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FISH OR CUT BAIT: THE FUTURE OF THE ROYAL CANADIAN NAVY'S MINE COUNTERMEASURES CAPABILITY

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AIM

1. The aim of this service paper is to examine the Royal Canadian Navy's (RCN's) current capability deficiency in Naval Mine Countermeasures (NMCM) and its strategic impact on the Canadian Armed Forces (CAF). This paper will compare the current competency of the RCN's NMCM capability to its intended level of competency and will conclude with recommendations with regards to the future of NMCM in the RCN.

INTRODUCTION

2. With roughly 90 percent of the world's trade done by way of the sea, access to the Sea Lines of Communication (SLOC) is absolutely crucial. Often trumped by ballistic or anti-ship missiles, sea mines are amongst the oldest form of anti-access or area denial threats in the maritime domain, with the ability to alter, slow, or stop movement completely through narrow straits or in and out of ports vital to littoral nations' sustenance.[1]

3. Sea mines are responsible for having sunk or having severely damaged 15 United States Navy (USN) warships since the Second World War; which is more damage than all other weapons combined have caused.[2] Ranging from expensive and highly sophisticated devices

[1] National Academics Press, "Naval Mine Warfare: Operational and Technical Challenges for Naval Forces (2001), Last accessed 02 February 2018, https://www.nap.edu/read/10176/chapter/3

[2] Sydney J. Freedberg Jr., "Minefields At Sea: From the Tsars to Putin," last modified 23 March 2015. https://breakingdefense.com/2015/03/shutting-down-the-sea-russia-china-iran-and-the-hidden-danger-of-sea-mines/

activated by various stimuli (acoustic, magnetic, etc.), to cheap and simple versions of contact mines, they are extremely capable weapons known to cause catastrophic damage, both physically and psychologically.

4. Upon the release of the 1987 White Paper on Defense, the need for re-establishing a Canadian NMCM capability became a priority and as such the MCDV Major Crown Project was initiated.[3] The RCN's 12 KINSTON Class Maritime Coastal Defence Vessels (MCDVs) were introduced to the Fleet in 1995. They were intended to be multi-role minor war vessels with coastal surveillance as their primary mission and additionally possessing the capability to embark mission specific payloads that allowed them to also re-role and conduct route survey, bottom object inspection, or mechanical minesweeping.[4] Along with the introduction of the MCDVs, both Fleet Diving Units (FDUs) were revamped to account for mine warfare operations and the Canadian Fleet School Quebec (CFFS(Q)) was tasked with the responsibility to deliver NMCM training to both regular and reserve personnel.[5]

DISCUSSION

5. Until the ORCA Class training vessels came online in 2006, MCDVs bore the brunt of the naval officer training workload while also conducting mine countermeasure tasks. However, without the requirement to conduct the core officer training as they had been doing in the past, and with the commencement of the HALIFAX Class Modernization and Frigate Life Extension

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[3] Department of National Defence, *Maritime Defence Plan (MADP) 321 Vers 3.0. Canadian Naval Mine Countermeasures (NMCM)* (Ottawa: DND Canada, 2015), v.

[4] Government of Canada, "Maritime Coastal Defence Vessels," last accessed 02 February 2018, http://www.navy-marine.forces.gc.ca/en/fleet-units/mcdv-home.page.

[5] Department of National Defence, *Maritime Defence Plan (MADP) 321 Vers 3.0. Canadian Naval Mine Countermeasures (NMCM)* (Ottawa: DND Canada, 2015, v.

(HCM/FELEX) project in 2010, the MCDVs became more operationally focussed.[6] They began conducting more operations in both the Arctic as part of Operation NANOOK and in the Caribbean Sea and the eastern Pacific Ocean as part of Operation CARIBBE.

6. Found within various strategic and policy documents within the organization, it is evident that the RCN understands the importance of a NMCM capability and the strategic effect it can have. In 2015 the RCN released the *Maritime Defence Plan (MADP)* which outlined expected future threats and also gave strategic guidance with a specific mission "…to provide the RCN with NMCM forces capable of protecting and defending HMC Ships, strategic shipping, ports and/or critical infrastructure from sea mines, and to counter and clear sea mines or UWIED [Under Water Improvised Explosive Devices]…"[7]

7. And in the RCN's *Leadmark 2050* updated in 2017, it states that the MCDVs "…greatly exceeded our original expectations for the class…" and that "…options to extend the life of the *KINGSTON*-class are also being examined closely…"[8] The document also states that, "Their [MCDV] ongoing utility has also underscored the need to reinvest in their mine countermeasure (MCM) capabilities" and has "also highlighted the need to reinforce this specialized naval warfare discipline through doctrinal and tactical development, as well the commensurate nurturing of skills and competencies within the MCM community."[9]

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[6] Darlene Blakely, "Maritime Coastal Defence Vessels sail beyond expectations," *Crowsnest*, 3 (November 2015): 6.

[7] *Ibid*., 3.

[8] Department of National Defence, *Canada in a New Maritime World: Leadmark 2050* (Ottawa: DND Canada, 2017), 45.

[9] *Ibid.*

8. However, the only mention of anything related to mine warfare in the *RCN Strategic Plan 2017-2022* is that a measure of success is considered to be the introduction and delivery of Maritime Unmanned Systems, which include autonomous underwater vehicles, by 2022.[10] Canada's most recently released Defence Policy, *Strong Secure,Engaged,* presents the strategic vision for defence as "Strong at home, Secure in North America, and Engaged in the World."[11] Within this broad vision, mine warfare certainly can apply to ensure Canada's sovereignty is protected and that CAF forces contribute to a "…more stable, peaceful world, including through peace support operations and peacekeeping."[12] However, the policy does not specifically mention NMCM, except to confirm that remotely piloted systems are being used in the world to assist in "…conducting acoustic surveillance, mapping or the surveillance of "choke-points', to naval mine countermeasures", and that Canada needs to be aware of threats remotely piloted systems pose and "…invest in a range of remotely piloted systems…"[13]

9. In a NMCM Review conducted for Commander Maritime Operations Group 5 (MOG5), three primary capabilities were identified as requirements for the RCN to respond to naval mine threats. The first was the ability to maintain a command and control structure known as a Mine Counter Measures Tasking Authority (MCMTA), the second was a requirement for a NMCM dive capability, to include the ability to respond to EOD threats on land, and the third was Unmanned Diving Systems (UDS).[14]

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[10] Department of National Defence, *Royal Canadian Navy: Strategic Plan 2017-2022* (Ottawa: National Defence, 2017),15.

[11] Department of National Defence, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: DND, 2017),14.

[12] *Ibid.*

[13] *Ibid.,* 73.

[14] William, Barter, "Executive Summary: Naval Mine Counter Measures (NMCM) Review" (Halifax: Maritime Operations Group 5, 2017), 1.

10. According to Canadian doctrine, an MCMTA is made up of an NMCM commander/advisor to the CTG Commander, a Mine Warfare Officer (MWO), two Watch Officers, a coordinator, and two operators/information managers. Both the NMCM commander and MWO require an advanced qualification which means they require the Canadian Standard Mine Warfare course, which is a pre-requisite for the Canadian Intermediate Mine Warfare Course, as well as the Advanced Naval Mine Warfare course.[15] The Advanced Naval Mine Warfare course is only available through the Royal Navy's (RN) Maritime Warfare School, HMS COLLINGWOOD, or through the Belgium Naval Mine Warfare School, EGUERMIN.[16] No dedicated staffs have been appointed to fill the MCMTA, should it be required, and furthermore, it is estimated that less that ten people in the whole of the RCN have this Advanced Naval Mine Warfare qualification.

11. According to the MADP 321, NMCM forces will be permanently established on each coast, and as such, a dedicated MCM vessel is designated in the Fleet Schedule. The dedicated MCM vessel is required to maintain currency on a number of Combat Readiness Requirements (CRRs) and is expected to be able to be activated as part of an NMCM force within 10 days if required.[17]

12. However, the CAF's and RCN's desire to participate in both Operation NANOOK and Operation CARIBBE make this requirement for a dedicated MCM vessel almost impossible to

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[15] *Ibid.,* 3-4.
[16] *Ibid.*
[17] Department of National Defence, *Maritime Defence Plan (MADP) 321 Vers 3.0. Canadian Naval Mine Countermeasures (NMCM)* (Ottawa: DND Canada, 2015), 7.

attain. Currently six MCDVs are assigned to both the Atlantic and Pacific Fleets. At any given time, one of those vessels is in dry dock, and another ship is in extended readiness alongside. With two ships preparing and deploying for Operation CARIBBE twice a year, it leaves only two remaining ships to carry out the other assigned tasks and commitments for the RCN, including Search and Rescue (SAR) Zone coverage assistance to the Canadian Coast Guard (CCG), attendance at Fleet Weeks, Ready Duty Ship assignments, Operation NANOOK, Rim of the Pacific (RIMPAC), and various other Community Relations (COMREL) and training duties.

13. Canadian NMCM missions are conducted with the assistance of various payloads including the SeaBotix Remote Operating Vehicle (ROV), Bottom Object Identification Vessel (BOIV), and various versions of the Klein Side Scan Sonar.[18] It takes considerable effort and time to embark a payload and time alongside must be allotted specifically for this purpose. Additionally, the Standard Operating Procedures (SOPs) for many of the events a ship's company will prepare for are altered when payloads are embarked (i.e. Man Overboard, anchoring, etc). Therefore additional training must occur, be tested, and confirmed by a designated authority; namely a Sea Training Team. However, currently, no formal training exists for the operation of any of the payloads, despite the fact there are CRRs for payload operations.

14. Manning issues with the RCN coupled with the 'One Navy' concept in which more Regular Force (RegF) personnel are sailing in MCDVs, have also had an impact on NMCM readiness. Increasingly more personnel posted to MCDVs have never had any experience with mine warfare operations or have worked with any of the payloads. For example, the designated

[18] *Ibid.*

BOIV team on the West Coast, which consists of eight personnel, has been vacant for over three years. Further to this, the supporting engineering documents for the equipment setup arrangement on board the ship had not been centrally controlled and subsequently there were numerous conflicting blueprints. The multitude of equipment issues combined with the lack of adequate training and qualified personnel was so severe that in 2017 a subset of a Task Group Exercise (TGEX) with a focus on NMCM operations had to be cancelled.

15. Another aspect of Mine Warfare is Route Survey (RS). RS is usually conducted during peacetime where 'Q-Routes' are surveyed to collect environmental data which is fed into a database of mine-like objects. These shipping routes can then be utilized in times where a mine threat exists.[19] Canada has approximately 5500 nautical miles of Q-Routes which are prioritized to allow for a reasonable allocation of assets and resources.[20] Formation Commanders are to provide up to 50 days per year of RS activity on each coast.[21] As previously mentioned this becomes extremely difficult with the limited number of platforms and competing assignments. Each coast has a four member RS team that work for their respective MOGs. The RS course Qualification Standard and Plans (QSPs) have not been updated since 2007, and as such, the MOG4 RS Team developed their own RS Officer Course, which has yet to be formally authorized.

16. Although the threat of a direct state-on-state offensive mining campaign against Canada is low, the developing global security trends demonstrate that asymmetric threats are

[19] *Ibid.,* C-1.
[20] *Ibid.,* C-3.
[21] *Ibid.*

increasing.[22] Additionally, critical waterways like the Strait of Hormuz, Korea Strait, Strait of Malacca are just a few examples of strategic SLOCs that could easily be mined and would have a severe impact in global affairs.[23] The North Atlantic Treaty Organization (NATO) has a Standing Mine Counter-Measures Group1 which has patrolled the Baltic Sea since 1973 and over the last decade, this task group along with other non-NATO minesweepers have conducted an annual exercise called "Northern Coasts."[24] It is clear that there is an increasing awareness of a mine threat to international waters and many allied nations are significantly investing in developing their NMCM capabilities.[25]

17. The USN, RN, and Royal Australian Navy (RAN) all utilize specialized purpose-built ships and some type of remote unmanned vehicle as part of their NMCM capability and they all actively participate in many of the international NMCM exercises.[26] Although the MCDVs have participated in international exercises in the past, (i.e. RIMPAC, Ex UNMANNED WARRIOR, etc.), the level of participation is significantly impacted by the competing demands of the platforms and of the range and speed of the MCDVs. The KINGSTON Class vessels are minimally armed; with only .50 Calibre machine guns, and as such, they are not intended for threat environments. Even in extremis, if they were tasked to conduct NMCM operations overseas, with a top speed of only 15 knots, it would most likely take them an inordinate amount

[22] Defence Research and Development Canada, "Scoping Study on DRDC Toronto Future Research Regarding Naval Mine Countermeasures" (Toronto: DRDC, 2012),1.

[23] Sydney J. Freedberg Jr.,"Sowing the Sea with Fire: The Threat of Sea Mines," last modified 30 March 2015, https://breakingdefense.com/2015/03/sowing-the-sea-with-fire-how-russia-china-iran-lay-mines-and-how-to-stop-them/

[24] Sydney J. Freedberg Jr., "Minefields At Sea: From the Tsars To Putin," last modified 23 March 2015, https://breakingdefense.com/2015/03/shutting-down-the-sea-russia-china-iran-and-the-hidden-danger-of-sea-mines/

[25] Defence Research and Development Canada, "Scoping Study on DRDC Toronto Future Research Regarding Naval Mine Countermeasures" (Toronto: DRDC, 2012),1.

[26] A.D. Graham, "A Recommendation for the Future of Mine Countermeasures Capability in the Royal Canadian Navy" (Joint Command Staff Course Paper, Canadian Forces College, 2016),4.

of time to get to the threat environment, and depending on the weather, could place them in detrimental sea-keeping scenarios.

CONCLUSION

18. "A mine is only an obstacle, not the main objective in a battle. Yet many seem to regard the naval mine threat as somebody else's problem."[27] Although the RCN recognizes the importance of an NMCM capability, the lack of training, under-resourcing, and underfunding over the years has shown otherwise and the limited capability the RCN once had in mine warfare has atrophied and degraded. It is no secret that currently the RCN has minimal resources in both platforms and personnel, and yet the number of assigned operations and tasks continue to increase. The RCN is simply being spread thin.

19. Credibility with Canadians as well as other nations is crucial for the CAF. Our small Armed Force does not allow for us to maintain all the capabilities that we would like. As such, the CAF and subsequently the RCN have to make tough decisions with regards to what capabilities we want to develop and nurture. It is of no benefit to maintain a variety of capabilities at a substandard level. Not only does it reduce our credibility with Canadians and other nations, but it can place our personnel in danger.

20. Therefore, the RCN must make a deliberate decision on what capabilities it not only wants, but that it can afford to possess; subsequently making the decision to either cease or renew its MCM capability, and if so, at what expense.

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[27] Thomas S. Reynolds, Commander US Navy (retired), "Learning from IEDS," *Proceedings* 54, (August 2013): 56.

RECOMMENDATION

21. The appetite of Canadians to have their CAF involved in the Arctic remains high and with the recent success of counter-narcotics operations, a tangible effect is being delivered to the Canadian public. Therefore, continued participation in Operation NANOOK and Operation CARIBBE is highly recommended and also has the positive side effect of useful recruiting and COMREL opportunities.

22. As a result, it is recommended that the RCN cease its efforts to maintain an NMCM capability and instead re-role the funding and personnel into other capabilities that may be lacking. Unfortunately, this will create a strategic vulnerability that will need to be mitigated. As previously mentioned, many of Canada's allies are able to sufficiently maintain and develop an NMCM capability. It is recommended that the CAF look to offer research assistance to these nations and in return, receive NMCM support, should it be required. This will allow the CAF to maintain the credibility is has fought so hard to earn.

23. The alternative is to completely and properly invest in NMCM, including training, equipment and personnel. However, this will come at a cost and other tasks and or obligations will have to be cut to ensure the proper focus is truly given to this capability.

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