CANADIAN GLOBAL AFFAIRS INSTITUTE
INSTITUT CANADIEN DES AFFAIRES MONDIALES

# Canadian Anti-Submarine Warfare in the Future Strategic Environment

by Kate E. Todd

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# CONFERENCE REPORT

## CANADIAN ANTI-SUBMARINE WARFARE IN THE FUTURE STRATEGIC ENVIRONMENT

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## Keynote: How Does ASW Feature in the Canadian Armed Forces' (CAF's) Future?

**General Wayne Eyre** – Canadian Chief of Defence Staff

General Wayne Eyre, Canada's Chief of Defence Staff (CDS), opened the CGAI's conference on Canadian ASW in the future strategic environment, by highlighting the geopolitical shift that has occurred in recent years. He characterized this shift as a turning point in history, moving from a unipolar system led by the United States, to one where disruptive powers are threatening the rules based international order (RBIO). Russia's illegal invasion of Ukraine was used as a prime example of this threat. According to Eyre, as the world becomes an increasingly dangerous place, democracies that value the RBIO are in a "profound struggle" to protect our way of life against forces of authoritarianism. Failure to do so, he stated, "is not an option."

Discussing his recent visit to Singapore for the June 2nd to 4th Shangri-La Dialogue, the annual Asia defence summit, the CDS said that his time in the Asia-Pacific has driven home the importance of submarine capabilities, as our adversaries "go subsurface." Allies at the conference reiterated their commitment to the RBIO in the face of China, who continued their "trend of recklessness" during the conference. On June 3rd, a Chinese warship violated international collision regulations, threatening regional stability and chipped away at the RBIO.

General Eyre expressed that threats to the RBIO come in many different forms, from political polarization to urbanization, disinformation, and climate change. In addition to driving mass migration and competition over food and water supplies, climate change is increasing access to the Arctic region, which Eyre argued is more important to Canada now, than ever before. As Russian and Chinese interest and activity in the Arctic increase due to accessibility, so do threats to Canadian sovereignty and the risk of miscalculation in the Arctic. Threats from, through, and to the Arctic include advances in technology such as hypersonics, artificial intelligence (AI), and quantum, which are changing the face of defence – especially in the maritime environment.

The CDS spoke of how the undersea domain is changing as melting sea ice and exploration of underwater resources creates a noisier environment, and countries with submarines increase the quantity of them in their fleets. Russia is no exception to this. Although Russia now has fewer submarines than before the end of the Cold War, the submarines it has are quieter and more advanced than previous models, making them more difficult to detect and deter. Managing sound signatures of underwater assets and the ability of allies to identify signatures is key in ASW.

Since the end of the Cold War, NATO allies have reduced their ASW capabilities and, as a result, their assumed maritime advantage. Investment is necessary to bolster offensive and defensive ASW capabilities, especially in maritime nations like Canada. There is an economic imperative for allies to make these investments, as it only takes one submarine to close critical maritime and commercial shipping routes, cause damage to critical infrastructure including the 95 per cent of the world's fibre optic cables that are located underwater, and impact supply chains. ASW and allied submarine capabilities are expensive investments but are critical to retain command of the sea.

General Eyre noted Canada's recent investments in NORAD, surveillance, and its air and naval fleets are a starting point to restore Canada's ASW capabilities, but that more must be done.

## ASW: What is the Problem?

**Jennifer Parker**– Deputy Director of Defence, ASPI

**Dr. Rebecca Pincus** – Director of the Polar Institute, The Wilson Center

**Capt (N) John Strunk** – Director of Maritime Operations, US Navy

**Dr. Timothy Choi** – Moderator & CGAI Fellow

Jennifer Parker, the Deputy Director of Defence of the Australian Strategic Policy Institute (ASPI)'s Defence, Strategy and National Security program, provided an Australian perspective on ASW. She highlighted three key trends in submarine warfare in Southeast Asia: submarine proliferation due to the prestige associated with submarines and strategic competition in the area, increased domestic production of submarines, and countries adopting unmanned aerial vehicles. Seventy-five per cent of submarines outside of the U.S. are located in the Pacific, and this number is growing. For example, China's submarine presence in the region is large, with 12 diesel electric submarines with long range capabilities already in its fleet and 12 more expected to be added by 2040. Smaller countries such as Vietnam are also acquiring and indicating their interest in producing submarines, but Parker expressed concern about these countries' abilities to maintain their submarines once acquiring them due to the expense and expertise needed to ensure their seaworthiness. Along with these trends, there are countries in Southeast Asia that are investing in ASW capabilities to create 'systems-of-systems' to combat submarine threats, such as South Korea's procurement of Boeing P-8 ASW-capable aircraft. Pivoting to discussing AUKUS, Parker described the alliance as a three-phase agreement. Phase One will begin in 2026 with U.S. and UK submarines being rotated through Australia. In the 2030s, Phase Two will begin as Australia will acquire nuclear submarines. In 2040, Phase Three and the design of the AUKUS submarine will begin. In speaking of Canada's ASW capabilities, Parker emphasized the need for Canada to have a 'system-of-systems' to combat threats and the challenge Canada will face in replacing its Victoria class submarines, suggesting that Canada could learn from Australia's recent procurement experience.

Dr. Rebecca Pincus, the Director of the Polar Institute at the Wilson Center based in Washington, D.C., spoke of how submarine threats are emerging in the Arctic. As the geopolitical context shifts, the U.S. is now confronting Russia and China as peer competitors and has updated its Defense Strategy to reflect these changing realities. Despite Russia's significant reduction in overall military capabilities due to losses incurred during its illegal invasion of Ukraine, Dr. Pincus assured attendees that Russian's submarine capabilities are in great condition due to prior investments the state has made. However, Russia's terrible track record of repairs has led to an increase in accidents involving their submarines. China's submarines, she said, are a future threat.

However, military cooperation between the two countries is a risk, as Russia could share its underwater expertise with China in exchange for support in Ukraine. Dr. Pincus mirrored General Eyre's comments about the acoustic profile and climate in the Arctic experiencing rapid and major change as sea ice melts, temperature and salinity profiles shift, and parts of the Arctic Ocean undergo the process of Atlantification. She emphasized the regional differences in this process, as Canada's archipelago has more ice than other areas in the Arctic. Pincus also drew attention to the threat of submarine attacks on underwater critical infrastructure, referencing incidents affecting subsea fibre optic cables and gas pipelines in recent years. In discussing the future of ASW in the Arctic, Pincus argued that Greenland's political independence is an important facet of the geopolitical shifts affecting the Arctic and that Canada should consider low-cost investments to bolster their ASW capabilities, like Maritime Surveillance and Control Aircraft, towed arrays, and unmanned systems for surveillance.

Captain (Navy) Strunk, the Director of Maritime Operations for the U.S. Navy's Submarine Group 2 based in Norfolk, Virginia, emphasized that the main threat posed by submarines is the resurgence of submarine operations in the world, as well as the proliferation of new ASW technologies, capabilities, and submarines themselves. The willingness of nations such as Russia to expend extreme resources on national objectives including submarines and submarine capabilities is a threat to North America due to the long-range striking distance of these assets. Their submarines, although not as capable as the U.S.' Virginia or the United Kingdom's Astute classes, are state of the art and only getting more advanced. Therefore, it's important for allies to keep their technological edge. Investing in technology like AI and machine learning, that can't be bought quickly, is essential to do so. Captain (Navy) Strunk brought attention to the possible difficulty allies may have protecting against submarine threats in the high north, due to the environment being inhospitable for operating ASW assets like ships and aircraft. Geographic considerations also make ASW in the high north particularly difficult, as the mid-Atlantic ridge allows submarines to disappear along the contours of the seafloor below. According to Strunk, layered allied ASW operations are needed to prosecute submarines in these complex environments. Canada's geographic position and ASW capabilities, such as the CP-140 Aurora long-range maritime patrol aircraft, are needed as part of allied continental and Arctic defence.

## How Can Digital Transformation and New Technology Enhance ASW?

**Warren Connors** – Underwater Warfare Section, Defence Research and Development Canada

**Capt (N) (ret'd) Lloyd Hewitt** – Director of Business Strategy, Microsoft

**VAdm (ret'd) Ron Lloyd** – Strategic Advisor, Accenture & CGAI Fellow

**Julia Scouten** – Moderator & President of Women in Defence and Security (WiDS)

Warren Connors argued that the Royal Canadian Navy (RCN) is data driven. Forethought about how data is used and how data models are trained, is necessary as militaries increasingly rely on

data driven technology. For example, as submarines are getting quieter and more efficient, better sensors are needed to detect them. These sensors, however, produce vast amounts of data. They produce so much data, that humans alone struggle to make use of it. Algorithms and AI can fix this by sorting and fusing this data into usable information in a timely way, so Command can rely on it for decision-making. The integrity of information like this, on the other hand, has always been an issue for militaries. Encryption is a traditional way of minimizing this threat. Another way of protecting the integrity of information, says Connors, is to send less of it. By filtering data and only communicating relevant information, less can be intercepted and it is easier to protect. Data is only useful, Connors argued, when it is shared.

Lloyd Hewitt, the Director of Business Strategy (Defence) of Microsoft's Worldwide Public Sector (Defense & Intelligence) organization, spoke about the importance of 'edge computing,' which is offering computer technologies wherever they are needed – including the front line. To do this, he emphasized the need for technology to compress large swaths of data, filter it using AI, and send the relevant and right insights to the right person at the right time. Hewitt argued that having humans 'in-the-loop' of AI, deciding which data is relevant and important, is essential, but that with the amount of data available, humans processing it need AI to give them a queue that some of the data could be more important than others. Machine learning, he said, could strongly aid operators. To implement it, policies need to be interpreted properly and trust in the abilities of these new technologies needs to be developed. In terms of cyber security, Hewitt emphasized the blurring lines between state actors and cybercriminals as potential adversaries. Defence organizations, he argued, need to rethink their more traditional security paradigm to account for this new environment.

Ron Lloyd emphasized that a digital transformation is needed in the CAF to enhance combat, personnel, and material readiness. Policy and defined frameworks need to be created to enable our Forces to use AI and machine learning. In additional, operators need to trust the risk tolerance and decisions of senior officials who create these policies. AI and machine learning technologies, said Lloyd, require innovation to be useable in the battlespace. Algorithms these technologies rely on need to be trained in that space to be successful. To train these algorithms, data is needed, which creates a difficulty. Who owns the data? The answer to this question, Lloyd argued, affects the usefulness of the data itself. In Canada, there are 21 functional authorities who own data, and our classification and categorization of sensitive data is decades out of date. Canada's security classification framework stymies information sharing with its allies, putting us at a disadvantage. Five Eyes has codified impact levels for sensitive information, and Canada has not followed suit. One example of Canada's dated policies is its unwillingness to aggregate its data. This unwillingness, Lloyd argues, stems from a fear that doing so will make it easier for adversaries to access it. However, our adversaries are already aggregating Canadian data. By aggregating its own data, Canada could help protect it, rather than risk its security. Overall, the more digitally enabled the CAF are, the more horizontal the organization can become, leading to better decision making.

**What are We Already Doing Operationally?**

**MGen Iain Huddleston** – Commander of 1 Canadian Air Division, Royal Canadian Air Force

**RAdm Brian Santarpia** – Commander of Maritime Forces Atlantic, Royal Canadian Navy

**Dr. Rob Huebert** – Moderator & Professor at the University of Calgary

Rear-Admiral Brian Santarpia, the RCN's Commander of both the Maritime Forces Atlantic and Joint Task Force Atlantic, described how we are seeing a resurgence in ASW as the 'post-Cold War' moment, where the U.S. was the uncontested superpower of the world, has drawn to a close. This moment, according to Santarpia, was shorter than allies thought – having been over by 1995 to 1996, if it ever existed at all. Russia has never given up or lost focus on its submarine force. Now, China has also joined this great power competition and is rapidly building ships to add to its naval fleet. Both Russia and China see the value of submarines, in that submarines enable them to threaten the destruction of critical infrastructure and national security as well as deny allies the ability to control the seas. Submarines allow states to use an A2/AD strategy, also called an anti-access/area denial strategy, to control access to and within marine environments. To combat this, Canada uses a 'system-of-systems' strategy that is similar to what it used in the Cold War, where multiple assets are used in tandem to detect, deter, and potentially defend against submarine threats. Canada, said Santarpia, never stopped ASW but did prioritize other theatres, including the Middle East, in recent years. Canada continues to train sailors in ASW, fly CP-140 Aurora long-range maritime patrol aircraft with ASW capabilities, have sensors on ships upgraded, and practice ASW as part of ships pre-deployment high-readiness work up exercises. However, with Canada's submarines aging, they require more maintenance, leaving less time for sailors to train and get the experience they need to operate them effectively. Looking to the future, Santarpia argued that uncrewed platforms would allow the Navy to conduct better forward analysis of situations and push further than assets have previously allowed Canada to do.

Major-General Iain Huddleston, the Commander of the 1 Canadian Air Division of the Royal Canadian Air Force (RCAF), emphasized that Russia and China have been modernizing their fleets while Canada's aging assets and personnel strength has reduced its capacity to operate. China, for example, builds one new nuclear submarine per year and now has over 70 submarines in their fleet. Russia also has over 60 submarines, compared to Canada's four. In the RCAF, long-range patrol aircraft and helicopter fleets have always had an ASW focus. When Canada's priorities shifted to the Middle East, the fleets were used for intelligence, surveillance, and reconnaissance abroad. Now, with the focus of ASW being closer to home, Canada needs to focus on interoperability to make the most of these assets – especially to bolster open ocean search capabilities. As new ASW technologies emerge, threats to, and opportunities for Canada do as well. Longer range weapon systems with better targeting abilities, including submarine launched air missiles, threaten Canada's assets and security. Better sensing and communications equipment, on the other hand, could allow Canada to fix capability gaps in wide area search and make interoperability between assets and allies seamless. As renewed attention is given to ASW,

Huddleston made a point that, although nuclear weaponry associated with submarines is a threat to Canada, preventing the use of conventional weapons is Canada's primary concern.

## Keynote: How Will ASW Shape the Future of the RCN?

**VAdm Angus Topshee** – Commander, Royal Canadian Navy

Vice-Admiral Angus Topshee, the 38th Commander of the RCN, gave a keynote speech about how ASW has shaped the Navy in the past, and how it will continue to in the near and midterm future. Looking back to historical periods where other important geopolitical shifts have occurred, Topshee drew parallels between the military, ideological, economic, and media climates of the 1890s, 1930s, and now. In both the 1930s and 2020s, airborne viruses had swept the globe, states' focus shifted to military investment, and authoritarianism and political polarization were on the rise. In the 1890s and 2020s, news sources were proliferating, and already vast wealth inequality was increasing. In the 1890s, print technology led to the advent of 'yellow journalism,' where sensationalism was more popular than fact, and Robber Barons ran rampant. In the 2020s, the same has occurred as the internet and social media now allow anyone to create news, confusing citizens' conceptions of the truth, and technology-sector billionaires reign as titans of industry. The summation of either proceeding period, said Topshee, was a World War. We need to be prepared for and able to deter another.

When Canadians think of ASW during the Second World War, their minds are drawn to the Battle of Atlantic by default. The Battle of the Atlantic was Canada's longest continuous battle in the war and featured valiant Canadian efforts to protect supplies being sent to the UK from the threat of U-Boat submarines lurking below. However, ASW was also fought in the Pacific and was very different. Unlike the protected Halifax Harbour, there are no chokepoints in the Pacific where submarines could more easily be detected and destroyed. Another often overlooked aspect of the war, is that Canadian ships were sunk in Canadian waters, as far inland as Trois-Riviere in Quebec. To protect against threats to national security posed by submarines, Canada needed and continues to require a capable Navy, assisted by the Air Force.

During the war, processes and technologies improved as a result of military innovations, enabled by industry. Depth charges were further developed into anti-submarine mortars, called hedge hogs, that were instrumental in prosecuting U-Boats. Canada built the Corvette class, designed to for ASW and to fit through Canada's existing lock system. The enigma machine and advances in code-breaking allowed allies to intercept and decode enemy transmissions. Due to Canada's pioneering efforts, creating large anti-submarine helicopters and the Corvettes, the Navy continued to focus on and develop ASW capabilities up until the end of the Cold War.

Now, Topshee stated, there is no doubt about the global proliferation of submarines and ASW technology. Today, 44 navies possess this incredible asset. In the future, ASW could change radically. The oceans could either become more transparent or opaque due to technological innovations. Sensing abilities may make it easier to detect and destroy submarines, eliminating

the deterrent created by deployed submarines. On the other hand, signature management technology could make finding submarines even harder, changing risk calculations. Until now, allies have not focused on signature management as they have been assumed to have sea control. To better protect against threats of state and non-state adversaries targeting our capabilities and assets with submarines as well as unmanned vehicles, ASW needs to be thought of more holistically as undersea or seabed warfare to capture changing realities.

Challenges to ASW vary in different theatres. The enormity of the Pacific and seasonal changes in the Arctic make ASW in the regions demanding. As an expeditionary theatre, operations the Arctic are particularly difficult. Unlike more developed areas, Forces must bring all supplies with them to and from the Arctic. Fortunately, NORAD's continental defence framework captures these idiosyncrasies.

To combat ASW threats, Canada does and will rely on four Cs: the Cyclone helicopter, the CP-140 long-range maritime patrol aircraft, the upcoming Canadian Surface Combatant ships, and the Canadian Patrol Submarine Project. An upgrade to the Cyclone's mission suite and the procurement of the ASW-capable Canadian Surface Combatant to replace Canada's aging frigates are underway. The Canadian Patrol Submarine Project is actively working towards determining what type and how many submarines will be required to replace Canada's current Victoria class. Topshee argued that to protect Canada well, we need to be able to patrol our own waters. To do this, at least eight submarines need to be purchased, so four can be stationed and deploy on each coast. To manage Canada's third ocean, the Arctic, another four submarines are needed.

In closing, Topshee emphasized that the future of ASW in the RCN "looks a lot like the past." Like during the Second World War, innovations are needed to protect against and outmatch adversaries. Civilian industrial innovations should be leveraged and incorporated into war platforms to ensure allies retain a technological 'edge.' Fortunately, in Canada, "we have all of the assets we need… to face that."

## How Can Canada Leverage International Industry Expertise?

**Cmdre (ret'd) Jamie Clarke** – Business Development Manager, Lockheed Martin Canada

**Cmdre (ret'd) Mike Knott** – Maritime Capability Advisor, BAE Systems

**MGen (ret'd) Michel Lalumière**– International Strategic Development, General Atomics

**Dr. David Perry** – Moderator & President of the CGAI

Mike Knott spoke of the need for persistent and available high capability assets within, what previous speakers described as, a 'system-of-systems' ASW strategy. The Canadian Surface Combatant has been shaped by the UK's experience of procuring new ASW-capable ships. In the post-Cold War era, assets have been designed as multirole platforms. Since 2012, when focus began shifting back to ASW, ASW capabilities and platform resiliency became necessary for new

designs. An example of the type of resilience assets require is the fuel capacity and signature management of the UK Type 26 frigate, which the Canadian Surface Combatant is based on. It can transit across the Atlantic twice before refuelling and is much less detectable than the current Halifax class. Canada benefits from having the new combatant built later than the UK Type 26. The industrial technology to build them has a proven track record of success, allowing Canada to bypass potential production challenges, and Canada can learn from how the UK has operationalized their new frigates. Additionally, due to the adaptability of BAE's digital design, local content and requirements can easily be added. To best leverage opportunities presented by this platform, Knott argued that Canada ought to "open previously closed curtains" and embrace data sharing between allied countries who will all operate variations of the same platform.

Michel Lalumière highlighted that a key to success in ASW is the ability of nations to integrate different platforms and domains. Integration has become a buzzword, much like 'interoperability' and 'interchangeability,' which all point to a state's ability to foster cooperation between military elements and assets. Lalumière argued that this ability to integrate and cooperate should be measurable and tracked. Along with this measurement of integration, a definition needs to be formulated to describe what a 'systems-of-systems' is. This definition should make explicit that this system includes mixed fleets with systems aboard assets that complement others. In terms of integrating crewed and uncrewed assets, Lalumière discussed how the right assets need to be chosen to achieve specific goals. The 'right' assets for intelligence, surveillance, and reconnaissance are those that are agile, adaptable, and affordable. Unknowns and ambiguity, said Lalumière, pose risks, necessitating specificity about terms and the military's requirements.

Jamie Clarke discussed the first principles of ASW and the need for nodes, sensors, and networks to use and create necessary data. Submarines, according to Clarke, provide their owners with stealth, persistence, and lethality. Submarines can operate stealthily for months at a time but compromise their ability to remain hidden when they receive and send data to and from shore. Such data is needed to prosecute other submarines or threats. When submarines conduct intelligence gathering, surveillance, or reconnaissance, they also subject themselves to the risk of being more easily detected. Submarine captains and senior officers ashore need to trust each other and work together to decide when such risk should and can be tolerated. Aboard submarines, navigation systems, echo sounders, devices to measure the acoustic environment including the sea temperature, and other computers are used to prosecute other submarines, decide where to go and what armament is best for the situation at hand. In discussing needs for future submarines, Clarke said that interoperability should be considered as well as what is actually meant by 'military-off-the-shelf' models. If it means a step backwards it terms of capabilities, like no longer being able to use Mark 48 torpedoes like our allies do, further thought should be put into whether 'military-off-the-shelf' is the best procurement option. Options that allow for interoperability with allies should be prioritized.

**What Does the CAF's ASW Future Look Like?**

**Capt (N) Blair Brown** – Commander of CF Maritime Warfare Centre, Royal Canadian Navy

**Warren Connors** – Underwater Warfare Section, Defence Research and Development Canada

**Col Peter Saunders** – Royal Canadian Air Force

**Dr. Rob Huebert** – Moderator & Professor at the University of Calgary

Captain (Navy) Blair Brown identified challenges the CAF faces in conducting ASW and solutions to them. Instead of thinking of the acquisition of a 'system-of-systems' as the solution to an ASW problem, the CAF needs to think about how it acknowledges the relationships between assets and abilities it has to use them together. When training for ASW operations, sharing information between assets regarding what their sensors detect, leads to optimal performance. Going forward, the Navy is undergoing four platform-specific projects to further develop its ASW capabilities. First, it is upgrading the sensor suite and its ability to analyze sensor data on the Halifax class frigates. Second, the Halifax class is also being upgraded as part of the Integrated Torpedo Defence Project that will allow the ships to better sense and defeat inbound torpedoes. The third and fourth projects upgrade the torpedo capabilities on both the Victoria class submarines and Halifax class frigates. The RCN is also pursuing procurement projects for towed and beached arrays that will provide data and analysis of water characteristics, allowing for better control and monitoring of waters and chokepoints.

Warren Connors, the Underwater Warfare Section Head at DRDC, pointed out that surveillance issues create a lack of understanding about the underwater environment that is needed for success in ASW. With a lack of data and information about the underwater environment, it is difficult for the CAF to know where to put and how to use technological systems. The trust and integrity of systems relies on their use being data driven. To ameliorate this, non-traditional sources of data need to be leveraged to create a better and more accurate maritime picture. In the Arctic, past DRDC projects, like the 'Ice Pick' geobuoy and 'Spinnaker' optical cable trials, inform future deployments of experimental technology. Lessons learned about the harshness of the Arctic have taught DRDC to create technologies with robust and persistent capabilities.

Colonel Peter Saunders of the Royal Canadian Air Force, in charge of contracted training programs and leading the Air Force component of NORAD modernization, described how the Air Force contributes to ASW and the status of NORAD modernization. Out of the Air Force's three platforms, two are for ASW. These assets are able to collect intelligence and perform reconnaissance for whatever mission is at hand. The RCAF is strongly linked to ASW due to their ability to detect and target submarines, as well as the risk submarines pose to air assets in their ability to strike them from the water. When servicemembers train on RCAF assets, ASW operations are seen as a challenge. "If you can do ASW," said Saunders, "you can do everything else." Turning to NORAD, Saunders said that the focus is largely on increasing domain awareness. Investments are being made in Over the Horizon radar and easy detection systems to increase surveillance capabilities, particularly in the North.

**How Do We Work Best With Allies?**

**Gp Capt Richard Berry** – Deputy Force Commander, Royal Air Force

**Cmdre Micheal Jacobson** – Director Submarine Policy and Plans, Royal Australian Navy

**VAm (ret'd) Mark Norman** – Moderator & CGAI Fellow

Mark Norman started the session by discussing the three Cs of interoperability: capabilities, competence, and coordination. When working with allies towards common goals, understanding all three components of interoperability is key.

Group Captain Richard Berry, the Deputy Force Commander for the Royal Air Force's Intelligence, Surveillance, Target Acquisition and Reconnaissance Force, spoke about how the UK recently released an updated version of its Integrated Review of the government's development, defence, security, and foreign policy strategic ambitions to reflect changes in the global context since 2021. The Review drove home that unless democracies like ours do more to out-cooperate and out-coordinate our adversaries, the geopolitical picture will just get worse. Allies do a lot of good thinking around international security, said Berry, but that thinking hasn't been turned into investment decisions and funding. Although allies have strong relationships with one another, there is work to be done on resilience of capabilities and how to work together in the high north. No thought has been put in as to how to replace assets quickly if they were to be taken out. To be a good ally, Berry argued, you must be clear about what capabilities you want or have, and those capabilities have to be credible and lethal. When procuring assets there will always be a compromise between the cost of the asset, the time it takes to deliver it, and its performance. Everyone, including allies, need to be clear about what compromise a given country has decided on.

Commodore Micheal Jacobson emphasized that to best work with allies, one must ask and get the right answers to the right questions. This, he said, lets you identify the problem you are working together to solve. In this case, is cooperation for ASW or undersea warfare writ large? A common understanding and language of a common problem allows allies to begin fixing it. The recently created AUKUS alliance is an example of how Australia came together with the U.S. and UK to solve a common challenge. AUKUS allows for the sharing of technology and greater collaboration on all levels. In times where allied cooperation is needed, said Jacobson, one of the things that can't be surged is trust. Trust between allies needs to be fostered at all times, so when allies are needed, their help can be depended on. An example of enduring trust is the Five Eyes partnership between Australia, Canada, New Zealand, the UK, and the U.S. However, as geopolitical threats shift, other partners are needed as well, such as Japan and South Korea. Another area where allies could improve cooperative efforts is aligning their defence industrial bases. Despite data and intellectual property hurdles associated with this, it is essential that allies collaborate in this way. Reflecting on Australia's experience, Jacobson noted that the best way to be an ally, is to be able to protect your own sovereignty and have assets that are interchangeable and interoperable with the assets of your allies.

**How Can Canada Leverage Canadian Industry?**

**RAdm (ret'd) Chris Earl** – Vice President of Project Delivery, Seaspan Victoria Shipyards

**Col (ret'd) Jason Kenny** – Director of Business Development, IMPAAD

**Col (ret'd) Jeff Tasseron** –Director of Strategic Growth and Acquisitions, CAE

**Col (ret'd) Patrick Thauberger** – Director, General Dynamics Mission Systems – Canada

**Dr. David Perry** – Moderator & President of the CGAI

Chris Earl emphasized that Canada's workforce is incredibly skilled, with tradespeople and engineers who excel in the defence industry. However, with a labour shortage creating competition for new hires, companies need to prioritize what is important to them. "Industry," said Earl, "can turn out anything you want, given the right tools." In Canada, there is an expectation that the defence industrial base can react to current needs when they arise and complete whatever transactions are necessary. According to Earl, a more accurate depiction is that the industrial base is more like an insurance policy for Canada. It ensures that in times of need, Canada and allies have the necessary tools. In a way, treating the industry as a transactional entity makes it so Canada does not control its own defence, security, and resiliency. "Until we support the defence industry base," Earl argued, "we don't control our destiny." Canada's Shipbuilding Strategy is an example of an industrial strategy that will benefit the defence industry and CAF going forward. By creating and maintaining a sovereign shipbuilding capability, Canada has more control over its ability to produce the ships it and allies may need, and companies working in the industry and their employees are ensured that there will be decades of sustainable work in the country. Due to Canada's procurement practices, companies in the defence industry are often left wondering at the end of a project, "what's next?" The creation of strategic industrial partnerships could get rid of that uncertainty.

Jason Kenny argued that Canada's defence industrial base has a lot to contribute to global security. Our industries and experiences allow us to create technology that can withstand harsh environments, earning us the trust of allies as they upgrade their assets. A strategy is needed to foster the aerospace and defence sector and focus the industries efforts. Canadians in the defence industry have training and clearances that aren't widely available elsewhere. However, there is a limited pool of talent. Industry, therefore, must start thinking about how to attract employees from non-traditional backgrounds and train them to understand the sector. This, said Kenny, is where the industry could work with government on initiatives like job training. To take advantage of Canada's well-developed industry, it needs to play the long game. The defence industry works with long lead times, necessitating long term relationships and trust between industry members and the Government. To keep pace with our adversaries, procurement needs to be sped up, and leveraging industry can help do that.

Jeff Tasseron highlighted that Canada's aerospace industry is strong, with Montreal being one of the top aerospace hubs in the world. For example, CAE is one of Canada and the world's leaders

in air training. Along with aerospace, Canada has a strong AI sector as well as other technology sectors such as nuclear power. However, the defence industrial base, as it stands, relies on program-by-program procurement processes to make profit. A managed defence industry could offer sectors like AI and aerospace the same opportunities given to shipbuilders. In an already heavily regulated and distorted market, this would be an opportunity to create stability and resilience across the defence industrial base. Industry, said Tasseron, should take the lead in this. Collaboration between industry leaders and with the government is necessary to create a national industrial policy that leverages Canadian industry to the fullest extent possible.

Patrick Thauberger spoke of how the pandemic showed allies and industry how fragile supply chains are. This, he said, is why Canada needs a national industrial policy to state its priorities and what it needs from industry partners. As the labour shortage makes it hard to attract qualified talent, it is hard to retain talent as well without a policy guaranteeing companies some stability in terms of contracts and income. In the past, employees in the defence industry would join a company and stay for life. This, says Thauberger, is no longer the future of the industry, as talent have more options for employment. Procurement processes in Canada, are 'stand-alone' projects that should be part of a grander strategy. Canada's defence industrial base possesses unique expertise as a result of many decades of past investments that should be celebrated, preserved, protected, and enhanced.

# About the Author

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*At Munk, Kate is pursuing a collaborative specialization in ethnic, immigration, and pluralism studies, is a research assistant under Dr. Phil Triadafilopoulos, and received SSHRC funding to study how to develop multi-purpose defence infrastructure in the Canadian Arctic, while respecting the United Nations Declaration on the Rights of Indigenous Peoples.*

*Kate graduated with high distinction with a Bachelor of Arts with Honours from the University of Toronto in 2022, where they completed a specialization in political science and a minor in public law and was awarded the tri-campus Moss Scholarship for being top student. In the summer of 2022, Kate completed a week-long diplomacy and geopolitics program at Oxford University and a 5-week immersive intermediate level French program at York University.*

*Kate is passionate about protecting Canada's interests and security while promoting human rights and positive change. They are a fellow with the North American Arctic Defence Security Group, the Policy Insights Forum, and the NATO Association of Canada, and volunteer at in various capacities at the Munk School and within their local community.*

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