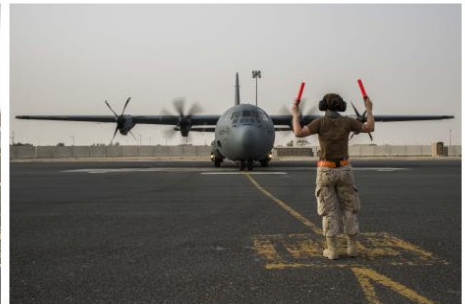Reviewed by ADM(RS) in accordance with the *Access to Information Act.* Information UNCLASSIFIED.

Evaluation of Ready Naval Forces

Performance Measurement and Evaluation Committee Meeting

March 2019

1258-3-015 (ADM(RS))

Canada

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Acronyms and Abbreviations

ACNS AT&R	Assistant Chief of Naval Staff Afloat Training and Readiness
ACNS P&T	Assistant Chief of Naval Staff Personnel and Training
ADM(HR-Civ)	Assistant Deputy Minister (Human Resources–Civilian)
ADM(Mat)	Assistant Deputy Minister (Materiel)
ADM(RS)	Assistant Deputy Minister (Review Services)
AOR	Auxiliary Oiler Replenishment [ship]
ARA	Authorities, Responsibilities and Accountabilities
CAF	Canadian Armed Forces
CDS	Chief of the Defence Staff
CFCD	Canadian Forces Controlled Document
CO	Commanding Officer
Comd	Commander (of a unit or formation)
CRCN	Commander of the Royal Canadian Navy
CRR	Combat Readiness Requirements
CT	Collective Training
DGMEPM	Director General Maritime Equipment Program Management
DND	Department of National Defence
DRF	Departmental Results Framework
DWP	Docking Work Period
EC	Engineering Change
EDWP	Extended Docking Work Period
ER	Extended Readiness
FELEX	Frigate Equipment Life Extension
FElms	Force Elements
FG	Force Generation
FMF	Fleet Maintenance Facility
FP&R	Force Posture and Readiness
FTE	Full-Time Equivalent
FY	Fiscal Year

GC	Government of Canada
HCM	Halifax-class Modernization
HQ	Headquarters
HR	High Readiness
IT	Individual Training
JSS	Joint Support Ship
L1	Level 1 Organization
MARLANT	Maritime Forces Atlantic
MARPAC	Maritime Forces Pacific
MCDV	Maritime Coastal Defence Vessel
MEPM	Maritime Equipment Program Management
MND	Minister of National Defence
MRP	Managed Readiness Program
MTOG	Maritime Tactical Operations Group
NATO	North Atlantic Treaty Organisation
NAVORD	Naval Order
NPTG	Naval Personnel and Training Group
NR	Normal Readiness
NSHQ	Naval Staff Headquarters
NSMB	Naval Strategic Management Board
NTS	Naval Training System
O&E	Organization and Establishment
OGD	Other Government Department
Op	Operation
OPI	Office of Primary Interest
OT	Operational Training
PAA	Program Alignment Architecture
PEMA	Plan, Execute, Measure, Adjust
PIP	Performance Information Profile
PM	Preventative Maintenance

RCN	Royal Canadian Navy
Reg F	Regular Force
RIMPAC	United States Navy Rim of the Pacific Exercise
RNF	Ready Naval Forces
SSE	Canada's defence policy: *Strong Secure Engaged*
SSID	Single Ship International Deployer
TAFH	Time Away From Home
TB	Treasury Board
TEL	Technology Enabled Learning
TES	Trained Effective Strength
TPR	Training Production Requirement

Executive Summary

This report presents the results of the evaluation of the Ready Naval Forces (RNF) program conducted by the Assistant Deputy Minister (Review Services) (ADM(RS)). This evaluation is a component of the Department of National Defence (DND)/Canadian Armed Forces (CAF) Five-Year Evaluation Plan (fiscal years (FY) 2017/18 to 2021/22) in compliance with the Treasury Board Policy on Results (July 1, 2016) and examines the relevance and performance of the RNF program from FY 2013/14 through 2017/18.

Program Description

The RNF program provides Canada with a combat-effective, multi-purpose force in the Royal Canadian Navy (RCN). The program generates and sustains relevant, responsive, combat capable maritime forces which are able to respond to a spectrum of tasks, as may be directed by the Government, within the required response time. This is accomplished by bringing maritime forces to a state of readiness for operations and by assembling and organizing maritime personnel, supplies and materiel. This includes the training and equipping of maritime forces and the provision of their means of deployment, sustainment and recovery to defend Canadian domestic, continental and international interests. In FY 2017/18 the RCN was comprised of 8,405 Regular Force personnel, 3,309 Naval Reservists, and 3,702 civilian staff. The total RCN budget was $601.4 million, of which $445.1 million (74 percent) was expended on the RNF program.

> ### Overall Assessment
> - The RNF program fulfills an ongoing need and aligns with government roles and responsibilities.
> - The RNF program has met all operational requirements but has been challenged to meet Force Posture and Readiness requirements.
> - The RCN is actively addressing significant RNF challenges of personnel shortages in critical occupations and growing maintenance demands.
> - The RNF program has used its resources efficiently.
> - The RCN has made extensive use of the Defence Program Analytics to effectively manage limited resources and maximize program effectiveness.

Relevance

The evaluation determined there is an ongoing and future requirement for the RNF program in support of Canada, Canadians and Canadian national interests as clearly articulated in Canada's defence policy, *Strong, Secure, Engaged* (SSE). This includes both command and sea-going elements of the RCN as the lead element for the CAF in domestic, continental and international maritime operations ranging from support to Other Government Department (OGD) law enforcement activities to full combat. The RNF program is aligned with federal government and departmental roles and responsibilities within the *National Defence Act*, and there is a clear commitment in SSE to maintain and modernize the RCN. The RCN has made a significant

contribution to the federal government and departmental priorities of defending Canada, protecting Canadians at home and abroad, and making a highly visible and significant contribution to a safer and more secure world.

Effectiveness

The RNF program has met all operational requirements and has overcome numerous challenges over the period of the evaluation to meet all Chief of the Defence Staff (CDS) Force Posture and Readiness (FP&R) requirements except for submarine availability. Challenges have included:

- The number of frigates that were out of service in the Halifax-class Modernization (HCM)/Frigate Life Extension (FELEX) programs between 2010 and 2017;
- Retirement of the Iroquois-class destroyers that provided the RCN with an Area Air Defence capability;
- Retirement of the Protecteur-class replenishment ships (Auxiliary Oiler Replenishment (AOR)) that provided the RCN with the capacity to independently sustain its operations at sea;
- Two separate major incidents that placed two of the Victoria-class submarines out of service for prolonged periods of time;
- Ongoing serviceability issues and lengthy refit requirement of the Victoria-class submarines; and
- Personnel shortages in several critical occupations necessitating close monitoring of personnel in High Readiness (HR) frigates and submarines and the Normal Readiness (NR) Maritime Coastal Defence Vessels being deployed on operations. Personnel shortages have been addressed by frequently attach posting[1] personnel from other lower readiness/non-deploying units to ensure ships are crewed as required for their readiness state and operations.

Finally, while not fully achieving the FP&R requirements for submarine availability, it is worth mentioning that the submarines achieved major operational milestones in FY 2017/18 with the deployment of HMCS _Victoria_ to South East Asia and HMCS _Windsor_ to the Mediterranean.

Efficiency and Economy

The RNF expenditures have gradually increased over the evaluation period commensurate with the increasing number of frigates that completed the HCM/FELEX programs and entered the RCN's readiness cycle. This cycle includes extensive underway training and maintenance to ensure units are trained and maintained to meet their prescribed readiness levels.

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[1] Attach postings are temporary postings of a member from their unit, which retains administrative responsibility for their personnel records, to another unit for employment purposes.

The RCN expenditures declined as a proportion of the DND budget between FY 2013/14 and FY 2015/16 but have been increasing since then. While remaining below the FY 2013/14 expenditure level, the portion of the RCN's annual budget spent on the RNF program has increased. This would indicate efficiencies or economies being achieved in other RCN programs to meet the increasing resource demands of the RNF program.

Finally, it is noteworthy that only two recommendations have been put forward in this evaluation. This reflects the RCN's regular detailed assessment of the RNF program's performance and development of comprehensive action plans that are already addressing issues identified in this evaluation.

Key Findings and Recommendations

Key Findings	Recommendations
Relevance	
1. There is an ongoing and future need for RNF in support of Canada, Canadians and Canadian national interests.	
2. There is alignment between the generation and delivery of RNF and departmental and federal roles and responsibilities.	
3. RNF are aligned with DND/CAF priorities and are a key component of the Department's Strategic Outcomes.	
Performance – Effectiveness	
4. Ships' crews have successfully achieved Sea Training Group training and certification for their prescribed readiness requirements.	
5. Ships' crews have achieved the initial requisite level of collective training for their designated readiness state but have been challenged to maintain that level of training.	
6. The RCN is challenged to crew units with the requisite personnel and training in accordance with readiness requirements.	
7. The relatively high numbers and proportion of attach posted personnel to smaller units, such as the MCDVs, has challenged the ability of these ships to achieve and maintain readiness levels.	

8. The RCN is closely tracking critical personnel shortages and has introduced several important initiatives to manage crewing, training and quality of life issues.	
9. Fleet Maintenance Facilities (FMF) have been increasingly challenged to sustain the aging platforms and increasingly obsolete systems of the Halifax-class frigates and Victoria-class submarines to meet technical readiness requirements.	
10. Victoria-class submarines are operated in accordance with current submarine safety regulations and with appropriate safety restrictions when necessary.	
11. Ship and submarine systems are updated periodically to maintain units' operational relevance in an increasingly complex operational environment. Units deploying to operations may be fitted with mission-specific systems to meet anticipated mission requirements.	
12. Naval resources are effectively managed through a Naval organization and governance structure that closely monitors performance measurement data to support its Plan, Execute, Measure, Adjust (PEMA) management of the RNF program.	
13. The RCN has been in a continuous period of re-organization over the period of the evaluation but formal Organization and Establishment (O&E) changes have not kept pace with the changes leading, in some instances, to a lack of clear Authorities, Responsibilities and Accountabilities (ARA) of the revised organizations.	1. It is recommended that the RCN develop a means of communicating O&E changes, pending their formal approval and notification, to ensure clarity regarding revised lines of communication and related ARA.
14. The RCN has had difficulty generating certain ready naval force elements required in accordance with the CDS Directives on FP&R but met all requirements for assigned operations.	

Performance – Efficiency

15. The new Naval Training System (NTS) has begun to demonstrate efficiencies through its reorganization, leveraging of technology and consolidation of infrastructure.	
16. The NTS may achieve greater efficiencies through better alignment of scheduled training and training demand.	2. It is recommended that the RCN investigate the reasons for the variance between projected training demand and the actual training delivered to identify and introduce potential efficiencies in the NTS production plan.

17. The increased cost of collective training is attributed to the increasing availability of frigates for training during the reporting period.	
18. Since FY 2015/16, Force Generation (FG) sea days have increased year over year while cost per sea day has decreased, indicating a general efficiency within Naval FG.	
19. The cost to sustain RCN materiel is increasing as additional resources are required to maintain the RCN's aging fleet.	
20. Reduced HQ staff have managed an RNF program with increased expenditures and complexity over the reporting period indicating the RCN's renewed structure is providing efficiencies.	
21. RCN senior staff are increasingly employing timely and credible information in their decision making across all key program segments through their use of business analytics software.	
Performance – Economy	
22. Reduced expenditures in other RCN activities have facilitated annual increases in RNF expenditures as a proportion of the RCN's budget over the period of the evaluation.	
23. The RCN is actively pursuing means to leverage available resources, particularly to address its personnel shortages.	

Table 1. Key Findings and Recommendations. This table provides a consolidation of report findings and recommendations.

Note: Please refer to Annex A—Management Action Plan for the management responses to the ADM(RS) recommendations.

1.0 Introduction

1.1 Context for the Evaluation

This report represents the results of the evaluation of the RNF program, which was conducted between August 2017 and June 2018 by ADM(RS) in compliance with the TB Policy on Results. As per the TB policy, the evaluation examines the relevance and performance of the program over a five-year period, FY 2013/14 through 2017/18. The evaluation may be used to inform future senior management discussions regarding the generation and sustainment of RNF to meet Canada's maritime defence and security requirements.

There have been previous evaluations of Naval Forces and related programs as follows:

- *CRS Evaluation of Naval Forces,* December 2013;
- *CRS Evaluation of Maritime Air Capabilities*, June 2014;
- *ADM(RS) Evaluation of the Maritime Equipment Program,* June 2016; and
- *ADM(RS) Evaluation of the Information System Lifecycle Program*, December 2016.

This evaluation was supported by the RCN's senior naval staffs in the Naval Staff Headquarters, the Director General Maritime Equipment Program Management (DGMEPM) in Ottawa and RCN formation staffs in Maritime Forces Atlantic (MARLANT) and Maritime Forces Pacific (MARPAC).

1.2 Program Profile

1.2.1 Program Description

The RNF program generates, sustains and renews combat-effective, multi-purpose naval forces and capabilities ready for operations. This is achieved through the execution of Individual Training (IT), Collective Training (CT) and validation activities designed for operational delivery of the RCN's sea power capabilities across a broad mission set. This mission set includes combat operations, rapid provision of humanitarian assistance and disaster relief, defence diplomacy, and collaborating with other government departments and agencies in support of domestic defence and security. The program is deliberately organized to ensure that the RCN is trained and adequately equipped for a scalable, agile, responsive and interoperable force both domestically with civil authorities and other Government Departments, and internationally with allies and partners. This program is supported by Naval Equipment Servicing and Naval Readiness Management.[2]

As seen in Table 2, in FY 2017/18 the RNF program represented only 2.38 percent of DND annual expenditures, however the impact of its contribution to overall DND strategic objectives and priorities has been significant. The RCN's contributions have had a direct impact on the safety and security of Canadians, and supported public confidence in the Government's ability

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[2] Program Description, National Defence Program Inventory – PIP 2.2 Ready Naval Forces, November 29, 2017 Draft.

to defend Canada and protect Canadian citizens at home and abroad.[3] The RCN's involvement in domestic, continental and international operations has also earned it both national and international recognition.[4]

Expenditures ($M) & Personnel Data	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18[5]
RNF Expenditures	$341.7	$367.4	$363.4	$392.3	$445.1
RCN Expenditures	$708.0	$692.3	$523.9	$529.3	$601.4
DND Expenditures	$18,764.4	$18,453.9	$18,666.1	$18,606.2	$18,682.9
RCN – Regular Force (Reg F)	9,393	9,036	8,749	8,464	8,405
RCN – Reserve Force	3,171	3,038	3,024	3,186	3,309
Civilian	4,362	4,180	4,046	3,839	3,702

Table 2. RCN and RNF Program.[6] This table provides a summary of RNF, RCN and DND expenditures and RCN personnel resources over the period of the evaluation.

Overall direction of the RCN is provided by the Commander of the RCN (CRCN), through Naval Staff Headquarters (NSHQ) in Ottawa, responsible for the strategic development and generation of combat-effective, multi-purpose naval forces and to provide advice to the CDS and Government in matters related to maritime operations.

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[3] During recent years, the RCN has conducted numerous successful counter-narcotics operations in domestic/continental context and successful NATO operations to deter and de-escalate the situation in Europe, as well as counter terrorist and counter-piracy activities internationally.

[4] United States Navy and NATO commanders have praised RCN units deployed to Operation (Op) CARIBBE, Canada's participation in the multinational campaign against illicit trafficking by transnational organized crime in the Caribbean Sea and the Eastern Pacific Ocean, Op ARTEMIS, deployed with US led coalition partners with Combined Maritime Forces and CTF 150 in the Arabian Sea, and Op REASSURANCE, deployed as part of a NATO Standing Maritime Group to implement a series of military measures to reinforce NATO's collective defence, demonstrating the strength of Allied solidarity in response to Russian aggression and provocation against Ukraine. An example of praise received on Op CARIBBE is available at http://www.navy-marine.forces.gc.ca/en/news-operations/news-view.page?doc=jiatf-south-director-thanks-rcn-for-successes-in-op-caribbe/ipmtfvw0. Last accessed August 16, 2018.

[5] DND and Ready Naval Forces expenditures for FY 2017/18 represent planned expenditures. The RCN expenditures for FY 2017/18 are actual expenditures as at April 25, 2018. All other expenditure amounts shown in the table are actual expenditures.

[6] Annual expenditures are sourced from DRMIS, DND Departmental Plan and Naval Staff data. RCN Personnel figures sourced from HRMS. DND Personnel figures sourced from annual Departmental Results Report. This table includes only RCN and RNF program operating expenditures. It does not include Vote 5 funding for Capital Procurement programs, which are not part of the RNF program, which pertain to the National Shipbuilding Strategy programs and other procurement programs to update RCN infrastructure and further enhance RCN capabilities. The latter spending is forecast to reach $11.054 billion over a five-year period in accordance with Defence Investment Plan 2018 Table 5.

In 2017, the RCN fleet was comprised of twelve frigates, four submarines and twelve Maritime Coastal Defence Vessels (MCDV) along with minor auxiliary and support vessels. The fleet is approximately balanced between MARLANT in Halifax, Nova Scotia, and MARPAC in Esquimalt, British Columbia. The Navy's three former destroyers and two replenishment ships were disposed of during the period covered by this evaluation as they were at the end of their service life.

Overall responsibility for the Navy's readiness training, comprising collective and integration training, has been assigned to the Commander (Comd) MARLANT while the Comd MARPAC has been assigned responsibility for the Navy's individual occupational and common training and professional development.

The RCN generates and sustains relevant, responsive, combat-effective naval forces through the following program activities:

- **Naval Collective Training (CT).** CT takes groups of individually trained personnel and forms them into effective operational specialist sub-teams which collectively form an operational unit. In the RNF Program Information Profile,[7] this also includes Operational Training (OT), which brings sub-teams together into a formed unit and trains them as a cohesive whole. The result is a unit generated to a specified level of readiness. OT encompasses all-unit training as well as interaction between two or more units.[8]
- **Naval Individual Training (IT)**. IT and Education include activities or events at the individual level that provide both initial and/or advanced knowledge, skills and other attributes required to carry out required naval duties and tasks both at sea and alongside.[9]
- **Naval Equipment Servicing**. This support is provided primarily through the DGMEPM who is responsible to the Assistant Deputy Minister (Materiel) (ADM(Mat)) and responsive to the CRCN. DGMEPM is the materiel authority for all naval ships, submarines, auxiliary vessels and naval equipment for shore establishments, and ensures that RCN ships are maintained and repaired both domestically and abroad. The work comprises materiel support, preventive and corrective maintenance, as well as some engineering changes (EC) and fitting of mission-specific equipment for a specific operational activity or mission.
- **Manage Naval Readiness**. Naval readiness and sustainment is managed by the RCN. This activity ensures effective governance, processes and headquarters organizations are in place for the application of the RCN's command and control including resource management and capability plans, human resource and financial management, and logistics and resource allocation functions. Documents issued by the CRCN include Commander's Planning Guidance and, more recently, Readiness Direction to Formations, which provides direction for the generation of naval readiness. The RCN

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[7] Performance Information Profile (PIP) 2.2 Ready Naval Forces, November 29, 2017 Draft.
[8] *Future Naval Training System Strategy*, A-PD-050-000/AG-003, June 2015.
[9] Ibid.

command is supported through a governance structure[10] that provides advice and recommendations on issues affecting the RCN and DND/CAF. The senior executive council for the CRCN is the Naval Board.

RNF are considered operational and those Force Elements (FElms) are maintained at designated levels of readiness for operational employment.[11] Readiness is defined in the CDS Force Posture and Readiness Directive as the preparedness to respond to government direction, expressed in terms of two components: the capability to execute a military task (essential requirements) and the time to deploy the capability of an organization's force element to perform a specific tactical or operational task.[12]

1.2.2 Program Objectives[13]

The RNF program objectives are:

- Generate naval FElms ready to conduct concurrent operations in accordance with CDS Directives for FP&R; and
- Ensure naval equipment is ready for training and operations.

1.2.3 Stakeholders

DND/CAF stakeholders include the Canadian Joint Operations Command, Senior Joint Staff, Canadian Army, Royal Canadian Air Force, Canadian Special Operations Command, Canadian Forces Intelligence Command, ADM(Policy), ADM(Mat), Military Personnel Command and Assistant Deputy Minister (Human Resources-Civilian) (ADM(HR-Civ). Other government department stakeholders for RNF are Global Affairs Canada, Public Safety, Transport Canada, and Fisheries and Oceans. Allies and coalition partners in operations may also be considered stakeholders.

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[10] As described in Naval Order (NAVORD) 1600-0, *RCN Strategic Governance*, governance within the RCN shall ensure that decisions on strategic priorities affecting work, resource allocation and risks are balanced and aligned among operational and strategic-level agendas. The Navy's governance structure is comprised of three levels of boards and committees ranging from the Level 1 Naval Board, to Level 2 pan-naval boards and committees to the Level 3 Formation level boards and committees.

[11] CFCD 129, Royal Canadian Navy Readiness and Sustainment Policy, 2015 Version 2.

[12] CDS Directive for CAF Force Posture and Readiness 2018/19, Annex D Glossary.

[13] National Defence Departmental Results Framework, FY 2018/19 Departmental Results and Indicators for Ready Naval Forces.

1.3 Evaluation Scope

1.3.1 Coverage and Responsibilities

The Departmental Results Framework (DRF) Program 2.2 Ready Naval Forces Performance Information Profile (PIP) is aligned with the following former PAA elements:

- 3.1.1 Maritime Roles – Readiness Sustainment;
- 3.2.1 Maritime Environment – Integration Training;
- 3.2.6 International and Domestic – Interoperability Training;
- 3.3.1 Maritime Environment – Force Element Production;
- 3.4.1 Maritime Environment – Force Element Production, Coordination and Command and Control;
- 4.1.5 (Maritime Environment) Professional Development Training;
- 4.1.6 (Maritime Environment) Military Personnel – Occupation Training; and
- 4.2.5 (Maritime Environment) Materiel – Engineering, Test, Production and Maintenance.

1.3.2 Resources

Expenditures and personnel attributed to the RCN and the RNF Program are provided in Table 2.

1.3.3 Issues and Questions

In accordance with the TB Directive on Results (2016),[14] the evaluation report addresses the evaluation issues related to relevance and performance. An evaluation matrix listing each of the evaluation questions, with associated indicators and data sources, is provided at Annex D. The methodology used to gather evidence in support of the evaluation questions can be found at Annex B.

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[14] Treasury Board Secretariat. Directive on Results, July 1, 2016. https://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=31306 last consulted on July 4, 2016.

2.0 Findings and Recommendations

2.1 Relevance

> **Key Finding 1:** There is an ongoing and future need for RNF in support of Canada, Canadians and Canadian national interests.

Between 2001 and 2017, the RCN has deployed warships on well over 110 occasions to various international operations ranging from Maritime Interdiction Operations to disaster relief. Since 2014, the RCN has maintained a frigate as part of the Standing NATO Maritime Group in support of NATO's assurance and deterrence measures following Russia's annexation of Crimea. The RCN is also routinely deployed in the Eastern Pacific and the Caribbean in support of the US Joint Interagency Task Force (South)'s counter-narcotics operations.

Canada's defence policy: *Strong, Secure, Engaged* (SSE), as well as the Canadian Security and Intelligence Service security outlook[15] both note growing risks, destabilising developments and increased international tension from state competition, ranging from the South China Sea to Eastern Europe. As well, the June 2017 Report of the Standing Committee on National Defence, *The Readiness of Canada's Naval Forces*, recommended that the Government of Canada (GC) recognize that the readiness of the RCN is one of its key pillars ensuring national sovereignty and security, noting that the aggressive actions by Russia and China in the maritime domain pose a direct threat to Canada and its interests.

> **Key Finding 2:** There is alignment between the generation and delivery of RNF and departmental and federal roles and responsibilities.

Defence is a core federal government responsibility as articulated in the *Constitution Act,*[16] which defines and outlines the responsibilities and duties of the federal government, including the CAF and DND. Furthermore, the *National Defence Act*, Article 17 establishes DND and the CAF as separate entities, operating within an integrated National Defence Headquarters, as they pursue their primary responsibility of providing defence for Canada and Canadians. The *National Defence Act* and various federal government Orders in Council also provide for CAF assistance to federal and provincial civil authorities.

Finally, the role of the RNF and strategic direction regarding the requirements of the RCN are clearly articulated in SSE ranging from surveillance and control of Canadian territory and

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[15] Canada's defence policy: *Strong, Secure, Engaged (*SSE*)* and Canadian Security Intelligence Service, *2018 Security Outlook – Potential Risks and Threats*, June 2016.
[16] *1867 Constitution Act*, section 91.

approaches, with an increased focus on the Arctic, contributing to NATO and developing relationships with multinational partners.[17]

RNF have been employed in direct support of other federal and provincial government departments and agencies and their provincial and community counterparts, within a whole-of-government framework, as provided for in the Federal Emergency Response Plan. In each case, the RCN has played a complementary role, supporting OGDs as appropriate based on Requests For Assistance under the *National Defence Act* s. 273.6 (1), which states the Governor in Council or the Minister of National Defence (MND) may authorize the CAF to perform any duty involving public service.

The RCN has provided FElms in support of the Royal Canadian Mounted Police in counter-narcotics operations, the Canadian Border Services Agency in response to smuggling of illegal immigrants, and the Department of Fisheries and Oceans in support of fisheries patrols, as well as domestic emergencies such as floods and other natural disasters.

> **Key Finding 3:** RNF are aligned with DND/CAF priorities and are a key component of the Department's Strategic Outcomes.

SSE clearly identifies key initiatives for investment in the RCN with a commitment to long-term funding to acquire new Joint Support Ships (JSS) and the full complement of 15 Canadian Surface Combatants to replace the existing frigates and the retired destroyers – one of the largest acquisitions in Canadian shipbuilding history.[18] Other GC investments in the Navy include acquisition of up to six Arctic Offshore Patrol Ships, modernization of the Victoria-class submarines, new intelligence, surveillance and reconnaissance systems, and upgraded armaments.[19] The MND mandate letter also clearly establishes the RCN as a priority and directs the MND to work closely with the Minister of Public Services and Procurement to ensure delivery of the Navy's future capabilities.

Finally, the RNF program is one of the key Ready Forces programs identified in the Departmental Results Framework and its priority in DND/CAF is reflected in the Department's Strategic Investment Plan and the CDS' annual FP&R Directives.

2.2 Performance—Achievement of Expected Outcomes (Effectiveness)

Effectiveness of the RNF program was evaluated using annual CDS Directives for CAF FP&R, Departmental reports, CAF and RCN personnel and training data, RCN readiness reports, key informant interviews and information obtained from ships' Commanding Officer Questionnaires.

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[17] Canada's defence policy: *Strong, Secure, Engaged (*SSE*)*.
[18] Ibid.
[19] Ibid.

2.2.1 Immediate Outcome 1 – Ships' crews and Specialty Teams meet readiness requirements.

> **Key Finding 4:** Ships' crews have successfully achieved Sea Training Group training and certification for their prescribed readiness requirements.

CT is one of the three components of military readiness that also include occupationally trained personnel and serviceable naval units and materiel. CT prepares ships' crews, special teams and other naval FElms to perform military tasks in accordance with defined standards.[20] At the highest level, this encompasses Task Group training and interoperability training with OGDs and both allied and partner navies.

Ship and submarine crews undergo a comprehensive set of collective training requirements as part of the Navy's readiness program as detailed in CFCD 129 *Royal Canadian Navy Readiness and Sustainment Policy*. The training is conducted and assessed by Fleet School staff or members of the Sea Training Group and specific training activities and certifications must be successfully completed by FElms to advance to the next higher readiness level.[21] On rare occasions units have been required to undergo additional training and re-assessment to advance to the next level of readiness. The sea training and certification requirements for each readiness level are specific to the Victoria-class submarines and each class of ship. The MCDVs, which do not possess a combat capability, are only considered NR FElms when they have successfully completed their sea training requirements.

Ships and Fleet Diving Units are also required to complete a comprehensive set of training serials in accordance with CFCD 102(M) *Royal Canadian Navy Combat Readiness Requirements.* The Combat Readiness Requirements (CRR) are based on a unit's specific requirements to prepare them to perform the tasks they may be assigned in accordance with CFCD 129 and their assigned readiness state.

CFCD 102 also provides a tracking mechanism for the various inspections/certifications that some FElms undergo at different stages of their readiness program. An example of the latter is a Weapons System Certification that is required in accordance with Naval Order (NAVORD) 11001-0 *Weapon System Certification Policy – Surface Ships.*

> **Key Finding 5:** Ships' crews have achieved the initial requisite level of collective training for their designated readiness state but have been challenged to maintain that level of training.

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[20] NAVORD 4500-0 *Royal Canadian Navy Individual and Collective/Operational Training Policy*.
[21] CFCD 129 Royal Canadian Navy Readiness and Sustainment Policy VER2 2015, Table 4-3, details FElm sea training and certification requirements for the Halifax-class frigates to progress from ER to High Readiness (HR).

CRR training serials can be difficult to achieve with many of the serials dependent on resources external to individual ships. These may include other ships, submarines and aircraft to play the role of friendly forces or opposing forces in tactical exercises, and weapons firing areas and missile firing ranges for the more complex CRR. The CRR also have validity periods that identify the duration the serial is considered valid once successfully completed. Validity periods can vary between different types of units and their readiness levels (ER/NR/HR).[22] Once achieved, if units do not have the ability to renew CRR serials their validity will expire and the unit's readiness level declines.

During the evaluation reporting period, the RCN participated in numerous exercises and deployments to complete CRR and maintain interoperability with other navies.[23] However, CRR completion rates will naturally vary over the operational cycle of ships, gradually increasing as units commence their operational cycle and move to higher readiness levels and decreasing as they approach the end of their operational cycle. The readiness levels of FElms at the end of FY 2017/18, based on collective training status, is depicted in Figure 1. Each section of a pie chart indicates the actual number of units at a specific readiness level over the FP&R prescribed number required at that readiness level, with readiness levels noted as NR1, HR and below NR1 (including lower NR and ER categories). For example, in the case of the Halifax-class, there were four frigates at NR1 while two were required, three at HR while four were required, and five were below NR1 when six could be in that category.

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[22] NR1 = Normal Readiness at higher level of NR (1, 2, and 3); HR = High Readiness, and ER = Extended Readiness.
[23] In FY 2016/17 these included RIMPAC 16; participation of the submarine, HMCS *Windsor*, in Exercise DYNAMIC MONGOOSE; the deployment of HMC ships Summerside and Moncton to West Africa for NEPTUNE TRIDENT 17; HMCS *Vancouver*'s participation in the Royal Australian Navy Exercise KAKADU; the Canadian-led anti-submarine warfare exercise CUTLASS FURY; and Exercise TRADEWINDS in the Caribbean Sea.
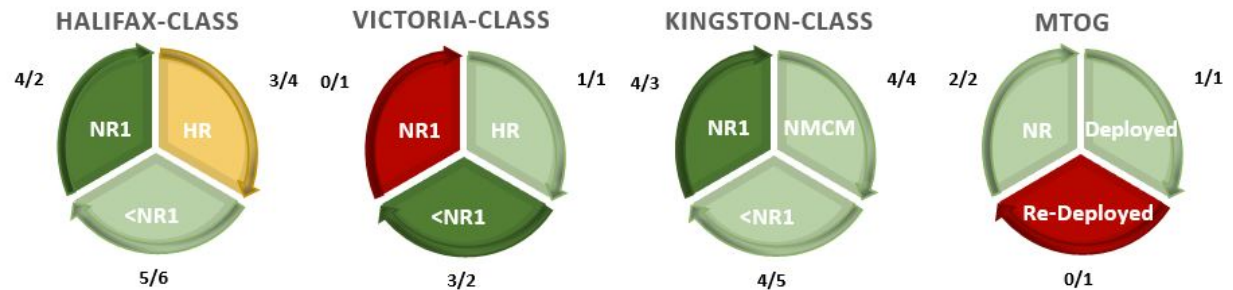
Figure 1. Force Element Readiness based on Collective Training.[24] This figure presents the readiness status of the Halifax-class frigates, Victoria-class submarines, Kingston-class MCDVs and the Maritime Tactical Operations Group (MTOG) teams based on each unit's completed collective training.

2.2.2 Immediate Outcome 2 – Ships' crews and specialty teams are manned by qualified personnel in accordance with readiness requirements.

> **Key Finding 6:** The RCN is challenged to crew units with the requisite personnel and training in accordance with readiness requirements.

Posting and crewing priorities for ships and submarines are updated annually in a directive promulgated by the Director General Naval Strategic Readiness. Crewing requirements are met primarily through postings to the units by National Defence Headquarters Director General Military Careers. Any subsequent critical personnel shortages are identified by the ships and managed by the Personnel Coordination Centres in each of MARLANT and MARPAC by attach posting personnel to address crewing deficiencies or support personnel training requirements. Attach posted personnel are normally taken from ships in ER or other lower states of readiness.

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[24] RCN Quarterly Report FY 2017/18 Q4. MTOG refers to Maritime Tactical Operations Groups.

# of positions/unit		10	12	9	6	7	6	8	6	11	7	15	6	37	18	18	15	14	12	217	
		Exec	Ops										DECK		MSE		CSE		LOG			
			Misc		Sensors		Sonar		IW		Comm											
FP&R Desig		OS-Cdr	OS-Lt(N)	<LS	MS-Lt(N)	<LS	MS-Lt(N)	<LS	MS-Lt(N)	<LS	MS-Lt(N)	<LS	MS-Lt(N)	<LS	MS-Lt(N)	<LS	MS-Lt(N)	<LS	MS-Lt(N)	Avg	Flt Avg
HR1 until Jun 18	STJ	100%	100%	67%	100%	71%	100%	88%	100%	73%	100%	80%	100%	86%	100%	89%	93%	93%	100%	91%	91%
HR1 Jun 18 - Jan 19	VDQ	100%	92%	100%	83%	100%	83%	100%	100%	91%	100%	100%	100%	100%	100%	100%	93%	93%	100%	96%	
HR1 Oct 18 - Jun 19	TOR	100%	92%	89%	83%	100%	67%	100%	83%	100%	100%	100%	100%	100%	100%	100%	100%	93%	100%	95%	
NR until Aug 18	HAL	100%	92%	100%	67%	86%	67%	88%	67%	82%	86%	100%	100%	89%	100%	89%	100%	100%	100%	89%	
NR until Aug 18	CHA	90%	92%	100%	83%	71%	83%	100%	100%	82%	100%	100%	100%	84%	100%	100%	100%	79%	100%	92%	
NR until Aug 18	MON	100%	83%	100%	83%	43%	83%	100%	83%	100%	86%	100%	83%	95%	100%	100%	100%	86%	100%	90%	
ER	FRE	100%	58%	89%	100%	100%	33%	63%	33%	82%	71%	100%	100%	100%	100%	100%	87%	71%	83%	82%	
FP&R Desig		OS-Cdr	OS-Lt(N)	<LS	MS-Lt(N)	<LS	MS-Lt(N)	<LS	MS-Lt(N)	<LS	MS-Lt(N)	<LS	MS-Lt(N)	<LS	MS-Lt(N)	<LS	MS-Lt(N)	<LS	MS-Lt(N)	Average	Flt Average
HR3 Jan - Oct 18	VAN	100%	100%	100%	100%	86%	100%	100%	83%	73%	86%	100%	100%	97%	100%	100%	100%	100%	92%	95%	88%
HR3 Apr 18 - Mar 19	CAL	100%	100%	67%	67%	71%	50%	100%	67%	45%	100%	73%	83%	89%	100%	100%	87%	93%	100%	83%	
HR3 Nov 18 - Jun 19	REG	100%	100%	100%	83%	86%	83%	100%	67%	91%	100%	100%	83%	95%	100%	100%	100%	100%	100%	94%	
NR until Apr 19	OTT	100%	100%	89%	100%	100%	83%	100%	67%	55%	57%	100%	83%	95%	94%	100%	100%	86%	100%	89%	
ER	WIN	90%	75%	100%	50%	86%	50%	100%	100%	45%	57%	100%	67%	37%	100%	100%	100%	79%	100%	80%	
# of positions/unit		10	12	9	6	7	6	8	6	11	7	15	6	37	18	18	15	14	12	217	

O&E Position Fill Rate	
95-100%	
85-95%	
<85%	

Table 3. CC 1 FP&R Priorities and Crewing Status – Halifax-class.[25] This table presents the percentage of required crewing achieved for key occupations in the Halifax-class frigates based on their FP&R designated readiness level.

Table 3, which shows crewing in the Navy's frigates over a period of FY 2018/19, includes both the personnel posted and attach posted to the units required to attain those crewing levels, and reveals the significant shortage of personnel in the Combat Operator occupations in the Master Seaman to Lieutenant(N) rank range. Crewing in submarines and MCDVs is similarly challenged. The Navy's crewing shortages reflect:

- Deficiencies in the Navy's Trained Effective Strength (TES),[26] which at the time of this report numbered approximately 700 personnel; and
- Difficulties achieving recruiting targets to bolster the Navy's TES. As can be seen in Table 2, the Reg F personnel strength of the Navy has steadily declined over the period of the evaluation. At the same time, the Navy is faced with the requirement to create establishments to crew new units including the Arctic Offshore Patrol Vessels, JSS, MTOG, and the MV *Asterix*, the Navy's leased interim replenishment ship.

> **Key Finding 7:** The relatively high numbers and proportion of attach posted personnel to smaller units such as the MCDVs, has challenged the ability of these ships to achieve and maintain readiness levels.

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[25] RCN Quarterly Report FY 2017/18 Q4.
[26] The number of personnel with the required training to perform their jobs.

Since November 2016, the Navy has been carefully tracking the number of attach postings and the Time Away From Home for those sailors that are deployed at short notice, or in conflict with their personal plans, to meet critical manning requirements.[27]

Personnel shortages have stressed crewing in all key FElms. Ensuring that units have personnel with the requisite platform or equipment familiarity has also been a challenge. This is particularly evident in smaller units such as the MCDVs, as well as submarines. These vessels have significant deficiencies of qualified personnel, including Naval Warfare Officers and engineers with the required certifications, and attach postings comprise a much larger portion of their small crews.[28]

Instability Level	# of Aps	# of Pers	RCN Parade State (% of 9662 Pers)*
High	8 or more	2	0.02%
	5 - 7	36	0.37%
Medium	4	57	0.59%
	3	154	1.59%
Low	2	547	5.66%
	1	1,523	15.76%
		2,319	24.00%

Table 4. Attach Postings - December 1, 2016 to November 30, 2017.[29] This table details the number of attach postings individuals were subject to during the period to meet crewing requirements and support individual training requirements.

The high number of attach postings, as seen in Table 4, has also reduced the efficiency of collective training, particularly in smaller units such as in the MCDVs. Constantly changing crew has required more frequent repetition of critical collective training for the new crew members. The Commander of the Canadian Submarine Force reported at the Naval Strategic Management Board meeting in August 2014 that there were insufficient submarine-qualified Marine Engineers to operate three submarines and vulnerability within the Electrical Technician and Sonar Operator occupations, which were placing an extremely high strain on both the personnel and materiel for the class. In December 2017 he reported that all submarine crews combined could only fill 70 percent of the crew positions in the four submarines.[30] The limited availability of submarines has been a severe impediment to qualifying new submariners.

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[27] RCN Message NAVGEN 035/16 RCN 045/16 211649Z NOV 16, RCN PERSONNEL TEMPO.

[28] The full crew of an MCDV is 37 personnel and a submarine crew is 48 + 5 trainees. See https://www.canada.ca/en/navy/services/history/ships-histories/kingston.html and http://www.navy-marine.forces.gc.ca/en/fleet-units/submarines-home.page, last accessed August 22, 2017.

[29] RCN Quarterly Report FY 2017/18 Q3. # of APs = the number of attach postings an individual has had during the period; # of Pers = the number of individuals that have been attach posted that many times during the period. On the low instability level, 1,523 persons were attach posted once, while at the high instability level, two persons were attach posted eight or more times.

[30] Submarine Force Update Brief to NSMB, December 6, 2017.

> **Key Finding 8:** The RCN is closely tracking critical personnel shortages and has introduced several important initiatives to manage crewing, training and quality of life issues.

The number of attach postings shown in Table 4, along with Time Away From Home seen in Table 5, are largely the result of personnel shortages and have become major quality of life issues for sailors over the period of the evaluation and are now closely monitored and tracked by the Navy.

Days TAFH	# of Pers	RCN Parade State (% of 9662 Pers)*	% by Grouping
270 - 365	7	0.07%	
240 - 269	12	0.12%	6.6% (638 pers) of RCN with more than 6 months TAFH in the past 12 months
210 - 239	87	0.90%	
180 - 209	532	5.51%	
150 – 179	383	3.96%	
120 – 149	382	3.95%	14.62% (1,413 pers) of RCN with more than 3 months but less than 6 months TAFH in the past 12 months
90 – 119	648	6.71%	
60 – 89	1,324	13.70%	
30 – 59	1,912	19.79%	70.28% (6,790 pers) of RCN with 3 months or less TAFH in the past 12 months
1 – 29	3,554	36.78%	
Totals	8,841	91.50%	

Table 5. Time Away From Home Port (TAFH) - December 1, 2016 to November 30, 2017.[31] This table presents the number of days that individuals were away from home. At the high end, seven individuals had between 270 and 365 days away from home over the period reported, while at the low end, 3,554 were away from home only one to twenty-nine days.

Quality of life issues for sailors include no notice/short notice attach postings, and/or frequent attach postings to operational ships. This creates un-forecast and often prolonged periods away from families during a period they are posted to a shore unit or reduced readiness unit with an expectation of being able to spend more time and be able to plan activities with their families. If not properly managed, these factors may raise RCN attrition rates, particularly of their more senior personnel with families.

The Navy has introduced numerous initiatives during the evaluation period to address both short- term crewing issues and the longer term personnel and training issues. These include:

- Enhanced recruiting with dedicated RCN specific recruiters, including through Naval Reserve units in conjunction with Military Personnel Command recruiting;
- More responsive recruiting of both Reg F and Reserve naval personnel;

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[31] RCN Quarterly Report FY 2017/18 Q3, the high TAFH (red) category is a combination of CAF/RCN tasks including OP Reassurance (NATO deployment), Poseidon Cutlass (RCN deployments to SE Asia), Kingston-class, HMCS *Oriole*, and training.

- The "Big Idea," an initiative to expedite the component transfer of Reserve Force personnel to the Reg F and to re-enrol recently retired personnel;
- More efficient training process for individuals to reach their occupational functional point;
- Rationalized and validated personnel requirements and optimal rotation and/or employment model for ships/units that may reduce naval personnel demands; and
- Elimination of duplication of effort and properly defined jobs. The Navy is currently amalgamating and restructuring the non-commissioned member (NCM) marine engineering and combat operator occupations.[32]

2.2.3 Immediate Outcome 3 - Fleet units are materially sustained and operationally relevant.

> **Key Finding 9:** FMFs have been increasingly challenged to sustain the aging platforms and increasingly obsolete systems of the Halifax-class frigates and Victoria-class submarines to meet technical readiness requirements.

> **Key Finding 10:** Victoria-class submarines are operated in accordance with current submarine safety regulations and with appropriate safety restrictions when necessary.

Ship and submarine systems, including recently updated systems in the modernized frigates, regularly encounter serviceability issues that reduce their operational capabilities but do not restrict their operations.

Although in the case of frigates, the RCN encounters issues maintaining multiple units at the highest levels of high readiness due to limited mission-specific equipment, training and certification, the RCN remains fully capable of meeting all its demands laid out by the CDS Directive on FP&R.

In the case of the submarines, issues with hull welds and serviceability of batteries and diesel generators, all of which impact submarine safety, have periodically restricted or curtailed submarine operations over the period of the evaluation. Due to the hazards associated with submerged operations, submarines are required to undergo comprehensive testing and certification, much like aircraft airworthiness certification, to confirm they are safe to operate.[33]

FMFs have been increasingly challenged over the evaluation period. The key issues have been:

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[32] Presentation, "Integrated Risk Management – RCN Personnel Risks – Work Progression," Cdr Witzke, last modified January 5, 2018.

[33] Submarine safety is assured through testing and certification in accordance with C-23-VIC-000/AG-001 Materiel Management and Certification in Submarines – Victoria-class. Submarines may be restricted from proceeding to sea prior to rectification of defects depending on the results of tests/nature of the defects.

- Ships' limited technical staff are unable to complete all the numerous Preventative Maintenance (PM)[34] routines required and Corrective Maintenance (CM).[35] The amount of incomplete maintenance grows over a frigate's four-year operational cycle, significantly increasing the work load for FMF staff during Work Periods. [36]

- In 2016, the FMF PM completion rate was 65 percent,[37] and over the past ten years the total FMF executable maintenance has trailed demand by 100,000 - 200,000 hours.[38] In addition, the aging fleet of ships and submarines require increasing maintenance and repair, resulting in ship and submarine Docking Work Periods (DWP) and Extended Docking Work Periods (EDWP) routinely exceeding their programmed hours with a resultant reduction in ship/submarine operational availability.

- FMFs' production is becoming increasingly limited by capacity versus funding.[39] The FMFs have been understaffed the past several years which, combined with increasing demands, has led to significantly increased overtime to meet production requirements. The Navy is working closely with ADM(HR-Civ) to resolve this and other civilian personnel issues.

- Availability of spare parts. The Navy has had sufficient National Procurement funds to meet spare part demands, however the obsolescence of certain ship and submarine systems has made it difficult to obtain some parts. In certain cases those parts have been manufactured by the FMF or transferred from ships and submarines in DWPs or reduced readiness levels to the higher readiness unit requiring the parts. This activity represents a further demand on FMF resources and risks damaging serviceable equipment during the transfer.

- Key informants and reports have noted that there is difficulty coordinating fleet units' Short Work Periods and ECs to coincide with FMF resource availability as a result of the Navy's high operational tempo, further straining FMFs' ability to complete planned PM, CM and ECs.

The Navy and the DGMEPM are working closely together to ensure that future maintenance demands can be met. Initiatives include:

- Increasing the funding for FMF third line maintenance, from $15 million to $18 million annually to increase third line maintenance output;

- Increasing the workforce in both FMFs;

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[34] PM routines are any scheduled maintenance task carried out to reduce the likelihood of system failure or to confirm that the system is operating within specified performance limits. PM falls into one of two categories, namely Condition Based Maintenance and Time Based Maintenance.

[35] CM is carried out after the occurrence of a functional failure or detection of a fault, in order to restore the equipment or system to a state in which it can perform its required functions.

[36] RCN Quarterly Report FY 2017/18 Q4.

[37] NSMB Item 4 – Halifax-class 2nd Line PM Demand, February 5, 2018.

[38] MEPM Third Line Demand Increase and Capacity of Fleet Maintenance Facilities, letter 2183AA-01000-01 (DGMEPM) September 18, 2017.

[39] NSMB – Item II, DGMEPM, September 20, 2017.

- Increasing the scope of the Victoria-class In Service Support Contract when it is renewed; and
- Prioritizing third line maintenance through an Annual Prioritized Work List, managed by an MEPM/FMF Service Level Agreement.

> **Key Finding 11:** Ship and submarine systems are updated periodically to maintain units' operational relevance in an increasingly complex operational environment. Units deploying to operations may be fitted with mission-specific systems to meet anticipated mission requirements.

The HCM and FELEX programs were completed during the period of this evaluation and work has continued since then to introduce other new systems in the frigates. While this is modernizing and extending the service life of these ships, the obsolescence of certain parts and systems, including some recently installed HCM systems, and the growing age of the platforms themselves, remain significant issues.

Similarly, as directed by SSE, the Navy is modernizing the Victoria-class submarines and a number of projects are also under development to maintain or enhance the operational effectiveness of the MCDVs.[40]

Finally, a variety of mission-specific systems for the frigates, submarines and MCDVs are routinely fitted in deploying units to ensure they have the equipment they may require to conduct assigned or anticipated tasks. Those systems may also be accompanied by specialist personnel to operate and maintain them.

2.2.4 Immediate Outcome 4 – Naval resources are effectively managed

> **Key Finding 12:** Naval resources are effectively managed through a Naval organization and governance structure that closely monitors performance measurement data to support its Plan, Execute, Measure, Adjust (PEMA) management of the RNF program.

The Navy has adopted a "One Navy"[41] function-based organization over the evaluation period that continues to evolve to better generate and manage RNF. The Navy's key functional organizations, one responsible for generating ready force elements and the other responsible for personnel and training, assigned to the Comds MARLANT and MARPAC respectively, were introduced to eliminate or reduce the duplication of responsibilities.

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[40] Kingston-class Project Summary, October 16, 2015.

[41] "One Navy" refers to the integration of RCN Regular Force and Reserve Force personnel in ships and shore establishments rather than the two components performing different missions, serving in separate units, and duplicating RCN HQ organizations.

These organizations have continued to evolve and be refined over the period of the evaluation to enhance the Navy's ability to generate and sustain RNF. This was reflected in a MARLANT HQ message that detailed the continuing evolution of the Navy's Maritime Component Command (MCC) and Formation Force Generation organizations.[42]

The [RCN] *Commander's Guidance and Direction to the Royal Canadian Navy Executive Plan – 2013 to 2017* clearly articulated priorities including enabling the RCN's transition to the future fleet and evolving their business to create a more functionally aligned "One Navy," and improve the Navy's strategic agility by employing the strategy of PEMA, and seeking better, leaner, smarter ways to deliver on the Navy's mission. The Navy has pursued this aggressively, as reflected in the revised coastal formations' functions, revised Naval Personnel and Training Group (NPTG) organization and extensive use of Defence Program Analytics to monitor and adjust program activity to achieve the required outcomes. The RCN's PEMA is further reflected in the following key documents and activities:

- The Comd RCN's direction and planning guidance, which has been regularly updated, as in his *RCN Strategic Direction and Intent 2016-2019*, the *Royal Canadian Navy Strategic Plan 2017-2022* and the *RCN's Future Naval Training System Strategy*;
- Naval readiness and training directives are regularly reviewed and updated by the responsible authorities based on changing ships systems, feedback from ship and submarine COs and observations by Sea Training staff while conducting sea readiness training. Some of these observations are captured in the Sea Training Group Annual Reports;
- The Comds Sea Training (Atlantic and Pacific), responsible for maintaining the Navy's CFCD 102 Combat Readiness Requirements, advise the Comd Sea Training Group when changes are required to ensure the publication remains relevant, achievable and responsive to strategic direction and guidance;[43] and
- Individual training plans, documentation, scheduling and delivery, the responsibility of the NPTG, are reviewed and updated. In 2016, the NPTG Training Development Schedule and Qualification Standard and Plan (QSP) tracking sheet revealed that most QSPs had been updated since introduction of the HCM. Those that have not been recently updated are being risk assessed.

The RCN's governance structure and cycle have evolved over the period of the evaluation to more effectively inform leadership of current and future force issues, and support sound decision making to manage the Navy's "Change agenda" for the future and "Sustain agenda" for today.[44]

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[42] MARLANT HQ message NAV GEN 006/18 / RCN 008/18 281249Z MAR 18, MARITIME COMPONENT COMMAND AND FORMATION FORCE GENERATION EVOLUTION.
[43] CFCD 102(M) RCN Combat Readiness Requirements.
[44] Naval Order (NAVORD) 1600-1 RCN Strategic Governance Framework.

The RCN's current strategic governance organization, detailed in NAVORDs *1600-0 RCN Strategic Governance* and *1600-1 RCN Strategic Governance Framework*, establishes a three tier governance structure:

- Tier One supports the CRCN through the Admirals Council and Naval Board;
- Tier Two boards and committees support the Deputy Commander RCN; and
- Tier Three boards, committees and working groups inform related Tier Two boards and committees.

Committees, working groups and steering groups have been established or re-focused, when required, to better address arising requirements. An example was a proposal to establish an RCN Civilian Workforce Management Working Group, replacing an existing Civilian Workforce Management Board, to better support the Navy's current efforts to manage and increase the size of its civilian workforce.[45]

> **Key Finding 13:** The RCN has been in a continuous period of re-organization over the period of the evaluation but formal Organization and Establishment (O&E) changes have not kept pace with the changes leading, in some instances, to a lack of clear ARA of the revised organizations.

RCN organization and establishments have also changed significantly over the period of the evaluation as the Navy adjusts to meet today's operational and readiness requirements and prepare for its future fleet. The most pronounced changes have been within the Navy's training establishment, the NPTG with a Headquarters organization and responsibility for Personnel Coordination Centres, Fleet Schools and Training Development Centres in each of the formations. Lesser, but still significant changes have been made and continue in the organization of the NSHQ in Ottawa, MARLANT HQ in Halifax and the NPTG in Esquimalt to better support the RNF program. These organizational changes are occurring as part of the Navy's PEMA strategy to refine their personnel requirements and associated ARA. Indeed, some changes are occurring so rapidly that documentation for the revised O&E, and the associated ARA, have not kept pace with the changes. At least one interviewee noted that this has resulted in decisions being made outside of an organization's or individual's ARA.

ADM(RS) Recommendation

1. It is recommended that the RCN develop a means of communicating Organization and Establishment (O&E) changes, pending their formal approval and notification, to ensure clarity regarding revised lines of communication and related ARA.

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[45] Director Naval Personnel and Training presentation to the Fleet Sustainment Oversight Committee, October 18, 2017.

OPI: Comd RCN/DGNSR

2.2.5 Intermediate Outcome - Naval Forces produced and sustained at the required level in accordance with the CDS Directive on FP&R

> **Key Finding 14:** The RCN has had difficulty generating certain ready naval force elements required in accordance with the CDS Directives on FP&R but met all requirements for assigned operations.

The Navy's Managed Readiness Program (MRP) is informed by the CDS Directives for CAF FP&R that were first introduced in 2012, and have since evolved in the way force element requirements are identified and to reflect the new GC Defence Policy. However each of the Directives specified:

- The capability/FElms required;
- Minimum response time/Notice to Move (in hours or days); and
- Endurance, i.e., short duration/surge operation or one that must be sustained.

The readiness level of naval FElms is assessed based on their Personnel (crewing), Materiel (availability and serviceability) and level of Training. At the end of FY 2017/18 the RCN was closely tracking readiness levels of the following deployable FElms identified in the latest CDS FP&R Directive:

- Halifax-class frigates;
- Victoria-class submarines;
- Kingston-class MCDVs including General Purpose MCDVs and four Mine Counter Measure (MCM) variants; and
- The MTOG – specially trained tactical boarding parties.

The Navy has been required by CDS FP&R Directives to maintain the following minimum numbers of major FElms during the period of the evaluation:

- One MCDV or major warship (frigate or destroyer) on each coast as Ready Duty Ships prepared at all times to respond to domestic operations and contingencies such as Search and Rescue;
- One HR combatant (destroyer or frigate) as a Single Ship International Deployer (SSID);
- One HR submarine;
- One NR submarine; and
- One HR Task Group (TG) comprising up to three surface combatants, a submarine and a support ship (AOR). One of four modernized frigates configured as command ships is required at HR for the TG command role since retirement of the RCN's Iroquois-class destroyers.

While key informants noted the RCN has never failed to deliver on assigned FP&R tasks, they acknowledged challenges existed including the limited number of ships that may be available at any given time. These limitations were appropriately reported in annual DND/CAF reports[46] over the evaluation period.

Major deficiencies and challenges included:

- Retirement of the Iroquois-class destroyers and replenishment ships (AOR) that represented a 25 percent loss in the navy's major warships. These eliminated critical Anti-Air Warfare and replenishment capabilities required for a TG to be largely self-sufficient. The Navy's lease of an interim AOR, MV *Asterix*, which joined the fleet in early 2018, addresses part of the AOR shortfall pending delivery of the JSS project; and
- Availability of frigates during the HCM program. The DGMEPM described FY 2013/14 as a "perfect storm year"[47] with the HCM program at its height (nine ships in various stages of the program), work to achieve the submarine 2+1+1 steady state[48] ongoing and first effects of the Deficit Reduction Action Plan that reduced the civilian work force and capacity of the FMFs to meet the Navy's maintenance production requirements.

The Navy's MRP, which assigns fleet readiness levels over a ten-year period based on FP&R requirements, reveals how the Navy is challenged to generate certain of the required force elements. As can be seen in the excerpts of the RCN's 2017 MRP in the following tables:

- There have normally been three HR frigates available at any given time and the frigate identified as the SSID has been "double tasked" as part of the National TG (NTG); and
- There has frequently been only one operational submarine, and periodically no operational submarine available. As previously discussed, the limited availability was normally based on scheduled maintenance/submarine safety certification requirements. However, submarine availability was further reduced by un-forecast maintenance requirements to rectify battery and diesel failures, repair weld defects in the boats' hulls, and repair damages from two major incidents. Those incidents were a fire in HMCS *Chicoutimi* that placed the boat out of service for nine years from October 2004 to November 2013, and an underwater grounding by HMCS *Corner Brook* in June 2011 that removed it from service for seven years until completion of its scheduled EDWP in 2018.

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[46] See DND/CAF Departmental Performance Reports 2013/14 and 2014/15 and the DND/CAF Departmental Results Report 2016/17.
[47] Naval Board Executive Committee Minutes, September 24-26, 2013.
[48] The submarine 2+1+1 steady state refers to 1 x HR submarine + 1 x NR submarine + 1 x transitioning submarine (into/out of Docking Work/Maintenance Period) + 1 x submarine in EDWP.

	2017												2018											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
SSID		STJ (SK)												STJ (SK)										
	CHA (SK)							CHA (SK)											VDQ (CY)					
National TG (NTG)	FRE					WIN							CHA							CAL				
	STJ							CHA					STJ						VDQ					
	WIN					OTT						STJ	VAN										REG	

Table 6. RCN HR Frigate Tasking 2017/18.[49] This table details the HR frigate assignments over a two-year period to meet the RCN's FP&R requirements for the Single Ship International Deployer and the National Task Group.

Force Element		2017												2018											
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
SSK	VICTORIA	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2
	WINDSOR	ER2	ER2	ER2	ER2	ER2	ER2	ER1	ER1	NR2	NR1	NR1	NR1	NR1	NR1	NR1	HR3	HR3	HR3	HR3	HR3	HR3	ER2	ER2	ER2
	CORNER BROOK	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2
	CHICOUTIMI	ER1	NR2	NR2	NR1	HR3	HR3	HR3	HR3	HR3	HR3	HR3	HR3	HR3	HR3	HR3	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2	ER2
TOTAL HR/NR SSK (metric <1=RED)		0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	1	1	1	1	1	1	0	0	0

(Note: VICTORIA shows "TDWP" status around O 2018.)

Table 7. Planned Victoria-class Submarine Availability.[50] This table depicts the availability and readiness status of the four Victoria-class submarines over a two-year period. Those submarines whose status is ER are not available. The table indicates that at least one HR or NR submarine was required.

The Navy also assesses how well it is meeting FP&R requirements by the percentage of time in "Ready Unit Days" that each of the key FP&R FElms[51] is ready for operations in accordance with its ordered readiness state.[52] FElms are assessed as meeting the FP&R requirements based on their ability to meet the following response times:

- HR - 21 days to be prepared to deploy; and
- NR - 90 days to achieve HR and be prepared to deploy.

The Navy has assessed the percentage of required Unit Ready Days achieved by frigates, submarines and MCDVs over the period FY 2014/15 to FY 2017/18 as depicted in Figure 2.

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[49] Managed Readiness Plan (MRP) (U) Version 17.5 Approved November 7, 2017. Ship's assigned to the NTG identified in bold print are "double hatted" as they are also the designated SSID. Ship's abbreviated names are STJ – *St Johns*; CHA – *Charlottetown*; VDQ – *Ville de Quebec*; FRE – *Fredericton*; WIN – *Winnipeg*; OTT – *Ottawa*, CAL – *Calgary*; VAN – *Vancouver*; REG – *Regina*. SK denotes ship's flight deck configured for Sea King helicopter; CY indicates ship's flight deck configured for new Cyclone helicopter. FRE, WIN, CHA, and CAL are the four frigates that were modified during HCM to be TG Commander's command ships.
[50] Ibid.
[51] Key force elements are 3 HR units of the Halifax-class, 1 HR and 1 NR unit of the Victoria-class and 4 NR-MCM units of the Kingston-class and 3 NR units of the Kingston-class.
[52] Readiness states of FElms are assessed based on a unit's crewing, training and materiel meeting prescribed requirements for their readiness state.
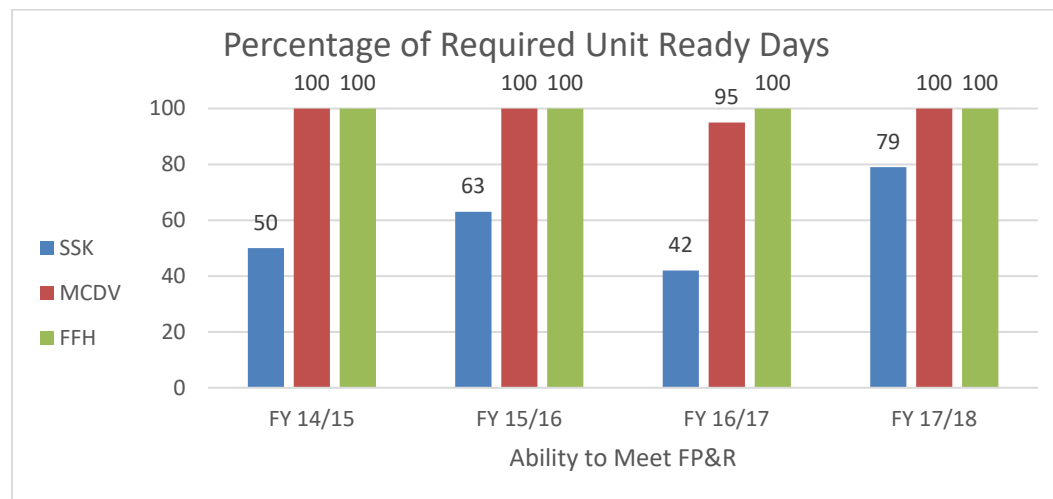
Figure 2. Key Force Element Percentage of Required Unit Ready Days Achieved FY 2014/15 - 2017/18.[53] This figure presents the percentage of the FP&R required unit ready sea days (e.g., 3 X HR frigates = 3 x 365 days per HR unit = 1,095 required unit ready days for 100 percent).

As can be seen, the RCN has achieved the required readiness levels of the frigates and MCDVs but it has been particularly difficult for the RCN to achieve Victoria-class submarines FP&R requirements. The percentage of required unit sea days for the submarines reflects their availability issues seen in Table 7.

2.3 Performance—Demonstration of Efficiency and Economy

Evaluation of the efficiency and economy for the RNF program was derived using data from the Defence Resource Management Information System (DRMIS), Human Resource Management System (HRMS), Departmental reports and the RCN Results Framework. Additional supporting context was provided from interviews with stakeholders and results from a ships' CO questionnaire.

Has the RCN used resources efficiently?

Six key indicators were used to determine whether the RNF program used resources efficiently:

- Trends in costs of individual training;
- Trends in costs of collective/integration training;
- Trends in costs of interoperability training;
- Trends in cost of materiel sustainment;
- Trends in cost of management; and
- Use of business information to optimize resource efficiency.

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[53] RCN presentation, "Metric 2.2 002 RCN Key Fleets FP&R Ready Days," last modified February 2, 2018 and RCN Quarterly Report FY 2017/18 Q4. SSK = Victoria-class submarine, and FFH = Halifax-class frigate.

> **Key Finding 15:** The new Naval Training System (NTS) has begun to demonstrate efficiencies through its reorganization, leveraging of technology and consolidation of infrastructure.

The RCN's training system is undergoing its largest revitalization in more than a quarter century. The goal of the initiative is to design and develop a naval training system that is more cost-effective, relevant and capable of meeting the demands of the 21st century. The Navy is already seeing results from these transformational efforts. Training times are being reduced by as much as 30 percent, enabling the RCN to get sailors readied and employed faster, along with a related boost in enthusiasm and morale.[54]

In the past, technological limitations forced a large amount of military training and education to be delivered in a linear, residential manner – usually in school or on board ship. The RCN's implementation of Technology Enabled Learning (TEL) such as the use of synthetic environments, simulators, networked training and distributed e-learning allows for further optimization of training resources and can reduce the classroom learning time for sailors while enhancing learning. The TEL strategy also reduces the demand for infrastructure and equipment. For example, bridge simulators are used on each coast to provide naval warfare officers valuable training experience while significantly reducing operating costs as reliance on real operational assets is reduced. According to one key informant, a further unquantifiable benefit of TEL is that errors committed while training in a synthetic environment do not involve additional costs as there is no real-world damage caused to equipment or personnel.

> **Key Finding 16:** The NTS may achieve greater efficiencies through better alignment of scheduled training and training demand.

Despite the efficiencies noted earlier, the RCN has identified a discrepancy in the Naval Training System (NTS) between the projected training demand (total demand) and the actual training delivered (demand produced) as shown in Figure 3.

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[54] Report of the Standing Committee on National Defence, *The Readiness of Canada's Naval Forces*, June 2017.
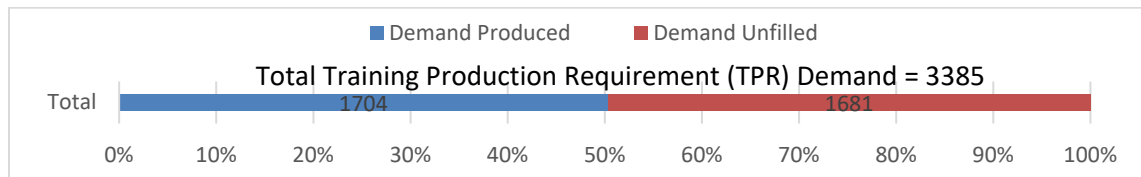
Figure 3. Training Production Requirements - Total Demand vs Produced Demand.[55] This figure indicates the Total Training Production Requirement (TPR), (i.e., training days), that was forecast versus the actual training conducted.

While the NTS has graduated almost all enrolled candidates, discrepancies in the number of trainees and available training billets available exist across all occupations in varying degrees. The RCN's training schedule (TRAINSKED) is derived from the Training Production Requirement (TPR). The NTS has the capacity to train to the TPR and as a result this inefficiency causes unnecessary encumbrances on the NPTG budget. Rectifying the discrepancy between the projected demand and the actual training delivered could allow for more efficient allocation of resources.

ADM(RS) Recommendation

2.   It is recommended that the RCN investigate the reasons for the variance between projected training demand and the actual training delivered to identify and introduce potential efficiencies in the Naval Training System production plan.

OPI: Comd RCN/ACNS P&T (NPTG)

In July 2015, the Future Naval Training Strategy made changes in the delegation of training functions and clarified training roles with Comd MARPAC, as the Navy's Assistant Chief of Naval Staff Personnel and Training (ACNS P&T) focused on Individual Training and Education and Comd MARLANT, as the Navy's Assistant Chief of Naval Staff Afloat Training and Readiness (ACNS AT&R) tasked with Collective Training. These changes have reduced duplication of organizations and responsibilities between the coasts and streamlined processes. One key informant mentioned that the shifting of certain training management responsibilities allows the Naval Fleet School to direct its main efforts to training delivery. One issue affecting the efficient delivery of training with the establishment of the NPTG has been the reduction of NPTG staff as seen in Table 8. The organization was unable to sustain the required training tempo with its reduced personnel due to changes in the NPTG's originally envisioned mission and deliverables. Although this has been mitigated by employing individuals from the senior ranks and non-Fleet School staff to deliver training, reliance on external resources risks instructors not being available, qualified or properly prepared to teach the course. Lower recruitment intake along with the cancelling of training serials with below minimum enrolment levels has eased some of the immediate pressures. However, at the RCN's April 2018 NSMB

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[55] Numbers reflect Regular Force training only. Sourced from RCN Quarterly Report FY 2017/18 Q4.

meeting, a decision was made to provide the NPTG additional staff (see 2018/19 column in Table 8) to reach sufficient capacity and expertise levels to deliver its core training activities.

Personnel	2014 (Pre-NPTG)	2016 (Post NPTG)	2018/19 (Current Demand)
Reg Force	1,279 (includes Res)	780	835 (+55)
Reserves	N/A	109	129 (+20)
Civilians	175	129	164 (+35)
Total	**1,454**	**1,018 (-436)**	**1,128 (+110)**

Table 8. NPTG Establishment History.[56] This table presents the total RCN training establishment prior to the RCN's creation of the NPTG organization (Pre-NPTG), following creation of the NPTG (Post NPTG) and the revised increased requirements for FY 2018/19 (Current Demand).

> **Key Finding 17:** The increased cost of collective training is attributed to the increasing availability of frigates for training during the reporting period.

As shown in Table 9, the cost of CT increased dramatically during the reporting period. However, as mentioned in section 2.2.5 of this report, the period from FY 2013/14 to FY 2016/17 was characterized by a large number of frigates in the HCM program and the withdrawal from service of the Navy's destroyers and replenishment ships. The significant reduction in the number of ships was raised by COs in the CO Questionnaire with 25 percent of responding frigate COs mentioning training asset availability as one of the top five challenges during their command. The cost increase following FY 2015/16 is attributed to completion of the HCM and return to service of the Halifax-class frigates.

2013/14	2014/15	2015/16	2016/17	2017/18	5-yr change
$59,903,117	$106,783,391	$86,774,243	$92,564,314	$118,625,068	98.0%

Table 9. Annual Cost of Naval Collective Training.[57] This table presents annual RNF expenditures for collective training.

> **Key Finding 18:** Since FY 2015/16, Force Generation sea days have increased year over year while cost per sea day has decreased, indicating a general efficiency within Naval FG.

The data presented in Table 10 reveals that as more ships became available during the latter part of the reporting period the number of force generating sea days increased annually from FY 2015/16 to FY 2017/18 allowing the Navy to conduct more CT. The associated cost per sea day decreased over the period since FY 2015/16 and the Cost per Core FG Sea day increased at a lesser rate than the rate at which sea days increased year over year. This may be indicative of

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[56] NSMB April 11, 2018 - NPTG Military Personnel Demand.
[57] DRMIS.

cost-savings related to the Navy's growing use of synthetic training environments and simulators.

	2015/16	**2016/17**	**2017/18**
Core FG Sea Days	733	866	1014
% change YoY Sea Days	N/A	18.1%	17.1%
RCN Core FG Cost	$45M	$44M	$54M
Cost/Core FG Sea Day	$61,392	$50,808	$53,254
% change YoY Cost	N/A	-17.2%	4.8%

Table 10. Annual Core (Frigate) Force Generation Sea Days and Cost.[58] This table identifies the number of Core FG sea days, the cost of those sea days, costs per sea day, and percentage changes in days and costs per sea day year over year for three FYs.

> **Key Finding 19:** The cost to sustain RCN materiel is increasing as additional resources are required to maintain the RCN's aging fleet.

The increasing amount of labour and materiel required to maintain the RCN's aging fleet is apparent in the rising cost of FMF labour required to service naval equipment and the National Procurement (NP) expenditures seen in Tables 11 and 12. The figures also reflect the increasing number of frigates returned to service from the HCM program in addition to the increasing maintenance requirements of both the frigates and Victoria-class submarines.

	2013/14	2014/15	2015/16	2016/17	2017/18
Cost of Naval Equipment Servicing	$540.2M	$603.2M	$579M	$637.2M	$702.8M
Year over Year Change	N/A	+11.7%	-4.1%	+10.1%	+10.3%

Table 11. Cost of Naval Equipment Servicing.[59] This table presents annual cost of naval equipment servicing with year over year percentage changes.

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[58] NSMB 02-17 Item IV - CSTG Presentation - Sea Days.
[59] DRMIS.

	2013/14	2014/15	2015/16	2016/17	2017/18
MEPM NP Expenditures	$603M	$710M	$749M	$767M	$805M (est'd)
Year over Year Change	N/A	+18%	+5.5%	+2.4%	+5.0%

Table 12. MEPM National Procurement (NP) Expenditures.[60] This table presents annual NP expenditures with year over year percentage changes.

As seen in Table 13, FMF workforces on both coasts declined during the evaluation period while productivity at both facilities increased. As of March 2018, staff levels were 837 at FMF Cape Breton and 963 at FMF Cape Scott.[61] This is a further one percent reduction from FY 2016/17 total staff levels (productivity data not yet available for FY 2017/18). Despite this, the FMFs increased productivity by over seven percent from FY 2013/14 to FY 2016/17, as measured by the relative changes in the number of technically completed work orders (TECO) and changes in size of the workforce. The Navy attributes this result to improvements in work planning and execution processes.

Still, as discussed in section 2.2.3 of this report, further efficiencies could be found with an improvement in the supply chain management of spare parts. An MEPM review of the supply system revealed that in the majority of instances when ships raised a High Priority Requirement for a spare part, which led to a Transfer Requirement (TRANREQ), the required part was in the supply system and was either not recorded properly in the system, or the Ship's staff could not properly identify the part to locate it. Together, these issues gave rise to unnecessary demands for TRANREQs that further stressed FMF capacity. DGMEPM and the Director of Naval Logistics are working together to identify the causes of this situation and solution(s) to resolve it.[62]

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[60] 8th Fleet Sustainment Oversight Committee Presentation, October 18, 2017, slide 19.
[61] RCN Quarterly Report FY 2017/18 Q4.
[62] 8th Fleet Sustainment Oversight Committee Presentation, October 18, 2017, slides 15-17.

	FMF Cape Breton (CB)				FMF Cape Scott (CS)				Total (FMFCB + FMFCS)			
	FTEs	TECOs	TECOs/FTE	Sea Days	FTEs	TECOs	TECOs/FTE	Sea Days	FTEs	TECOs	TECOs/FTE	Sea Days
2013/14	951	8,605	9.05	1,027	1,102	8,722	7.91	1,296	2,053	17,327	8.44	2,323
2014/15	916	8,812	9.62	1,073	1,057	9,073	8.58	1,208	1,973	17,885	9.06	2,281
2015/16	885	8,558	9.67	1,294	980	9,539	9.73	1,583	1,865	18,097	9.70	2,877
2016/17	855	8,350	9.77	1,044	965	8,310	8.61	1,416	1,820	16,660	9.15	2,460
Overall Change	-10.1%	-3.0%	7.9%	1.66%	-12.4%	-4.7%	8.8%	9.26%	-11.3%	-3.8%	8.5%	5.9%

Table 13. Annual Productivity of RCN Fleet Maintenance Facilities.[63] This table presents the annual productivity of the RCN's two FMFs comparing the number of personnel (FTE) in each facility with their respective completed work orders (TECO) and formation (MARLANT or MARPAC) sea days.

> **Key Finding 20:** Reduced HQ staff have managed an RNF program with increased expenditures and complexity over the reporting period indicating the RCN's renewed structure is providing efficiencies.

As shown in Table 14, the cost of Naval Readiness Management has remained relatively stable over the evaluation period with increased expenditures after FY 2015/16 mainly attributable to costs related to MV *Asterix* contract management support.

2013/14	2014/15	2015/16	2016/17	2017/18	5-yr change
$9,811,421	$10,025,267	$10,341,064	$34,316,670	$35,955,014	266.5%

Table 14. Cost of Naval Readiness Management.[64] This table presents the total annual expenditures attributable to the RCN's national and formation headquarters.

At the same time, as discussed in section 2.2.4 of this report, RCN management has been under constant change over the evaluation period to more effectively deliver the RNF program. Key informants noted benefits of the RCN's new organization structure included more efficiency at higher levels of the organization with NSHQ in Ottawa and the two coastal formation HQs having more clearly delineated lines of responsibility.

That said, an element of these changes has been an overall reduction and redistribution of personnel in NSHQ and Formation HQs (see Table 15) to meet higher priority ship crewing requirements and ensure Fleet staff, such as the Commander Sea Training Group, have the personnel they require to force generate the Navy's FElms.

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[63] RCN Quarterly Report FY 2017/18 Q4.
[64] DRMIS.

However, as the number of HQ staff has declined, the demands on them have significantly increased as they strive to meet today's FP&R requirements with an aging fleet and personnel shortages while also preparing for the fleet of tomorrow.

Table 15 reveals the number of personnel working in the NSHQ and Formation HQ staffs has decreased during the reporting period by 18 percent while the RNF program expenditures have increased significantly, 30 percent overall, based on FY 2017/18 planned expenditures.

		FY 2013/14	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	Overall Change
HQ Staff	Reg Force	745	709	657	503	508	
	Civilian	305	277	277	289	297	
	Reserve Force	150	122	142	172	179	
Total		**1,200**	**1,108**	**1,076**	**964**	**984**	
Annual change year over year		N/A	-7.7%	-2.9%	-10.4%	2.1%	**-18%**
RNF Expenditures		$341,663,784	$367,364,353	$363,381,435	$392,333,090	$445,056,451	
Annual change (%)		N/A	7.52%	-1.08%	7.97%	13.44%	**30%**
Average RNF expenditure managed per HQ staff		$284,720	$331,556	$337,715	$406,985	$452,293	
Annual change (%)		N/A	16.5%	1.9%	20.5%	11.1%	**59%**

Table 15. RCN HQ Staff vs RNF Annual Expenditures.[65] This table compares the year over year changes in the number of RCN HQ staff and RNF expenditures.

> **Key Finding 21:** RCN senior staff are increasingly employing timely and credible information in their decision making across all key program segments through their use of business analytics software.

The RCN's use of business information has evolved significantly through use of the DND/CAF Defence Analytics Program. Products generated by the use of Defence Analytics are presented in the RCN's Quarterly Reports for each of the RNF program components (Personnel and Individual Training, Collective Training, Equipment Servicing and Readiness Management) to provide valuable information and insights on each component that informs decisions to improve the program. Since their first iteration in the first quarter (Q1) of FY 2017/18, RCN Quarterly Reports have continually evolved to align with informational requirements to better inform the Navy's decisions, manage and improve the program.

The benefits and usefulness of business analytics was echoed by many key informants, particularly one who likened the RCN Quarterly Report to quarterly reports issued by public

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[65] Financial data from DRMIS. Note expenditures for FY 2017/18 represent planned expenditures. RCN HQ personnel include NSHQ, MARLANT HQ, MARPAC HQ and Naval Reserve HQ figures sourced from HRMS data.

companies measuring corporate profits. In the Navy's case, corporate profit was equated to the level of readiness the Navy provides the CAF. Another key informant highlighted the efficiencies offered by the Defence Analytics Program noting that financial reports produced within MEPM are now "populated live" and without MEPM staff resources required to generate them. Going forward, these reports will ease the tracking and monitoring of progress across all RCN lines of business including the RCN's progress against its SSE deliverables.

Has the RCN used resources economically?

The following indicators were used to determine whether the RCN used resources economically:

- Trends in cost of RNF Program;
- Demonstrated efforts to reduce or stabilize input resources (e.g., leveraging); and
- Adequacy of input resources to produce operational effect.

> **Key Finding 22:** Reduced expenditures in other RCN activities have facilitated annual increases in RNF expenditures as a proportion of the RCN's budget over the period of the evaluation.

As seen in Table 16, RNF annual program expenditures increased 30 percent during the reporting period, from $341 million in FY 2013/14 to $445 million of planned expenditures in FY 2017/18. At the same time, the RCN's total annual expenditures decreased 15 percent from $708 million in FY 2013/14 to $601 million in FY 2017/18. This was mainly the result of a decrease in infrastructure costs beginning in FY 2015/16 related to the centralization of Infrastructure under National Defence's Assistant Deputy Minister (Infrastructure and Environment) Group.

RCN expenditures increased in FY 2017/18 at almost the same rate as RNF expenditures. This increase was due in part to new collective agreements for civilian employees coming into effect in FY 2017/18 which increased civilian salaries, resulting in retroactive payments of $15.9 million. Regular Force and Reserve Force members also received pay raises resulting in additional Reserve Force salary expenditures that amounted to $6.9 million in FY 2017/18.

Expenditure Data (millions)	FY 2013/14	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18[66]	Total (5-yr) Change
RNF Expenditures	$341.7	$367.4	$363.4	$392.3	$445.1	**+$103.4**
Annual change (%)	N/A	7.5%	-1.1%	8.0%	13.5%	**+30.3%**
RCN Expenditures	$708.0	$692.3	$523.9	$529.3	$601.4	**-$106.6**
Annual change (%)	N/A	-2.2%	-24.3%	1.0%	13.6%	**-15.1%**
DND Expenditures	$18,764.4	$18,453.9	$18,666.1	$18,606.2	$18,682.9	**-$81.5**
Annual change (%)	N/A	-1.7%	1.1%	-0.3%	0.4%	**-0.4%**

Table 16. RNF Program Costs.[67] This table compares year over year changes in RNF expenditures with RCN and DND expenditures.

As shown in Table 17, RNF annual program expenditures expressed as a percentage of annual Total RCN expenditures increased from 48 percent of RCN expenditures in FY 2013/14 to 74 percent in FY 2017/18, representing a total increase of 53 percent over the five-year reporting period.

RNF expenditures, as a percentage of Departmental annual expenditures, increased from 1.82 percent in FY 2013/14 to 2.38 percent in FY 2017/18, representing a total increase of 31 percent over the reporting period. In contrast, RCN annual expenditures represented 3.77 percent of Departmental expenditures in FY 2013/14 and decreased to 3.22 percent in FY 2017/18, a total reduction of almost 15 percent during the reporting period. This would indicate efficiencies being achieved in other RCN programs to meet the increasing resource demands of the RNF program.

	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	Total (5-yr) Change
RNF as % of RCN Expenditures	48.25%	53.07%	69.36%	74.12%	74.01%	**+53.4%**
RNF as % of DND Expenditures	1.82%	1.99%	1.95%	2.11%	2.38%	**+30.8%**
RCN as % of DND Expenditures	3.77%	3.75%	2.81%	2.84%	3.22%	**-14.6%**

Table 17. RNF Expenditures as Percentage of Annual RCN and DND Expenditures.[68] This table compares year over year percentage changes of RNF expenditures with percentage changes of RCN and DND expenditures and the percentage changes between RCN and DND expenditures.

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[66] DND and RNF expenditures for FY 2017/18 represent planned expenditures. RCN expenditures for FY 2017/18 are actual expenditures as at April 25, 2018. All other expenditure amounts shown in the table are actual expenditures. Actual DND personnel numbers were not available for 2017/18.

[67] Annual expenditures are sourced from DRMIS and DND Departmental Plan.

[68] DRMIS, DND Departmental Plan and Naval Staff financial data.

> **Key Finding 23:** The RCN is actively pursuing means to leverage available resources, particularly to address its personnel shortages.

The Navy is implementing and leveraging concurrent efforts to reduce and stabilize the use of resources. These include a greater use of Defence Program Analytics to inform decision makers, increased integration between the coastal Formation HQs and NSHQ, a greater focus on workforce management and the implementation of Reserve Force initiatives.

The delegation of training functions, with MARPAC responsible for Individual Training and Education and MARLANT responsible for Operational/Collective Training, has enabled the RCN to streamline its processes and reduce duplication between the coasts in this regard.

Through its Future Naval Training System Strategy, the Navy is:

- Leveraging the use of technology to achieve training economies and efficiencies as well as allow more sailors greater access to training on-demand;
- Optimizing the use of available training infrastructure; and
- Increasing availability of training on the coast where sailors are serving to further reduce their Time Away From Home.

The Navy recognizes that its personnel shortages in both the military and civilian workforces are its number one issue. In the civilian workforce, shortages are particularly acute in the naval bases and FMFs and the RCN is working with ADM(HR-Civ) to address these challenges. However the most critical personnel shortages are in the Navy's TES with some of the most pronounced personnel shortages in the Navy's Combat Operator and Technical occupations. This is having a direct impact on the RNF program's ability to achieve and sustain its required FP&R. While seeking to function as effectively as possible with its available personnel, the Navy is pursuing many initiatives to address its personnel shortages as previously detailed in Section 2.2.2.

From a platform perspective, the Navy is immersed in its efforts to maintain operationally-effective units in sufficient numbers to meet FP&R requirements while looking towards the requirements of its future fleet. Although the Navy has lacked the capabilities provided by their three destroyers and two replenishment ships during much of the reporting period, several key informants mentioned that the RCN's increased reliance on the MCDVs at home and in operations such as OP CARIBBE has provided great training and operational effect while using comparatively fewer resources than the larger warships.[69] The Navy will continue to leverage these platforms to ensure the RCN has trained sailors in preparation for when the future fleet arrives.

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[69] Annex A to RCN Integrated Business Planning Directive (RCN BPD) 2017 – 2020, July 4, 2016.

Success of these various initiatives will be critical to the Ready Naval Force program's ability to deliver the FElms required today by the CDS' FP&R directive and successful introduction of the Navy's Future Fleet.

Annex A—Management Action Plan

The RCN was pleased to have had the opportunity to work with ADM(RS) in the development of 'Ready Naval Forces,' and welcomes the findings of the review. As was seen and articulated in the 2013 evaluation of naval forces, the RCN continues to adapt as an institution in order to address the complex challenges of the future, while ensuring our efforts – as codified in the RCN Strategic Plan 2017-2022 – are synchronized and complementary to *Strong, Secure, Engaged*.

The effective allocation of resources (e.g., people, money, time) forms the core of the RCN's ability to meet the priorities articulated in the defence policy and the RCN Strategic Plan. Naval Readiness, both today and tomorrow, is predicated on our ability to efficiently and effectively prioritize RCN resources in the face of a demand that exceeds the available supply. The RCN effectively plans resource allocation and tracks performance, through measurable results, so that we will continue to prepare combat-effective naval forces that support Canadian interests at home and abroad.

In order to successfully position the RCN to deliver measurable results and prioritize resource allocations, the RCN has adopted a results-based business management approach combining strategy management, performance and enterprise risk management, with business planning processes. The results-based management approach is supported by business analytic tools that deliver to RCN leadership reports and analytics support enabling evidence-based decision making. This approach flows logically from the RCN Strategic Plan 2017-2022, and the RCN Results Framework and is designed to improve program delivery and strengthen management effectiveness, efficiency and accountability through the Plan, Execute, Measure, Adjust cycle.

> **ADM(RS) Recommendation**
>
> 1.   It is recommended that the RCN develop a means of communicating Organization and Establishment (O&E) changes, pending their formal approval and notification, to ensure clarity regarding revised lines of communication and related ARA.
>
> **OPI:** Comd RCN/DGNSR

Management Action

The RCN order on Organization and Establishment (O&E) Management (NAVORD 5760-1) was issued in 2014 and has been updated annually. The RCN O&E management process mimics the VCDS' Establishment Change process by exercising positive control of the RCN structure. This is effected through an annual governance cycle which culminates in the submission of Establishment Change requests, through the Director of Naval Personnel and Training (D Nav P&T). These changes are reflected in the system of record—the Human Resources Management System (HRMS). Further to this ongoing management cycle, the RCN has commenced a Human Resources (HR) Analysis that will look at all aspects of organization design

for each unit and/or function across the RCN. Through an Initiating Directive of March 2018, the D Nav P&T was explicitly directed to:

- Ensure ARA are clearly defined and delegated;
- Review all positions against the Workforce Assignment Framework to ensure roles are assigned appropriately;
- Review organizational design and assigned resources and make recommendations on reallocation; and
- Align the organizational design in the system of record with reality.

These efforts will align RCN HR with strategic intent, define and promulgate ARA, and align the system of record but they will not address the confusions that are caused when organizational change is executed before the structure is formally altered. Understanding that there will be instances where it is necessary to "lean forward" and execute changes to structure, accountabilities, responsibilities or authorities and complete the formal structure changes in arrears, the RCN will:

- Make any decisions that change structure, accountabilities, responsibilities or authorities at formal governance bodies where those decisions will be captured in a Record of Discussion;
- Signal those changes in a general message from D Nav P&T - the responsible authority for the management of O&E; and
- Require the immediate submission of Establishment Change requests in support of the authorized changes.

OPI: D Nav P&T
Target Date: April 2019

> **ADM(RS) Recommendation**
>
> 2.   It is recommended that the RCN investigate the reasons for the variance between projected training demand and the actual training delivered to identify and introduce potential efficiencies in the Naval Training System production plan.
>
> **OPI:** Comd RCN/ACNS P&T (NPTG)

Management Action

The RCN shares this observation and concern with ADM(RS) and has begun an improvement process. The NPTG and D Nav P&T in the Naval Staff use the TPR process to develop the Training Schedule (TRAINSKED). The TPR involves inputs from various stakeholders and provides the most accurate forecast of training requirements and student availability as is possible. This process was used for the first time to forecast the 2017/18 training year. In that training year there were, unfortunately, still cases where course demand remained unfilled which created

inaccuracies in the reporting system and a strained NPTG ability to properly forecast production requirements.

To further improve the accuracy of the training requirement forecast, NPTG HQ has redefined the ARA within the TPR delivery framework so that all training requirement inputs are gathered and assessed by a single point of contact within D Nav P&T. This refined process is anticipated to achieve a course demand output greater than 90 percent, which should resolve both the Performance Measurement discrepancies observed and leverage Naval Fleet Schools' capacity in a more efficient way.

The RCN has already begun seeing improvement this year with a diminution of course cancellation requests, which speaks directly to the production of a more robust TRAINSKED, from the TPR. The outcome is that the improved TRAINSKED has enabled better management and load levelling of Naval training assets. The RCN will continue to monitor the process and make improvements, with a target of autumn 2020 to achieve efficient course demand and loading.

OPI: NPTG
Target Date: October 2020

Annex B—Evaluation Methodology and Limitations

1.0 Methodology

1.1 Overview of Data Collection Methods

The evaluation of the RNF program considered multiple lines of evidence to assess the program's relevance and performance. The methodology established a consistent approach in the collection and analysis of data to help ensure the reliability of the evaluation process. Quantitative and qualitative data collection methods were used and included: document review, financial data review, key informant interviews and a questionnaire. Qualitative information was used to establish the program profile and context and to interpret the significance of numerical data assessed. Comparisons of both qualitative and quantitative assessments were used to validate the overall analysis and to develop the evaluation findings and recommendations.

1.2 Details on Data Collection Methods

1.2.1 Document Review

A review of program and related departmental documents was conducted in the initial phase of the evaluation to establish a general understanding of the RNF program. This informed the scope of the evaluation and supported the creation of the logic model and evaluation questions. A comprehensive document review was subsequently undertaken to collect evidence against indicators for relevance and performance. Reviewed documents included GC policy documents, CAF strategic directives and guidance, including annual Force Posture and Readiness Directives, program reports and assessments, business plans and departmental performance reports.

1.2.2 Financial Data Review

Financial data was reviewed to assess efficiency and economy of the program (e.g., sustained funding), trends in resource utilization and operational costs associated with the RNF program, financial data from the Defence Resource Management Information System (DRMIS), business plans and the RCN comptroller's financial reports and departmental financial reports.

1.2.3 Key Informant Interviews

The team conducted extensive interviews with key formation staffs on each coast including the Commanders of MARLANT and MARPAC and their principle staff, each Formation's Fleet Commander, the Commander Naval Reserve, Commander Sea Training, Commander NPTG, the Commandant of Naval Fleet School Atlantic, Commanding Officers of each FMF, the Director General Maritime Equipment Program Management, CJOC staff and key Naval Staff in Ottawa and a concluding interview with the Commander RCN.

1.2.4 Commanding Officers' Questionnaire

A questionnaire was sent to 82 RCN officers who served as ship and submarine COs during the period FY 2013/14 to FY 2017/18 requesting their views on the impact of crewing, training and materiel on their unit's readiness while they were in command. Fourteen of eighty-two COs had left the service or could not be otherwise contacted. In all, 43 of 68 (63 percent) of available COs responded to the questionnaires, including 70 percent of frigate COs who were contacted.

1.2.5 Data Analysis

Data from each of the sources was compiled against indicators for program relevance and performance identified in Annex D. The data was used to analyze the planning and conduct of operations and assess the CAF Ops program achievement of the immediate and intermediate outcomes. Analysis was made of resources consumed against the CAF operations conducted to assess efficiency and economy of the program. Trend analysis of resource usage was also used to assess input and output costs of the CAF Ops program, focusing primarily on personnel, maintenance, infrastructure, and training resources and activities. Observed trends in resource utilization were contextualized using qualitative data to understand variances and observed trends.
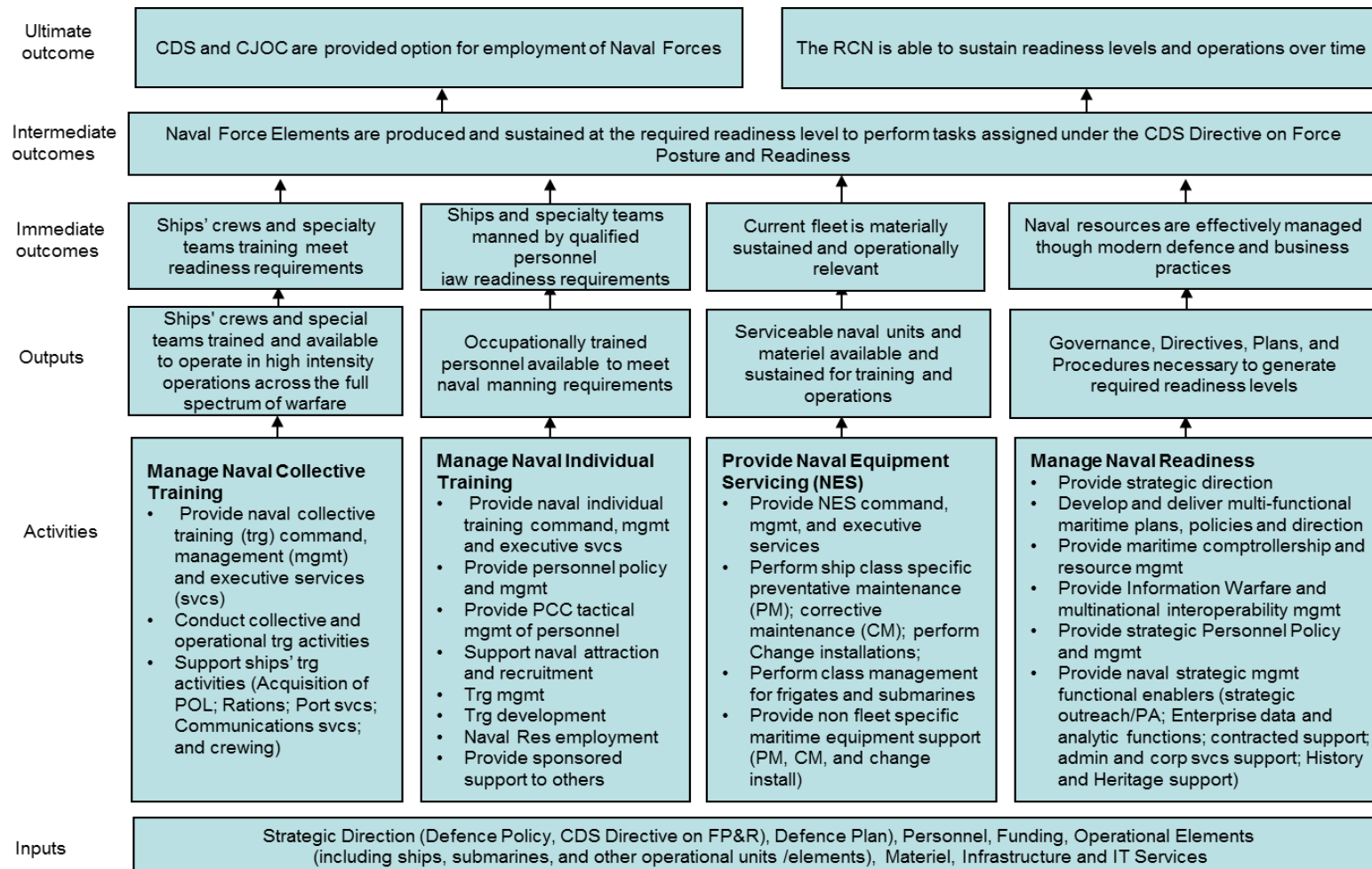
2.0 Limitations

The Comd RCN and his staff provided outstanding access and support to the evaluation team, providing extensive access for interviews, to their networks for documentary research and responses to our requests for information. The following general limitations are noted, however:

Limitation	Mitigation Strategy
Possibility of interviewees providing biased information.	A comparison was made between interview evidence and other sources (e.g., program documentation and financial records) to confirm fidelity of evidence, and these were weighted as appropriate based on the preponderance of other evidence.
Certain costing data was not available to assess program efficiency and economy, and attributions for program expenditures were translated from the former National Defence Program Alignment Architecture (PAA) to the new Departmental Results Framework (DRF).	Trending data was based primarily on DRMIS.

Attributions for program expenditures were translated from PAA to the DRF program for FYs 2013/14 to 2015/16.	Challenges regarding consistency of financial data attribution were addressed through comparison and validation of financial data outputs with RCN staff.

Table B-1. Evaluation Limitations and Mitigation Strategies: This table lists the limitations of the evaluation and the corresponding mitigation strategies.

Annex C—Logic Model

Ultimate outcome	CDS and CJOC are provided option for employment of Naval Forces / The RCN is able to sustain readiness levels and operations over time
Intermediate outcomes	Naval Force Elements are produced and sustained at the required readiness level to perform tasks assigned under the CDS Directive on Force Posture and Readiness
Immediate outcomes	Ships' crews and specialty teams training meet readiness requirements / Ships and specialty teams manned by qualified personnel iaw readiness requirements / Current fleet is materially sustained and operationally relevant / Naval resources are effectively managed though modern defence and business practices
Outputs	Ships' crews and special teams trained and available to operate in high intensity operations across the full spectrum of warfare / Occupationally trained personnel available to meet naval manning requirements / Serviceable naval units and materiel available and sustained for training and operations / Governance, Directives, Plans, and Procedures necessary to generate required readiness levels
Activities	**Manage Naval Collective Training** • Provide naval collective training (trg) command, management (mgmt) and executive services (svcs) • Conduct collective and operational trg activities • Support ships' trg activities (Acquisition of POL; Rations; Port svcs; Communications svcs; and crewing)	**Manage Naval Individual Training** • Provide naval individual training command, mgmt and executive svcs • Provide personnel policy and mgmt • Provide PCC tactical mgmt of personnel • Support naval attraction and recruitment • Trg mgmt • Trg development • Naval Res employment • Provide sponsored support to others	**Provide Naval Equipment Servicing (NES)** • Provide NES command, mgmt, and executive services • Perform ship class specific preventative maintenance (PM); corrective maintenance (CM); perform Change installations; • Perform class management for frigates and submarines • Provide non fleet specific maritime equipment support (PM, CM, and change install)	**Manage Naval Readiness** • Provide strategic direction • Develop and deliver multi-functional maritime plans, policies and direction • Provide maritime comptrollership and resource mgmt • Provide Information Warfare and multinational interoperability mgmt • Provide strategic Personnel Policy and mgmt • Provide naval strategic mgmt functional enablers (strategic outreach/PA; Enterprise data and analytic functions; contracted support; admin and corp svcs support; History and Heritage support)
Inputs	Strategic Direction (Defence Policy, CDS Directive on FP&R, Defence Plan), Personnel, Funding, Operational Elements (including ships, submarines, and other operational units /elements), Materiel, Infrastructure and IT Services

Figure C-1. Logic Model for the Ready Naval Forces program. This flowchart shows the relationship between the program's main activities, outputs and expected outcomes

Annex D—Evaluation Matrix

Relevance					
Evaluation Issues/ Questions	**Indicators**	**Program Data**	**Literature and Document review**	**Key Informant Interviews**	**COs' Questionnaire**
1.1 Is there a continued need for the Ready Naval Forces (RNF) program?	1.1.1 Evidence of past engagement of RNF	Yes	Yes	No	No
	1.1.2 Requirement for RNF in the future security environment	Yes	Yes	No	No
1.2 Does the Ready Naval Forces Program align with federal roles and responsibilities and those of DND/CAF?	1.2.1 Alignment with government Acts, legislation and strategic direction	No	Yes	Yes	No
	1.2.2 The extent to which Canada's RNF conducts activities that are the responsibilities of OGDs, other levels of government or the private sector	Yes	Yes	Yes	No
1.3 Does the Ready Naval Forces Program align with federal government priorities and Defence Strategic Outcomes?	1.3.1 Alignment with or inclusion of RNF in stated government priorities	No	Yes	No	No
	1.3.2 Alignment with or inclusion of RNF in DND/CAF priorities or Strategic Outcomes	Yes	Yes	No	No

Table D-1. Evaluation Matrix—Relevance. This table indicates the data collection methods used to assess the evaluation issues/questions for determining the relevance of the Ready Naval Forces Program.

Performance: Effectiveness					
Evaluation Issues/ Questions	**Indicators**	**Program Data**	**Literature and Document Review**	**Key Informant Interviews**	**COs' Questionnaire**
2.1 Do ships' crews and specialty teams meet readiness requirements?	2.1.1 Ships' crews have successfully completed readiness training and certifications required for prescribed readiness level	Yes	Yes	Yes	Yes
	2.1.2 Ships' crews and specialty teams have completed requisite collective training for their prescribed readiness level	Yes	Yes	Yes	No
2.2 Are ships' crews and specialty teams manned by qualified personnel iaw readiness requirements?	2.2.1 Ships' crews and specialty teams are manned with the requisite number of personnel for their prescribed readiness level	Yes	Yes	Yes	No
	2.2.2 Ships' crews and specialty teams are manned by personnel with the requisite occupational training and certifications for the ship, equipment or systems	Yes	Yes	Yes	Yes
2.3 Are Fleet units materially sustained and operationally relevant?	2.3.1 Ship/Submarine systems are serviceable and available to meet prescribed readiness	Yes	Yes	Yes	Yes

Performance: Effectiveness					
Evaluation Issues/ Questions	**Indicators**	**Program Data**	**Literature and Document Review**	**Key Informant Interviews**	**COs' Questionnaire**
	requirements without operational restrictions				
	2.3.2 Operationally deployed ships/submarines have relevant mission-fitted equipment to execute assigned or probable tasks	Yes	Yes	Yes	No
	2.3.3 Ship and Submarine systems are maintained iaw current engineering/ maintenance directives	Yes	Yes	Yes	No
	2.3.4 Ships'/submarines' systems are periodically updated to address obsolescence and maintain relevance	Yes	Yes	Yes	No
2.4 Are Naval resources effectively managed?	2.4.1 The RCN is effectively organized to manage Ready Naval Forces	Yes	Yes	Yes	No
	2.4.2 RCN strategic direction and planning is comprehensive and up to date	Yes	Yes	Yes	No
	2.4.3 RCN governance effectively informs Naval leadership of current and	Yes	Yes	Yes	No

Performance: Effectiveness					
Evaluation Issues/ Questions	**Indicators**	**Program Data**	**Literature and Document Review**	**Key Informant Interviews**	**COs' Questionnaire**
	future force issues and provides sound decision support				
2.5 Are Naval Forces produced and sustained at the required level iaw the CDS Directive on FP&R?	2.5.1 RCN force elements are available iaw FP&R	Yes	Yes	Yes	No

Table D-2. Evaluation Matrix—Performance (Effectiveness). This table indicates the data collection methods used to assess the evaluation issues/questions for determining the performance of the Ready Naval Forces Program in terms of achievement of outcomes (effectiveness).

Performance: Efficiency					
Evaluation Issues/ Questions	**Measures/Indicators**	**Program Data**	**Literature and Document Review**	**Key Informant Interviews**	**COs' Questionnaire**
3.1 Has the RCN used resources efficiently? [outputs]	3.1.1 Trends in costs of individual training	Yes	Yes	No	No
	3.1.2 Trends in costs of collective/integration training	Yes	Yes	No	No
	3.1.3 Trends in cost of materiel sustainment	Yes	Yes	Yes	No
	3.1.4 Trends in cost of governance	Yes	Yes	No	No
	3.1.5 Use of business information to optimize resource efficiency	Yes	Yes	Yes	No
3.2 Has the RCN used resources economically? [inputs]	3.2.1 Trends in cost of Ready Naval Forces Program	Yes	Yes	No	No
	3.2.2 Demonstrated efforts to reduce or stabilize input resources (e.g., leveraging)	Yes	Yes	Yes	No
	3.2.3 Adequacy of input resources to produce operational effect (achieve required readiness levels)	Yes	Yes	Yes	No

Table D-3. Evaluation Matrix—Performance (Efficiency and Economy). This table indicates the data collection methods used to assess the evaluation issues/questions for determining the performance of the Ready Naval Forces Program in terms of efficiency and economy.