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FIGHTING THE LAST WAR TOMORROW: A RECOMMENDATION FOR RE-STRUCTURING NAVAL FORCE DEVELOPMENT

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JCSP 45	PCEMI 45
Service Paper	**Étude militaire**

Canada

CANADIAN FORCES COLLEGE – COLLÈGE DES FORCES CANADIENNES
JCSP 45 – PCEMI 45
2018 – 2019

DS 545/SP1- SERVICE PAPER

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Word Count: 2589

Compte de mots : 2589

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A RECOMMENDATION FOR RE-STRUCTURING NAVAL FORCE DEVELOPMENT

AIM

1.   The new defence policy: Strong, Secure, Engaged (SSE), charts the direction for the CAF

and where investments will be made in order to position the CAF to meet the challenges of the

future security environment. The Royal Canadian Navy (RCN) is in the midst of re-capitalizing

its fleet through the National Shipbuilding Strategy (NSS). In this manner, the RCN is poised to

be on the cutting edge of technology and will be the recipient of a great deal of investment from

SSE. The RCN must position itself to take advantage of these opportunities by transforming its

force development approach.

2.   This service paper is written for the Director General Naval Force Development

(DGNFD), Commodore Richard Feltham, and recommends a re-structuring of the Directorate of

Naval Requirements (DNR) to reflect the changing capability areas of naval warfare. The

Commander of the Royal Canadian Navy (CRCN) has already charted the course for change

through his Strategic Plan 2017-2022,

> The RCN must be bold and far-reaching in our approach…with a view to not just
> focusing on new technologies to fit into ships and submarines, but to seek new ways of
> conducting core functions like training and maintenance, as well as better and more
> efficient ways to run our enterprise.[1]

CRCN makes it clear in the Strategic Plan that the time to change is now, such that the RCN can

adapt and adjust its practices before the introduction of the Canadian Surface Combatant.[2]

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[1] Chief of the Naval Staff. "RCN Strategic Plan 2017-2022," 2016, 10.

[2] *Ibid*., 14.

INTRODUCTION

3.   DGNFD is responsible for the delivery of the future fleet.[3] Although relieved of responsibility for capital ship procurement through the NSS as a result of the creation of Director General Future Ship Capability (DGFSC), DGNFD is still responsible for ". . . the identification of naval requirements, the project directorship of all capital projects for which Commander RCN is Sponsor and the introduction of new capabilities into service."[4] This places DGNFD at the leading edge of the RCN's ability to develop the proper requirements and to capitalize on future technologies. DNR will be the focus of the re-structuring effort as it is this organization within DGNFD that is primarily focused on the delivery of capability to meet the needs of the RCN.[5]

4.   The future of warfare is moving at a rapid pace, "The spread of technology, and often of advanced weapons . . . will continue to increase the risks to platforms of the traditionally more advanced navies at sea."[6] The service life of a modern warship is measured in decades. An iterative approach to capability insertion, combined with a robust modernization program will maintain a warship's combat relevancy across the life of the hull. Recent investments through Halifax Class Modernization (HCM) are an example of a successful execution of this approach.

5.   These proposed changes mean growth within DNR and DGNFD in order to meet the requirement of the future maritime operating environment and demands of SSE. Today, DNR is structured to address traditional capability areas. It is essential to maintain skills and capacity within some of these traditional areas in order to continue current projects and support to existing platforms as new classes of ship come into service. The areas of Above Water Warfare (AWW),

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[3] *Ibid.*, 37.
[4] Chief of the Naval Staff. "RCN Strategic Plan 2017-2022," 2016, 37.
[5] Royal Canadian Navy, "Director Naval Requirements" Accessed 4 October, 2018. http://rcn-mrc.mil.ca/en/director-naval-requirements.page
[6] Ben Lombardi, Defence Research and Development Canada Scientific Report DRDC-RDDC-2016-R085, *The Future Maritime Operating Environment and the Role of Naval Power*, (Defence Research and Development Canada, 2016), 81.

Anti-Submarine Warfare (ASW), Submarines, and Special Teams and Operational Enablers (SP Teams/Enablers) will be maintained within DNR. It is recommended that the remainder of the organization be re-structured to include: Remotely Piloted Systems (RPS)[7], Cyber and Information Warfare (Cyber/IW), Command and Control and Network Centric Warfare (C2/NCW), Information Surveillance and Reconnaissance combined with Joint Enablers (ISR/Joint), Science and Technology and Space (S&T/Space), Training and Infrastructure (Trg/Inf), and a Project Control Office (PCO). This growth is aggressive but necessary in order to prepare for the future, "Failure to innovate could lead to inefficiencies in war-fighting and possible capability gaps, sometimes with dire consequences."[8] The new capability areas envisioned for the DNR structure will be described below.

DISCUSSION

6.   The traditional capability areas must be maintained to provide support for current threats and to maintain the capability of the *Halifax* and *Victoria* Classes. The threats to ships from contemporary warfare areas are growing as, ". . . governments will use increased revenues from expanding economies to acquire more advanced capabilities, including modern submarines, cruise missiles . . . short- to medium-range ballistic missiles . . ."[9], which requires continued investment and focus on traditional warfare areas. Additionally, SSE stated that submarines would remain a priority by signaling that the *Victoria* Class would remain in service and be

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[7] The traditional Unmanned Aerial Vehicle (UAV), Unmanned Underwater Vehicle (UUV), and Unmanned Surface Vehicle (USV) titles for these systems is slowly being replaced in order to be more inclusive and to accurately reflect their modes of operation. Article at link refers http://www.rcaf-arc.forces.gc.ca/en/article-template-standard.page?doc=update-and-new-name-for-the-joint-unmanned-surveillance-target-acquisition-system-justas-project/j9u7rzyf
[8] Ben Lombardi, Defence Research and Development Canada Scientific Report DRDC-RDDC-2016-R085, *The Future Maritime Operating Environment and the Role of Naval Power*, (Defence Research and Development Canada, 2016), 85.
[9] *Ibid*., 44.

modernized.[10] This modernization is a recognition of the unique role submarines play, ". . . a modern submarine is a serious threat as a sea denial platform. Stealthy in operations, and hard to hunt and kill, it has an enormous deterrent capability."[11] The highly technical nature of submarines and the complexity of the *Victoria* Class Modernization Program (VCM) require a flexible, adaptable approach and close collaboration between the RCN and the Assistant Deputy Minister (Materiel). The engineering skills and expertise required to successfully deliver this program necessitate that the support from the RCN, through DNR, be maintained in its current form until completion.

7.   SP Teams/Enablers will continue to support equipment for diving and will take on responsibility for procurement on behalf of the Naval Tactical Operations Group (NTOG). Diving requirements is an area that requires special knowledge of the unique equipment, supporting vessels, and regulations that support diving and therefore must be staffed appropriately. The NTOG is a new and emerging capability that, like diving, has a relatively small footprint. The small size of these units will enable faster procurement based on the need for lower numbers of items, which means a lower financial commitment and shorter process and timeline for approval. This will foster innovation and development of capabilities that can be distributed in larger numbers if they are proven to be of value to the Fleet. Each of these specialized units has to operate with conventional forces at sea and alongside and therefore their equipment and support vessels must be interoperable and complimentary to that which is onboard ships. This will be achieved by keeping these capability development leads within DNR.

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[10] Canada, Department of National Defence, "Strong, Secure, Engaged" (Ottawa, 2017), 35.

[11] Ben Lombardi, Defence Research and Development Canada Scientific Report DRDC-RDDC-2016-R085, *The Future Maritime Operating Environment and the Role of Naval Power*, (Defence Research and Development Canada, 2016), 75.

8.   RPS includes those systems that both are (not), crewed and which may (not), be armed. These systems are becoming more complex and capable and DGNFD recognizes the utility of RPS stating that they will, ". . . become an essential component of the RCN's future warfighting capability . . . ."[12] SSE extends the need for growth in this area across the CAF, "Given the unique value provided by remotely piloted systems, the Canadian Armed Forces will also invest in an extensive range of new capabilities for the RCN, the CA, and the RCAF."[13] The RCN will need to invest in airborne, surface and subsurface systems in order to address future threats and to contribute meaningfully to the joint effort. Current RPS projects highlight the joint contributions that RPS can make, as the RCN is partnering with CANSOFCOM to find efficiencies from common requirements for systems. To deliver on the demand for future RPS requires a focused effort and centralization of expertise in one section.

9.   The Cyber/IW section of DNR will address the growing cyber warfare capability stream. Although "Cyberspace is recognized as a genuine battlespace . . ."[14], the current RCN structure blurs the responsibilities for cyber and information warfare between DNR and the Director Naval Information Warfare (DNIW) who reports to the Director General Naval Strategic Readiness (DGNSR) as opposed to DGNFD. Information warfare is growing in importance, "Although previously foundational, Information Warfare (IW) has . . . become the paramount warfighting capability and one that requires constant attention and practice."[15] In addition, SSE has highlighted the importance of cyber warfare through investments in,

> . . . cyber capabilities to include: cyber security and situational awareness projects, cyber threat identification and response, and the development of military-specific information

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[12] Director General Maritime Force Development. "Concept for Maritime Unmanned Systems (MUS)," 2015, 7-8.
[13] Canada, Department of National Defence, "Strong, Secure, Engaged" (Ottawa, 2017), 15.
[14] Vice Chief of Defence Staff, "The CAF C4ISR Strategic Vision, Goals and Objectives V1.0," 2016, 33.
[15] Royal Canadian Navy, "Director Naval Information Warfare," Accessed 4 October, 2018. http://rcn-mrc.mil.ca/en/director-naval-information-warfare.page

operations and offensive cyber operations capabilities able to target, exploit, influence, and attack in support of military operations.[16]

By transferring elements of DNIW into a Cyber/IW section at DNR, there would be better synchronization of effort and more resources available to meet the growing cyber threat and to take advantage of future developments in information sharing and networking.

10.   The strengths of networked forces are described in CAF visions of future warfare.[17] The networked nature of Command and Control (C2) systems makes them a key enabler to warfare for adversaries as well, "The most important challenge for the surface force to address is the improving technologies, systems, and networks our competitors put into place to deter and deny . . . access to vital sea areas."[18] NCW has the ability to dramatically shift the balance of power in future warfare, "If such an attack were to impact the combat system of a ship or a fleet (as a result of computer networking) in wartime the operational and strategic impact would be considerable, possibly even decisive."[19] The RCN must address C2 as a key capability and area of warfare as opposed to an enabler to operations. This means focus on NCW from both an offensive and defensive capability using both kinetic and non-kinetic means. Creating a robust and effective network that will work at sea requires a large investment and focused effort. The strength of a future C2 capability will determine the RCN's ability to contribute meaningfully to joint operations and must therefore be managed within its own section at DNR.

11.   The ISR/Joint section will support those elements that are joint in nature or feed into a larger joint enterprise. Development of these capabilities will require close liaison with all

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[16] Canada, Department of National Defence, "Strong, Secure, Engaged" (Ottawa, 2017), 41.
[17] Vice Chief of Defence Staff, "The CAF C4ISR Strategic Vision, Goals and Objectives V1.0," 2016, 17.
[18] Rowden, VAdm Thomas S, "Surface Force Strategy Return to Sea Control," (San Diego: Naval Surface Force Pacific Fleet, 2016), 6.
[19] Ben Lombardi, Defence Research and Development Canada Scientific Report DRDC-RDDC-2016-R085, *The Future Maritime Operating Environment and the Role of Naval Power*, (Defence Research and Development Canada, 2016), 83.

elements. Investments in sensors, weapons systems and communications systems for the RCN will inherently be joint as, "Maritime, land and air environments will be less discrete and combat actions will transcend environments creating effects across the battlespace."[20] As the RCN moves from open ocean to littoral environments, these traditional lines will continue to be blurred.[21] Future communications systems will need to support advanced C2 as well as maintain interoperability with our allies and the RCAF, CA and CANSOFCOM elements. This cannot be achieved by focusing on systems on a platform by platform basis. The ISR realm is growing and is appropriately given a joint nexus within SSE,

> Given the critical role Joint Intelligence, Surveillance and Reconnaissance plays in anticipating threats to Canada and making informed operational decisions, we will prioritize further capability development in this area, both for domestic and expeditionary purposes.[22]

However, there is already concern within the CAF that the current system is at risk of meeting the demand, ". . . the DND acquisition process may not deliver JISR solutions fast enough to keep pace with technological advancements implemented by allies and adversaries."[23] Maintaining the status quo in this area will result in a large capability gap that will continue to widen. All future ISR solutions for the RCN will feed into a larger joint enterprise and must therefore be developed managed as such. By combining those projects that are joint in nature into one section, DNR can leverage experience, resources, and relationships to make sure RCN requirements are met and the RCN can fully contribute to any joint solution proposed to the Chief of Force Development (CFD) and the Chief of Programme (CProg).

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[20] Australian Defence Force, Australian Defence Force Future Maritime Operating Concept 2025: Maritime Force Projection and Control, 16.

[21] Ben Lombardi, Defence Research and Development Canada Scientific Report DRDC-RDDC-2016-R085, *The Future Maritime Operating Environment and the Role of Naval Power*, (Defence Research and Development Canada, 2016), 73, 81.

[22] Canada, Department of National Defence, "Strong, Secure, Engaged" (Ottawa, 2017), 65.

[23] Vice Chief of Defence Staff, "Joint Intelligence Surveillance and Reconnaissance Operating Concept" 2015, 13.

12.   DGNFD already has a link with the Science and Technology community through the Maritime Science and Technology Program Coordinator (MSTC).[24] This link is essential to the success of capability development, "Simply put, S&T are one of the factors contributing to the modern military forces' best understanding of what is necessary to deter, fight, survive, and win against adversaries in combat."[25] The current relationship leans heavily towards concept development as opposed to research and development of future technologies for the RCN. Moving the research and development and operational research support provided by the MSTC into DNR will increase collaboration and assist in identifying future technologies that could have naval applications. As with cyber warfare, SSE places a large focus on investments in the space domain.[26] Given the inherently joint and national strategic nature of space, it is unlikely that the RCN will pursue any space capabilities on its own. The S&T/Space section would work within DNR and liaise closely with DG Space to maintain lines of communication and to insure that the RCN is aligned with future CAF space initiatives.

13.   The Future Naval Training System Strategy (FNTS) was developed to revolutionize the current training regime in order to better prepare RCN sailors for the delivery of the future fleet. In order to be successful requires a new approach to training,

> The NTS [Naval Training System] must be treated as a capability, as if it were a class of ship. It must be capable of adjusting with agility to new equipment and RCN materiel capability programs. To keep pace with the Future Fleet's increasing complexity and sophistication, the FNTS must be considered as an investment and be managed through the RCN FD mechanisms.[27]

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[24] Royal Canadian Navy, "Maritime Science & Technology Program." Accessed 4 October, 2018. http://rcn-mrc.mil.ca/en/maritime-science-technology-programme.page

[25] Chief of Force Development, "The Future Security Environment, 2013-2040," 2014, 63.

[26] Canada, Department of National Defence, "Strong, Secure, Engaged" (Ottawa, 2017), 70-72.

[27] Royal Canadian Navy, A-PD-050-000/AG-003, *Royal Canadian Navy Future Naval Training System Strategy* (Winnipeg: 17 Wing Winnipeg Publishing Office, 2015), 4.

Although responsibility for the NTS falls under the Commander Maritime Forces Pacific[28], the

procurement of equipment to support the system and the alignment of training to future

capabilities requires a close relationship with DGNFD. Further, the Director of Naval

Infrastructure Requirements (DNIR) reports to DGNFD and is responsible for liaison with the

Assistant Deputy Minister (Infrastructure and Environment) to insure that investments in real

property align with RCN priorities.[29] Current training infrastructure is outdated and widely

dispersed across the country and does not meet the needs of the current training system.[30] The

role of infrastructure renewal is integral to a modernization of the system,

> The success of the Future Naval Training System strategy relies to a large extent on the
> effectiveness and suitability of the RCN's training infrastructure. The capabilities and
> limitations of the infrastructure assets play a significant role in determining if the training
> system can meet the future needs of the RCN.[31]

The linkage between the training system and infrastructure has been made clear. Thus, the two

areas of capability are best situated within the same section in order to best align the

requirements of a modern training system within new infrastructure. The introduction of

Technology Enabled Learning (TEL) to support three new classes of ship and their associated

combat and marine systems is a major undertaking that requires the kind of long-term investment

of time and education in personnel that is not consistent with current CAF posting cycles. It is

recommended that a civilian director, reporting to DNR, lead the Trg/Inf section to insure

continuity and success of this important initiative.

14.   The creation of a Project Control Office will increase success within the project approval

and procurement process. Currently, individual project teams work to develop myriad of project

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[28] Chief of the Naval Staff, "RCN Strategic Plan 2017-2022," 2016, 36.

[29] Royal Canadian Navy, "Director Naval Infrastructure Requirements" Accessed 4 October, 2018. http://rcn-mrc.mil.ca/en/director-naval-infrastructure-requirements.page

[30] Royal Canadian Navy, A-PD-050-000/AG-003, *Royal Canadian Navy Future Naval Training System Strategy* (Winnipeg: 17 Wing Winnipeg Publishing Office, 2015), 4, 27.

[31] *Ibid*., 27.

documentation to meet procurement timelines. Many of these documents are standard in nature and require liaison with personnel from CFD, CProg, Public Services and Procurement Canada, Treasury Board Secretariat, and Assistant Deputy Minister (Policy) to name a few. Failing to be prepared for any of the key project approval boards or central agency engagements can delay a project and lead to significant cost overruns. The PCO will work across all sections within DNR, assisting project teams to manage project timelines, enable central agency liaison, and improve the quality of presentations and proposals. This would promote consistency and standardization of products within DNR and keep projects on track to deliver maximum capability, while supporting project teams in delivering maximum capability to the RCN.

CONCLUSION

15.   The traditional nature of warfare is being challenged by emerging technologies and capability areas. DNR is currently structured to deliver capabilities across traditional warfare disciplines. The description of warfare in the future maritime operating environment, combined with investment areas in SSE, does not align with this traditional structure. In order to be innovative and take advantage of emerging technologies in relevant areas, the focus within DNR must change. SSE provides large investments in the CAF across many areas. To achieve this aggressive plan will require growth in key areas to provide the resources necessary to move projects through the approval and procurement process. A re-structuring of capability areas is key to enabling this change and setting the right conditions for success in RCN force development.

RECOMMENDATIONS

16.   It is recommended DNR maintain focus in some traditional capability areas, including support to the Halifax and Victoria classes throughout their planned life and modernization

programs. In order to meet the challenges of future warfare, it is recommended that the remainder of DNR be re-structured to include: Remotely Piloted Systems, Cyber and Information Warfare, Command and Control and Network Centric Warfare, Information Surveillance and Reconnaissance and Joint Enablers, Science and Technology and Space, Training and Infrastructure, and a Project Control Office. This shift will better align naval force development with emerging threats as well as RCN and SSE focus areas. In the end, the RCN will be better positioned to deliver the necessary capabilities for future operations.

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