, WC, RH)

Lt Klaus Joachim Dieter RIEBE, CD, RCN(Ret'd)**

90 in Truro NS 29/08/25. Jn'd in '53 as OSLMS. CFR'd as Lt 28/06/83. Ret'd in '89. (WM)

S/Lt(E) Ian Fraser ROGERS RCN(R)(Ret'd)

92 in Mill Bay, BC 16/05/25. Jn'd *Unicorn* as UNTD Cdt(E) 02/01/52 and prom A/S/Lt(E) 0001/09/54.. To Ret'd List in '54 and prom S/Lt(E). (WC)

LCdr Arnold SAKOLINSKY, CD*, RCN(Ret'd)

82 in Winnipeg 07/10/25. Jn'd RCN in 1961, CFR'd as S/Lt 21/12/72 and prom Lt 21/12/75. Srv'd, inter alia, *Mirimichi* (i/c), MARCOM HQ and Winnipeg Area Sea Cadet Officer. Ret'd in 1987. (RH)

Lt(NR)(Ret'd) Douglas William TAYLOR

78 in Victoria 13/10/25. Jn'd *Malahat* as UNTD Cdt 01/66 and pron Lt(N) 01/01/70. (WC)

Cdr(Ret'd) John A. WESTLAKE, CD**

77 in Ottawa 04/09/25. Jn'd *Venture* as Cdt 09/66, Prom S/Lt 01/09/67, Lt 08/09/71, LCdr 01/01/81 and Cdr 01/01/91. Srv'd *Beacon Hill, Assiniboine, Margaree, Chaudiere,* NATO Northwood, NDHQ and *Gatineau* (i/c). (GP)

S/Lt Nancy Anne WHITELEY, (nee HOWE) RCN

85 in Ottawa 30/09/25. Jn'd as a nurse S/Lt 22/03/63, srv'd *Stadacona* and Rls'd in '67. (*Citizen*)

Capt Donald Wallis WILSON, CD*, RCN(Ret'd)

Former Member, 88 in Ottawa 19/01/26. Jn'd *Venture* as Cdt 12/09/57, prom Mid(E) 01/09/56, A/S/Lt(E) 01/09/57, S/Lt(E) 01/07/58, Lt 01/12/60, LCdr 01/07/68, Cdr 01/01/74 and Capt 01/01/82. Srv'd *Niobe* (RNEC), *Skeena, Fraser, Naden, Beacon hill* (EO), TSD Vickers, *Huron* (EO) and 2CFTSA (i/c). Ret'd in 1986. (PMacG).

Lieutenant Commander George Moore, CD, passed away peacefully on November 4, 2025, at the age of 86. Born on October 28, 1939, George dedicated much of his life to service—both to his country and to his community.

George's lifelong connection to the Royal Canadian Navy began in his youth as a member of the Royal Canadian Sea Cadets at HMCS *Chippawa*, where he rose to the rank of Chief Petty Officer. He later received his Queen's Commission in 1975 as an officer in the Canadian Forces Cadet Instructor List, serving with distinction in numerous leadership roles, including Commanding Officer of RCSCC Qu'Appelle. He also introduced the Duke of Edinburgh Award to the Corps, culminating in a memorable presentation by His Royal Highness Prince Philip.

Beyond his naval service, George contributed over 30 years to the Canadian Pacific Railway and was widely recognized for his professional excellence. In retirement, he remained deeply engaged in volunteer work, including serving as Executive Director of the Cambodian War Amputees Rehabilitation Society.

George was a dedicated member and leader within the Naval Officers Association of Canada, Calgary Branch, serving as President and later as a Life Member. A gifted communicator, he devoted decades to editing and publishing numerous naval and historical newsletters and the national Starshell magazine, helping preserve and promote Canada's naval heritage. His leadership also extended to the Tecumseh Historical Society, where he played a key role in the development of the Naval Museum of Alberta.

His many honours included the Queen Elizabeth II Diamond Jubilee Medal, multiple awards from the Association of American Railroads, and the Bronze, Silver, and Gold Medallions of the Naval Officers Association of Canada.

George will be remembered for his lasting contributions to the naval community and beyond. He leaves behind a legacy of service, mentorship, and commitment that will continue to inspire all who knew him.

George & Gloria Moore. Palliser Hotel 2010 on the 100th anniversary of the RCN

Personnel from HMCS YELLOWKNIFE and the Coast Guard Tactical Law Enforcement Team South (TACLET South) work together as they conduct a small boat exercise in the Rigid Hull Inflatable Boat (RHIB) during Operation CARIBBE on 04 February 2026 (Image: CAF).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