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THE NEED FOR SUBMARINES IN THE ROYAL CANADIAN NAVY

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JCSP 47

Service Paper

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CANADIAN FORCES COLLEGE - COLLÈGE DES FORCES CANADIENNES

JCSP 47 - PCEMI 47
2020 - 2021

SERVICE PAPER – ÉTUDE MILITAIRE

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Word Count: 2,320

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THE NEED FOR SUBMARINES IN THE ROYAL CANADIAN NAVY

AIM

1. Canada requires submarines to meet the objectives outlined in the current defence policy *Strong Secure Engaged*. The aim of this paper is to demonstrate why the Royal Canadian Navy (RCN) requires a submarine service by investigating how the unique capabilities provided by submarines can be used to achieve strategic and tactical effect. This service paper is directed towards the senior leadership within the RCN, its value will be the ability to convey to strategic leaders the importance of submarines to achieve the mandate outlined in the current defence policy.

INTRODUCTION

2. A submarine is an extremely versatile platform that provides enhanced sense, shield and act functions within the maritime domain. The presence of a submarine in an operational theatre carries a strong strategic message on behalf of the Canadian Government. When incorporated into a naval task group, a submarine acts as a force multiplier that enhances the task group's organic capabilities and provides additional options to the operational commander. The value of the submarine as a naval weapon is recognized by several nations, who are actively seeking to acquire or expand their submarine capabilities.

3. To assess the requirement for Canada to operate submarines, this paper will analyze the strategic direction provided to the Canadian Armed Forces (CAF) within *Strong Secure Engaged*. Having established the mission space for the RCN, this paper will assess the necessity of submarines by looking at how their unique capabilities can contribute to operational success at home and abroad. In discussing the importance of

submarines, this paper will include the technologies and capabilities of modern submarines, which may exceed the capabilities of the current *Victoria* class. To complete this analysis, a high-level look at the costs to acquiring and operate a modern submarine will be used to provide context on the relationship between the strategic benefits and cost of a modern, non-nuclear submarine.

DISCUSSION

Defence of Canada

4. The *Strong in Strong Secure Engaged* refers to being strong at home through the defence of Canada. From a naval perspective this means defending Canada's maritime sovereignty, protecting its maritime interests and working jointly within a whole of government framework. This section is going to explore how the presence of a Canadian submarine can provide a major strategic advantage in the defence of Canada in the Atlantic and Pacific Oceans, while the uniqueness of Arctic operations will be discussed in the subsequent section.

5. The possession of a capable submarine force provides the Canadian government with the strategic option of sea denial for the defence of Canada, particularly in the face of a more powerful opponent. The difficulty for surface vessels to detect a submarine combined with the effectiveness of a torpedo makes the presence, or even the suspected presence, of a submarine a significant risk to any surface force. Any adversary seeking to project power within Canadian waters will have to assess the risk posed by Canadian submarines. If there are insufficient surface vessels or they lack sufficient air assets to concentrate their forces against the subsurface threat, then the risk may exceed their willingness to operate in the given area. While the *Halifax* class frigates carry the

harpoon anti-ship missile, they do not possess the same ability to exert a sea denial strategy as compared to a submarine.

6. By having a capable submarine force, the Government of Canada retains the strategic option of *selective disclosure*, which is the ability to divulge or deny the operating location of their submarines depending on the desired strategic outcome.¹ A submarine's ability to operate unbeknownst to the threatening force provides a significant advantage to Canada, which is why the locations of submarines are closely guarded national secrets. However, depending on the situation, Canada could overtly state or merely suggest the location of a Canadian submarine through the exercise of selective disclosure. This could force the enemy to re-evaluate the risk associated with their intended mission and potentially resolve a conflict before further escalation. A suspected example of this in practice took place during the 1995 Turbot War with Spain. Following the seizure of a Spanish fishing vessel off Canada's exclusive economic zone, Spain sent patrol ships to protect its fishing fleet who remained in the area. Despite the presence of two RCN destroyers, an undeterred Spanish government supported by the European Union, announced that they were going to send a larger naval task group into the area. Using selective disclosure, Canada activated NATO safety protocols for submarine operations thereby disclosing to Spain, a NATO ally, that RCN submarines may be operating in the contested area. In the end the Spanish opted not to deploy their larger taskforce resulting in a diplomatic resolution.² The potential of submarines operating in the area forced Spain to reconsider further escalation. In another aspect of the selective

¹ Commander Michael Craven, "A Rational Choice Revisited – Submarine Capability in a Transformational Era," *Canadian Military Journal* 7, No. 4 (Winter 2006-2007): 23.

² Department of National Defence, *Canada in a New Maritime World: Leadmark 2050* (Ottawa: Commander, Royal Canadian Navy, 2016), 15.

disclosure option, Canada has never confirmed whether submarines were present in the area during this conflict.³ While frigates and destroyers provide a visible deterrent, when employed on their own or in small task groups they fail to carry the same impact of a submarine.

The Arctic

7. The Canadian Arctic Archipelago presents considerable challenges for the RCN to protect Canadian sovereignty, maintain of surveillance and respond to incidents. These challenges stem from the vast size of the region, the lack of logistical support and the presence of the polar ice cap. The ongoing construction of the Nanisivik Naval Facility will aid in resolving the future logistical challenges that currently limit the operating time on station for RCN vessels. The polar ice, particularly multi-year ice, remains a barrier to RCN Arctic operations. The introduction of the Arctic Offshore Patrol Ship (AOPS), the first of class delivered in 2020, are a significant capability enhancement in this area over existing platforms. However, their Polar Class 5 rating limits their ability to operate in one meter of first year ice, which restricts their use to the lower Arctic and within the navigable season. Additionally, the AOPS is not fitted with any Anti-Submarine Warfare (ASW) sensors. This leaves a capability cap for the detection of potential threats under the Arctic ice.

8. In the latter half of the 20th century, there was growing concern in Canada about the presence of foreign nuclear submarines operating in the Canadian Arctic. Canada's inability to verify their presence resulted in the 1987 Defence White Paper calling for the

³ Craven, *A Rational Choice Revisited...*, 23.

acquisition of nuclear submarines.⁴ Unfortunately for the RCN, the cost, public perception and unwillingness of the US to provide the technology scuttled any nuclear submarine ambitions. International interest in the potential for the Arctic has only increased since 1987 and not only for the Northwest Passage, but also for the vast natural resources projected to be contained within. The nuclear submarine remains the most capable platform for operations under the Arctic ice, but the technological advances in Air Independent Propulsion (AIP) technology is providing more affordable alternatives for Canada. The *Victoria* class submarines are only rated for near-ice operations, but if the succeeding class were fitted with AIP technology then they could extend their range under the ice.⁵

Defence of North America

9. The presence of an RCN submarine fleet would give Canada advantages for meeting its contribution to continental security. A submarine is ideally suited for employment as an Intelligence-gathering, Surveillance and Reconnaissance (ISR) platform, which provides Canada with the ability to generate intelligence. This intelligence can be used to maintain awareness within the maritime domain at both the national and North American Aerospace Defence Command (NORAD) levels. Additionally, the possession of a submarine force provides valuable training asset for both RCN and US Naval forces who seek to hone their ASW skillsets.

⁴ Adam Lajeunesse, "Sovereignty, Security and the Canadian Nuclear Submarine Program", *Canadian Military Journal* 8, no. 4 (2007), 75.

⁵ Craven, *A Rational Choice Revisited...*, 27.

Contribute to Global Stability

10. Canada's contribution global stability is a main strategic objective for the Canadian government. The global security environment is extremely complex and continually evolving at a rapid rate. With the world's economies dependent upon maritime trade, there is incentive for both state and non-state actors to seek influence and control over key maritime waterways. This is evident in China's rapid naval expansion to become a peer competitor to the United States, Russia reasserting itself as a naval power, and several regional powers building up their naval capabilities such as Brazil and India.⁶ Additionally, there are non-state actors who use the oceans for piracy or the movement of weapons and narcotics. Given this operational environment, this section of the paper will look at the importance of the submarine in allowing Canada to achieve its strategic aims.

11. To achieve strategic effect, Canada deploys naval forces abroad within a task group construct. A naval task group consists primarily of surface combatants and a joint support ship, however it can be augmented with a submarine to achieve a full spectrum of combat capability.⁷ The addition of the submarine is significant, as it provides the task group with "vertical coverage of the water column, and horizontal coverage of the maritime warfare continuum."⁸ The versatility of the submarine allows it to operate in a sense, shield or act role for the task group. The use of a submarine to conduct valuable ISR missions in the vicinity of a capable and potentially hostile nation, provides a sense function that would otherwise not be available to the task group. An example of this includes conducting surveillance off the coast of North Korea in support of a UNSCR to

⁶ Department of National Defence, *Canada in a New Maritime World...*, 7.

⁷ Department of National Defence, *Strong, Secure, Engaged: Canada's Defence Policy*, (Ottawa: National Defence), 35.

⁸ Craven, *A Rational Choice Revisited...*, 24.

prevent the delivery of materials in support of their nuclear program.⁹ The presence of a submarine provides a credible deterrent for enemy naval forces and can be placed far in advance of the task group to sanitize the area. The best example of a using a submarine to provide a shield function for a task group was during the 1982 Falklands War. Following the sinking of the ARA *General Belgrano* by the UK submarine HMS *Conqueror*, the Argentine surface fleet withdrew from the exclusion zone and ceased to be a threat to the UK Task Forces.¹⁰ In addition to the lethality of a submarine against enemy vessels, the covert insertion and recovery of Special Operations Forces (SOF) into coastal regions provides an example of an act function that would be otherwise unavailable to the task group.

12. One of the more significant challenges facing western nations is the employment of an Anti-Access Area Denial (A2AD) strategy as a means of exerting influence and control over an expanse of ocean. Nations seeking to implement an A2AD strategy employ surface ships, submarines, aircraft, land-based missile batteries and mines to deny foreign nations access or the ability to exert influence in a given water space. While there are several examples of this including Iran's efforts to control the Straits of Hormuz or Russia's efforts to control the Baltic Sea, the most aggressive and contentious is China's efforts in the South China Sea. China is taking A2AD one step further through their construction and militarization of man-made islands over various reefs within the Spratly Island chain. The end goal is to achieve sea control by making the area too risky for the

⁹ David Common, "Canadian Sub on Mission to Bolster North Korea Surveillance," last modified 7 February 2018, <https://www.cbc.ca/news/canada/hmcs-chicoutimi-submarine-canada-pacific-north-korea-1.4511238>.

¹⁰ Scot Macdonald, "The Falklands Campaign: The British Reconquest and the Argentine Defense," *Marine Corps Gazette* 84, no. 3 (03, 2000): 72.

US to project power using a carrier battlegroup. For RCN surface vessels, who lack the numbers and capabilities of the US Navy, will face higher risks by entering the area should tensions in the region rise. On the other hand, the submarine is an optimal platform in the face of this threat given its ability to operate autonomously over long periods and without susceptibility to the risks faced by surface vessels.¹¹ This relative impunity allows the submarine to conduct various missions from intelligence collection to offensive actions.

Strategic Value

13. Having discussed the strategic impact that a submarine can provide the Canadian Government, it is important to consider whether these benefits provide value for money. It is likely that cost is the first criteria that would be used by detractors of the submarine program in Canada, and if the future fighter program provides any indication, it will be a significant factor in the replacement proposal for the *Victoria* class. For ease of discussion, it makes sense to breakdown the cost of a submarine into acquisition and operating costs. Given that Canadian industry doesn't have the resident expertise to design and build a submarine from scratch, it is likely that Canada would have to purchase the submarines from another nation. While these costs are a bit dated (2016), Peter Haydon examines the value for money for a modern submarine capability in Canada. He estimates the cost of a new German Type-212A submarine to be around US\$600M, while not a small expenditure it compares to the acquisition cost of two AOPS.¹² A modern submarine has significantly more capability than an AOPS. For

¹¹ Craven, *A Rational Choice Revisited...*, 24.

¹² Peter T. Haydon, "Canada and Modern Submarines," *Canadian Naval Review*, 12, No. 1 (2016), 36; David Pugliese, "Irving to Receive \$58 Million for 'Minimal' Changes to New Coast Guard Ships," last

operating costs, the cost for keeping a conventional submarine at sea for a day is 30% less than that of a frigate or destroyer.¹³ These costs compared to the strategic capabilities a submarine generates makes the platform a significant value. To be fair, this analysis is nowhere near as comprehensive as a fully detailed cost analysis of a submarine replacement, as that is well beyond the scope of this paper. What this does show is that a modern, non-nuclear submarine provides significant capability while not being more expensive than its surface vessel peers. This value explains why many nations are actively acquiring or expanding their submarine fleets.

CONCLUSION

14. Canada needs a submarine capability to achieve the strategic direction contained within the government's defence policy. A modern submarine force acts as a force multiplier within the RCN due to its ability to operate covertly, conduct a wide range of missions and deliver lethal effect. By examining some of the possible uses for submarines, this paper has demonstrated the strategic value that only a submarine can fulfill. Through its capacity to project power in contested waters, conduct a sea denial strategy and perform as an ISR platform, a credible submarine force provides Canada with strategic options when facing a threat both at home and abroad. With the end of the *Victoria* class vessels life insight, Canada needs to quickly begin seeking a replacement to maintain these advantages.

modified 7 February 2020, <https://www.thechronicleherald.ca/news/local/irving-to-receive-58-million-for-minimal-changes-to-new-coast-guard-ships-408179/>.

¹³ Craven, *A Rational Choice Revisited...*, 22.

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