STARSHELL

WINTER 2022 | ISSUE 94

NAVAL ASSOCIATION OF CANADA

Lessons from the War in Ukraine

Submarine Procurement: Widening the Aperture of Options

AOPV: Deliver in the North and South

Replacing Canada's Submarine Capability and the Changing Threat to World Order

Canadian Disaster Response in a Covid World

Does the RCN Need Submarines? A Surface Naval Warfare Officer's Perspective

Bringing Shipbuilding Back to Ontario

Starshell

From the Editor
Adam Lajeunesse

ISSN-1191-1166

STARSHELL magazine is published three times per year (with occasional special editions) by the Naval Association of Canada (NAC). The editor is solely responsible for the selection of material. Contributions are encouraged and should be sent direct to the editor at adam_lajeunesse@outlook.com.

NOTE: All material must reach the editor no later than the 15th day of the month prior to the month of publication. All photographs submitted for publication must be accompanied by suitable captions and accreditation. Photos should also be high-resolution (at least 200dpi). Changes of address are to be sent to the executive director, David Soule, ExecutiveDirector-NAC@outlook.com.

DISTRIBUTION and SUBSCRIPTIONS

STARSHELL is circulated electronically via email and displayed as a flipbook accessed through the NAC website.

Cover Image: Sailor 1st Class Kevin Tong from Naval Reserve Division, Her Majesty's Canadian Ship *Tecumseh*, conducts a proficiency dive during a Naval Reserve National Dive Exercise in Port Hardy, British Columbia, on 26 January 2022. Photo: Sailor 1st Class Valerie LeClair, MARPAC Imaging Services, Canadian Armed Forces Photo

This edition of *Starshell* is being published one month into Russia's unprovoked invasion of Ukraine. The result of which appears to be the collapse of the post-Cold War security system in Europe and, certainly, a shift in Canadians' perceptions of Russia: from a strategic competitor to an outright enemy. The impact that this will have on the country's medium and long term defence requirements remains to be seen, however it certainly places new emphasis on the Navy's renewal, both through the CSC program and the ongoing discussions surrounding submarine replacements. This edition also has a guest editorial by Rob Huebert, who offers his thoughts on a number of emerging strategic questiosn that the war will raise for the Navy.

In past editions, *Starshell* has paid close attention to the CSC and the surface fleet and this Winter we take a closer look at the strategic rationale for submarines, with articles by Norman Jolin, Robert Davidson, and Ryan deForest. This work is also leading up to a NAC-hosted virtual conference on the country's submarine replacement options, scheduled for this summer, with more details to come on that.

Rounding out this edition are in-depth assessments of Canada's need for an enhanced disaster-response capability by Dave Dunlop and a paper by Heddle Shipyards President Shaun Padulo, offering a look at Ontario's shipbuilding capacity.

With luck, our next edition of *Starshell* will have seen the end of the war in Ukraine and a better future for Europe and the world.

Adam Lajeunesse
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RCAF member on HMCS Montreal during Operation REASSURANCE in March 2022 (image: Braden Trudeau, CAF)

Guest Editorial

Some Initial Lessons of the Ukrainian-Russian War for the Royal Canadian Navy

Rob Huebert

The Russian renewal of its war in Ukraine has forced most observers to the conclusion that war remains a central element of the international system. It has also opened their eyes to a new geopolitical environment. While the focus of this attention is on the actions of the Russians in Ukraine, it needs to be remembered that China has also emerged as an increasingly well armed adversary, that will undoubtedly take lessons from what Russia does and achieves in Ukraine, and what the West is willing and not willing to do to.

The current war in Ukraine is almost exclusively a land war, but it serves to demonstrate that great powers will still use deadly force to achieve their objectives. This of course is something that the men and women of the Royal Canadian Navy have always understood. Their challenge moving forward into the new geopolitical environment is how to deal with the complexities of this new geopolitical environment and, more importantly, pushing their political leaders to understand what is now required to fight in this new environment. The way in which Russia has conducted this phase of the war – remembering that they initiated this in 2014 and not 2022 – offers certain insights that must be reflected upon.

First, Putin has reminded us of the centrality of the existence and utility of nuclear weapons. In very clear terms, he warned the NATO alliance that, if it intervenes, Russia could respond with nuclear weapons. While most hope he was only bluffing but he does tend to be serious when he makes his threats. At the same time, it also cannot be forgotten that China has been developing and modernizing its nuclear weapons. While China currently has a much smaller arsenal of such weapons, the impact of Putin's threat in deterring NATO's response will be noted in Beijing. Moving forward, this means that we must once again give thought to Herman Kahn's famous dictum about nuclear weapons – "thinking the unthinkable." What is needed for Canadian warships to be able to operate in an environment in which nuclear weapons are being used? What does this mean for communications where a EMP burst has occurred? Are our vessels able to withstand high levels of radiation and blast effects? Do the vessels have access or carry enough medical equipment to keep a vessel safe if it sails close to a nuclear exchange? These are all questions that most had hoped ended with the Cold War, but now need renewed consideration.

A second and related issues is how well the RCN could fight in an environment in which a bio-agent has been used. The COVID pandemic demonstrated how a naturally occurring pathogen resulted in the docking of both American and French aircraft carriers. The inability of both navies to keep their vessels sea-worthy will not be lost on adversaries willing to threaten the use of nuclear weapons. There were serious allegations at the end of the Cold War that the Soviet Union had a very active bio-weapon program. It would be naïve to presume that, given the effects of COVID, Russia and or China are not now examining how to weaponize such pathogens going into the future. How then does the Canadian Navy ensure that it can continue the fight in the face of such weapons? Before one argues that this will never happen, consider the fact that both the Russian and Ukrainian forces are now fighting a war in the midst of the (hopefully) end of the COVID Pandemic. Ukraine at least had no choice but to fight. Looking to the future, what does the Canadian Navy need to do to allow it to continue the fight should the bioweapon threat re-emerge?

Third, as noted earlier, the war has been almost exclusively a land-based conflict, but the Russian did use seapower to seize the Crimea when they began the invasion in 2014. What can be learned from their

actions? Much of their activities occurred within enclosed seas and close to the coastline, but what can be determined by their very quick seizure of the peninsula? Their quick conquest of Crimea stands in marked contrast to the much slower progress that they have had in the current phase of the conflict. Why were they able to overcome Ukrainian resistance then? What does this mean for the role of navies for invasions and what does the Royal Canadian Navy, with its allies, need to learn to prevent such quick and easy conquests in the future?

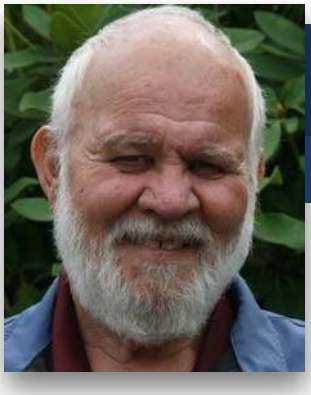
Fourth, and at the other end of the spectrum, this War in Ukraine also illuminates the advances that have occurred in terms of cyber-warfare and the use of misinformation and the weaponization of social media. One of the necessities of recruiting today's sailors is the need to allow them access to their communications to the outside world. In times of actual conflict, this will be subject to tight control. But there is growing evidence that the damage of misdirection and misinformation may be in the time leading up to the actual conflict. In Canada, it is becoming clear that many of the people who took up the cause against the federal government's efforts to contain the pandemic did so because of material they read through their social media. Many became so convinced of the misinformation that they read that they were willing to devote significant resources to protest – such as those who joined the protest in Ottawa. We have seen similar events in Washington where protesters, on the false claim that the democrats "lost" the election, were willing to gather and storm the capital.

How then does the Navy balance the need to allow its sailor access to their information sources but also ensure that the ships' crews remain focused and united. Given the effectiveness of the weaponization of social media, it is very easy to see the Russian or Chinese developing a strategy of targeting the crews of Canadian warships to sow dissent and disagreement. In some ways this is the return of Tokyo Rose, but delivered much more effectively. This will be a growing threat that makes the command of vessels increasingly challenging.

All wars have their lessons. Often these are difficult to accept. But it is clear that the current Ukrainian-Russian war carries with it important lessons that will better prepare the Royal Canadian Navy to fight, if and when, conflict with the Russians or Chinese spirals into war.

Rob Huebert, PhD, is an Associate Professor in the Department of Political Science at the University of Calgary. He is also a senior research fellow with the Centre for Military and Strategic Studies and was a senior research fellow of the Canadian International Council. In November 2010, he was appointed as a director to the Canadian Polar Commission. His area of research includes: international relations, strategic studies, the law of the sea, maritime affairs, Canadian foreign and defence policy, and circumpolar relations. He publishes on the issue of Canadian Arctic Security, Maritime Security, and Canadian Defence.

HMCS Montreal on Op Reassurance (image: Braden Trudeau, CAF)



From the Bridge

Bill Conconi, National President

The Elephant in the Room

I believe, the time has come when we must deal with our very own elephant in the room. The course forward is not an easy one but one I am sure we are up to it. We have an ageing membership that with attrition does not bode well for our future. For whatever reason, potential members are not stepping up to the task of "joining". Those members we have are quick to note the many assets we bring to the table and their perceived value. Branches across the country are offering programs of speakers and luncheons, our Naval Affairs program is producing high quality materials on our very excellent website and our very own NAC news has become a very valued source of current information. So, with a quality product, why do we need to work as hard as we do to secure our future by attracting new members?

In checking with other "like" organizations, all are having the same challenge. Perhaps information has become too easily available, and a different approach is needed. In days gone by, we had a stronger connection to our past and the strong social bonds that were a part of that. Going to sea often meant separation from our families and messes and wardrooms had to expand to meet the need. To me, this speaks to a need to change our approach. The need to support our navy continues to grow as resources are challenged and many needs compete for attention. We are living in an increasingly complex world as present-day current events demonstrate.

However, we are not without opportunities. We need to view challenges differently. Perhaps a key issue is the fixation we have with joining and membership. As mentioned earlier, the NAC is not unique in this, we are all part of a larger picture. Some associations have started to focus on "affiliations" rather than "memberships" or "amalgamations." Some groups I have spoken with would be willing to connect and partner, share ideas and resources, while at the same time maintaining their unique identities and interests. Also, many have discovered that "dues' as a way of securing income is no longer the best way to secure our financial future. Quality programs, as mentioned earlier, come with expenses to service and maintain. Currently dues do not cover this at all.

Question: are we looking for 1,000 members, or say 4,000 registered supporters looking to support our navy? Also, much easier to identify through website registration, those that like our products and are willing to support our goals. Running all this through a "sponsorship" model, where supporters get a return on their investment for a chance to connect with our audience, and access to our materials, is much easier than trying to maintain and service a complex membership database involving many branches across the country.

One change, a paradigm shift really, is to develop a marketing mindset. To rethink how we gather our support and then invest it in building an awareness of our maritime security. Our elephant, big and influential, perhaps could be re-harnessed to truly make a difference. It surely would change the discussion.

Yours Aye,

Bill Conconi, National President

The Front Desk

"SPRING HAS SPRUNG"– TIME TO PUT SOME SWAGGER IN YOUR STEP!

David Soule, Executive Director

Well at long last life seems to be getting back to a more normal. For our organization it means renewing friendships and once again being able to interact in person in a face-to-face social setting. That said, we face some new and old challenges. Like many similar organizations we are challenged in regards to membership – simply put, we need new blood. We also need folks to step up and assume key roles in the organization, whether at the National level or with your local branch so why not consider getting more involved as we "spring out of COVID!" with the spirit that "many hands make light work."

Some Thoughts

NAC's focus at the National level continues to be on our naval affairs program with the intent to remain relevant with our key stakeholders in government, industry, as well as in the public eye. We believe our naval affairs program can help guide the discussion of what our Navy needs in the current and future security environment (and this program is key to attracting new members). In my view, we tend to look back on historical events with nostalgia and with, more times than nought, a naive hope that whatever travesty and evil befell the nation in days past, it will not re-occur. The on-going tragedy in the Ukraine and the threat to maritime security in the South China Sea clearly demonstrate that the sacrifices of the past do not guarantee "peace in our time" or in the future. We also need to understand what missions our Navy has been deployed on in the recent past, where it continues to be deployed today, not to mention the challenges the Navy may be faced to meet head-on in the future. Canadians need to understand what our Navy does, why maritime security for Canada matters and what challenges may exist to threaten our way of life and security in the the future. NAC needs to tell this story. It is our mandate.

When I look back over the past two years, we have learned (and some might say been forced!) to use modern social media to keep in touch with members and stakeholders. These mediums have been key for you the member to remain informed of issues that impact the maritime security of Canada and our Navy. Going forward we need to ensure we continue to use these tools to our advantage and be willing adopt new ones – it's what some of our current, and all our potential new members, expect. We also need members who are media and technically savvy to step up and support this effort – I would argue you do not need to be an expert, just keen and willing to learn. I think of our use of social media over the course of the pandemic, whether it be GoToMeeting for what are now national speaker events, distributing NAC News, virtual social events like the West Coast NAC-VI hosted "Weepers", and efforts to post/tweet relevant material on Twitter and Facebook. This has made our organization more "National" in outlook and relevant with our stakeholders. And that is a good thing!

The 2022 NAC National Program

This is an update from the Fall 2021 edition – Even though we are emerging from

the pandemic, the 2022 plan has been somewhat tempered for a number of reasons.

BOA Gala Dinner – Ottawa – Thursday 29 April 2022 – A NO GO EVENT for 2022

Regrettably, Due to circumstances beyond the organizing committee's control, the decision on the 2022 BOA Gala dinner must be NO GO, at least for the foreseeable future. Notwithstanding that the COVID situation appears to be abating, there are still too many obstacles to overcome, and given the uncertainty since OMICRON appeared in Ottawa there is now not enough time to put in place a plan that will guarantee a 100 percent successful event. To note, several other high-profile social events planned for the spring in Ottawa have also been canceled recently. One of the biggest factors which led to our decision was the impact of the pandemic on the catering industry, particularly for events the size of a BOA Dinner. Additionally, there are concerns over ticket sales with COVID just barely in the rear-view mirror by the time of the dinner. That all said, do note the revenue the Gala generates remains a key enabler for our naval affairs program and indeed NAC's future as an organization.

Arctic Workshop/Conference – Halifax –Fall 2022 (TBD)

Discussions are underway with the RCN in Halifax to establish best dates for this event to take place later this year, with tentative dates most likely post-OP Nanook when participating RCN ships return to Halifax. NAC and the Brian Mulroney Institute of Government at StFX, in partnership with the RCN, will remain as hosts for this workshop. The theme will be "Arctic Maritime Partnerships – Options and Opportunities for Cooperation in the North American Arctic". NAC Vice-President Bruce Belliveau and his team from NSNAC are working with Dr. Adam Lajeunesse (from the Institute at StFX and our NAC naval affairs research coordinator). This workshop will not be conducted in the more usual NAC conference format, in that attendance will be limited by invitation only. A number of NAC members, who have expertise in this area, will be participating and a small number of NAC members may be able to attend. We are also investigating the best and most affordable way to make relevant portions of the plenary sessions available to all NAC members, either live or after the event. More to follow.

AGM 2022 – 15 June 2022 via GoToMeeting

More details to follow in April.

2022 Monthly Speaker Meetings – various NAC Branches

These events will be announced as scheduled and will be "held" on GoToMeeting and other similar social media as available. Event notification will be made using WildApricot messaging and in NAC News.

Your NAC Needs You

As many of you know I will be stepping down as the National Executive Director as of the 2022 AGM. We also need a treasurer. From my perspective these positions have been made somewhat easier to do with a more automated approach to accounting and administrative support from our NAC National Coordinator Nora Kennedy. Have no fear, I won't be running away but we do need someone to stand up for these positions. If you are interested (and like some good gossip!) please contact me by email or give me a call.

Endowment Fund Happenings

Many of you will have received EF Donor letter last Fall. I urge you to consider donating to this, your fund. In 2021, some $48,000 in grants have been allocated to a wide-range of deserving groups and activities. These support maritime related activities like Sea Cadet programs and education, maritime museums (on land or afloat) and support to veterans, to name a few. This effort can only be sustained by your donations. The National Board wants to thank Admiral (Ret'd) John Anderson, RCN, and his committee for their

efforts over the past year. This is never an easy task.

On behalf of all of you, I want to thank Doug Plumsteel, who is stepping down as an EF committee trustee, for his many years of hard work and dedication to the EF. He has been a key member for the Fund's success. I also want to welcome, on your behalf, Diana Dewar as a new trustee. We wish her all the best in this position.

You will find the EF report for 2021 and the list of donors in this edition of Starshell. As a reminder, we want to make a concerted effort in social media to advertise what organizations are awarded the grants so NAC gets some recognition for our contributions. Feel free to send me and Starshell's editor, Adam Lajeunesse, your pictures, links, etc … for any presentation related for the grant(s) your branch is sponsor for.

EF Grants

See the EF Grant request here

Grant request applications for 2022 are due to me (signed off/endorsed by your branch president) no later than 31 May 2022. That said, the earlier these are submitted, the better as it gives the committee more time to assess/consider the need against available funds. The more information in regard the scope, financial need and plan for your grant is always most helpful.

NAC Awards – 2022 Nominations

Nominations for NAC awards (medallions and president's letter) are due no later than 31 May 2022. Guidance be found in the NAC admin manual and this webpage.

Administration - Some Worthwhile Disruption Will Continue

This may be a repeat but… As you are all aware we have moved our email service and member information "products" such as NAC News and event announcements to the WildApricot (WA) platform. This transformation continues to progress, and while taking longer than anticipated to implement, it has been successful. Gerry Powell is membership coordinator for this project. He may have already contacted your branch membership person and if not please let us know who the individual is. This is not a one-size fits all approach so we can adapt to meet branch needs, as well as member needs, in terms of support. While WA is mostly user-friendly for members, managing it does require some training and a little tech savviness. We also recognize that some of you would prefer to continue to pay by cheque or cash and we will continue to support this as well. All to say, we are on the road to making this work.

NAC Children's Book

This series of three books, "Mom's in the Navy", "An Undersea Adventure", and "Over the Horizon" are available for sale at **this link**, as a set or individually in English and French. If you know of a school or library that could use either or both language versions of these books please let me know. We will be supplying copies to the Family Resource Centres on both coasts and I will be working on a plan to donate to local public libraries in the near future.

SALTY DIPS Volume 11 – "Some Things Pass. Some Things Change. Some Just Stay the Same."

The eleventh volume of "Salty Dips" in hard and soft copy is available for purchase through Friesen Press as well as other sellers such as Amazon. The Friesen Press site also has links to e-book versions such as Amazon Kindle and Apple Books. The stories in this series all tell our naval history from the individual point of view. Why not consider buying a copy and donating it to your local library or enjoying a copy while on holiday this summer.

Why I Joined The Navy

I am always fascinated to learn why people join the Navy. Some are from military families, some were active in sea cadets, some joined for adventure or to do something different, with a few who do so from a chance encounter or a spur of the moment decision. A few years ago, I read an

archived New Yorker article written by a journalist who accompanied an American landing ship crew for the June 6th Normandy invasion. This article was published shortly after the invasion as a human interest piece. One of the crewmembers was a US Coast Guard crewman. He signed up with the USCG because the local recruiting office in his hometown placed an ad in the local paper offering to send a staff car to pick up potential volunteers and take them to the recruiting office. He said he smiled at those in the long line, most of whom had walked a long way, outside the local USN recruiting station while he drove by in comfort to enlist in the USCG.

That article reminded me of a young officer under training in the frigate where I served as XO. He was likeable, seemingly laid back, yet he displayed a rather serious air and was very quiet by nature. We had a very socially active and free-spirited wardroom at the time. His quiet nature made him the target of some genteel wardroom teasing which he always took in stride – usually he just grinned like a Cheshire cat. When he did speak, it was with purpose and reminded me of an old EF Hutton commercial. Most of us will remember the line, "When EF Hutton speaks, people listen." We would literally stop what we were doing whenever he spoke up. He spoke in a very commanding and brief manner no matter what the topic, and he would stop talking as abruptly as he had started. Most of us were left in a bit of suspense waiting for him to conclude. I remember trying to hide my amusement whenever he spoke up even when he was serious.

One evening at sea we had a chance social chat during his watch. He told me he was Metis by way of heritage and I believe he was from a small prairie community. He was a good hockey player and had attended an American college on a scholarship. After graduating he played some semi-pro hockey but was forced to stop due to an injury. Apparently, he moved to Vancouver Island for some reason shortly after. One day he joined members of his local community who were travelling to Victoria to join a First Nation/Metis protest at the BC legislature. I think he told me he had never been to Victoria before so he wanted to see the sights if the opportunity presented itself. It was a rather cool damp day complete with drizzle. At some point he wandered off to find somewhere to warm up and get some food and a hot drink. By chance he passed by the local recruiting office where he spied a pot of fresh coffee and some snacks so in he went. After some time, while enjoying a bite to eat and a coffee, he signed up. He returned to the protest, continued marching around the legislature with the rest of the group, and eventually boarded the bus home. His joining papers were safely tucked in his coat. He never told anyone what he had done that day and after several weeks he left town for basic training. While I never asked, I am not sure he told anyone where he was going when he left town! I finally understood how he joined but never really learned the why – perhaps the coffee and snack on a dreary day was all it took(?)! All to say some 20 years later he is still in the Navy and doing rather well. He was certainly well respected as a junior officer and the Navy made a good investment in recruiting him. I still think of his manner of speaking from time to time and have a good laugh.

Concluding Remarks

Well, it is time to close this 'Front Desk". Let's find time to be social soonest and have a laugh or two as we have many things to be thankful for. Hopefully you have read this "Front Desk" with a bit of a sense of humour. Do remember that "Life is good".

Keep in touch with the NAC

If you are receiving NAC News, but are not a member, please consider joining.

Join the NAC

View our newest Naval Affairs work

Archived weekly NAC News links

Follow us on Twitter: @navalassn

Donate or leave a memorial visit at the **NAC Endowment Fund**

NAC reference to assist veterans and/or seniors is located at **Veteran's Corner**

NAC Endowment Fund: Annual Report to the Membership for 2021

It is our pleasure and duty to make this annual report of the NAC Endowment Fund activities for the year 2021.

As was mentioned in last year's report, in early 2021 the Chair of the Trustees was assumed by John R. Anderson and Michael Zwicker and Bryn Weadon joined as trustees. Michael Zwicker assumed the duties of Treasurer.

In 2021, the Fund received donations totaling just over $33,600. This was a modest increase from previous years – perhaps due in part to kind donations in memory of dearly departed members. We were able to maintain and even exceed the granting level typical of previous years, thanks to the generosity of our donors and the positive performance or our Odlum Brown investments. While we were unable to satisfy all the requests made for grants, your Trustees believed it was very important to continue to respond positively to the most deserving of those grant requests for worthwhile projects. We were very fortunate that the investment markets weathered the COVID-19 pandemic well and combined with the expert portfolio management by Odlum Brown – for 2021, we had an investment return of approximately 13% and a portfolio market value that grew to about one point one million dollars at the end of the year. We are very appreciative of NAC's corporate sponsors who contributed to the Endowment Fund in 2021 - specifically BAE Systems Canada, Lockheed Martin Canada, and Irving Shipbuilding Inc. as part of the NAC's 2021 Sponsorship Campaign.

The previous paragraph does not include project donations or disbursements for the Lt. Robert Hampton Gray, VC, DSC monument erected adjacent to the BC Aviation Museum thanks to the leadership of Terry Milne and his team. The role of your Endowment Fund, now concluded, was to provide accounting as well as fiscal control and management for a fund that grew to $100,000. On August 8, 2021, attended by 150 dignitaries, military leaders and veterans, it was dedicated with a full military ceremony to its namesake and all those Canadian pilots who flew with the RN's fleet air arm during the Second World War.

We would particularly like to acknowledge the donations made in memory of Ian Anderson, Derek Brown, Dale Dziadyk, Fred Keizer and Tim Porter.

In 2021 the Fund received grant requests totalling just over $80,000. In response the Fund made grants of $48,000 as follows:

Remembering the Past

- $5,000 to HMCS SACKVILLE for ship and public safety
- $2,500 to the Canadian War Museum for a "Supply line" education tool
- $5,000 to the Canadian Tribal Project, HMCS YORK monument
- $2,000 to Naval Museum of Manitoba for tribute display HMCS LABRADOR/HMCS HARRY DEWOLF
- $3,000 to North Vancouver memorial to ship building

Supporting Present Activities

- $3,000 to Veterans Memorial Lodge, Victoria BC, for Creative Arts program
- $8,000 to Multifaith Housing Initiative in Ottawa for housing BBQ and outdoor seating area

Build the Future

- $5,000 in support of Sea & Navy League Cadet programs in the Montreal area
- $1,500 towards Post-Secondary Bursaries in the Halifax area
- $5,000 to the Royal Canadian Sea Cadet Education Fund for scholarships
- $3,000 to the QUADRA Foundation

scholarship initiative

- $5,000 to the Maritime Museum of BC for artifact storage equipment

As forecast in last year's report, the Fund is becoming better known and an increased number of grant requests are being received. We ask for your continued generous support to assist us to grow the fund. Tax-deductible contributions can be made at any time during the year either by mail or using **CanadaHelps**. Donations of securities are also possible. The Fund could also be included in your estate planning.

In closing, Doug Plumsteel has now retired as a trustee after 12 years. We welcome Diana Dewar who has joined as a trustee. We want to express our condolences to the families of Derek Greer and Mike Morres, both of whom died early in 2022. Derek and Mike were long serving NAC members and played leadership roles in the operation of the NAC Endowment Fund for many years. We will remember them.

Thank you for your support!

Your trustees,

John R Anderson (Chair)

Michael Zwicker (Treasurer)

Richard Lewis

Doug Plumsteel

Bryn Weadon

(Image: from ISI)

NAC Endowment Fund: Donors in 2021

The trustees of the NAC Endowment Fund would like to acknowledge the generosity of the following who donated to the fund in 2021.

$1,000 or Greater	$250 to $499	$100 or less	$100 or less
Anderson, John, R	Thomas, William	Abbott, Arthur H.	Little, James (Kim)
Cooper , Henry A. ("Mike")	Waddell, Harvey	Allen, Robin	MacAlpine, James
Drage, Peter J.	White, Robert W.	Anonymous,	Macdonald, William
Harrison, Ronald E.		Auns, Vilnis	McKenzie, Niam H.
Monteith, Rolfe	$101 to $249	Austin, James, Sr	McNeil, Lonnie
Moore, Russell	Archer, Richard	Baird, A. Melvin	Meloche, Sarah
	Armstrong, Heather J	Baker, Richard	Melville, Bruce
$500 to $999	Bate, John S	Bathurst, John	Mercer, William
Campbell, Peter, A.G.	Bowkett, Edmund	Bey, Peter	Milne, William
Chisholm, Forbes Merritt	Brodeur, Nigel D.	Bialek, Murray	Mitchell, David
Currie, John	Brownfield, Edward	Bialkowski, Bill	Moore, George
Dembroski, George S.	Buchholtzer, Guy	Brossard, Michel	Nash, John Percy
Drent, Jan	Clark, Michael	Broughton, William	Nixon, Robert C.
Dziadyk, William	Collins, David, B	Deeks, Gordon	Pandzich, Martin
Fletcher, David (Mark)	Conconi, William F.	Dempster, Marshall	Parker, Eric Stanley (Stan)
Latham, Gary	Edwards, Robert	Dodds-Hebron, Bettina	Patterson, Gordon
MacKinnon, H Ross	Garnett, Gary, L	Dodgson, James	Pitfield, Mary-Jo
McIlwaine, Robert	Hoare, Michael	Doram, Mark	Polowin, Alex
Morres, Michael	Howes, Lisa	Douglas, Alexander	Porter, H. Timothy
Sparkes, Ken & Marg	Knight-Gorman, Anne B.	Duewel, Jurgen	Prentice, Ralph
Spence, Hugh	MacLaughlan, Allan	Elliot, John	Raven, Donald P.
Weadon, Bryn	Marshall, Rowland C.	Ellis, Mike	Rees, Mark
Zuliani, Ray & Anne	Michaud, JC	Erlendson, Peter	Reid, Ernest
	Moore, Nikki & North	Ervin, Michael	Rich, Darren
$250 to $499	NACVI	Evans, Roger A.	Richardson, Sharon
Addison, Timothy	Nason, Kenneth	Fama, Joe	Robbins, Carl
Bain, George, E	Oland, Richard	Fleck, John	Rogers, Tuppy
Bowen, Michael	Pickford, John	Forcier, Jean-Yves	Rushton, David Ian
Critoph, David	Roots, Fred	Forrest, Rosemary	Shanklands
Edwards, Davis C	Ross, Graeme	Gard, William, R	Shead, William
Fournier, Larry J	Saker, Michael	Glass, Saul	Siew, Louise
Jacobson, Stan	Skelton, Ron	Gospodnetic, Slobodan	Soule, David
Lapointe, Jocelyn S	Smith, Calvin A.H.	Hare, Irvine	Swail, Jessica
McCloy, Roderick, H	Ward, Peter	Hatton, Gary	Taillon, Pierre
McFadyen, Nancy	Watson, Jack	Hebb, Christopher	Taylor, William
McLeod, Theresa	Westropp, Charles	Hendel, Hans	Traves, Peter
Milne, Terry	Whiteley, Nigel	Hodgson, Michael	Trusler, George
O'Reilly, Eileen M.	Williams, Edgar	Hoes, Peter	Varley, Christopher
Plumsteel, Doug	Wilson, Donald W.	Hyde, Peter, B.M.	Watson, Mark B.
Porter, Brian J.	Wyatt, Rachel	Klein, Robert	Webb, James
Sears, Gordon	Wynnyk, J	Ko, Russell A	Winkler, David
Smith, Howard	Zwicker, Michael	Krupp, Judith	Woznow, Harry

NAVAL ASSOCIATION OF CANADA: EXPRESSIONS OF INTEREST IN SERVING ON THE BOARD OF DIRECTORS

The Nominations Committee of the NAC Board of Directors is interested in hearing from Members who are interested and willing to devote their time, energy and talent by serving on the Board and who would therefore stand for election at the June 2022 AGM.

The NAC Board sets strategic direction, governance policies and oversees the programs and services of the NAC. This is a skill- based board and is made up of individuals with a wide range of professional skills, knowledge and experience.

Board meetings have been held in the ZOOM format for the past two years during the pandemic and they will continue depending on the agenda. However, once COVID protocols permit, in-person meetings will also occur in the future. Board members serve on various committees of the Board.

At this point, we know we have two (2) vacancies as of the next AGM. If you are interested in being considered as a Director of the NAC Board, we would be delighted to hear from you. Should you wish to explore this opportunity further without commitment, please do not hesitate to contact me by email at drmh@hay.net or by calling me at 519-852-7412 anytime.

Thank you very much for your consideration.

Yours aye,

Mike Hoare

Chair, Nominations Committee

NAC Board of Directors

Sub Lieutenant Nursing Sister Margaret Brooke, MBE Special Edition Commemorative Coin

This coin was designed to recognize the history, courage and affiliation of Royal Canadian Navy Sub Lieutenant Nursing Sister Margaret Brooke, MBE, and commemorate the naming of the RCN's second Arctic and Offshore Patrol Vessel (AOPV) HMCS Margaret Brooke in her honour.

The coin, double plated polished gold and antique silver finish on stamped brass, is 4.4450 cm in diameter and 3.5 mm thick. At the centre of the coin is a portrait of Sub Lieutenant Margaret Brooke with a superimposed image of the RCNs second Arctic and Offshore Patrol Vessel (AOPV 431) named in her honour with its year of commissioning.

This magnificent coin can be yours for a minimum $25.00 donation which will enable a RCMSA contribution to the CFHSG commissioning gift to the ship.

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HMCS Margaret Brooke facilitates a boat transfer in Conception Bay Harbour during their transit to the Arctic for ice trials on February 20, 2022. (image S2 Taylor Congdon, Canadian Armed Forces Photo)

(Image: HMCS Harry DeWolf Twitter)

AOPVs Delivering in the North and South

This article was created in collaboration with Commander Corey Gleason, HMCS *Harry DeWolf.*

In the summer of 2021 HMCS *Harry DeWolf* transited the Northwest Passage from east to west, completing a navigation not undertaken by a Canadian naval vessel since 1954. While the transit was a remarkable achievement, the ship's mission was far from over. After reaching Vancouver on October 1, the route home stretched nearly 6,300 nm around the continent, through the Panama Canal and back to Nova Scotia. Across the Pacific and into the Caribbean, the Navy's newest patrol ship demonstrated its utility far from the Arctic ice, and with a tidy $638 million pile of cocaine seized to show for its efforts.

Having sailed south from British Columbia in October, *Harry DeWolf* arrived in its operating area in the Pacific Ocean on November 8th. With tropical storm Terry closing in, the ship's mission was to scour the horizon for a vessel of interest, suspected of carrying drugs and contraband. Intelligence reports had been flooding in over the previous two days, supplying the crew with images and possible coordinates of one such vessel's last known location. The first in class ice-strengthened patrol ship was now deployed in warm waters on Operation *Caribbe,* and officially on the hunt for its first illegal substance bust.

Vessels of interest are usually sleek, small boats, capable of moving very quickly, and are more commonly referred to as a 'go-fast' boats. These characteristics make such vessels difficult to spot, but not impossible. The first sighting came from a Naval Warfare Officer who had returned to the bridge while off duty to aid with lookout. This had been the crew member to spot the first polar bear amidst the barren landscape of Beechey Island, by using a clever technique. "One of the experienced killicks on my watch once gave me some useful advice for when you're a lookout: birds always mean something," explained the naval warfare officer. "Usually they

mean whales, or a submerged log, or other hazards, but they also follow boats." So, on the morning of the eighth, while scanning the horizon the crew member spotted saw several birds about four miles out. And sure enough, directly beneath them was the wake of a small contact. The ship immediately went into action.

Both Multi-Role Rescue Boats (MRRBs) were rapidly launched, embarked with a team of United States Coast Guard Law Enforcement Detachment (USCG LEDET) members to conduct a swift boarding of the suspect vessel. This small craft was quickly taken and, as it turned out, was not the primary target. It appeared to be a logistic support vessel for go-fasts operating in the area. The trail was hot, and *Harry DeWolf* continued onwards, following the last known position of the primary vessel of interest.

HDW with the US Coast Guard (image: from Cmmdr Corey Gleason)

After dinner, with the last rays of daylight well behind the horizon, the Arctic and Offshore Patrol Vessel (AOPV) approached the last known co-ordinates of the vessel of interest under a cloak of darkness. Then, finally – a faint outline of a small ship appeared about a hundred yards out. Again, the two MRRBs were launched and, within moments, the bridge was illuminated by the boat's blue and white LED patrol lights as they closed with the target of interest. What the LEDET found onboard was nothing short of spectacular – 1,300kgs of cocaine, intelligence leading them to a Transnational Criminal Organization, and confirmation that the bust had disrupted an identified smuggling route.

Thanks to the teamwork and dedication of all onboard, the day ended on a high note. This was the first illegal substance interdiction for an AOPV, and to further highlight the success, *Harry DeWolf* conducted the final operation in the dead of night, without air cover support, and with Tropical Storm Terry intensifying the sea state.

Overnight, *Harry DeWolf* conducted a series of searches, working in total darkness in two to three metre waves. Holding one or two targets of interest with radar or line of sight was difficult and the ship switched to search grids instead. Eventually, a junior officer under training, Slt Winzoski, sighted a small vessel moving in and out of the fog. The ship immediately ordered LEDET Phase 2, which forgoes all the formalities of formal briefs and simply has the boarding and boat team go to the boarding party ready room, dress, arm, brief, and go. The team was in the boat and launched within 15 minutes, which is twice as fast as they had practiced.

While the team was preparing, personnel on the bridge spotted the vessel throwing something over the side. The MRRB conducted a right of approach, questioning and identifying personnel before boarding, to determine what they were doing 500nm away from shore. Sporting no fishing gear and a lot of fuel, the boarding team determined that this vessel was another Logistic Support Vessel (LSV). The LSV had only a magnetic compass and fuel to navigate

with and when asked where their navigation and safety equipment was, they simply responded they threw it over the side when they saw the boarding crew coming. With no navigation equipment and a request for *rescue* from the three-person crew, *Harry DeWolf* was obliged to embark the men, who indicated that they were from Mexico.

During this boarding, the US Joint Interagency Task Force South, from U.S. Southern Command, tasked the AOPV with another search to the south. With one boat in the water conducting the final disposition of the rescue, *Harry DeWolf* dispatched its second boat to the south at best speed. Speeding away, the MRRB was equipped with a full navigation suite to vector onto and VHF and satellite communications and keep *Harry DeWolf* informed. In rough weather, the ship's boat moved past its original target and called to be recovered. The AOPV took over the search but again ran into trouble as the high seas limited its radars' reach.

What proved invaluable was the 25mm EO/IR camera, which found a target. Zooming in, the bridge crew spotted a small boat with three men, peering out at the ship – one even with night vision googles. *Harry DeWolf* closed to 1,200yds, stopped and, once again, put a boarding team in the water. Once the first team was away, the ship kept the suspect boat's attention, maneuvering the bow to port with the bow thruster. It was very dark, overcast and the seas made it easy for the boarding party to sneak up. Ready to jump on its target, the MRRB turned on its search lights and blue government strobe lights, which even impressed the *Harry DeWolf* bridge team. The target was soon secured and a report came back that there were packages onboard. Three personnel on the fast boat were reportedly from Ecuador, enroute to Mexico. Their fuel stock was low, and the assumption was that the first boat, recently interdicted, was their gas station. No one knew how many more fast boats were now missing their fueling stop, but it could have been many.

HDW MMRB deployed (image: from Cmdr Corey Gleason)

Damaged go-fast boat (image: from Cmdr Corey Gleason)

For several hours, the crew unloaded the contraband, communications equipment, and navigation suites. With a low-pressure system plaguing the area, no communications or navigation equipment and low fuel stocks, the personnel onboard were soon identified as US Coast Guard detainees. *Harry DeWolf* was requested to bring them onboard for off loading in the next couple of days. The ship worked well into the morning and, once the evidence had been collected, the drug-runners' ship was disposed of using C4. The crew of *Harry DeWolf* were fatigued, with many having been directly engaged for 23 hours, and others as many as 35.

On November 10th, a plan was put together to transfer the USCG detainees and contraband to the USCGC *Hamilton*. That plan changed over the course of the evening and into the morning of the 11th. *Hamilton* could no longer take the men and *Harry DeWolf* was responsible for them. The ship's Commanding Officer, Corey Gleason, took the opportunity to meet with the USCG detainees who seemed to have remained positive. They were showered, had an exercise period and movies and music was brought into the hangar.

Finally, on the 13th, the AOPV rendezvoused with cutter *Hamilton* to transfer the contraband and the USCG detainees. *Harry DeWolf* also supported a junior officer professional exchange during the process. The Canadian ship sent over the famous HARD OVER HARRY BEER while *Hamilton* passed along a series of gifts, including hats, coins, and plaques. *Hamilton* also sent over a bottle of bourbon with its ship's insignia, a most welcome gift.

On the evening of the 17th, a new fast boat, operating in *Harry DeWolf*'s vicinity was identified as a potential target of interest and the AOPV was tasked to interdict. The small boat was eventually found and, as before, the ship's boats were lowered to give chase. Racing after the target at speeds up to 32kts, the chase took 60 minutes and led to the capture of what turned out to be a Panga style vessel with six crew and suspicious bundles onboard. The bundles onboard tested positive for cocaine – 1,289kg in all – and all six crew became USCG detainees. This Panga crew dumped their satellite phones, GPS equipment and other supplies in the midst of the chase, rendering them helpless in the open ocean. The Panga's gunnels were also badly damaged and the vessel was declared a Hazard to Navigation by USCG District 11, which requested it be destroyed. *Harry*

DeWolf dealt with this navigation hazard with .50 calibre and 25mm broadside gunfire.

Having embarked the newest batch of USCG detainees and the contraband, *Harry DeWolf* was directed by the Americans to rendezvous with USCGC *Vigilant* to conduct a transfer. That was executed on the 20th, after which, the AOPV remained on patrol for several days, before proceeding to Balboa, Panama to conduct a port visit prior to transiting the Panama Canal.

The ship moved through the canal on November 24 and proceeded alongside Rodman Piers, in vicinity of the Panama Naval Headquarters for a four day port visit while awaiting the Panama Canal transit schedule. While there, the ship hosted Ambassador Kim Ursu from the Canadian embassy, along with RCMP and CBSA representatives. On the morning of November 28, the canal transit was completed and the ship moved from the Pacific Ocean into the Caribbean Sea and back towards the home port of Halifax, Nova Scotia.

While designed for Arctic operations, *Harry DeWolf* showed its versatility during Operation *Caribbe*. Off the coast of Mexico, it showcased its small "S" constabulary and seamanship operational capabilities. Its unique sea-lift, boats, cranes, and deck real-estate clearly made it an ideal platform for this type of work. It also introduced a new class of law enforcement detachment operating procedures using small boats with mounted weapons.

On December 16th, *Harry DeWolf* arrived home to Halifax after months at sea. The ship had proved itself a highly capable Arctic platform and an exceptional constabulary vessel. Having made the first transit of the Northwest Passage in 67 years, the ship finished its circumnavigation of the continent with the seizure of nearly 3,000 kg of cocaine. A highly productive summer.

This article is derived from narratives authored by Commander Corey L.E. Gleason, who took command of HMCS *Harry DeWolf* before the ship was even launched and only relinquished command in January 2022. In the summer of 2021, he took the AOPV on a circumnavigation of North America, the first such transit for the RCN in nearly 70 years. His new command appointment is in Sea Training Patrol, which will allow him to continue his work and studies in the Arctic security domain.

HDW drug bust (image: HDW Twitter)

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Replacing Canada's Submarine Capability and the Changing Threat to World Order

Norman Jolin

As the conflict in Ukraine is ongoing, I was asked to speculate on how this shift from limited wars against non-state actors back to the threat of state-on-state warfare, with a peer/near peer adversary, will impact a future Canadian submarine replacement project.

The invasion of Ukraine by Russia has brought home the stark reality that here-to-fore assessments of 'potential' threats are now a reality that can no longer be wished away as hawkish speculation - the threats are real and global, as China is arguably a much greater long-term threat to world order than Russia. Canada, as a leading western nation and a member of the G7, has a leadership role to play in international defence and, while it is heartening to hear Defence Minister Anand indicating that she is considering "aggressive options" to increase military spending, it must be meaningful.[1] This is more than just meeting a fiscal target that can comprise many factors, it needs to reflect the development of military forces which will give future Canadian governments options when addressing the crises of the day. Submarines are such a capability in both the defence of Canadian sovereignty, as well as the ability to provide meaningful contributions to alliance operations in countering contemporary threats. This is the reason why Canada needs to replace the Victoria-class submarines - the need to maintain a credible submarine capability as part of balanced naval forces.

Clearly the situation in Europe has galvanized NATO, particularly the United States of America, with its total commitment to Article 5 of the Washington treaty under Collective Defence, which means that "an attack against one Ally is considered as an attack against all Allies."[2] While the world's security situation is dramatically changing with

HMCS Windsor (image: Capt Trevor Ackland, CAF)

Russia and China explicitly threatening the post-Cold War world order, it is noteworthy that Canada has yet to commit to any substantial change from the 2017 defence policy – *Strong, Secure, Engaged*.[3] As this article is being written, the federal budget is anticipated in the first week of April, and there remains significant speculation as to whether or not the crisis in Ukraine will see a significant boost in defence spending. While Finance Minister Freeland has hinted that defence spending is being re-evaluated, the question remains: have the government's overall priorities changed and how will defence figure in this calculation?[4] This is an important point, as a review of the 2022-23 Government of Canada Main Estimates will show that while the government continues to spend, the Department of National Defence is no longer the department with the highest discretionary budgetary expenditures - Indigenous Services has significantly overtaken defence ($39.5B vs $24.3B).[5]

At first blush, this bellicose rise of the Russian threat would appear to have simplified the justification necessary for the renewal of Canada's submarine capability over what it was but a few weeks ago. So, the question is, notwithstanding the recent fervour the crisis in the Ukraine has generated, will defence be a priority for future government spending by having a meaningful and honest debate of what kind of military is needed or will Canada revert to defence on the cheap relying on her geographical position next to the United States of America to provide for her national defence?

I ask this question because Canadian history has shown that it is necessary to put submarines into perspective. During the First World War Canada operated two small US built submarines, however drastic post-war cuts in defence spending caused the Royal Canadian Navy to give up any submarine capability and retain a small destroyer-based fleet. While the RCN of the Second World War eventually grew to 450 warships by 1945, it is noteworthy that Canada did not operate any submarines during the war. Post war, Canada paid Britain to provide submarine services well into the 1960s, as the RCN saw itself as a frigate/destroyer navy. However, with the changing face of anti-submarine warfare, Canada realized it needed a balanced fleet that necessarily included submarines. Initial discussions were with the US Navy and in 1961 Canada acquired a retired US Navy submarine for training.[6] At this time RCN planning was in place for a new fleet which would include six of the latest American Barbel-class conventional submarines with aspirations to transition to nuclear submarines (SSNs).[7] This ambition proved to be too costly and in 1962 it was decided to go for three of the less expensive British Oberon-class conventional submarines, modified to meet Canadian requirements.[8] In 1968 the submarine capability on the West Coast was replaced with another ex-US Navy submarine which operated until 1974 when, due to budget limitations, it was retired without replacement.[9]

In the early 1980s a capital project was stood up to acquire a replacement for the three Oberon-class submarines, however, the Conservative government's 1987 defence policy decided Canada needed an Arctic under-ice capability and the project was re-scoped to acquire 10-12 SSNs.[10] Regrettably the costs associated with operating nuclear-powered submarines proved too great and the SSN project was stopped in 1989. Unfortunately, the submarine replacement project subsequently became an early casualty of reduced defence expenditures, as the government of Canada needed to address a huge budgetary deficit.

There was simply no funding for a project that would deliver submarines, modified to Canada's unique requirements, at that time. That said, in the early 1990s the UK declared their four new Upholder-class diesel-electric submarines surplus to requirement. In 1998 the Liberal government agreed to purchase these submarines (re-named the Victoria-class) as an interim solution, entitled the Submarine Capability Life Extension (SCLE) project, until such time as a replacement project for the Oberon-class could be stood up.[11] In 2017, Canada confirmed its intent to maintain a submarine capability by upgrading the Victoria-class but did not discuss a future replacement project. In 2021, 23 years after the inception of SCLE, the Commander RCN announced his intention to conduct a preliminary investigation into a future Canadian Patrol Submarine project.[12]

The point to take away from our history is that the

RCN has always been a frigate/destroyer navy and when resources become tight the surface fleet is prioritized and all other capabilities become negotiable. Moreover, short of the leadership of Prime Minister Sir Wilfred Laurier, successive Canadian governments have always chafed at the costs of maintaining a military, including a navy, and submarines which are expensive to operate and difficult to explain, become problematic.[13] In short, the RCN has operated in the past without submarines by relying on Allies, so one should not assume a replacement submarine project is guaranteed.

The RCN now has an opportunity to drive a submarine replacement project through government, but it will be a challenging endeavour in a post-pandemic fiscal environment that is competing for resources with the other environments. In addition to unforecasted defence expenditures resulting from the crisis in Ukraine, there is the recent announcement by Prime Minister Trudeau that the NATO Mission to Latvia (Op REASSURANCE) is to be renewed indefinitely, notably without any confirmation that his government will significantly increase defence spending to meet this ongoing commitment.[14] Importantly, there is a significant unknown cost of Continental Defence which is becoming much more than NORAD renewal and it is a must do for any government, regardless of political ilk - but are submarines considered to be part of this requirement?[15]

This is the situation which the naval staff is facing as they conduct a preliminary investigation into what will form the basis of a future Canadian Patrol Submarine project. It is important to remember the naval staff is finite in size and is simultaneously supporting the introduction of a new surface fleet, based around the Canadian Surface Combatant project, as well as coming to grips with critical personnel and training issues. In other words, the naval staff is necessarily very resource constrained and limited in its ability to staff the requirements for a balanced fleet that includes submarines.

While we all would enjoy an open and spirited debate on all available submarine options there is simply not the time to challenge Canada's overall defence and security policy. Specifically, prolonged discussions on nuclear powered submarines risk derailing the project as the current government has made it clear that it is not interested in acquiring SSNs.[16]

Of note, at the recent CDAI conference on security and defence, the Chief of the Defence Staff, General Wayne Eyre, made it clear that he will not bring to government options that are not sustainable, which underscores this point. Paradoxically, this may be an opportunity to increase the size of the conventional submarine force as a fleet of four submarines challenges force sustainability, particularly for crew generation. All that said, if a replacement submarine capability risks displacing the planned force mix of the surface fleet, history has shown that it may lack support within the RCN itself.

At this stage the investigation into a future submarine capability is in the pre-Identification stage and does not have official project status, that would allow for a detailed submission to government. The team will be looking at the various contenders against unique Canadian requirements knowing that cost will always be the driving factor in eventual procurement decision. As a future submarine capability will operate from both east and west coasts, as well as ice-edge operations, these factors are challenging. In short, budgeting and Cabinet approval are a long way away and the goal will be to achieve government buy-in for maintaining a submarine capability and therefore replacing the Victoria-class before the end of their service lives in the late 2030s.

So, to speculate on how this shift to the threat of state-on-state warfare will impact a future Canadian submarine replacement project – the answer is the conditions may indeed have become easier to justify a renewal of Canada's submarine capability, but it must be realistic. In that it must be sustainable as part of a total Canadian defence solution. However, what is unknown at this time is, will Canada prioritize defence in future government spending and how will submarines factor in the overall military force assessment against other priorities resulting from the Russian invasion of Ukraine?

The bottom-line is that, notwithstanding recent international events, a replacement submarine project is quite possible, but not a given. Therefore, all efforts must be carefully coordinated to ensure Canada has a

credible submarine capability to meet the ongoing and evolving threat.

Notes

[1] "Defence minister says she's considering 'aggressive options' to increase Canada's military spending" *CBC* (March 16, 2022).

[2] NATO, "Collective defence - Article 5," https://www.nato.int/cps/en/natohq/topics_110496.htm

[3] Canada, "Strong, Secure, Engaged" (2017).

[4] Karina Roman, "Federal budget will be a 'back to basics' document responding to the chaos in Europe, sources say," *CBC* (March 14, 2022).

[5] Canada, Treasury Board, "Government Expenditure Plan and Main Estimates (Parts I and II)," 110.

[6] Canada, RCN, "HMCS *Grilse,*" https://www.canada.ca/

[7] Wikipedia, "Barbell-class submarines," https://en.wikipedia.org/wiki/Barbel-class_submarine.

[8] Wikipedia, "Oberon-class submarines," https://en.wikipedia.org/wiki/Oberon-class_submarine.

[9] Wikipedia, "USS Argonaut," https://en.wikipedia.org/wiki/USS_Argonaut_(SS-475).

[10] Canada, Department of National Defence, "*Challenge and Commitment*" (1977), 52-53.

[11] Canada, Department of National Defence, "Status report on transformational and major Crown projects," (2018).

[12] Anja Karadeglija, "Canada needs to start looking for new subs, report says," *National Post* (September 21, 2021).

Captain (Retd) Norman Jolin, OMM, MSM, CD served 37 years in the Canadian Navy, where he saw service across the entire spectrum of maritime operations. He served at sea for the majority of his career in both ships and submarines, having commanded a squadron of minor warships and later the Halifax-class frigate HMCS *Montreal*. Today, Norman works as an Associate Consultant with CFN Consultants.

[13] Canada, RCN, " Toward a Canadian Naval Service (1867-1914),"https://www.canada.ca/en/navy/services

[14] Amanda Connolly, "Canada extending mission in Latvia amid NATO effort to deter Russian threat," *Global News* (March 8, 2022)

[15] Steven Chase and Robert Fife, "Canada to unveil 'robust package' to modernize NORAD, Defence Minister Anita Anand says," *Globe and Mail* (March 11, 2022).

[16] Amanda Connolly "Was Canada invited to join AUKUS? Officials mum but stress no interest in subs," *Global News* (September 16, 2021).

HMCS Victoria (image: Kendric Grasbym CAF)

Local citizens wrote "Thank You Canada" on the roof of their house to thank the Canadian Armed Forces for their contribution in the Philippines during Operation RENAISSANCE in Roxas City, Philippines on December 12, 2013 (Source: Combat Camera)

Canadian Disaster Response In A Covid World

Dave Dunlop

The Canadian Armed Forces (CAF) has a well-defined Humanitarian Assistance/Disaster Relief (HA/DR) responsibility in federal policy. Over the past several years, Canadians have become more reliant on the CAF to respond to more predictable and frequent domestic emergencies. This may start to have impacts on future combat readiness. The changing frequency of deployments and nature of the missions and required resources suggest that the CAFs priorities of combat over HA/DR may need to be revisited. How should the military and government react to greater demands for domestic HA/DR? As climate change is likely to increase the frequency of national disasters, demand for domestic HA/DR will only increase with it. Provinces now view the CAF as their first line of defence rather that their last resort. Newfoundland and Labrador has disbanded their Emergency Measures Organization (EMO) entirely increasing its dependency on federal resources. Should the CAF have to deploy in strength overseas in a crisis, CAF domestic resources might well be unavailable for any HA/DR response.

Some defence analysts would like to see the HA/DR role removed entirely from the CAFs policy and assigned to a new federal agency expressly designed for domestic HA/DR responses. The Federal Emergencies Act (under the Minister of Public Safety) coordinates the Canadian governments response requests from provinces under the Federal Emergency Response Plan (FERP) which seem to be happening more frequently. Should there be a new alternative federal agency created to mitigate disaster risks, clarify CAF roles and determine how best to use finite federal funds for a large contingency force of skilled and semi-skilled civilian labour during domestic or international disasters? The federal government could mobilize volunteer and skilled labour to create a “so-called” Disaster Assistance Response Force (D.A.R.F) of say, 3,000-4,000 skilled civilian workers and team leaders pre-designated from provincial organizations and contractors from across the spectrum of the Canadian labour force; ready to integrate with the CAF on a moments notice. This organizational force structure would meet regularly to plan disaster training and hold national exercises at least annually, under the leadership of the Minister of Public Safety and Minister Of National Defence.

Advantages of a Coordinated CAF-D.A.F.R. HA/DR Response:

Canada would normally send other types of combat ships to stricken disaster areas within Canada. This is at best, token support and, while the optics are good, the usefulness of a frigate, Auxiliary Oiler Replenishment (AOR) ship or mine sweeper providing significant HA/DR response is marginal at best. The ships themselves don't have the capability or resources to provide anything near what is required. Canada cannot wait for another generation to acquire ships that will provide a significant HA/DR response. Building and providing HA/DR vessels dedicated to this mission for both domestic and global operations, would provide an adaptable solution to address catastrophes nationally or world-wide. An opportunity for Canada to show Canadians and the world that Canada cares. Picture the feelings of relief felt by people standing on Canadian shorelines ravaged by "once in a lifetime" natural disasters, seeing a huge Canadian HA/DR ship arrive with food, water, heavy equipment, clothing, shelter, substantial medical aid and a dedicated D.A.R.F. response. Then picture the pride of Canadians knowing that these ships represent Canada with all the medical personnel, facilities, equipment, and skilled civilian personnel needed for this disaster. Having an amphibious sealift capability would reduce Canada's dependency on its allies to move personnel and supplies into domestic HA/DR areas of operations.

The capability to undertake peace operations, including effectively rendering HA/DR, is a critical requirement for the Royal Canadian Navy (RCN). The RCN could be well positioned to contribute meaningfully to domestic action ashore and support the sustainment of joint operations from sea, while preserving the ability to defend Canada's freedom of action through naval HA/DR operations. The multi-purpose nature and versatility of a fleet with such an HA/DR capability, both domestically and as part of a Canadian relief effort, would allow Canada to deploy credible forces at home and abroad on short notice. An amphibious sealift capability would make Canada a more reliable contributor to national and international operations. Another advantage is the capacity to move and deliver bulk supplies and dedicated, skilled civilian personnel and heavy equipment into areas of HA/DR operations; an extremely costly and limited option when conducted by air, and impossible without functioning airports. Canada must, however, have enough naval, air and army personnel to crew these amphibious "peace-support" ships. Recruitment and training of more sailors, airmen and army personnel into the CAF will be vital, bringing up strength by at least 3,000-4,000. The experiences of our allies recognize the unique abilities of dedicated, multi-role strategic amphibious sealift ships, and the innovative HA/DR missions they could enable Canada to take on.

The sad reality within the current COVID-19 pandemic however, may well be that visionary efforts made to implant "effectiveness" within the CAF, is beginning to give way to much of the same old myopic, parochial, and service-centric approaches to the nation's defence strategy that have so often failed Canada in the past. Our navy's long and continuing lack of purpose-built peace support ships to deliver and support humanitarian forces domestically, and the world's littoral regions, is minimal at best. The stark reality is that the new Protecteur Class AOR's or Joint Support Ships (JSS), have only very limited usefulness to support even small natural disasters or epidemics. Contrast this with the nation's amphibious capability that was so effectively demonstrated in 1956 during Operation Rapid Step by Canada's aircraft carrier, HMCS *Magnificent*, when it was quickly reconfigured for troop lift and speedily dispatched by then Prime Minister Lester B. Pearson in response to the United Nations request to send a peace keeping force to Egypt. Sadly, such a national capability, was destroyed long ago with the scrapping of our last carrier, HMCS *Bonaventure* over 50 years ago. Since then, we have seen the humiliating consequence of leasing civilian cargo ships with the GTS Katie incident even with the gallant efforts by RCN ships to deliver aid to New Orleans in the wake of the Hurricane Katrina disaster.

With all the HA/DR advantages that an amphibious sealift capability provides, it is puzzling why Canada has not yet adopted this capability like so many of our allies. During the House of Commons Standing Committee on National Defence in 2017, most witnesses proposed that Canada acquire a large helicopter carrying amphibious peace support

capability that the RCN could use for HA/DR, peace support and personnel transport domestically and abroad. The RCN has been interested in operating such "Peace Support" ships for many years and reiterated its desire to do so in "Leadmark 2050". HA/DR is one of the eight core missions stipulated in Canadas Strong, Secure, Engaged (SSE) policy. The development of this capability in Canada would constitute a large institutional change however the real reason some are opposed to the adoption of this capability is due to fiscal constraints. A growth in the force, the procurement of ships, connector vessels, amphibious vehicles, aircraft, training, and the research and development for it all, comes with a price-tag that is currently out of reach for Canada. An amphibious sealift capability would however, prove to be a sound investment since it is something Canada has used in the past, could have used recently, and will be required to use in future HA/DR operations. Although this capability is not specifically mentioned in Canada's latest defence policy, it would certainly enhance the CAFs ability to complete missions required by government as laid out in its pages. By not having its own sealift capability, Canada is diminishing its political significance in the world by limiting military involvement in HA/DR and Maritime operations.

Global security is forever-changing, especially with the COVID-19 pandemic. One can imagine a myriad of situations where Canada might need to intervene if asked both domestically and globally. This capability would improve national security, interoperability with other government departments (OGD), reduce Canada's reliance on others, and allow for the projection of more robust forces into different theatres domestically and globally. Canada's navy needs to become better equipped for peace-support operations, including a robust command and control HA/DR capability. Among the appropriate sealift options, the most practicable are ships specifically designed and purpose-built for HA/DR amphibious operations, with a capacity to move forces in their entirety. Amphibious ships provide a secure base for generating local air mobility assets. They may also act as a secure base for an HQ Command, and provide logistical supply facilities. These are flexible, specialized military assets that are highly valued by our allies, and by the international organizations to which Canada belongs. Amphibious assets would be in great demand on all three of our oceans. The list of capabilities amphibious platforms provide ranges from evacuating citizens, to rendering HA/DR assistance with medical and military aid, the tactical recovery of personnel during Search And Rescue (SAR) operations, to all points in between. Such capabilities will improve the fleet's agility and capacity to respond to major disasters.

A Canadian Armed Forces Disaster Assistance Response Team (DART) Multi-Purpose Engineer Vehicle is unloaded from a Royal Canadian Air Force C-177 Globemaster aircraft during Operation RENAISSANCE 13-1, in Iloilo, Philippines on November 15, 2013.

Besides the longstanding US amphibious capability, other allies that are re-investing in this area include the UK, France, Australia, Turkey, the Netherlands, Spain, and Italy. These ships have

capabilities that can be assigned to high profile domestic humanitarian emergency missions at home or abroad. The fundamental need and task is to provide mobility and support for training, readiness and deployment of Canada's land-locked army. Unless a minimum of at least four Landing Helicopter Dock (LHD) ships is provided for both Atlantic and Pacific embarkation locations (one of each LHD would normally be in periodic refit or maintenance), the availability for humanitarian and national security missions is by no means assured. Needed are types of ships that can transport security forces and are robust enough to be able to carry and deploy medical units, skilled civilian personnel, and air detachments. The possible use of naval assets for command and control must be part of any HA/DR package. The Canadian requirement is for a prudent choice of ships, adequately sized with the flexibility and growth potential to meet changing needs over their lives of 40 to 50 years, a period in which Canada's population, economic power, external interests, disaster relief and defence requirements will grow. These ships should be capable of providing space and infrastructure for field hospitals, other medical support, and offshore command and control HQs. They must also be broadly balanced, combat-effective, capable of independent action at sea and able to contribute substantially to HA/DR operations ashore.

Operations after Hurricane Irma by the RCN and allied navies have highlighted a pressing need for Canada to seriously consider the acquisition of dedicated "peace-support" ships to meet the unique demands of HA/DR. Specialized naval vessels dedicated to this mission would offer an adaptable solution to address catastrophes domestically and worldwide. They would represent a visible symbol of Canada's commitment to bringing stability to fragile infrastructure and help populations to recover from the aftermath of local or global disasters. Such ships would act as a sea-base, with features that include a substantial capacity to move personnel, vehicles, force logistics and humanitarian materiel into theatre. There would be equipment to transfer cargo at sea, and deck space to accommodate and operate medium/heavy-lift aircraft and landing craft. These landing craft would act as the ship-to-shore connectors to project, sustain and support an HA/DR force ashore, and recover it. Recently Canada committed two helicopter squadrons, heavy lift Chinook helicopters and up to 200 support personnel to the Mali Mission. A dedicated Canadian strategic sealift LHD would have been ideal to provide transport of the entire mission of equipment and personnel. It could have landed at a coastal African port and then disembark the entire force to the Mali region. Internal space and equipment could be dedicated to a joint operation HQ, act as a floating civil-military coordination centre, as well as a substantial medical field hospital with accommodations for medical evacuees.

Such vessels would likely be among the most heavily used assets in the Canadian maritime force inventory. They would be capable of anticipatory pre-positioning or rapid deployment, be able to carry large volumes of humanitarian cargo, medical units, skilled D.A.R.F. civilian teams, emergency vehicles and related supplies. Such peace-support ships would be an ideal platform for Canadian domestic and joint action across a wide range of relatively permissive HA/DR scenarios. Situations where the ships would be used include the evacuation of civilian personnel from zones of medical crisis or conflict and supporting medical forces ashore. Moreover, such vessels would likely emerge as the principal Canadian defence diplomacy assets. They could be deployed routinely to regions of domestic and strategic interest to Canada, with a range of personnel and capabilities to strengthen regional strategic partnerships. More broadly, they could conduct civilian missions with OGDs agencies and non-governmental organizations (NGO).

The planned two Protecteur Class, JSS (HMCS *Protecteur* & *Preserver* AOR's) and interim AOR ship MV *Matrix*, each have a very small measure of this capability but are designed primarily for replacement of the old AOR fleet supply ships in direct support of long-range operations of our future Canadian Surface Combatant (CSC) frigates. They are not designed to carry troop formations, quickly disembark large amounts of heavy equipment or medical field hospitals. Subject to availability, they will not eliminate the reliance on chartered sealift when speed of delivery is a key requirement. The deployment of these amphibious assets is totally mission dependent. The force must always be capable of dealing with worst-case scenarios and always have the capability of being augmented and sustained by additional follow-on HA/DR assets. Aviation

elements that consist of medium to heavy-lift helicopters, air defence and ground attack aircraft either fixed or rotary wing, and all necessary ground support capabilities, will be a required element of any strategic sealift capability. Service support groups will provide the force with mission-essentials such as medical/dental assistance, logistics, suppl, maintenance and forward ship-based operation capabilities.

Amphibious ships would provide the RCN with the ability to perform a 'peacetime helping role' for which the Canadian public has an expressed appetite. When humanitarian disasters such as medical crises or natural disasters strike, one of the most prominent responses the government of Canada can deploy are the ships, aircraft, and naval personnel of the RCN. Ships and their crew provide self-sustaining, self-contained assets, as RCN personnel can live aboard and be fed from their ship's galleys, without straining local resources. Onsite, these ships could aid in the evacuation of Canadian residents, augment civilian hospital staff ashore for a substantial COVID-19 response, repair infrastructure and provide supplies to stranded citizens. This dedicated resource would better equip the RCN to provide humanitarian aid, respond to natural disasters (especially in more remote stretches of coastline), engage in search-and-rescue operations and participate in United Nations peacekeeping missions. As platforms from which the full range of helicopter and fixed wing operations can be conducted, if necessary, amphibious ships of the LHD type would provide an important part of the necessary fleet balance and flexibility needed to meet government mandates for Canada's domestic or global HA/DR mission requirements.

HA/DR Fleet Options

Most contemporary amphibious assault vessels are conceived with built-in aviation facilities, as well as a stern well-dock for operating much faster ship-to-shore connectors. Major amphibious vessels can act as command ships, with facilities for an embarked staff and large communication suites as well as robust command-and-control systems. The HA/DR role is of particular importance. Amphibious vessels offer a unique and often critical capability, able to transfer large amounts of medical supplies and/or engineering, rescue equipment and personnel even without the availability of harbour facilities. This has made these ships attractive to navies that would otherwise never contemplate the possibility of amphibious operations in the traditional meaning of the term. Most of Canada's allies have placed great emphasis on dedicated amphibious sealift capabilities.

There are two ship classes that would make excellent HA/DR options for Canada. First, is the Spanish *Juan Carlos*-class. A 27,500 ton 230.8m (758ft) "multi-purpose" LHD that has four decks, a dock and garage for heavy cargo, a habitability deck, a hangar and light cargo garage and a flight deck with a 12° sky-jump. This LHD runs on combined diesel-electric and gas turbine (CODELOG) propulsion systems with sustained speeds of 21 knots. A multi-purpose vessel that can be used for aircraft support as well as amphibious HA/DR operations. The Australian navy has acquired two *Juan Carlos* (Canberra-class) LHDs – HMAS *Canberra* and Adelaide –now operational in their navy. Australia's HA/DR response is centered on this helicopter dual-purpose platform, which carries four landing craft, 100 vehicles, six to 10 helicopters and over 1,000 troops. In early 2016, HMAS *Canberra* responded to a typhoon in Fiji with over 100 tonnes of humanitarian supplies, full medical suites, and a complement of several hundred engineers, carpenters, electricians, and plumbers, all of whom were able to access even the most remote areas in the Fijian archipelago using the ships helicopters and landing craft. Besides Australia's two Canberra class LHDs, Turkey has also acquired and built one Juan Carlos-class with another on order. These ships could be built at a cost of approximately $1.7B CAD per unit (2021 prices) or a total of $7.1B CAD for all four units.

Spanish Juan Carlos class LHD

The other option is the Italian Trieste-class LHD. The first of its class, the *Trieste* is a 33,000 ton, 245m (803ft) LHD, with a maximum speed of 25+ knots. Expected to be commissioned in 2022, it is equipped with two Rolls Royce MT30 gas turbine engines

LHD Juan Carlos (source: Wikimedia)

(CODELOG) models with improved weight/power ratio efficiency. It can accommodate 1,064 personnel. It has a range of 7,000 nautical miles (nm) and can sail over 30 days without storing. These ships could also be built with costs of around $2B CAD per unit (2021 prices) or a total of $6B CAD for just three units. (With this ship being slightly larger than the Juan Carlos-class, it may be possible to build three units instead of four). This class has similar characteristics to the Juan Carlos but is able to carry more aircraft and humanitarian relief equipment.

Italian Trieste class LHD

Both options have exceptional command and control capabilities and are fitted with four Landing Craft Mechanized (LCMs). Both can carry both military equipment and support vehicles, including helicopter and fixed-wing aircraft. Both have substantial triage hospitals, operating rooms with x-ray, MRI and dental facilities and space for at least 100+ patients. These HA/DR vessels are able to carry 144+ large containers. Either one of these ship classes would give Canada the potent sealift HA/DR capability it has been sorely missing and give the Canadian government the flexibility to respond quickly with dedicated D.A.R.F. teams. These ships could both be built here in Canada with technical assistance from Spain or Italy, with contracts awarded to the best bidding Canadian shipyard. There are other options of course including the USS America class Landing Helicopter Assault (LHA) and the French built Minstrel class LHD but are either too expensive or not built to Canadian standards.

Conclusion

In today's chaotic COVID-19 world and uncertain security environment, there will be situations which arise at home or globally that will not be conducive to flying in conventional HA/DR forces. If Canada were to address the pressing need of a dedicated and coordinated civilian Disaster Assistance Response Force, then Canada would need this sealift capability more than ever. A credible strategic sealift fleet of Landing Helicopter Dock (LHD) vessels for rapid deployment with extensive Humanitarian Assistance and Disaster Relief (HA/DR) capabilities would be an excellent resource and a game changer for domestic disasters both in Canada or globally. If the Canadian government believes that "being back" as our Prime Minister has said, within NATO, this means Canada will be participating in peacekeeping and peace support operations in a much more meaningful way. Acquiring a strategic Canadian amphibious sealift HA/DR capability will be essential to this policy.

LHD Triest (source: Wikimedia)

Canada must step up to the plate and give our Navy the tools to accomplish the government's peace support and peace keeping HA/DR missions required by, and for, all Canadians.

There is no denying the current Defence Department fiscal constraints. Most NATO Allies already spend at least 2% of their GDP on Defence. If Canada were to do the same, this amphibious sealift capability would not only be possible, but these "Peace Support" HA/DR ships could easily be built here in Canada from existing ship designs already under construction in Spain and Italy. There would be no negative effects on Canada's defence needs in the future, or on Canada's strong economy. The ability to quickly deploy military, civilian and/or medical forces at home or abroad with speed over great distances, has considerable appeal to a country that wishes to renew its NATO presence. Canadian strategic sealift thinking must be re-examined to best achieve Canada's future domestic and global HA/DR requirements. The time for such a re-examination is now. So long as the government of the day, remains willing to accept that our nation's future strategic, political, and military options will not be unnecessarily reduced by the absence of a credible militarily amphibious sealift capability, Canada will never live up to its full potential as an influential global middle power. It is time for our government to clearly state its intentions and quickly start the process to field a Canadian amphibious sealift HR/DR capability. It will be difficult unless an increase in Defence spending is realized soon.

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Does the RCN Need Submarines?

A Surface Naval Warfare Officer's Wave-Top Perspective

Lieutenant-Commander Ryan deForest

This paper was originally written in 2021 for the JSCP 47 at the Canadian Forces College and updated for the NAC's NIOBE Paper series

In July 2021 the Royal Canadian Navy (RCN) launched the long-anticipated process to replace its aging *Victoria*-class submarine fleet, standing up a team to define Canada's requirements and inform government decision making. A submarine replacement program will be a challenge, both politically and financially, as the expensive Canadian Surface Combatant program gears up and other shipbuilding efforts see significant cost inflation.[1] Indeed, the strategic and operational value of submarines has been a point of perpetual debate within government, the media, and even military circles.[2] Yet, even in the face of budgetary constraints and political opposition, the Navy is advancing the program, on the understanding that a submarine capability is essential to meeting Canada's needs. That assessment is certainly correct as the security and defence challenges that Canada will likely face in the 21st century will call for the strategic capabilities only offered by submarines. Speed is also of the essence. *Strong, Secure, Engaged* states that the *Victoria*-class will be kept operational "through the mid-2030s."[3] Building submarines takes years and the Canadian Armed Forces (CAF) must soon decide on a replacement to meet that 2035 timeline.[4] Meeting that challenge and hitting that 2035 deadline means long-term investments and a realistic but thoughtful approach to the selection of a future diesel-electric boat for the RCN. It also means experimenting with new technology that can augment crewed platforms and add a degree of flexibility in an increasingly uncertain and dangerous marine environment.

A Strategic Capability

Submarines provide Canada with an important strategic capability, one baked into Canadian defence policy. Both the Government of Canada's defence policy, *Strong Secure Engaged*, and the RCN's *Leadmark 2050* make specific reference to the value of robust submarine capabilities. In the former, submarines are said to "play an important role in sovereignty operations and continental defence."[5] In the latter, submarines are described as representing "the RCN's ultimate warfighting capability."[6] Indeed, submarines bring a unique strategic capability, being able to control a battle space by virtue of their real or perceived presence alone, while deterring adversaries and altering opponents' decision making across an entire maritime theatre. In times of conflict, submarines are the Navy's best anti-submarine warfare assets and the best platforms for operating in contested environments.[7] During peace, they offer ideal intelligence gathering systems, which can be used in either a constabulary or security role.

The need for this kind of versatile platform is based on Canada's interpretation of the future security environment, laid out in *Strong, Secure, Engaged*, which is anticipated to be "a more diffuse environment in which an increasing number of state and non-state actors exercise influence."[8] Within this setting, the defence element of the security spectrum has become even more pressing and the most relevant actors in the maritime security space are now, once

again, the great powers. That is clearly the American interpretation, given the focus of the 2017 National Security Strategy, itself catalysed by recent Chinese and Russian military expansion and diplomatic posturing.[9]

From a Canadian perspective, Russia is an Arctic neighbor and the most significant maritime threat. While the ongoing war in Ukraine is a clear signal of Moscow's aggressive posture towards its terrestrial neighbors and NATO's eastern front, it has expanded its naval capabilities more broadly. Indeed, Russia considers the Arctic a national security bastion and is increasingly active in the North Atlantic.[10] The second clear and emerging (and more novel) threat is China. China has built the world's largest navy with new power projection capabilities, which includes nuclear submarines and a "growing fleet of conventional and air independent propulsion-equipped diesel attack submarines [providing] additional potent capabilities."[11] China's "grey zone" coercive activities also highlights the utility of covert intelligence, surveillance and reconnaissance (ISR). Indeed, the growth of Anti-Access/Area-Denial (A2/AD) in China's near-abroad has shown how important stealth is, conferring as it does a significant advantage in developing an ISR picture.[12] At the same time as great power competition expands, non-state actors – acting either on their own accord or as proxy for great powers – could also exert localized influence in crucial locations. The expansion of law enforcement surveillance and enforcement, such as that undertaken in Operation *Caribbe* (a drug interdiction operation in the Caribbean) or *Artemis* (an anti-terrorism and weapons smuggling operation in the Middle East) – demonstrate the need for that. This is the geopolitical environment facing the RCN, and one which is likely to become even more dangerous in the years ahead.

Diesel Electric Attack Submarine (SSK): Capabilities in the 21st Century

Canada's submarine fleet has always been made up of SSKs and this platform is likely in the future fleet as well. Diesel electric attack submarines provide non-nuclear navies the least expensive opportunity to generate significant, and often disproportionate, effects within the underwater maritime domain. These effects can be achieved alongside other surface assets, such as anti-submarine warfare (ASW) influence within a Task Group, or individually on a single task or operation. Underwriting these capacities is the stealth advantage. The submarine offers a covert means to achieve national operational and strategic goals in ways that air and surface assets cannot.[13] A single submarine, particularly an SSK, can be positioned at strategic points to exercise sea denial to an adversary, or support friendly sea control. As "grey zone" operations increase in the marine security environment, maritime insertion of Special Operations Forces (SOF) elements will become an increasingly useful tool in the national or allied strategic toolbox.[14]

Likewise, the ability to discretely and persistently conduct maritime ISR, including signals intelligence (SIGINT), is unique to the submarine. This is especially so in an environment congested with air and surface A2/AD factors.[15] Improvements to submarine-launched weapons systems will permit surprise joint land attack options. While there are other capabilities an SSK bring to a middle power navy, these are key elements that advisers and decision makers should keep in mind when discussing middle power naval capabilities.

The future appears bright for the relevance of SSKs. They will retain these core capabilities and with improvements in stealth and under water endurance will remain "a key underwater sensor for the near to medium future."[16] As pointed out by Abenheim and his coauthors, "[t]he ideal warship is the least expensive one that can carry out its strategic role while maintaining a degree of tactical independence in modest threat environments."[17]

International Benefits to Maintaining a Submarine Capability

One of the key benefits of possessing a submarine capability within the NATO and partner community is that of access. Being part of the "sub club" grants "decision-makers the access to information on allied submarine operations necessary to avoid mutual interference."[18] Losing this critical intelligence link would jeopardize an important node by which the

HMCS Windsor passes under the Angus L. MacDonald Bridge during the departure of NATO Ships participating in Exercise CUTLASS FURY 2021 in Halifax Nova Scotia, on September 7, 2021 (image:Connor Bennett, CAF)

CAF shapes operations and provides military advice to the government.

By possessing an SSK capability, Canada is also in a unique position to reinforce its maritime defence partnership with its most important ally: the United States. Indeed, this defence relationship is essential. As Canada relies heavily on the international rules-based order, it finds its own maritime security underwritten by the US Navy, which Abenheim calls "the glue for this vast and unprecedented system of global maritime security."[19] The US does not itself possess SSKs, but finds itself facing adversaries with growing fleets of them. In the past, the US has sought to leverage RCN skill and geographic proximity for its own training purposes and is likely to continue to do so in the future.[20] Canada should embrace opportunities to be that sparring partner given the benefits which Canada derives from the strength and capability of the US Navy.

Although submarines tend not to be viewed as platforms for defence diplomacy due to their inherently covert nature, being able to field an SSK abroad furthers the defence engagement goals laid out in Canada's defence policy. As a member of NATO, deploying SSKs to key regions abroad demonstrates an ability and willingness to contribute to the alliance's strategic goals, such as HMCS *Windsor*'s participation in Operation *Sea Guardian* in the Mediterranean.[21] In a separate theatre, HMCS *Chicoutimi* completed a lengthy deployment to the Asia Pacific region, demonstrating the reach the RCN is capable of projecting with its SSK force.[22] This also demonstrates to allies in the increasingly vital Indo-Asia Pacific region that Canada is poised to complement local allied SSK capabilities to ensure stability and a rules-based international order in the region.

Operational Readiness Benefits to the CAF

Less widely discussed are the significant operational readiness benefits the CAF enjoys by having a submarine force. RCN and Royal Canadian Air Force (RCAF) assets are the prime beneficiaries of this symbiotic relationship. Surface ships' ASW teams have multiple underwater sensors to manage, both active and passive. Live training against a submarine yields results that extant autonomous drones, such as the expendable mobile ASW training target (EMATT), cannot. RCAF assets, both maritime helicopter and long-range patrol aircraft, similarly benefit. The effect is enhanced when air and surface assets operate together, providing training within the command-and-control domain as well. At the same time, submariners hone their track, attack, and

evasion skills against a variety of adaptive and reactive above water assets.[23] Somewhat less frequently, RCN submarines provide operational readiness opportunities to other domain operators such as the Canadian Army Patrol Pathfinders and Canadian SOF Command. The operational readiness value is truly pan-domain.

Regardless of the participants involved, CAF control of all these assets provides independence from allied availability and schedules, allowing service branches to directly control the level of training and target specific skill sets. Having such a robust domestic force generation ability cannot be overstated given the resurgence of Russia in the Atlantic, China's increasingly assertive posture in the Pacific, and Special Operations Force relevance in grey zone operations.

Evolving the RCNs Underwater Domain Capability

Uncrewed underwater vehicles (UUV) represent an option to achieve similar effects to a crewed platform, though at much less cost and risk. These systems have matured quickly and some commentors have called for the UUV to take the place of conventional submarines. Others argue that technological advances will render the crewed submarine obsolete by negating its stealth advantage.[24] While these platforms offer real potential, the technology is still in nascent form and it will be years, if not decades, before its potential is realized. Crewed submarines, including SSKs, will remain the option of choice to achieve these strategic effects.

Despite the need to focus Canada's efforts on crewed platforms, a concerted effort must also be placed on developing UUVs as a force multiplier. UUVs represent an opportunity for the CAF to enhance its undersea presence by complementing, rather than replacing, the crewed submarine. As noted in *Forbes* magazine, UUVs "could complement manned warships in conducting tactical reconnaissance, mine countermeasures, anti-submarine warfare, strike missions and a variety of other critical activities."[25] Other observers note UUVs could "extend sensor coverage and abilities, decoy, generate clutter to confuse adversaries, and push into the littorals on behalf of the expensive submarine."[26] This sentiment is shared by the US Director of Unmanned Vessels who, in early 2020, laid out the USN's goal, which "isn't to replace manned warships but to augment them so that the fleet has more firepower, more awareness, and more flexibility to disrupt enemy war plans."[27] However, she also notes that "none of the unmanned vessels currently under development is ready to join the fleet. A lot more research and prototyping lie ahead."[28] Indeed, significant challenges exist in the areas of battery capacity, control algorithms, and communications with the "mothership."

Despite this, Canada is making strides to incorporate UUVs into achieving maritime effects. Recently, Commander Mark O'Donohue outlined significant steps the RCN has made in initiating UUV projects within Force Development and specific projects in the seafloor mapping domain.[29] In November 2020, Canada joined the NATO Maritime Unmanned Systems Initiative, which promotes collaboration on "operational experimentations, exchanges with the private sector on innovation and initial efforts to develop specific capabilities."[30] Canada should continue seeking similar opportunities to work with defence partners to smartly invest in a technology area that will inevitably impact the conduct of undersea military operations.

Galerna-class SSK (image:wikimedia)

Other Middle Power Approaches to Submarines

There is value in considering how other middle power navies, which share similar geopolitical outlooks and challenges, are approaching the role of submarines within the context of great power competition and the evolving maritime security environment. A brief examination of Norway, Spain, Australia, and Denmark provides context in framing how Canada should value an SSK capability.

Norway, a NATO member, possesses a coastline that borders a strategic route for Russian naval access to the Atlantic Ocean. Indeed, Russia is highlighted as a strategic threat in the latest Norwegian defence policy.3[1] The 2014 Russian incursion into Norwegian territorial waters is a reminder that this threat is not simply theoretical.[32] At present, Norway intends to keep their six *Ula*-class SSK submarines in service until they can be replaced by four German-designed 1800-ton Type 212 SSKs, which feature air-independent propulsion (AIP).[33]

Collins-class SSK (image:wikimedia)

Spain, another NATO member, remains committed to an SSK fleet. At present, it possesses two *Galerna*-class SSKs, having retired two already. These are due to be replaced by four *Isaac Peral* (S-80) class SSKs through 2024, which also feature AIP. At 3,400 tons, these boats are notably larger than the Type 212s and are designed for long range oceanic missions.[34] Such is the potential of this platform that is has drawn the attention of India.[35] The production delays experienced by Spain pursuing a domestic build policy are worthy to note should Canada consider a similar plan.[36]

Australia, a close US and Canadian security partner, shares maritime defence concerns similar to Canada, with the exception of their relationship with China. That country possesses a vast coastline, much of it remote from population centers, while Australia also has an economy facing similar fiscal constraints amid an ambitious military recapitalization plan.[37] Keeping their six *Collins*-class SSK submarines active has remained a priority for the Australian military, which has gone so far as to attract RCN officers to mitigate crewing shortfalls.[38] Before the fundamental shift in its shipbuilding plan – ushered in by the AUKUS agreement and the decision to procure nuclear attack submarines – Australia had intended to purchase twelve French designed *Barracuda*-class SSKs to double extant capacity. That this plan failed in the face of cost increases and changing strategic considerations, shows some of the pitfalls that Canada will have to navigate. This is particularly the case given the size of submarine that the Australians had intended to purchase. Nearly 4,000 tons and capable of long ocean deployments, the French SSKs are larger and more capable than many boats procured for coastal defence by Canada's European allies. Like the Australians, Canada will need larger platforms to monitor its littorals.[39]

NATO member Denmark is also included in this review because its divestment of submarine capability in 2004 helps shape a holistic international view. After the Cold War, Denmark assessed a reduction in submarine activity in its near-abroad justified divestment of its SSK submarines.[40] However a resurgent Russia has now become a national security priority.[41] In a clear shift to an ASW footing, Denmark has updated and reclassified "its *Absalon*-class ships from command and support vessels to the Anti-Submarine Warfare (ASW) role, a move that is a clear reflection of the changing priorities of many NATO navies."[42] However, Denmark finds itself beholden to international partners for maintaining ASW proficiency, and the capability "deficit negatively affects Denmark's ability to enforce the sovereignty of its territorial waters and its ability to support NATO in ASW operations."[43] Clearly, the decision to divest has had serious repercussions for Denmark.

Conclusion

The debate about whether Canada should maintain a submarine capability seems as rote as tax season. It is indeed a significant expense to maintain, but the level of maritime effect that a submarine can bring to bear more than justifies the cost for a middle power navy such as the RCN. Largely out of sight and out of mind when operating effectively, it is easy to forget the ways in which a submarine capability enables the RCN to project military power on behalf of Canada. The platform's core tasks: sea denial, sea control, special operations, and ISR (including SIGINT) are vital and cannot be allowed to disappear.

Beyond those effects normally associated with the application of maritime power, allied SSK users reap additional benefits by maintaining a credible submarine force. Access to water space management intelligence and mutual training opportunities provide significant information and reinforce defence relationships. Domestic control of submarine training opportunities grants independence to the CAF pan-domain in achieving readiness goals. These additional benefits rarely receive attention, but they are significant and not easily available by other means.

The future of Canada's submarine capability could be positive, if given sufficient long-term investment. Noting that the CAF is fiscally constrained and suffers from a dearth of human resources, Canada must be realistic but thoughtful in selection of submarine fleet size and capabilities. Comparable navies are investing in modern SSK designs, including emergent AIP options, normally between four and twelve hulls. In contrast, those that divested SSKs are increasingly challenged in the evolving and increasingly challenging maritime security environment. Canada must sustain this capability, while also investing in complementary technologies that can augment the traditional capabilities of crewed platforms. Crewed submarines, augmented by UUVs, represent a potent combination for long-term strategic RCN undersea awareness and control and the time to invest is now.

Notes

[1] For instance: the Canadian Coast Guard Science Vessels, Icebreakers, and the CSC

2 For a summary of some of these arguments see: Michael Byers, "Does Canada need Submarines," *Canadian Naval Review* 14:3 (Summer, 2014).

[3] Department of National Defence, "Victoria-class Modernization (VCM)."

[4] Jeffrey F. Collins, "Towards a Renewed Canadian Submarine Capability," Niobe Papers 4 (2019), 9.

[5] Department of National Defence, *Strong Secure Engaged: Canada's Defence Policy* (Ottawa: Minister of National Defence, 2017), 65.

[6] Department of National Defence, *Canada in a New Maritime World: Leadmark 2050* (Ottawa: Commander, Royal Canadian Navy, 2016), 39.

[7] Naval Association of Canada, "Canada's Submarine Assets," NAC Briefing Note.

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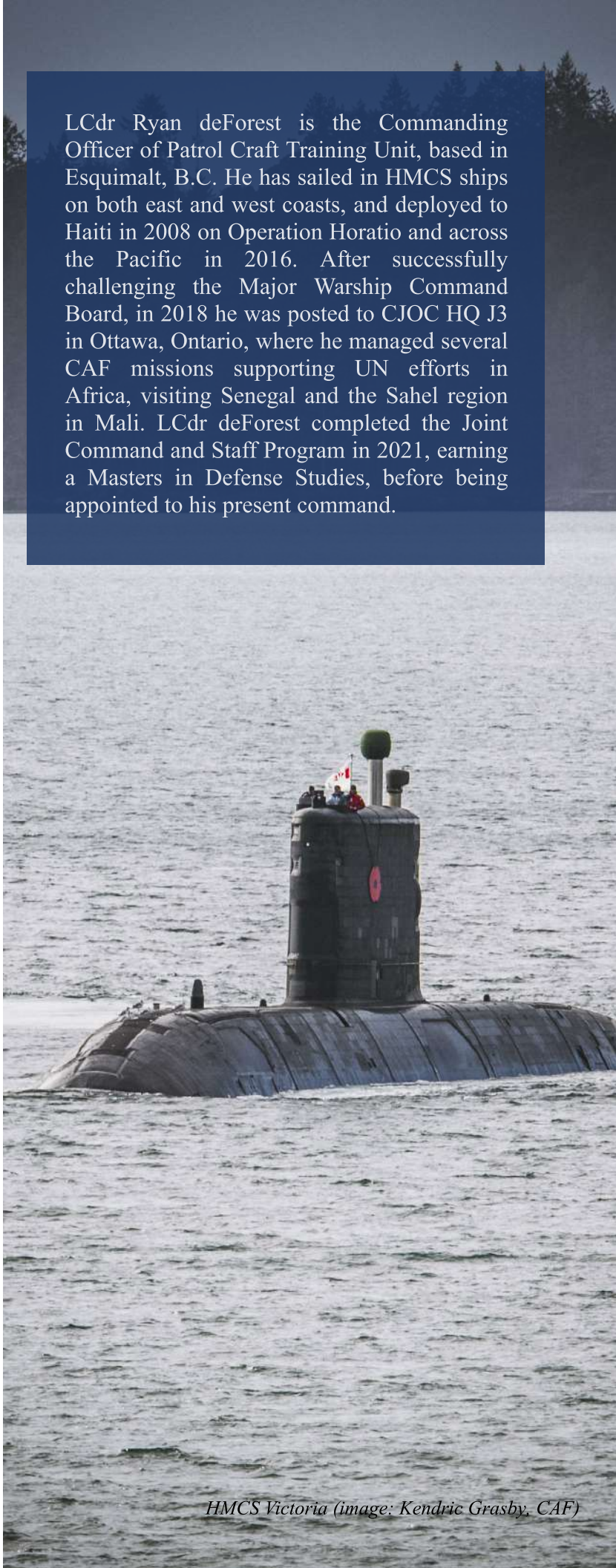
LCdr Ryan deForest is the Commanding Officer of Patrol Craft Training Unit, based in Esquimalt, B.C. He has sailed in HMCS ships on both east and west coasts, and deployed to Haiti in 2008 on Operation Horatio and across the Pacific in 2016. After successfully challenging the Major Warship Command Board, in 2018 he was posted to CJOC HQ J3 in Ottawa, Ontario, where he managed several CAF missions supporting UN efforts in Africa, visiting Senegal and the Sahel region in Mali. LCdr deForest completed the Joint Command and Staff Program in 2021, earning a Masters in Defense Studies, before being appointed to his present command.



HMCS Victoria (image: Kendric Grasby, CAF)

Canada Bobsleigh Skeleton Team Canada Bobsled and Skeleton will honour the Royal Canadian Navy at this year's Winter Olympics in Beijing.

Canada's Bobsled and Skeleton Teams Partner with the Navy for the 2022 Olympics

This year Canada's bobsled and skeleton teams honoured Canadian veterans serving members in the Royal Canadian Navy by sporting disruptive dazzle paint schemes, based on the Navy's Second World War vessel camouflage. Two years ago, the Navy showed of its new (old) colours by repainting the frigate the HMCS *Regina* and patrol ship HMCS *Moncton* in 2020 in commemoration of the 75th anniversary of the end of the Battle of the Atlantic. The design was unveiled in January in Halifax aboard the future HMCS *Margaret Brooke* – an Arctic Offshore Patrol Ship. In total, Canada sent three skeleton athletes and 18 bobsledders to the 2022 Winter Olympics in Beijing, bringing home two bronze medals.

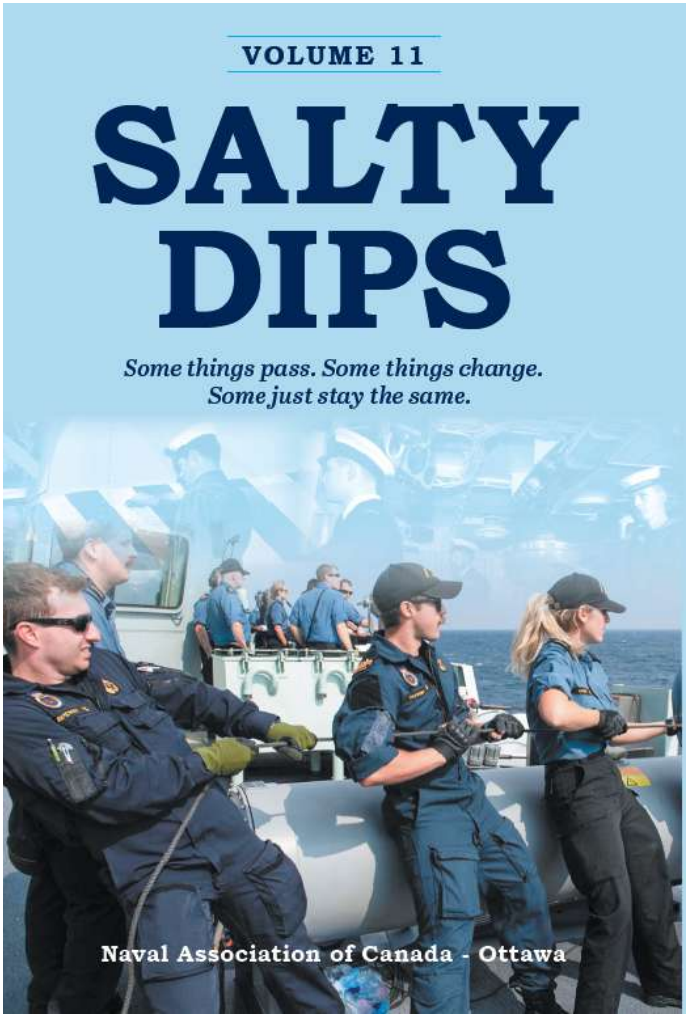
(From left) Commander Nicole Robichaud, Lt.Commander, Dustin Allen and Coxswain Steven Clark in front of HMCS Margaret Brooke in the Labrador Sea (image: Taylor Congdon, CAF)

NAC Releases Volume 11 of *Salty Dips*

The latest volume in the Salty Dips series, Volume 11 is now available from Friesen Press in hard or soft copy as well as other major book sellers such as Amazon. E-book versions are also available from/for Amazon Kindle, Apple books,Barnes & Noble, Nook and Rakuten/Indigo Kobo eBook networks (the Friesen Press site has links to e-book sellers).

Volume 11 "Some things pass. Some things change. Some just stay the same" is mainly focused on the social change in the Canadian Navy/RCN that has taken place between the early 1950s until 2001.

This volume includes the stories and interviews from two women officers, Louise Fish and Diana Dewar, who were among the first women to go to sea in the Navy, reminisces from Rear Admiral (Ret'd) Tim Porter on his life journey from sea cadet to admiral and then his role in the creation of the Royal Canadian Sea Cadet Education Foundation when he retired from the RCN, and Dr. Alec Douglas' early career in the RCN and his role in the NDHQ Directorate for History where he lay the foundation for the writing of the official history of the RCN (a task that continues to this day).



Pat Barnhouse and Jerry Wynnyk provide an informative glimpse of life as an officer and sailor in the days prior to the Integration of the Canadian Forces in 1968. Louise Mercier provides an insight into the first female UNTD class post the Second World War to earn bridge watchkeeping certificates.

Rounding out this volume are Ian McKee's insight into the life of an aide-de-camp for the Governor General in the 1950s, Rod Hutcheson's recollections of his travels and life in the American Southern States while under training in the early 1950s, while Barry Walker provides the background story for the introduction of the modern shore based command and control capability in the 1980s.

Keith Nesbit's diary of a submarine operating as an "enemy force" in exercises during the Cold War is contrasted with Margaret Morris' story of how HMCS *Cabot*, a "Stone Frigate" responded to the 9/11 crisis in 2001.

Finally, as usual, there are a number of smaller but equally entertaining short stories – some rather humorous – to complete this volume. We think you will find this a most worthy read!

Submarine Procurement

Widening the Aperture of Options

Vice-Admiral RCN (Retd) Robert Davidson CMM MSC CD

The RCN recently announced the start of work to explore options to replace the Victoria-class submarines. Any future submarine procurement must deliver optimum military capability while remaining politically and economically affordable. This can only be achieved if we widen the aperture of options.

Canada needs submarines. Every credible navy in the world today has them – the tactical and strategic arguments in favour of submarines are irrefutable. Submarines bring capability, *gravitas*, knowledge, and experience that are essential elements of a multidimensional modern navy.[1] Any navy aspiring to leadership in the global maritime commons has, and will continue to employ, this essential element of naval combat and surveillance capability. No other platform can deliver the stealth and strategic surprise of a submarine. Those few maritime countries that don't have submarines have made difficult political and economic choices that do not diminish a submarine's inherent value and operational utility. Simply put, as a G7 nation that is highly reliant on maritime trade and with the world's longest coastline, Canada needs submarines.

The Department of National Defence (DND) will need to convince Cabinet that this capability is worth the political and economic capital. A funding envelope and spending authority will be essential and an early Memorandum to Cabinet (MC) is, therefore, a logical first step. Such an MC will need to address:

- Arctic and under-ice requirements.
- Surveillance on three coasts, including the number of hulls needed.
- An ability to operate overseas with our allies.[2]
- Range, endurance, combat and surveillance capability.
- Industrial offsets (that translate into jobs).
- Regional benefits (that translate into votes).
- The National Shipbuilding Strategy (existing policy framework).

High quality steel for submarines is expensive and working with it requires a unique skill-set. Canadian industry currently lacks the expertise and facilities for submarine construction, and establishing that capability would inflate the cost. Ideally, Canadian industry will focus on component construction and systems integration.

Considerable risk lies in any view that only unique design work will meet Canada's requirements. Such work has consistently resulted in escalating costs, largely arising from delays, unique made-in-Canada solutions, changing scope, and inflation. Escalating costs lead to a loss of faith and trust in DND's ability to forecast and deliver major projects.

The recent Australia/UK/USA (AUKUS) strategic agreement may have changed the environment. It may open the potential for a nuclear propulsion option without necessarily creating a nuclear supply chain in Canada, the cost of which doomed our last exploration of this option in the late 1980s. While nuclear propulsion has clear advantages, it is a stretch to believe that any Canadian government will find nuclear propulsion politically saleable in the current environment, particularly for Arctic applications. Still, the government should make this call and so it should not be excluded from consideration.

Nevertheless, we should focus efforts on a conventional submarine option with Air Independent Propulsion (AIP).[3] AIP is essential for safe and effective operations in areas near ice and brings enormous tactical advantage in stealth. Most existing designs allow for roughly three weeks of independence from the surface, depending on speed and the nature of opertations. Some level of ice reinforcement of the fin area would also be needed to penetrate Arctic ice in an emergency or for communications.

We must consider the Arctic of 2050 and beyond. A full climate forecast is essential in advance of any decision. Canada's submarines must be able to operate where and when we can reasonably expect to see a threat to our sovereignty. Ice thickness and extent will change with global warming. Could the ability to surface through up to one meter of sea ice be sufficient for future requirements? Can we expect that there will be more polynyas and open water areas?[4] Could three weeks of AIP be sufficient? Options should be backed by sound research and forecasting.

The hydrographic work to improve Arctic charts also needs increased efforts now as part of Canada's sovereign responsibilities and to improve navigation safety for all shipping in the Arctic, including submarines.

Bigger hulls use more steel and are therefore more expensive; this could limit the number of hulls that can be afforded. Bigger submarines also have limited shallow water access, except when equipped with underwater remote vehicles. Submarine vulnerability and detectability increase with size. Conventional submarines, even with modern batteries and AIP systems, are limited in their speed and endurance – compared to their nuclear cousins. Quite simply, without nuclear propulsion, the power-to-weight ratio favours smaller submarines. Bigger may mean more range but it may not produce a dramatic increase in AIP endurance over some of the smaller submarines already in service.

Fixing the size requirement at 3,500 tons or more, as recommended by some analysts, starts us down a limiting and costly path. Smaller submarines should be included in the analysis and options. A smaller hull size opens the door for more submarine yards and builders to compete while smaller less costly hulls may mean more submarines are affordable.

When it comes to the actual operation of submarines and ships, the Navy calculates cost and effort in terms of sea days. Incremental costs for crew, including fatigue, and maintenance are driven by days at sea. For a submarine, this is further compounded by days submerged affecting hull fatigue. Sea days are made up of:

- Trials and Equipment testing
- Transit time
- Time on patrol for operations
- Training time for the submarine crew
- Training time for other platforms (ships and aircraft) that must also practice hunting for submarines.

Given the slow transit speeds for conventional propulsion, many sea days are expended in transit. Each transit day reduces the available days on patrol or in the assigned operating area. Long distances in transit to overseas and Arctic deployments result in fewer patrol or surveillance days. This has been a perennial problem with Canada's submarines and has been a key factor in limiting the frequency of overseas deployments of the Victoria-class. Options to reduce transit days should be explored.

Remotely operated vehicles (ROV) are a useful addition to submarines but not a substitute. If we intend to keep a human in the decision loop with sufficient combat capability, then ROVs alone will not do the job. Underwater gapped communications lack the data rate or fidelity needed for such complex operations and tethered applications are range limited and not environmentally friendly. Artificial intelligence may open new options, but we are not ready to let machines do autonomous submarine combat operations.

HMCS Chicoutimi arrives at its home port of Halifax aboard the Norwegian sealift vessel M/V Eide Transporter (Image: Cpl Mike Selig, Combat Camera)

A smaller submarine (2,000-2,500 tons), combined with a Heavy Lift Ship (HLS), offers many potential advantages and should be considered:

- The HLS transports the submarine to the operations area eliminating the transit/range problem that favours a larger submarine
- The HLS can be built in Canada, creating a valuable industrial offset.
- With no submarine sea days lost in transit, more operational days are available in any deployment.
- The HLS can provide repair facilities, docking, refuelling (including AIP), re-arming or weapon change-outs, re-storing, and submarine crew accommodations closer to the operating area.
- Crews can be flown to join the deployed submarine/HLS.
- Some repairs that previously forced an early return transit to home port can be addressed locally.
- Special Operations capabilities and personnel can be housed in the HLS
- The HLS has utility for humanitarian lift to northern communities and areas affected by natural disasters.
- An HLS could be operated by industry.

Any study of options to replace the Victoria-class needs a wide aperture. Requirements should be established for 2050 and beyond where changes in technology and the Arctic environment may offer substantially different operating parameters from our current experience. Options to solve the transit and range challenges such as the combination of a heavy lift ship with a small submarine merits consideration. Most importantly, our procurement plan should minimize the procurement duration to reduce cost and risk. Key strategies to achieve this include avoiding unique designs and a built-in-Canada solution.

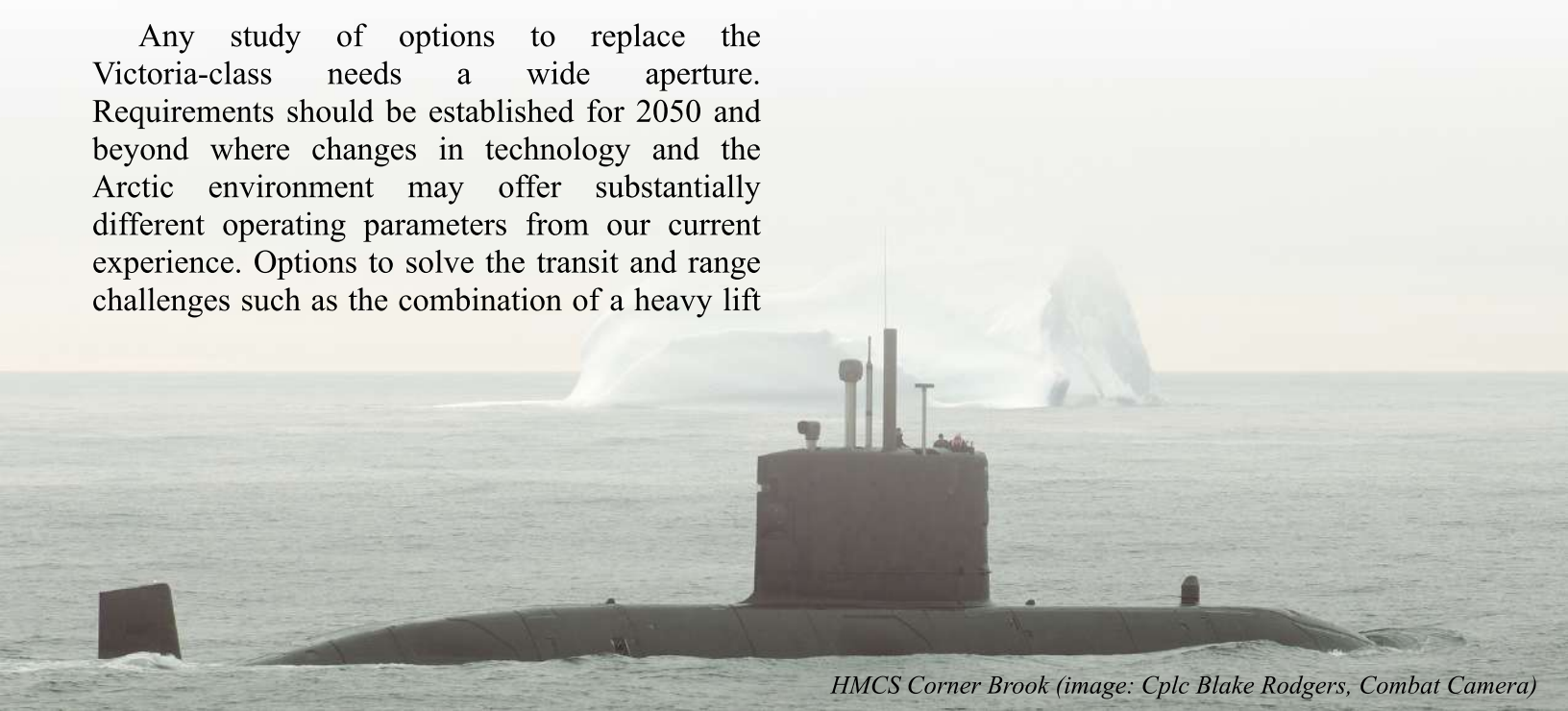
Notes

[1] A modern Navy needs experience across the spectrum of maritime operations to be credible to lead international operations. Submarines also offer access to the club of submarine operating allies within which intelligence and movement information is exchanged. A submarine with a heavy weight torpedo and/or anti-ship missiles is a strategic capability than can deny area access to an adversary.

[2] While may carry less weight nationally, it will be key for our NATO and other allies

[3] AIP is any technology that provides for the generation of power without access to atmospheric oxygen. Batteries, closed cycle and Stirling engines and fuel cells. These systems may require stored hydrogen and/or oxygen or a reformer that can produce hydrogen from another fuel source. AIP enables a submarine to remain submerged for extended periods without accessing the atmosphere to run large diesel engines.

[4] Canada's Arctic currently contains 23 polynyas or open-water areas surrounded by sea ice. These are created by winds, currents and upwelling warmer water. (Source: Canadian Geographic, Status and trends in Arctic Biodiversity)



HMCS Corner Brook (image: Cplc Blake Rodgers, Combat Camera)

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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

With the Russian invasion of Ukraine heightening the threat to European security HMCS *Halifax* was re-tasked and departed Halifax this March to join HMCS *Montréal* on Operation Reassurance. This change-of mission is part of the government's promise to provide additional military support to NATO operations in Central and Eastern Europe. *Montréal*, which departed Halifax on January 19, 2022, has already chopped into Standing NATO Maritime Group 2 in the Mediterranean Sea.

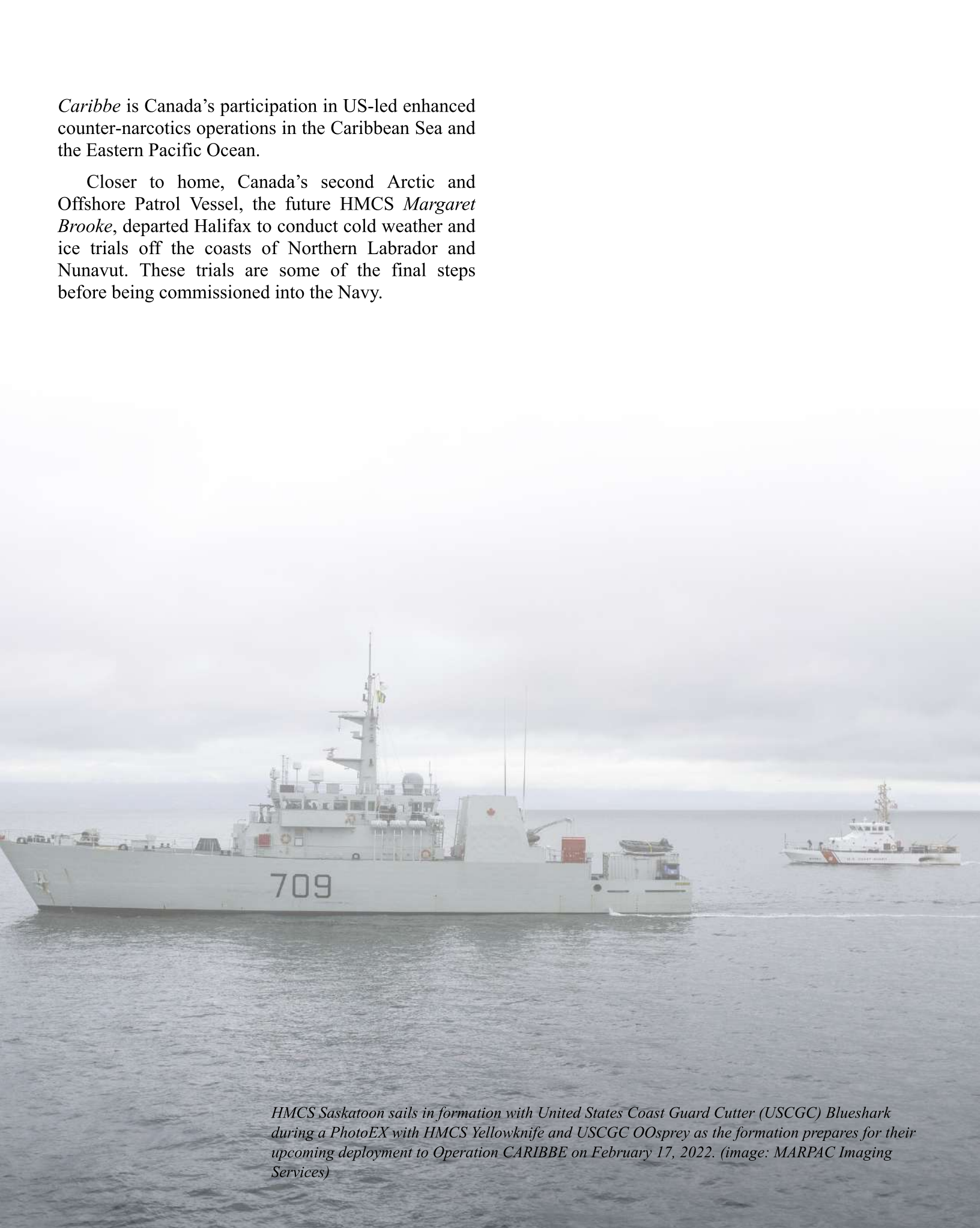
HMCS *Goose Bay* and *Moncton* departed Halifax on January 20 for Operation *Projection West Africa,* a strategic deployment promoting maritime security, while fostering relationships, in the West African region. While in the region, the ships will participate in Exercise *Obangame Express 2022* in the Gulf of Guinea. The exercise is sponsored by US Africa Command and is focused on improving regional cooperation, maritime domain awareness, information-sharing practices, and tactical interdiction expertise.

Meanwhile, HMCS *Saskatoon* and *Yellowknife* departed Esquimalt on February 21 for a rotation on Operation*Caribbe* that will last until May. Op

A Polar Bear visiting HMCS Margaret Brooke (image: RCN twitter

Caribbe is Canada's participation in US-led enhanced counter-narcotics operations in the Caribbean Sea and the Eastern Pacific Ocean.

Closer to home, Canada's second Arctic and Offshore Patrol Vessel, the future HMCS *Margaret Brooke*, departed Halifax to conduct cold weather and ice trials off the coasts of Northern Labrador and Nunavut. These trials are some of the final steps before being commissioned into the Navy.



HMCS Saskatoon sails in formation with United States Coast Guard Cutter (USCGC) Blueshark during a PhotoEX with HMCS Yellowknife and USCGC OOsprey as the formation prepares for their upcoming deployment to Operation CARIBBE on February 17, 2022. (image: MARPAC Imaging Services)

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Bringing Shipbuilding Back to Ontario

By Shaun Padulo | President Heddle Shipbuilding

This article was originally printed in *Soundings,* the newsletter of the NAC Ottawa's Branch

It is no secret to the Royal Canadian Navy (RCN), the Canadian Coast Guard (CCG), and the Canadian-flagged commercial fleet that Ontario was once a shipbuilding titan. During their prime, the Port Weller Dry Docks and Collingwood Shipbuilding proudly launched vessels, such as the CCGS *Des Grosielliers* and CCGS *Sir Wilfred Laurier*, still in service today. During World War Two, more than thirty corvettes were built by Ontario shipyards from Thunder Bay to Kingston. Although Collingwood Shipyard is now permanently closed and the glory days of shipbuilding remain a distant memory, shipbuilding in Ontario is primed for a resurgence.

In 2016, Heddle Shipyards purchased the Thunder Bay Shipyard out of bankruptcy, and in 2017 took control of the storied Port Weller Dry Docks in St. Catharines Ontario, thus beginning a new chapter in Ontario's rich maritime history. As the owner/operator of three large shipyards in Ontario and the largest number of dry dock assets in Canada, we believe Ontario and Heddle Shipyards, have the capacity to support the National Shipbuilding Strategy (NSS), specifically when it comes to the CCG's new-build program for vessels under 1,000 Gross Tons (GT).

At Heddle Shipyards, our vision is to be recognized as the most reliable provider of ship repair and maintenance services in Canada and to become a meaningful partner in the shipbuilding industry. Our goal is to be Canada's partner shipyard for vessels under 1,000 GT new-builds and to support the larger vessel new-build program through the construction of ship modules and components. Although there are challenges to achieving these ambitions, we firmly believe our facilities, our people, and the Ontario marine industry, have the capacity and expertise to bring shipbuilding back to Ontario.

At one time, the Port Weller Dry Docks and Thunder Bay Shipyard employed upwards of 4,000 people collectively. While the vessels under the 1,000 GT market is unlikely to support employment to that level, there is no doubt the shipyard facilities in Ontario can support large-scale new-build programs and become an industrial powerhouse in this sector. Furthermore, Hamilton and the golden horseshoe is home to the industrial and manufacturing heartland of Canada. This creates an opportunity to outsource significant parts of the shipbuilding process to local industry, thereby eliminating some of the burdens on the shipyards to invest in costly equipment and infrastructure that already exists in close proximity.

While there is no doubt that the loss of shipbuilding knowledge is an unfortunate by-product of the decline of shipbuilding in Canada, the industry has changed significantly in the last thirty years. The shift towards automation and robotic welding has significantly improved quality and efficiency. While traditional trades positions such as fitting, welding, and machining will continue to play a crucial role in the shipbuilding process, new positions in automation and equipment operation will present the next generation with new opportunities in the shipbuilding industry. As well, modular construction has brought much of the shipbuilding process from the hardstand to the shop floor. Modules and block sections are integrated into the ship fully outfitted with machinery, piping, electrical, etc., a shift that has significantly improved both quality and efficiency. We believe that

Port Weller Dry Docks – St. Catharines (Image: Heddle)

by embracing these new technologies and methods, Ontario shipyards can offset the traditional demands for manual workers and train a new generation of high-tech shipbuilders.

It is important to note that the Canadian shipbuilding industry has made leaps and bounds over the last decade. From the outset of the NSS, Canadian shipyards were effectively starting from scratch, from both equipment and human resource perspectives. Companies like Vancouver Shipyards and Irving Shipbuilding have had to re-invent their processes and facilities. Despite some challenges early on, these challenges were a natural part of rebuilding a dormant industry and significant progress has been made in quality and efficiency over the last few years. It would be prudent and natural for Heddle to draw on the experiences and lessons from the other NSS shipyards as we transition into the new-build market. Ontario shipyards are, however, fully capable of delivering on the vessels for the under 1,000 GT new-build program.

Concerning the new-build market, we believe there will be enough activity over the next two decades to eliminate the boom-and-bust cycle that Ontario shipyards currently find themselves in. New-build projects in the 1000 GT sector in the coming years are as follows:

- City of Toronto – Replacement Ferries (4 vessels)
- CCG – Near Shore Fisheries Research Vessel (1 vessel)
- CCG – Mid Shore Multi-Mission Vessel (MSMM) (6 vessels)

In addition to the above, Owen Sound Transportation will be looking at the replacement of the MS *Chi-Cheemaun* and the *Jiimaan* passenger ferries in the next decade. Furthermore, Canada has yet to identify a replacement program for the Maritime Coastal Defence Vessels (MCDV), and the CCG great lakes small buoy tenders the *Caribou Isle*, *Île Saint-Ours*, and *Cove Isle* will be due for replacement in the not-so-distant future.

Ultimately, the goal will be to transition from domestic government-funded programs to the commercial or international defense markets. Our ability to do this will be based on creating a niche area of expertise, specifically in the vessel under the 1000 GT market. If we can build up our processes and

facilities to efficiently construct vessels of a particular size or configuration, nothing is stopping Ontario shipyards from competing on the global market. This is not necessarily a new model, companies like Metal Craft Marine and Hike Metals – both in Ontario – have carved out a space in the international markets for aluminum hull patrol and search and rescue style vessels. There is no reason Heddle could not do the same thing with small and medium-sized vessels based on designs like the MSMM or MCDV.

There is no question that we will face challenges but with ingenuity and common sense we see a clear path forward. For example, engineering and design capacity in Canada has come a long way in the past decade. Although resources are spread relatively thin given the current demands of NSS projects, standardization and simplicity of design can go a long way towards reducing the design and engineering burden. That being said, the design and engineering capacity in Canada continues to grow, and we feel it will be adequate to support our aspirations, given that we can approach this challenge intelligently.

Furthermore, skilled labour continues to be a challenge faced by Canadian industry as a whole. We must embrace new technology and utilize the skill sets of the next generation to achieve the same tasks that were done manually in decades past. There also needs to be a recognition that Ontario has an opportunity to access an untapped resource, specifically when it comes to under-represented groups and to upskilling people currently working in different sectors. Women, Indigenous communities, and other under-represented groups still make up only a fraction of skilled trades positions in Ontario, and shifts in employment trends have left many without the skills and training our evolving economy requires. It will be important for companies like Heddle, in partnership with the government, colleges, and secondary schools, to develop curriculum and training programs that will provide opportunities for this untapped resource to enter the exciting world of modern shipbuilding. This will be a key factor in Ontario shipyards remaining competitive both domestically and internationally.

As Heddle and the Ontario marine industry transition to the next phase of growth and shipbuilding becomes the primary activity, it will be important for our Provincial government to play an active role. It is no secret that initiatives such as the Québec maritime strategy have given Québec a competitive advantage in the shipbuilding and ship repair markets. Nova Scotia was instrumental in assisting Irving to upgrade their facilities and Québec took a financial stake in the Asterix project executed by Chantier Davie so as to assist with facility upgrades. Similarly, we need the Ontario government to enact policies and mechanisms that support Ontario-made solutions and create an environment where Ontario shipyards can continue to invest and stay competitive.

Samantha Stout – Welder at the Port Weller Dry Docks

We are pleased to say that the current provincial

administration has been extremely supportive of shipbuilding in Ontario, and we are optimistic we are headed in the right direction. Last fall, Heddle was awarded the Simcoe Island Cable Ferry new-build for the Ministry of Transportation Ontario, which is a testament to the Ministry's support of the shipbuilding sector. Ontario has placed a premium on skilled trades development, and we will be working with the province to leverage opportunities for increased skills development and advanced manufacturing solutions, all of which will strengthen our position as a shipbuilding power.

From a federal perspective, we would like to see greater recognition of the capacity Ontario shipyards have to offer, both in terms of vessels under 1000 GT and in supporting the large build programs both underway now and in the future. In Ontario, we have a tremendous reservoir of underutilized capacity, which can be leveraged to support the goals of the national shipbuilding strategy.

For Heddle, there are a number of steps that must be taken to achieve the goal of bringing shipbuilding back to Ontario. Most important will be establishing an Ontario Marine Strategy that both incentivizes shipbuilding and ship repair work in Ontario and supports investment in human resources and our facilities. Without this piece, Ontario Shipyards will continue to be at a competitive disadvantage when it comes to bidding and winning federal shipbuilding contracts. At the same time, we need to pursue an aggressive skilled trades training program not only in Ontario shipyards, but also across the province's advanced manufacturing sector. While we are anticipating a significant shift towards automation and robotics, we will always need skilled tradespeople in the shipyard, and the transition to automation will not take place overnight. Furthermore, skilled trades education will be the foundation of competent operators and quality control personnel. Simply put, you must have a solid foundation in welding to operate a robotic welding machine and recognize quality defects if they occur.

At the same time, we need to execute some smaller new-builds to hone our process and techniques. To that end, Heddle will be building several split hull dump scow barges using newly installed robotic welding systems. This is an internal initiative we feel worthy of investment so we can train our people and refine our processes before some of the larger more complex build programs come along. It is worth noting that Heddle has built a variety of vessels over our thirty-plus-year history including small tugs, workboats, cable ferries, and small ice-breaking hulls. The split hull dump scow project is an exercise in training and implementation of the latest welding technology.

Although it may seem like a tall task, we feel we are well on our way to taking some giant leaps

MV Waaseyaagmik – Major Conversion (image: Heddle)

forward as a company and as a province. Our full-time employees have more than doubled since 2017 and we are executing larger and more complex projects every day. We have made significant investments to upgrade our facilities and our capabilities including the 2021 purchase of Fabmar Metals in Thunder Bay and the purchase of Algoma Ship repair and all of its heavy equipment. In 2022, we will continue our capital investment plan alongside an aggressive training program to ensure we have the workforce of the future. To this end we are working with trade colleges in Hamilton, Niagara, and Thunder Bay to build ship repair and construction training courses. These initiatives will enable awareness in the sector and create a steady pipeline of young people excited about a career in shipbuilding.

We have a tremendous opportunity in front of us, and Ontario shipyards are primed for success, building on what we have already achieved. Our facilities and people are stronger than they have been in decades. Today there exists a clear path forward in the accessible market of shipbuilding work, via a roadmap to execution through investment and training. If the political support for shipbuilding both federally and provincially remains strong, we do not doubt that we will bring shipbuilding back to Ontario.

Shaun Padulo is the President of Heddle Shipyards. Mr. Padulo joined Heddle in 2017 and assumed the role of President in June 2018. He has 10 years of experience in the marine and offshore contracting sectors, having started his career as a deckhand on tugboats sailing on the Great Lakes. He later took commercial roles for the Dutch firms Dockwise Shipping B.V. and Boskalis Offshore B.V.

During his time at Dockwise, Shaun lived and worked in the Netherlands where he specialized in logistical management as well as the transportation and installation of offshore production structures. While at Boskalis, Shaun lived and worked in Houston, Texas, and focused on offshore installation projects, offshore decommissioning projects, and subsea inspection, repair and maintenance projects.

Shaun is an alumnus of the Erasmus Universiteit Rotterdam, the University of British Columbia in Vancouver, and McMaster University in Hamilton - and holds a Master of Science in Maritime Economics and Logistics.

As President, Shaun leads the Executive Team and is responsible for developing, communicating and implementing the company's strategic plan, culture, values and vision.

Heddle Shipyard, Thunder Bay

Canadian Naval Heritage

The serialized naval memoirs of the late RAdm Robert Philip ‘Bob’ Welland DSC & Bar, MiD, psc, Officer of the Legion of Merit (USA), RCN

Turning Japanese

Where last we left off, Welland had deployed to the Far East as the region was in the midst of both orderly (and disorderly) decolonization.

The Commonwealth War Graves Cemetery, Sai Wan, in Hong Kong holds the bodies of 1,750 Canadian soldiers. They were sent to help defend the island-colony when the Japanese started their war against us in December 1941.

Most of the soldiers were killed when the Japanese overwhelmed the Island early in 1942, the others were taken prisoner. The father of my cadet term-mate, Ralph Hennessy, is amongst those killed. Colonel Hennessy died with the men he commanded. It has become a duty of every Canadian warship that visits Hong Kong to pay tribute to these soldiers.

Hong Kong has a special smell that meets the ship half-way across the harbour; it is spicy, like a turkey-dinner cooking in curry. It has a special sound, even from a distance; Chinese tinkling, staccato voices, high 'C' laughter. Those sounds came from the girls in the sampans that attached themselves to the ship's side as we glided into the harbour. They scrambled onboard using grappling hooks. My trusty crew didn't even try to repel these boarders, they were boosting them over the guard rails.

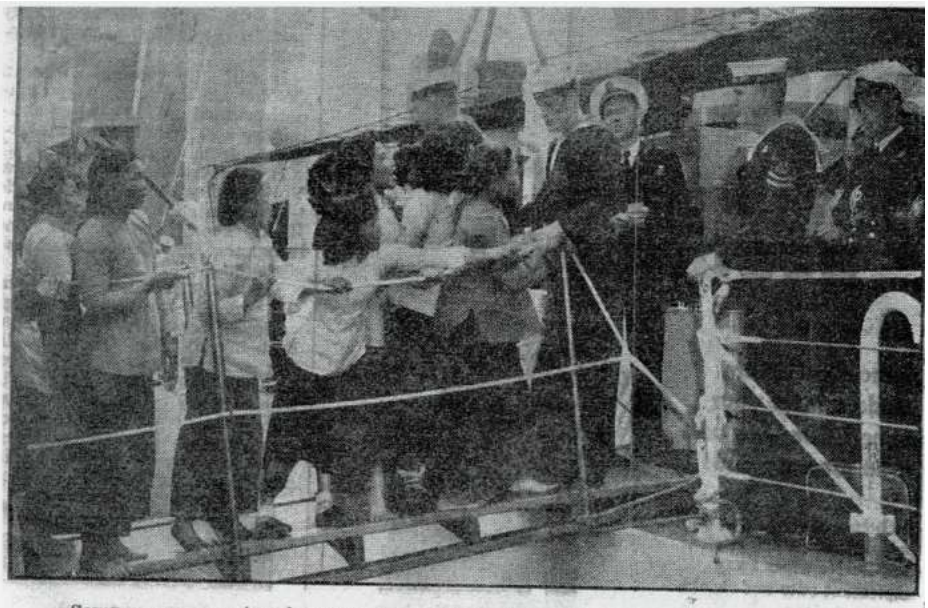
They were business ladies, and not monkey-business girls, they were Companies and

Padre Horatio Todd conducted our ceremony. This same indomitable chaplain also conducted the service in 1950 when we in Athabaskan paid tribute.

had calling cards, ' Susie Wong Ship Painting Ltd. Recommended by Admiral Horatio Nelson of HMS *Victory*. There were tailors 'Just Like Gieves of London, Ltd', and dry cleaners and barbers; the girls were noisy and pretty.

When we got alongside our berth an additional gang came aboard, that included men. Many of our older officers and chiefs had been here before, we knew we didn't have to worry about their honesty or intentions. They were regulated by the famous Hong Kong Police and the Navy, and by each other. I have never been in another port that puts on such a performance.

Hong Kong was noisy, funny, and the service was superb; they invented free enterprise! I needed a white dinner-jacket for a noon-day reception slated for our second day there. I was measured in my cabin within an hour of arriving. The tailor, a



Sampan women storming the gang plank of HMCS Ontario after it tied up at HM Dockyard yesterday. They were seeking odd jobs such as washing and cleaning.—(Staff Photographer).

man of 60 with a long pigtail, returned on aboard at eight the next morning. He and two women finished it in my cabin. It was ready by 11:00 and one of the women gave me a maroon silk bow-tie that matched my cummerbund. I wore that outfit for the next ten years, the label said, 'Fine tailoring by Sir Winston Churchill, Hong Kong, Tel.02164'

Sailors hired girls to do their mending; everyone needed a haircut apparently. The quarterdeck petty officer hired four girls to paint his part-of-ship and he gave his crew extra leave. Hey, this was Hong Kong; they woke up the world with efficiency and good humour.

When we sailed the ship probably weighed an extra fifty tons with bikes, radios, dishes, paintings; everyone had been shopping. We had room for all of it in odd places like the cable locker and the tiller flat. Mike and I had browsed the shops and bought a fine wooden coffee-table for Stephanie; it is still in the family.

On the day of sailing we did a full calibre shoot against a battle-practice target supplied by the Royal Navy. We fired 200 rounds of ammunition at ranges up to 26,000 yards; the results were good in the analysis made by the target-towing vessel. It's a unique experience to be a member of a guns crew enclosed in a turret. Each of the three barrels weighs eight tons, they fire and recoil together, sliding back into position for the next salvo. The crew load the shells with power equipment, then ram in a silken bag of cordite. The breech slams shut. Twelve guns fire together, the recoil rocks the 1,000 ton ship. It's a team effort, mistakes are dangerous, especially to those inside the sealed turrets. I was a turret guns-crew as a midshipman; if one wasn't a bit apprehensive one was a liar. I wouldn't have the Venture cadets miss it for anything!

As soon as the guns were sponged out I set the course for Japan, a thousand miles north. Our destination was the port of Yokohama. I had sailed the *Athabaskan* from it in 1951 in our hurry to get home after Korea.

Our visit to Japan was intended to show good will toward the Japanese. We were to be careful of our conduct ashore, we were to accept tours of the city and country and show a proper interest in an ancient land, and leave them with good feelings toward Canada. That is how I interpreted my brief verbal instructions prior to sailing. I had not organised our visit to Japan, I was simply told to go to Yokohama for five days and get in touch with our Embassy to arrange a program. The Japanese and particularly their navy were quite familiar with our warships; we had maintained three destroyers operating out of Sasebo for the four years of the Korean war. These ships frequently visited Kure and Yokosuka, the naval port in Tokyo Bay. Relationships had always been good as far as I knew. I had unlimited admiration for their dockyard workers, the fellows who installed the LN16 radar that Bill Strange sent me; they had put it up the mast of *Athabaskan* in one day. I looked forward to the visit.

Canada had an embassy in downtown Tokyo, which is an hour's drive around Tokyo Bay from Yokohama. The embassy had organized a full program for all hands; lots of bus rides with tour guides, plus sports.

When the yellow cordite smoke blows clear the shells can be seen climbing into the sky - little black dots. They will splash thirteen miles away and be within 150 yards of the target. (It's such a good photo that it appears twice)

I was given an embassy owned Buick sedan and a Japanese driver, who went too fast until I threatened him with Hari Kari. When I called on Admiral Yoshida he was aware that I had commanded destroyers during the war; he spoke quite good English. I met him again at a dinner given by the Mayor of Yokohama. The Mayor of Yokohama was six foot two, he had been a track star, he had won the 1,500 metre race at the 1932 Olympics.

When he visited the ship he took interest in the machinery and equipment and had amusing opinions, eg: "You English have made such progress. Just a few hundred years ago, when we were making fine china, you were painting your faces with woad." That was one of his observations in his catalogue of our accomplishments. Anyway I forgave him when he presented me with a bonsai tree, "It is as old as your country," he said with a gold-toothy grin. I said "Perhaps we'll find a way to copy it." He gave a giggle and said, "Ah so, velly funny."

Older Japanese gentlemen, like Mayor Hiranuma, called Canadians and Americans "You English," presumably because of our language. Presumably. This method of identification didn't fuss me much; it was really aimed at the once-English Yankees, and sent them up the wall. At the Mayor's impressive dinner party, where each guest had an attentive Geisha standing behind serving hot saki, the once-Olympic runner remarked that he found our women's pink nipples unattractive," ... like a sow's.". I said that I wasn't that familiar with sows. As he began to respond his face dropped into his chocolate cake. Being drunk was the last course anyway.

I hadn't been to Japan since 1951. In the six intervening years the progress they had made was astonishing. New everything was everywhere; cars, trains, roads, buildings. In 1951 the people were still in a state of shock from losing the war; now they were busy and laughing and blowing the horns on their scooter bikes till it made you want to punch them. Everything about western culture seemed to suit them; clothes, loud music, sports.

Everything, that is, except we westerners. For example; they had adopted golf, they were making fine equipment and had some excellent courses. The courses around Tokyo were so good, that our embassy couldn't find one that would let a foursome from the ship play, "Sorry, all our tee times are full." All the golf courses were 'private' and they meant it. I was only mildly offended at the blatant silent discrimination; they had learned more from us than the mere game of golf.

On the day of sailing Mike and I were driven into Tokyo by our Japanese driver; he had now got

Vice Admiral Yoshida is piped aboard in Yokohama. My briefing notes said that he was a notable destroyer-captain during the war. We agreed that it was the best job one would ever have in anybody's navy.

the message I was chicken about running red-lights. Mike and I had topped up the presents for home in Hong Kong, but there was one item to get for Stephanie; we found the speciality shop that dealt in cultured pearls. Mr. Mikimoto's string of perfectly sized pearls are still in the family; Jillie has them.

Miss Yokohama and I are so pleased to meet each other.

Ontario led the squadron out of Tokyo bay in the dark. It was 3,400 miles by rhumb line to the island of Oahu, eight days at economical speed. The ocean was ours to share only with the seabirds, the flying fish and a whale every hundred or so miles. No unpleasant weather rolled the ship, the temperatures in the boiler rooms returned to bearable, the sky was clear and the horizon even further away than on the prairies. In 1957 navigation was still done by sextant, using the sun, stars, and moon; The radio-aid, Loran, existed but was less accurate than a Venture cadet's starsights.

The cadets had a busy time; there were sights to be taken at nautical twilight, morning and evening, and the sun at noon, and the moon when it was available. Every cadet had the experience of transferring between ships on the jackstay; every one was required to handle a frigate in bringing it alongside Ontario. Once a day the cadets manned the boats and lowered them, then, rowed around the ship, and hoisted them onboard. Sometimes I ordered that the boats be emptied using scrambling nets; our wartime method of recovering survivors. Each ship had two or more 'Instructor' officers on board, their academic Venture teachers; so their 'journals' were properly criticized! I wanted those cadets to have a busy time. We stayed three days in Pearl Harbor, refuelled and provisioned the ships, then sailed for the main Island of Hawaii. It was our intent to renovate the memorial, the gravestone, of Captain Cook. We anchored for a day to do the job.

The concrete obelisk is ten feet high and located on a blacklava beach in Kealakekua Bay at the spot where the famous British surveyor was killed. He died when a native speared him, the year was l779. His ship's crew erected a memorial to him at the time and it has been maintained by British and Canadian ships for 180 years. Our ships based on Esquimalt took over the task in the early 1900's and it has become a tradition that we keep it up; after all, a hundred places on the BC coastline were named by the Captain. He did many things for Canada; he was General Wolfe's navigator when Quebec was captured; he surveyed the Gaspe and Newfoundland, he was present at the successful siege of Louisburg. One of his junior officers was Lieut. George Vancouver, who returned to survey and name a few places on our western coast, like Mount Rainier and a big island and leave his name on city hall. It was because of the diaries of Cook and Vancouver that I was curious about the lost Haida village of Ninstints; it was thriving in 1778 and traded sea-otter skins with the British sailors!

Eight of our skilled men landed on the beach and undertook the job; I had seen to it that we brought bags of cement and lime for the purpose. Towering over the jet-black beach is Mauna moa, a 13.000-foot active volcano; dozens of the three crews sweated up its sides to gaze into the boiling-lava crater; it took them all day. The next morning we sailed for home.

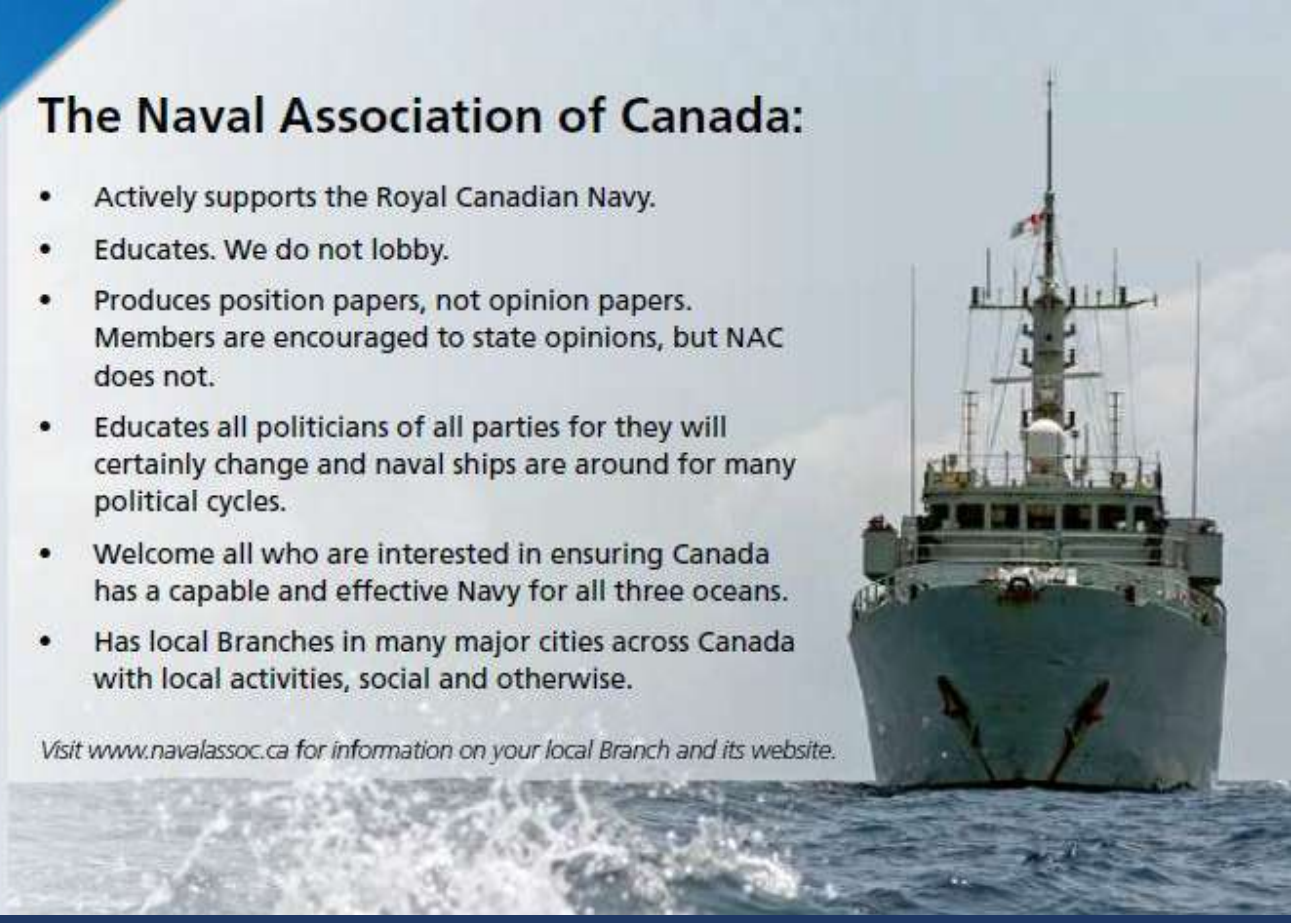
Join us!

The Naval Association of Canada:

- Actively supports the Royal Canadian Navy.
- Educates. We do not lobby.
- Produces position papers, not opinion papers. Members are encouraged to state opinions, but NAC does not.
- Educates all politicians of all parties for they will certainly change and naval ships are around for many political cycles.
- Welcome all who are interested in ensuring Canada has a capable and effective Navy for all three oceans.
- Has local Branches in many major cities across Canada with local activities, social and otherwise.

Visit www.navalassoc.ca for information on your local Branch and its website.

All memberships include a subscription to our quarterly magazine, Starshell (yep, you'll get this snazzy magazine delivered four times a year electronically!).



NAC Regalia Sales

Blazer Badge (NOAC/NAC)	$25 each
Blazer buttons (set of 2 large, 6 small - if you need more or less please contact me at the email address below to work a deal. These new items are not as detailed as previous versions, hence the price) - $25/ set	$25/set
Medallion Lapel Pins – Gold, Silver, Bronze	$5 each
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E-transfers now accepted

RED TEAM

GLOBAL DEVELOPMENTS FROM COMPETITORS & ADVERSARIES

Russia's New Hybrid Patrol Ship and Submarine is a Curious Mixture

Russia's Rubin Central Design Bureau has unveiled an extraordinary – and somewhat bizarre – submersible patrol ship design. Called the "Strazh", this 1,000 ton ship is meant to combine the strengths of a submarine and a surface vessel. The submerged position gives the ship two advantages at once: the ability to conduct covert surveillance of intruders (and successfully intercept them) and escape from adverse weather conditions without interrupting the patrol. The ship resembles Project 613 submarines, the largest subs in the old Soviet submarine fleet and, like the 613s, the new hybrid vessels are also intended for export.[1]

While intended primarily as a peacetime patrol craft, the Strazh can be customized with autocannons, guided-missile launchers, and four 324 mm torpedo tubes. Some variants will also have pressure-proof multifunctional hangars for boarding teams boats and equipment, unmanned aerial vehicles or other payloads.

Notes

[1] Ryan White, "Russia Designs Submersible Patrol Ship "Strazh" (Страж) Capable of Carrying Guided Missiles, UAVs and Torpedoes",*Naval Post*(April 12, 2021).

Concept of the BOSS patrol ship. (Rubin Design Bureau)

BLUE TEAM

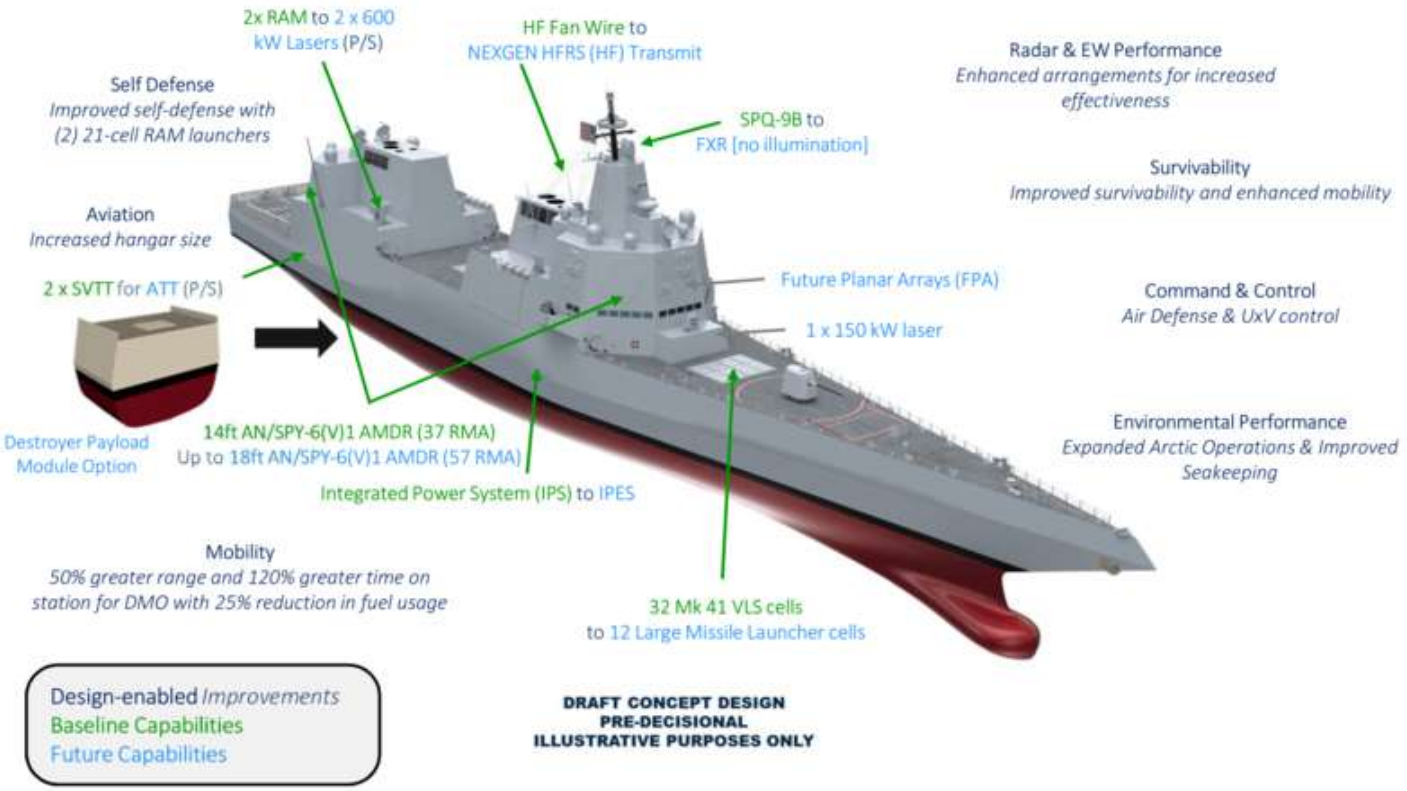
GLOBAL DEVELOPMENTS FROM ALLIES & PARTNERS

The US Navy Unveils Next-Generation DDG(X) packed with Hypersonics and Lasers

As the US Navy's Ticonderoga-class cruisers begin to show their age, a replacement seems to be on the horizon. The next generation, major surface combatant is still in a nascent design phase but is certainly starting to take shape. Intended to serve well into he 2060s, the DDG(X) is being future-proofed as best as possible, and that means a host of new technologies, and room for expansion.

In its initial design reveals, the USN has made it clear it intents to pack the new ship with hypersonic missiles, as well as lasers that will would be radically more powerful than the service's existing laser weapons. Powerful lasers, capable of downing incoming missiles or aircraft need an enormous amount of power; as such, the USN is trading the traditional gas-turbine propulsion system for something closer to the Integrated Power System found on the Zumwalt-class, which generates more than 75 megawatts of power. That technology will be key to generate the power for batteries of directed energy weapons and new sensors. In theory, the new ship could power up to 600-kilowatt lasers, a quantum leap beyond the 60-kilowatt High Energy Laser with Integrated Optical-dazzler and Surveillance (HELIOS) system developed by Lockheed Martin and now being tested by the USN.

Supporting those systems, the ship is slated to use the combat system developed from the Flight III Arleigh Burkes, incorporating the new SPY-6 air search radar and the baseline 10 Aegis combat system. The Navy is also calling for a more fuel-efficient ship that can travel 50% farther and spend 120 percent longer time on station. Much of that is still theoretical, since the hull design remains to be determined. The first of the new class is supposed to start construction in 2028, however the war in Ukraine may be a wild card that accelerates defence programs across the board.



From the Branches

NLNAC Luncheon

From Robert Lucas

On December 8th, 2021 and in view of the looming arrival of the Omicron SARS variant, NLNAC held a pre-Christmas social for members, spouses and friends at the Royal Newfoundland Yacht Club in Conception Bay South. The event consisted of an excellent luncheon, good conversation both before and during the meal, and a presentation by "Close Quarters." The latter is a quartet who have been singing together for several years as an avocation outside their regular employment, and who have entertained us at our pre-Christmas events for several years. Their repertoire was seasonal, including many old favourites which encouraged those present to sing along.

Upon completion of the meal, the following NAC medallions were presented by President, Don Peckham:

- Margaret Morris – Gold
- Bob Lucas – Silver
- Tony Dearness – Bronze

In addition, Past President Wayne Ludlow presented the bronze medallion to President Don Peckham.

Close Quarters

Lorne Wheeler, Rose Wheeler, Verna Skanes, Graham Skanes, Ann Gilbert.

Letters to the Editor

A Salty Dip

Steve Foldesi

In 1984 I was CO Skeena. It was the year of the Jacques Cartier 450th anniversary. The events included a tall ship assembly in Quebec City, a quasi-race to North Sidney NS to be followed by the official race from there to St. Malo. As the FLU I was the natural selection for the job as official host. So here I was, berthed in Quebec City.

At the reception held onboard my war canoe a few days before, the Cdr of 5 Bde (Valcartier) told me that I need to leave harbour early as the presence of my ship at the start of the departure was politically undesirable. I politely informed him that with the Governor General in residence at the Citadelle, this was simply not on and that it was my intention to sail after 0800, proceed West to the Quebec Bridge, come about and as I pass Her Excellency's Summer Residence I would be firing a 21 gun salute.

As it happened, the CO of 5 RALC at the time was LCol Romeo D'Allaire, later LtGen, UN Cdr in Rwanda, Senator, etc.. I told him of this stating that I expect his reply of 21 guns on behalf of our Commander in Chief.

And this is how it went down. By the time I was East of the Citadelle I heard the 42nd gun.

If you can imagine, I had to vacate the premier jetty a few day before so that the grain carrier MV Prairie Harvest may me berthed there. Upon which were erected four huge candy striped marquis tents, one for the GG, one for the Premier, one for the Mayor of Quebec City and one for the CEO of the Jacques Cartier 450ième Corp and their entourage. (I moved into Basin St Charles now Fleet School Quebec's private jetty).

My role after sailing was to act as escort and SAR primary response down the St. Lawrence to North Sidney where, after a two day port visit I officially started the race to St Malo. It was a great event on a beautiful summer day. My guests included RAdm Freddie Mifflin, several politicians, federal and provincial, and a host of hangers on enjoying the Navy's hospitality.

My escort duties ended 200nm off the Canadian coast and I returned to Halifax. The trip down river was uneventful. I even conducted a three day port visit in Sept Illes and caught up with all the boats in North Sidney. They ranged from the big ones like the USCG Eagle, the German Gorch Fock, the Soviet Kruzenshtern, the Polish Dar Mlodziezy, Columbia's Gloria, Portugal's Sagres, etc. and down to thirty footers.

The Admiral joined me on arrival in North Sidney, gave me a handful of Dunhill Monte Cristo cigars (I later gave them to Charles Westropp, D1, a cigar connoisseur). He asked me to make sure I had a tape of 'Song of the Myra', apparently almost an anthem to the locals. I promptly dispatched a Sub to find one and consequently it was played on the upper deck broadcast, sung by Catherine McKinnon, throughout the day to everyone's delight.

As an aside, the Admiral was an ex-CO of Skeena and the youngest officer to command a Cadillac. He was Deputy MarCom when I took command. He asked me to call on him. We had a great chat and I will never forget his advice when he said "Steve, by taking command you have the instant and complete loyalty of your ship's company and only through your actions can it be lost." The next day I sailed with STANAVFORLANT.

As a postscript there is a tragic beginning to this story. D1(Skeena, Assiniboine, Margaree) with Preserver in company were in Bermuda when the class C race to Halifax was started. The Marques with 19 on board went down with all lives lost. We all sailed for the SAR mission. After a few days I was detached to sail independently to make my Quebec City commitment. Assiniboine under Wilf Lund did most of the work until the fleet arrived in Halifax.

This photo (unrelated and my favourite) was taken off Tahiti when as CO Provider I commanded the Training Squadron Task Group as a consolation prize for missing out on the 1991 Gulf War.

In fact I was tasked five times to take part in Operations Desert Shield and Desert Storm. They were all cancelled because things just moved too fast.

I was at sea on local ops when I was asked "How many 500lbs iron bombs and CRV 7 rockets can you take to Qatar to support F18 operations". It was the only FLASH message I ever received. My reply, based on a number of assumptions (no helos, magazines empty, ammo palletised, two pallets high in the hangar, flight deck and magazines, C130 style tie down straps in good supply), produced a number significantly high resulting in a tasking to return to Esquimalt, deammo, store ship and proceed to Prince Rupert to load. (apparently the ammo was on its way already in a fleet of eighteen wheelers from CFAD Dundurn and Vancouver did not authorise a transit through the city).

When I briefed the troops, the plan was a 79 day round trip with a Singapore port visit on the way back with the slight glitch of a mine field just before my anchorage off Qatar. When I saw the long faces I had basically two things to say: that on any good day we are sitting on tons of ammo and 119,000 barrels of fuel, so adding a few bombs here and there is not much of a change; and upon sailing from Prince Rupert we will all (300) shave our heads bald (including the 36 women in the ship's company) and take the mother of all ship's company photographs on the focs'l.

This did it as I had hoped. The worried looks disappeared and all the troops could focus on was the historic photograph. I did tell them that upon our return to Esquimalt after 79 days we should all have our hair back in any event. So off we went after deammunitioning at Rocky Point and picking up groceries for the trip.

Unfortunately, two days later and the day prior to our arrival in Prince Rupert the war ended and the mission was cancelled. We returned to Esquimalt. Just as well that my plan called for the massive SHAVEX after departure from Prince Rupert and not before. No one can believe how disappointed I was in this outcome. Less for missing the war, but more for missing out on the greatest photograph ever.

Even so, 1991 was a busy year. Two trips to Panama to escort HURON on her way to Iraq and later RESTIGOUCHE, on her way East to be the first

West Coaster to join STANAVFORLANT, a trip to Guam to meet HURON on her way home and a 15 week deployment with the Training Squadron to Hawaii, Tahiti, New Zealand, Australia and Tonga.

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MAGGIE'S DRAWERS

Jim Williamson

At first glance one might think that the painting on the next page was a marine salvage, recycling and disposable yard. Actually it is the cable deck of HMCS *Magnificent*, Light fleet carrier and once the pride of the Royal Canadian Navy. The year was 1952 and the place probably Valletta , Malta. The painting was done by then LCdr Anthony Law, DSC, MiD, CD, the ship's First Lieutenant Commander. LCdr Law was one of Canada's most notable Naval Official War Artists of the second world war. He also served as Commander of several Motor Torpedo Boats (MTB's). He was mentioned in dispatches in 1942 and again in 1943. In 1944 during the Normandy landings he Commanded a flotilla of MTB's and was awarded the Distinguished Service Cross.While in *Magnificent* he started a drawing class of 23 sailors who knew nothing about art. The following are excerpts from TIME magazine in November, 1952:

"Calling themselves Maggie's Art Club, they first tackled seascapes and carrier scenes. Later on shore leave in Greece, Malta, North Africa and Scotland, they hired buses and taxis to paint fishing boats, beaches and villages. Just how well Maggie's amateurs had done was apparent when the ship arrived in Halifax. One of the cities Art Galleries exhibited 48 of the paintings and crowds were large and impressed."

At the time I was a Petty Officer First Class in charge of the cable deck. When LCdr Law left the ship for a new posting he kindly gave me the painting - his own work of art. (next page)

(next page)

Pearl Harbour - 80 Years Later

Jeff Gilmour

I recently had the opportunity to visit Pearl Harbour for the 80th anniversary of the Japanese attack on this strategic USN facility and wanted to take the opportunity to reflect on that crucial battle.

The strike force for Japan's Hawaiian Operation assembled at Hitokappu Bay in the Kuril Islands in November 1941. The success of this operation depended on disabling the US Pacific Fleet located at Pearl Harbour in the Hawaiian Islands. Admiral Nagumo's oceangoing force consisted of six aircraft carriers, two battleships, three cruisers, and nine destroyers. Thirty submarines were deployed as scouts to attack any ship that attempted to escape the harbour.

The strike force settled 230 miles north of Oahu. From there, on December 7, 1941, at 6 am, the first wave of 183 aircraft began. At 7:49 am, the Air Group Commander Fuchida Mitsuo spotted seven USN battleships in Battleship Row on Ford Island. He then gave the call from Tora, Tora, Tora and the battle commenced. At 7:58, the alarm went out: "air raid, Pearl Harbour. This is not a drill." Within minutes the battleships Oklahoma, Nevada, California, and West Virginia were struck by torpedoes, and all were eventually sunk.

At 8:06 a 1,763 pound bomb hit the battleships "Arizona" which demolished the forward magazine, engulfing the ship in flames and causing a massive explosion that killed over 1,000 sailors. There are still reported to be over 330,000 gallons of fuel oil remaining in the hold of the ship. Several pints of oil are released each day based on the slick forming in the water close to the memorial. Although the Japanese lost 29 aircraft in this attack, the USN lost 18 ships, 347 aircraft with 2,403 Americans killed and 1,178 wounded. Eight US battleships were either sunk or damaged in this attack.

One of the additional historic sites at Pearl Harbour is the battleship Missouri, one of the four Iowa-class ships. It was on the deck of the "Might Mo" that the Japanese signed the surrender documents before General Douglas MacArthur. It is interesting to note this battleship served in WWII, the Korean War, the War in Vietnam and the recent Gulf War and was finally decommissioned in 1992. As with the Arizona memorial, the Missouri is also located and berthed at Ford Island.

December 7, 1941 is the "date which will live in infamy "as Franklin Roosevelt called it, and transformed America's place in the world. Both ships, Arizona and USS Missouri are the book-ends of World War II, stated James Newman, the official historian of Pearl Harbour's naval base. "Their legacy is with us every single day."

USS Arizona Memorial (Image: Creative Commons)

Canada Should Acquire Nuclear Submarines

Roger Cyr, OMM, CD

Canada has four rebuilt and maintainable conventional submarines that are stealthy, well-armed, and can patrol over vast distances. Their flexibility allows them to perform a wide range of unique naval missions. The navy states that they still have a good life in them with some modest investments. Given the origin of the subs, this is truly remarkable. It shows that the naval industry in Canada has the potential and knowhow to get involved in designing and building submarines.

Submarines are an essential component of any naval fleet, as a force projection instrument. A modern submarine is a multi-role platform which can conduct both overt and covert operations. In peacetime it can act as a deterrent as well as conducting surveillance operations and information gathering. In wartime a submarine can carry out several missions including denial of sea areas. Today's submarines can also be fitted with not only the usual torpedoes, but with missile systems similar to surface combatants. Almost all roles of surface warships will eventually be taken over by submarines, as they will be the only naval units capable of evading the increasing intelligence capabilities (space satellites, aircraft).

There is a global impetus for nations to build up their submarine arsenal. There are some 41 countries in the world, including Canada, who have submarines which shows the importance of these ships as defence assets. It should be emphasized that not all of these nations are not NATO members, and many are not peaceful nations.

Both Russia and China are actively pursuing the development of nuclear-powered submarines. Russia has 13 nuclear-powered submarines at different stages of construction at the Sevmash yard and are all expected to be delivered to the navy before 2027. China is constructing a major underground nuclear submarine base near Sanya, Hainan Island. In was reported that tunnels were being built into hillsides which could be capable of hiding up to 20 nuclear submarines from spy satellites. The next decade could see a major shift in the world of naval power, and more specifically nuclear submarine assets. China is forecast to become the world's most powerful navy, although it is still lacking the global sea power capabilities of its US counterpart. It is estimated that China will surpass the US Navy's submarine fleet by the year 2030. There are six nations that operate submarines with nuclear propulsion. These are: USA with 71, Russia with 33, UK with 11, France with 10, China with 3, and India with 2.

On September 16, 2021, it was announced that Australia will become the 7th nuclear nation. It indicated it would acquire a nuclear-powered submarine capability with support from the UK and the US. As a first step, it established a taskforce, AUKUS, that would devote 18 months to determine the optimal pathway to establishing this new capability. The taskforce has already signed an initial nuclear information sharing agreement. This new enterprise will be a massive undertaking and probably the largest and most complex endeavour Australia has embarked upon. The real purpose of the task force is to choose the strategic partner, either the US or the UK. At any rate, this is a lifetime opportunity for Canada to join this taskforce and explore the possibility of building nuclear submarines as well.

Canadian shipyards are certainly capable of building submarines. The National Shipbuilding Strategy (NSS) is a long-term project to renew Canada's federal fleet of ships for the Canadian navy and coast guard. A partnership was formed with three major shipyards to build and deliver combatant and noncombatant ships. The strategy provides economic benefits to the shipyards and their workforces, and it is rejuvenating the country's shipbuilding industry. The three major shipyards now building large ships are Davie, in Quebec, Halifax Shipyards in Nova

Virginia-class submarine, the mainstay of the US SSN fleet (source: wikimedia Commons)

Scotia, and Vancouver Shipyard in British-Columbia. Davie in Quebec was proclaimed North America's shipyard of the year in 2015. In addition, there are a dozen smaller shipyards that could provide support to the three main yards. The three major shipyards have shown their expertise and excellence in building any type of ship. The NSS is resurrecting the ship building industry in Canada, and it is creating thousands of professional jobs across the nation.

There is one reason to make a submarine nuclear-powered and that is its mission capabilities, providing for coastal defense and the protecting sea lanes by controlling the open ocean. Nuclear power enables a submarine to meet this requirement, as it allows for nearly unlimited endurance, with the nuclear reactor never needing to be refueled in a 25-year lifespan. This means that a submarine's restrictions are only crew limitations. Nuclear power provides submarines with a sustained submerged speed of more than 30 knots. Superior speed, range, stealth, and endurance make the nuclear submarine a very effective ship capable of projecting power.

Submarines are once again being recognized as a key factor in maintaining a powerful naval force. Historically it has proved impossible for a country to keep global military status, without dominance at sea. Since World War I, it has also been impossible for naval forces to hold superiority at sea, without the use of submarines. In fact, today the use of submarines is not only pivotal to naval campaigns, but with their growing missile capabilities, subs are also an important part of any major land offensive. Even before a conflict arises, a submarine's ability to deploy military strength to an area without being detected is strategically invaluable. Conversely then, the ability to neutralize an opponent's underwater force must be a primary objective. Each new generation of submarines has become quieter and harder to detect. In the end, if a submarine cannot be seen or heard, then it cannot be found, attacked, and destroyed.

It is time for the government to consider a new approach to the acquisition of submarine assets. Since Canada has built submarines before, it should then follow the method employed by Australia to acquire submarines. It should partner with a state-of-the-art submarine design and modify the design to meet Canadian requirements. As a first step, Canada should join the Australian tri-state submarine task force to gain knowledge in the process. The build of submarines would take place in Canadian shipyards as was done with the other ship construction.

Canada needs greater investments in defence to meet the security challenges in a world that is increasingly menacing and self-interested. Robust defence capabilities are needed to protect the country's core security interests and to make meaningful contributions to the security needs of allies and alliances. As a NATO member, Canada

must have relevant naval forces to contribute to the support of the alliance and share the associated burden of promoting world peace. Modern and effective nuclear-powered submarines need to be a part of a naval force of member nations to ensure global safety and stability. Australia's initiative of starting on the path of procuring nuclear submarines should be an example for Canada.

With regard to the use of nuclear power, there is a myth that it is harmful to the environment. It is clear that nuclear energy is clean energy since it is a zero-emission energy source. It generates power without the harmful byproducts emitted by fossil fuels which cause health hazards since it is carbon-free. As a source of energy, it is about 1 million times greater than that of other traditional energy sources and because of this, the amount of nuclear energy used is miniscule. Nuclear waste can also be reprocessed and recycled. Hence, Nuclear power in submarines is safe and sound for the environment and the crew and will keep a submarine at sea for decades

HMS Tireless, a Trafalgar-class submarine, which Canada considered procuring in the 1980s (image: Julian Merrill)

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 David Walter ATKINSON, CD*, RCN(Ret'd)

NACVI, 94 in Victoria 30/11/21. Jn'd RCN as Cdt at *Royal Roads* in '45. Prom Mid 03/07/47 thence *Niobe* (RN for Trg.) Prom S/Lt 03/11/48 and Lt 03/02/51 fll'd by *Stadacona* 06/51, *Wallaceburg* 10/51, *Swansea* 05/52, *Cornwallis* (P&RT qual) 05/53, *Naden* 06/54, *Venture* 08/54, *Stettler* 09/56 and *Mirimichi* (XO) 10/57. Prom LCdr 03/02/59 thence *Shearwater* 12/59, *Micmac* (XO) 07/61, *York* (RCAF Staff College) 09/63 and *Patriot* (COND Staff) 07/64. Ret'd in '92. (TA)

Capt Cecil Kenneth BAKER, CD, RCN(Ret'd)**

NACVI, 86 in Victoria 02/01/22. Jn'd RCN in '57 thence *Brunswicker* 03/09/59 as CTP Cdt. Prom S/Lt 01/5/63 fll'd by *Stadacona* 06/63, *Algonquin* 01/64 and *Nipigon* 04/65. Prom Lt 08/06/65, LCdr 01/07/70, Cdr 01/07/74 and Capt 01/01/84. NAVARCH who also srv'd in NDHQ and NEUP (i/c). Ret'd in '91. (RNDM)

Capt James Franklin CARRUTHERS, CD, RCN(Ret'd)

NAC-O, 78 in Ottawa 01/11/21. Jn'd RCN as Cdt at *Royal Roads* 01/09/61, thence RMC 09/63. Prom S/Lt 01/05/65 fll'd by *Stadacona* and *Terra Nova* (ASWDS Trials). Prom Lt 19/04/67 and attended NS Tech for PhD. Prom LCdr 01/01/72, Cdr 01/01/77 and Capt 01/01/81. Srv'd in NDHQ, CFCSC and NEU(A) Ret'd in '82. Civ career as CEO and President Norpak. Branch President 2009-11 and National President 2011-13. Gold Medallion 2013. (*Citizen*, e-Veritas)

Cdr John Edward DUMBRILLE, CD, RCN(Ret'd)**

NAC-O, 95 in Ottawa 09/12/21. Jn'd RCN as Cdt at *Royal Roads* 01/09/43. Prom Mid(E) 05/07/45 thence RN for Trg. (RNEC, qual "E" and "AE"). Prom A/S/Lt(E) 05/03/47, S/Lt(E) 05/10/46 and Lt(E) 05/08/48 fll'd by *Magnificent* 05/51, *Shearwater* 05/52, *Bytown* (NSHQ) 09/53 and *Ontario* 01/56. Prom LCdr E) 05/08/56 thence *Athabaskan* 01/57 and *Bytown* 09/58. Prom Cdr 01/01/62 thence *Crescent* (Sqn Staff) 09/6, *Algonquin* (Sqn Staff) 03/63, FOAC 04/63 and CFHQ/NDHQ in '66. Rert'd in '76. Civ career as DND Analyst. (WM, *Citizen*)

Cdr(NR)(Ret'd) David Grant FRAYER, CD*

Winnipeg Br., 80 in Winnipeg 07/11/21. Jn'd *Chippawa* as UNTD Cdt in '60, prom A/S/Lt 01/09/63 and S/Lt same date. Later prom Lt. and ret'd in '74. Jn'd Judge Advocate Reserve Branch in '76 and prom Cdr in '82. Srv'd as Military Trial Judge from '83 till retirement in '98. (WC)

LCdr(MT) William Roy HINDLE, CD*, RCN(Rrt'd)

NACVI, 96 in Victoria 11/01/22. WWII RCAF pilot and also srv'd RN(FAA). Post WWII qual pharmacist. Jn'd RCN at *Naden* 27/09/48 as S/Lt(SB) (sen. 27/07/48). Prom Lt(MT) 27/07/50 thence *Bytown* 08/51 and *Shearwater* 07/56. Prom LCdr(MT) 29/07/58 fll'd by Medical supply Depot Debert 10/62. Ret'd in '79. (RNDM, *Citizen*)

LCdr Frederick J. KEIZER, CD, RCN(Ret'd)**

NACVI, 79 in Victoria 09/11/21. Jn'd RCN as OS and CFR'd as S/Lt 15/12/71. Prom Lt 15/12/71 and LCdr 01/01/78. MARE MS who did tour as MARE Career Manager. Ret'd mid-1990's. Bronze Medallion 2003. (RNDM)

LCdr Peter Howard Douglas MacARTHUR, CD*, RCN(Ret'd)

NAC-O, 85 in Ottawa 19/01/22. Jn'd RCN as Cdt(E) at RMC 01/09/55. Prom S/Lt(E) 01/05/59 thence *Kootenay* 06/59, *Stadacona* 08/59 and *Restigouche* 01/61. Prom Lt 07/07/61 fll'd by *Chaudiere* 02/63 and *Niobe* (RNEC) 09/64. Prom LCdr 01/01/69 thence NDHQ. Ret'd in '81. (*Citizen*)

LCdr David MacGREGOR-GREER, CD*, RCN(Ret'd)

NACVI, 79 in Victoria 17/01/22. Jn'd *Carleton* as UNTD Cdt 01/61 and tsf'd to RCN as Cdt 01/09/63 at *Venture*. Prom A/S/Lt 01/09/64, S/T 02/07/65, Lt 02/09/68 and lCdr 01/01/78. LOGS specialist. Ret'd in '89. Srv'd term as NOAC National Treasurer and as NAC Foundation Treasurer. Bronze 2006, Silver 2011 and Gold 2014 Medallions. (RD, RNDM)

LCdr Gordon Douglas SAUNDERS, CD, RCN(R)(Ret'd)

Winnipeg Br., 100 in Winnipeg 15/12/21. Srv'd WWII as RCNVR signaller. Jn'd *Chippawa* 24/08/48 as RCN(R) S/Lt (sen. 23/11/45), prom Lt (sen. 23/11/47) and lCdr 01/01/65. Bronze Medallion 2013. (DS)

LCdr Harold Raymond STEELE, OC, CD*, RCN(Ret'd)

NSNAC, 92 in St. John's, NL 28/01/22. Jn'd *Cabot* as UNTD Cdt 02/01/51. Tsf'd to RCN at *Cabot* as A/S/Lt 18/09/52 thence *Ontario* 09/53 and *Magnificent* 07/54. Prom S/Lt 01/09/54 fll'd by *Niobe* (RN for Trg.) 12/54. Prom A/Lt 01/01/56 and Lt same date, thence *Nootka* 07/56, *Sault Ste Marie* 04/58, *Cayuga* 03/59, *Cornwallis* (Long "C" Cse.) 09/59, *Fort Erie* 09/60 and *Gatineau* (CCC5 Staff) 09/62. Prom LCdr 01/07/63 fll'd by Joint Maritime Warfare School 07/64. Also srv'd *Niagara* and lastly CFS Gander (i/c). Ret'd in '74. In business as head of Eastern Provincial Airways and later founder Newfoundland Capital Corporation. NOAC/NAC Honorary President 1999-2019. (WC, WM)

Cdr Robert Ashton WILLSON, CD, RCN(Ret'd)**

Toronto Br., 88 in Toronto 10/11/21. Jn'd *Star* as UNTD Cdt 02/01/52 and tsf'd to RCN as Cdt 22/09/52. Prom Mid 01/09/53 thence *Ontario* 09/53, *Toronto* 08/54 and *Magnificent*. Prom A/S/Lt 01/01/55 fll'd by *Niobe* (RN for Trg.). Prom S/Lt 01/01/55 thence *Haida* 11/56. Prom Lt 01/03/57 fll'd by *Bytown* (RCN rep RCAF Centralia), *Cowichan* (XO) 10/60, *Stadacona* 08/62, *Restigouche* 04/63 and *Stadacona* in '65. Prom LCdr 01/01/67 and Cdr 01/07/74. Also srv'd *Annapolis* (i/c), RN Staff College and in Norway. Ret'd in '86. 11 years as Capt (Manager) *Haida* whilst ship at Ontario Place. (JP, WC)

OTHERS

Lt(W) Andree Marie Anne ANDERSON (nee SAVOIE), RCN(SSA)

95 IN Ottawa 17/02/22. Jn'd RCN(SSA) 03/06/55 as S/Lt(W) (sen. 16/02/64) and prom Lt(W) 01/01/57. Srv'd *D'Iberville* and *Stadacona* (Asst. Sec. COMBRAX). Rls'd 12/06/58. (*Citizen*)

S/Lt(MED) Harry Ernest AFAGANIS, RCN(R)(Ret'd)

84 in Lethbridge, AB 25/10/21. Jn'd *Nonsuch* as UNTD Surg Cdt 02/01/56 and prom S/Lt(MED) 01/07/58. To Ret'd List in 1960. (WC)

LCdr Bruce Eugene BAKER, CD*, RCN(Ret'd)

90 in Ottawa 07/11/21. Jn'd RCN as Mid 16/10/52, prom A/S/Lt 06/11/53, S/Lt(P) 16/11/54, Lt(P) 21/01/56 and LCdr 01/01/66. Srv'd *Cornwallis, Ontario*, RCAF Centralia, *Niobe* (RNAS Culdrose and Eglinton), *Shearwater, Magnificent, Bonaventure*, RCAF Namao, *Naden,* CFB Montreal, NDHQ, VS-881, VX-10, VU-33, VS-880 and VU-32. Qual ATC and Bridge Watchkeeper. Ret'd 01/03/82. (JC, Canada's Naval Aviators)

S/Lt John Alexander BAKER, RCN(R)

82 IN Lion's Head, ON 31/10/21. Jn'd *Unicorn* as UNTD Cdt in '59 and prom S/Lt 01/07/62. Rls'd in '64. (WC)

S/Lt(S) Donald Morley BROCK, RCN(R)(Ret'd)

87 in Wasaga Beach, ON 11/01/22. Jn'd *Star* as UNTD Cdt(S) 02/01/55 and prom S/Lt(S) 01/09/57. To Ret'd List in '60. (WC)

Lt Derek BROWN, RCN(R)(Ret'd)

76 in Toronto 09/11/21. Jn'd *Scotian* as UNTD Cdt in '62, prom A/S/Lt 15/09/64 and later Lt. (WC)

CPO1 Wilfred BROYDEN, MMM, CD, RCN(Ret'd)**

81 in the UK 05/09/21. Srv'd 39 years on numerous ships and *Ojibwa, Onandaga* and *Okanagan*. (SR *Chronicle Herald*)

CPO2 Harold Curwin CROCKET, CD, RCN(Ret'd)**

89 in Halifax 25/09/21. Jn'd RCN as OS in '49. Srv'd, inter alia, in *Kootenay* at time of explosion. Ret'd in '83. (SR, *Chronicle Herald*)

CPO1[CWO] George Joseph DelFABRO, CD, RCN(Ret'd)**

87 in Comox, BC 03/10/21. Jn'd RCN as Air Fitter in '52, srv'd *Shearwater, Magnificent, Bonaventure,* CFB Petewawa, CFB Chatham, CFB Comox (Base CWO) and CFB Penhold. Ret'd 03/98. (SR, *Chronicle Herald*)

Cdr Michael Anthony DUNN, OMM, CD, RCN(Ret'd)**

02 in Qualicum Beach, BC 03/10/21. Jn'd RCN as OS. CFR'd as S/Lt 09/12/74, prom LT 01/01/77, LCdr 01/01/81 and Cdr 01/01/89. Srv'd, inter alia, *Grilse, Rainbow*, CFFS(Hfx), METR (i/c) and CDLS(L) (Asst NA). Ret'd around '94. (RH, *Times Colonist*)

S/Lt Peter James GOOD, RCN(R)(Ret'd)

75 in Kingston, ON 25/11/21. Jn'd *Cataraqui* as UNTD Cdt 01/66 and prom S/Lt in '68. (WC)

Donald Gordon GRANT, KStG

Former Member, 86 in Ottawa 26/12/21. Jn'd RCN as Steward and srv'd, inter alia, *Magnificent*. NAC Honourary Counsel. Bronze Medallion 1987. (Beechwood Cemetery)

PO Leonard C. HALEY, CD, RCN(Ret'd)

82 in Bridgewater, NS 23/09/21. Jn'd RCN as OS in 05/57, srv'd inter alia, *Nootka, Haida, Bonaventure, Preserver* and *Chaudiere.* (SR, *Chronicle Herald*)

CPO Kenneth HARRISON, CD*, RCN(Ret'd)

89 on the West Coast 08/08/21. Jn'd RCN as OS in "54, srv'd in 12 ships and ret'd 04/84. (SR, *Chronicle Herald*)

A/Lt Robert Frederick Joseph HICKERTY, RCN(R)(Ret'd)

94 in Medicine Hat, AB 16/10/21. Jn'd *Unicorn* as UNTD Cdt 10/01/49 and prom RCN(R) A/S/Lt 01/05/51. Tsf'd to *Queen* in '52 and confirmed S/Lt 01/05/51. Prom A/Lt 18/07/53 and to Ret'd List in '54. (WC)

Lt William Andrew HOLLAND, CD*, RCN(Ret'd)

82 in Ottawa 02/11/21. Jn'd RCN as OS in '57 and prom CPO1. CFR'd as Lt 01/01/80. Srv'd, inter alia, DDH 280 Project in Sorel and in NDHQ on CPF Project. Ret'd in '85. (*Citizen*)

LCdr Robert George HOWDEN, CD*, RCN(Ret'd)

82 in Ottawa 24/01/22. Jn'd as Cdt at *Venture* 04/09/56, prom Mid 01/09/58, A/S/Lt 01/05/59, S/Lt 01/05/60, Lt 16/05/62 and LCdr 01/01/76. Srv'd, inter alia, *Stettler, New Glasgow, Mirimichi, Jonquiere* and NDHQ. Ret'd in '87. (RD, *Citizen*)

CPO1 Ernest Hubert IRWIN, CD*, RCN(Ret'd)

In Truro, NS 23/10/21. Jn'd in 1951 and srv'd *Quebec, Magnificent, Cape Breton, Lanark, Ungava, Algonquin, Sioux, Yukon, Ottawa, Restigouche* and NDHQ. Ret'd in 1975. (SR, *Chronicle Herald*)

Capt Frederick Duncan JARDINE, CD*, RCN(Ret'd)

89 in Ottawa 22/11/21. Jn'd RCN as OS thence CTP Cdt(L) at *Royal Roads* 01/09/51 and RMC 09/53. Prom S/Lt(L) 01/06/55, Lt(L) 01/06/56, LCdr 01/01/64, Cdr 01/01/69 and Capt 01/01/77. Srv'd *Brunswicker* (UNB), *Stadacona, Bytown, Haida, Niagara* (USNPGS), NDHQ and NEU(A). Ret'd in '79. (KB)

CPO2 Burton Yuill KEEPING, CD*, RCN(Ret'd)

87 in Halifax 26/09/21. Jn'd RCN in '52 as a Cook and Ret'd in '83. (SR, *Chronicle Herald*)

CPO1 Erle Thomas KING, CD*, RCN(Ret'd)

92 in Dartmouth, NS 06/12/21. Jn'd RCN in '51 and srv'd *Cornwallis, Stadacona, Shearwater, Magnificent, Bonaventure*, TSD Mtl (Longueil) and CFB Bagotville. Ret'd in '72. (SR, *Chronicle Herald*)

A/S/Lt(E) Clarence William KIRKPATRICK, RCN(R)(Ret'd)

91 in Toronto 25/08/21. Jn'd *York* as UNTD Cdt(E) 15/01/50 and prom RCN(R) A/S/Lt(E) 01/05/52. To Ret'd List in '53, thence Active List in '60 as S/Lt E) sen 01/05/52 and prom A/Lt sen 19/11/59. To Ret'd List in '61. (WC)

LCdr(Ret'd) Douglas Malcolm McLEAN, CD*

65 in Chilliwack, BC 13/10/21. Jn'd as Cdt at RMC 08/75, prom S/Lt 01/05/79, Lt 01/01/82 and LCdr 01/01/90. Srv'd West Coast ships, Argentia (SOSUS station), CFFS(HFX), *Annapolis*, NDHQ, RMC (Master's degree), *Royal Roads,* CFCSC and CDLS(W) (Whidby Island). Ret'd in '05. (RG via Argonauta)

CPO1 Terrance Robert MELOCHE, MMM, CD, RCN(Ret'd)**

73 in London, ON 27/01/22. Jn'd as OS (Electrician) in '64. Srv'd, inter alia, *Stadacona, Cape Scott, Nipigon, Margaree* and *Ottawa* (Cox'n). Command CPO 1995-99. Ret'd in '99. Later Lt(CIL) and Cadet Liaison Officer for Southern Ontario. (WM).

Surg LCdr Robert Murray MUNDLE, CD, RCN(Ret'd)

89 in Charlottetown 15/10/21. Jn'd *Scotian* as UNTD Cdt 04/01/50, qual "P" and prom RCN(R) A/S/Lt(P) 01/05/52. To Ret'd List in '54 (on Rhodes Scholarship). To active RCN(R). as A/Lt(P) (sen. 10/07/54). Tsf'd to RCN as A/Surg S/Lt 26/09/58, prom A/Surg Lt same day and Surg LCdr 01/06/64. Srv'd *Donnacona, Montcalm, Shearwater, Bonaventure* and *Cornwallis*. Ret'd in '65. (WC)

Lt(L) Michael Andrew REIMANN, RCN

84 in Vancouver 26/10/21. Jn'd RCN as Cdt(L) at *Royal Roads* 09/09/54, thence RMC 09/56. Prom A/S/Lt(L) 01/05/58, S/Lt(L) 01/01/59 and Lt(L) same date. Srv'd *Star* (Westinghouse industrial tour), *Discovery* (UBC), *Stadacona,* and *Naden* (MEE branch Dkyd.). Rls'd in '63. (e-Veritas, WC)

LCdr Erling Brynjulf STOLEE, CD, RCN(Ret'd)

94 in Oakville. ON 08/02/22. Jn'd *Nonsuch* as UNTD Cdt 08/02/49. Tsf'd to RCN as A/S/Lt 15/05/50, prom S/Lt same day, Lt 01/03/52 and LCdr 01/03/60. Srv'd *Ontario, Stettler, Fortune, Naden, Fraser, Bonaventure, Niobe* (RN for Trg. and "N" Cse.) and OPVAL. Ret'd in '72. (*Citizen*, WC)

LCdr Raymond McLeod SUTHERLAND, CD*, RCN(Ret'd)

87 in Victoria 25/11/21. Jn'd *Scotian* as UNTD Cdt(S) 02/01/52, tsf'd to RCN as Cdt(S) 24/09/52 and prom A/S/Lt(S) 01/09/55, S/Lt(S) 01/09/56, Lt(S) 01/10/57 and LCdr 01/01/65. Srv'd *Naden, Ontario, Nonesuch* (Supply O.), *Hochalaga, Antigonish* and CFB Borden. Ret'd in '79. (WM, WC)

Capt(N)(Ret'd) Lloyd David SWEENEY

70 in Halifax 30/11/21. Jn'd in '72 and Cmn'd as S/Lt 27/03/75. Prom Lt 01/01/78, LCdr 01/01/85 and later Cdr and Capt. Had 24 postings including CFS Mill Cove, *Halifax* (i/c) and *Iroquois* (i/c). Ret'd in '05. (DS)

S/Lt Clifford Courtenay TAYLOR, RCN(R)

95 IN Toronto 26/10/21. Jn'd *Scotian* as UNTD Cdt 08/01/52, thence *Donnacona* in '54. Prom S/Lt 01/09/54. Rls'd in late '57. (WC)

PO1 Bradley Ray ZOLMER, CD, RCN(Ret'd)**

56 in Lawrencetown, NS 22/10/21. Jn'd in 1982, srv'd, inter alia, CFB Esquimalt, *Stadacona* and *Huron*. Ret'd in 2014. (SR, *Chronicle Herald*)

HMCS Windsor sails off the east coast of Canada during Exercise CUTLASS FURY 21 on September 9, 2021 (image: Capt Trevor Ackland, Canadian Armed