



## Personnel Challenges Faced by the Royal Canadian Navy

## **Commander Stephanie Hartzell**

## **JCSP 48**

# **Service Paper**

## Disclaimer

Opinions expressed remain those of the author and do not represent Department of National Defence or Canadian Forces policy. This paper may not be used without written permission.

© Her Majesty the Queen in Right of Canada, as represented by the Minister of National Defence, 2022

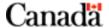
## **PCEMI 48**

# Étude Militaire

### Avertissement

Les opinons exprimées n'engagent que leurs auteurs et ne reflètent aucunement des politiques du Ministère de la Défense nationale ou des Forces canadiennes. Ce papier ne peut être reproduit sans autorisation écrite.

© Sa Majesté la Reine du Chef du Canada, représentée par le ministre de la Défense nationale, 2022



## CANADIAN FORCES COLLEGE – COLLÈGE DES FORCES CANADIENNES

JCSP 48 – PCEMI 48 2021 – 2022

Service Paper – Étude militaire

## Personnel Challenges Faced by the Royal Canadian Navy

## **Commander Stephanie Hartzell**

"This paper was written by a student attending the Canadian Forces College in fulfilment of one of the requirements of the Course of Studies. The paper is a scholastic document, and thus contains facts and opinions, which the author alone considered appropriate and correct for the subject. It does not necessarily reflect the policy or the opinion of any agency, including the Government of Canada and the Canadian Department of National Defence. This paper may not be released, quoted or copied, except with the express permission of the Canadian Department of National Defence."

"La présente étude a été rédigée par un stagiaire du Collège des Forces canadiennes pour satisfaire à l'une des exigences du cours. L'étude est un document qui se rapporte au cours et contient donc des faits et des opinions que seul l'auteur considère appropriés et convenables au sujet. Elle ne reflète pas nécessairement la politique ou l'opinion d'un organisme quelconque, y compris le gouvernement du Canada et le ministère de la Défense nationale du Canada. Il est défendu de diffuser, de citer ou de reproduire cette étude sans la permission expresse du ministère de la Défense nationale."

#### PERSONNEL CHALLENGES FACED BY THE ROYAL CANADIAN NAVY

#### **AIM**

1. Force employment (FE) is the Canadian Armed Forces (CAF) *raison d'être*. That is, serving at the behest of the Canadian government in defence of Canada at home and abroad. To fulfill this mandate requires a ready force. Achieving the right FE and force generation (FG) mix is a continuous struggle requiring near-constant revision. This service paper will inform Commander Royal Canadian Navy (CRCN) of the personnel challenges faced by the Royal Canadian Navy (RCN) that make it difficult to strike a balance between FG and FE. Subsequently, it will recommend areas requiring a concerted effort and further study.

### INTRODUCTION

- 2. The rise of great power competition, the proliferation of threats by non-state actors, the overwhelming pace of technological advancement and the intensifying impacts of climate change are shaping the current and future demand on the CAF and its allied militaries. Accordingly, the operations tempo required to support domestic and international operations will continue to rise. Conversely, CAF readiness is on the decline, namely concerning personnel. Both increased operations tempo and decline in readiness were exacerbated by the far-reaching and persistent effects of the COVID-19 pandemic. This triggered increased attention to the longstanding dilemma of most armed forces how to balance FG and FE activities to ensure operational excellence today while readying its forces for tomorrow.
- 3. The CDS and DM Directive on CAF Reconstitution manifests the concern. The mission: "As the COVID-19 pandemic persists and eventually ends, the CAF will reconstitute personnel, readiness, and capabilities in order to ensure our ability to protect Canadians and defend Canadian interests in the rapidly evolving security environment." Today, the pandemic may serve as a catalyst to dig deep on FG and take an honest look at how the CAF will continue to deliver excellence in operations, but the shift to FG is long needed. The Navy acknowledges that "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." It has consistently supported force employers and superbly delivered while deployed on operations. In the background, despite its steadfast commitment to results and numerous

<sup>&</sup>lt;sup>1</sup> Department of National Defence, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: Government of Canada, 2017), 49-57.

<sup>&</sup>lt;sup>2</sup> Department of National Defence, CDS Planning Directive for Canadian Armed Forces Reconstitution (Ottawa: Chief of the Defence Staff, 9 July 2021).; John Ivison, "Canada's Neglected Military Reaching Point of Being 'Irrelevant," National Post, 18 January 2022; Lee Berthiaume, "Canadian Navy Needs to Recruit 1,000 Sailors to Crew New Warships: Commander," The Canadian Press, 30 December 2021.

<sup>&</sup>lt;sup>3</sup> Department of National Defence, *CDS Planning Directive for Canadian Armed Forces Reconstitution* (Ottawa: Chief of the Defence Staff, 9 July 2021), 3-4.

<sup>&</sup>lt;sup>4</sup> Department of National Defence, *CDS Planning Directive for Canadian Armed Forces Reconstitution* (Ottawa: Chief of the Defence Staff, 9 July 2021), 10.

<sup>&</sup>lt;sup>5</sup> Department of National Defence, *Evaluation of Ready Naval Forces* (Ottawa: Assistant Deputy Minister (Review Services), March 2019), A-1.

<sup>&</sup>lt;sup>6</sup> Department of National Defence, Royal Canadian Navy Strategic Plan 2017-2022 (Ottawa: Royal Canadian Navy, 2016), 7.

initiatives aimed at improving FG activities and managing its personnel, the Navy is approaching a tipping point that risks an inability to sustain the existing operations tempo or crew the future Fleet.

#### **DISCUSSION**

- 4. Employment of RCN forces, like all CAF forces, is derived, first, from the government of Canada. *Strong, Secure, Engaged* (SSE) highlights a wide range of potential missions to include: "combat operations, rapid provision of humanitarian assistance and disaster relief to those in need, defence diplomacy, and collaborating with other government departments and agencies on a daily basis in support of domestic defence and security." The defence policy defines the ideal Naval Fleet as one where the CAF can simultaneously deploy two naval tasks groups made up of 5 ships, inclusive of a support ship. In keeping with strategic direction, the Chief of Defence (CDS) Force Posture and Readiness (FP&R) Directive demands that the Navy have at the ready:
  - a. one ship per coast to serve Ready Duty Ships;
  - b. one Frigate at high readiness (HR) to serve as a Single Ship International Deployer;
  - c. one submarine at HR;
  - d. one submarine at normal readiness (NR); and
  - e. one of the SSE-defined Task Groups at HR.<sup>9</sup>
- 5. It is a tall order. Nevertheless, the most recent Assistant Deputy Minister (Review Services) (ADM(RS)) evaluation of the Ready Naval Forces (RNF) program, which assesses performance results against the previously stated requirements, offered a glowing review. Over the reporting period, the RCN consistently accomplished assigned operations. However, it experienced challenges in attaining the level of readiness expected in the CDS FP&R. One glaring impediment was material readiness and platform availability a topic that warrants its own service paper. The importance of people features prominently in government, CAF and RCN guidance and direction. People are the linchpin of the organization, necessary if the RCN

<sup>&</sup>lt;sup>7</sup> Department of National Defence, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: Government of Canada, 2017), 34.

<sup>&</sup>lt;sup>8</sup> Department of National Defence, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: Government of Canada, 2017), 34.

<sup>&</sup>lt;sup>9</sup> Department of National Defence, *Evaluation of Ready Naval Forces* (Ottawa: Assistant Deputy Minister (Review Services, March 2019), 20.

<sup>&</sup>lt;sup>10</sup> *Ibid.*, v.

<sup>&</sup>lt;sup>11</sup> *Ibid.*, viii.

<sup>&</sup>lt;sup>12</sup> Department of National Defence, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: Government of Canada, 2017), 19-31; Department of National Defence, *CDS Planning Directive for Canadian Armed Forces Reconstitution* (Ottawa: CDS Canada, 9 July 2021); Department of National Defence, "CDS/DM Initiating Directive for Professional Conduct and Culture," accessed 21 January 2022, https://www.canada.ca/en/department-national-defence/corporate/policies-standards/dm-cds-directives/cds-dm-initiating-directive-professional-conduct-culture.html

is to see continued success in the other pillars of FG and ultimately in operations. Consequently, this paper will remain focused on readiness and availability of personnel as the chief area of concern when seeking to balance FG and FE within the Navy.

- 6. Simply stated, the RCN does not have sufficient personnel of the requisite qualification or experience to sustain current operations tempo and generate ready naval forces for the future. The ADM(RS) RNF assessment found that "The RCN is challenged to crew units with the requisite personnel and training in accordance with readiness requirements." This statement referred to the period between 2013/2014 and 2017/2018. In 2013/2014, the RCN had a complement of 7,312 Regular Force personnel compared to a trained effective establishment (TEE) of 7,494 positions, roughly 97% strength. Four years later, in 2017/2018, there was 6,794 personnel compared to 7,568 positions, equating to roughly 89% strength. Today, the trained effective strength (TES) is 6,542. Compared to 7,539 TEE positions, today the RCN is at 87% strength, a little over 1000 people short of a full compliment. Left unchecked, the growing gap poses a continued threat to the RCN's ability to achieve the expected level of readiness outlined in the CDS FP&R. Moreover, it challenges the RCN's ability to support force employers with ready force elements, and severely degrades its ability to force generate personnel, materiel readiness and new capability.
- 7. Over 1000 people short is concerning. However, when disaggregating the data by rank and occupation, it is immediately evident that the RCN's shortages and associated challenges with force generating personnel have the potential to be debilitating. Tables 1 and 2 summarize TES as a percentage of TEE positions by rank and occupation. While it is a crucial factor in improving the health of the naval forces, simply increasing intake will not solve the RCN's FG problem, certainly not in a manner or timeline that would keep up with the FE demand. The data corroborates the story told in the Reconstitution Directive about the "missing middle." <sup>17</sup> Insufficient, mid-level management and leadership are of particular concern. The RCN leans on this group to drive change, train our future force, develop future capability, and solve wicked problems. This is exemplified by the reallocation of a senior officer and small team of noncommissioned members (NCM), both from distressed occupations, to form the Marine Technician Action Team (MTAT), whose aim is to develop and implement initiatives for the recovery of the Marine Technician (MAR TECH) occupation. <sup>18</sup> Mid-level leaders are spread thin, and if solely focused on extinguishing the daily fires in service of the needs of today, the RCN will not be ready for the demand of the future.

<sup>&</sup>lt;sup>13</sup>Department of National Defence, *Evaluation of Ready Naval Forces* (Ottawa: Assistant Deputy Minister (Review Services), March 2019), viii.

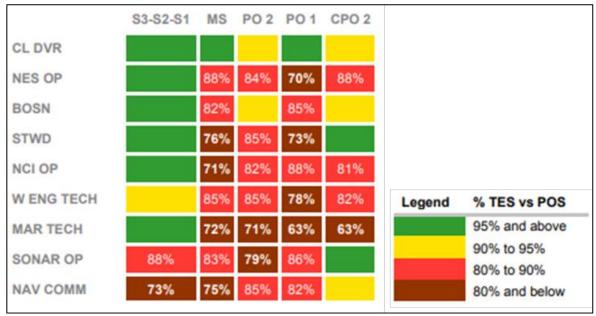
<sup>&</sup>lt;sup>14</sup>Pierre-Hughes Gervaud, *RCN Military Personnel Placemat*. Director Digital Navy, January 2022. <sup>15</sup>Ibid

<sup>&</sup>lt;sup>16</sup> Pierre-Hughes Gervaud, *RCN Managed Workforce Health – Current TES vs Positions (Weekly)*, Director Digital Navy, 12 January 2022.

<sup>&</sup>lt;sup>17</sup> Department of National Defence, *CDS Planning Directive for Canadian Armed Forces Reconstitution* (Ottawa: Chief of the Defence Staff, 9 July 2021), 5.

<sup>&</sup>lt;sup>18</sup> Maritime Technician Action Team, *MTAT Interim Report*, Director Naval Personnel, 10 January 2022.

Table 1 – Percentage of Trained Effective Strength vs. Trained Effective Establishment Positions, Non-Commission Members by Rank and Occupation



Source: Pierre-Hughes Gervaud, RCN Managed Workforce Health – Current TES vs Positions (Weekly), Director Digital Navy, 12 January 2022.

Table 2 – Percentage of Trained Effective Strength vs. Trained Effective Establishment Positions, Officers by Rank and Occupation



Source: Pierre-Hughes Gervaud, RCN Managed Workforce Health – Current TES vs Positions (Weekly), Director Digital Navy, 12 January 2022.

8. A TES of 6,542 is misleading in that it does not accurately represent the number of personnel available for employment. TES merely represents the number of personnel who have reached operationally functional point. There are sailors, on maternity/paternity leave, on compassionate, on career coursing, or with medical employment limitations (MEL), who need to be subtracted from that number. To illustrate the potential effects, let us consider the number of personnel in Maritime Forces Atlantic currently on MELs. Almost 25% of NCMs have some form of MEL. That is just under 750 sailors of 3,131. While not all MELs prevent personnel from serving in ships, this does present a personnel management challenge that undoubtedly

<sup>&</sup>lt;sup>19</sup> Personnel Coordination Center Atlantic, *Fleet Snapshot*, MARLANT, 18 January 2022. This reference is an excerpt from a slide deck delivered weekly at the Commander's Update Brief.

exacerbates the effects of existing shortages and threatens the RCNs ability to sustain ready forces.

- 9. As a result of personnel shortages, attach-postings serve to crew ships with sufficient qualified personnel to accomplish discrete tasks or sails. To illustrate the extent to which attachpostings are exercised, in Canadian Fleet Atlantic, 12% of the ship's companies are supplemented through attach-postings.<sup>20</sup> Both HR frigates, HMCS Fredericton and Montreal are at 18% and 13%, respectively. 21 At the extreme is HMCS Glace Bay, with 35% of its crew filled using attach postings.<sup>22</sup> This approach is not new. Over five years ending in 2018, ADM(RS) observed high rates of attached postings, namely within *Kingston*-class vessels. In 2018, 38 sailors were attach-posted five or more times to ensure sailing ships were crewed with personnel holding the necessary qualifications.<sup>23</sup> This practice is linked to difficulties in maintaining the requisite level of readiness and diminished quality of life and attrition.<sup>24</sup> While the number of affected personnel seems small, it is important to recognize that the personnel experiencing high attach posting rates are doing so because their occupations, rank and qualifications are already stressed. In 2016, while serving as CRCN, Vice-Admiral (Retired) Ron Lloyd admitted that attach-postings were necessary to sustain operations tempo, often with detrimental effects on the sailor.<sup>25</sup> Positions ashore critical to FG go vacant, forcing the status quo vice enabling the sweeping changes necessary to solve personnel challenges and prepare the Navy for the future Fleet. Sailors who are due for rest are robbed of this opportunity, contributing to decreased quality of life and job satisfaction and increased attrition. While such actions have been necessary to maintain the RCNs operations tempo, it places the future Fleet and RCN readiness at risk.
- 10. Despite efforts aimed at modernizing the Navy's approach to training, Naval occupations rely significantly on on-the-job training and experience at sea to grant qualifications and build credibility amongst sailors, their command teams and superior commanders. While serving in a ship, naval officers and sailors are almost always loaded with training packages (which include some form of minimum at-sea experience) in addition to their assigned roles. Naturally, the performance of primary duties takes a front seat. Primacy of mission combined with insufficient crew impedes the sailor's ability to progress training. These qualifications and experience typically serve as gates for promotion and certain appointments.

<sup>&</sup>lt;sup>20</sup> Ibid.

<sup>&</sup>lt;sup>21</sup> Ibid

<sup>22</sup> Ibid

<sup>&</sup>lt;sup>23</sup> Department of National Defence, *Evaluation of Ready Naval Forces* (Ottawa: Assistant Deputy Minister (Review Services), March 2019), 12

<sup>&</sup>lt;sup>24</sup> Department of National Defence, *Evaluation of Ready Naval Forces* (Ottawa: Assistant Deputy Minister (Review Services), March 2019), 11-12.; House of Commons, Standing Committee on National Defence, *Evidence*, No. 024, 1<sup>st</sup> Session, 42<sup>nd</sup> Parliament, Thursday, October 27, 2016, 4.

<sup>&</sup>lt;sup>25</sup> House of Commons, Standing Committee on National Defence, *Evidence*, No. 024, 1<sup>st</sup> Session, 42<sup>nd</sup> Parliament, Thursday, October 27, 2016, 4.

<sup>&</sup>lt;sup>26</sup> House of Commons, Standing Committee on National Defence, *Evidence*, No. 029, 1<sup>st</sup> Session, 42<sup>nd</sup> Parliament, Tuesday, November 22, 2016, 4-5.; Maritime Technician Action Team, *MTAT Interim Report*, Director Naval Personnel, 10 January 2022.

<sup>&</sup>lt;sup>27</sup> Maritime Technician Action Team, MTAT Interim Report, Director Naval Personnel, 10 January 2022.

- 11. Moreover, this experience is a necessary enabler to operational excellence. Paradoxically, attaining the necessary training and experience often relies on collective training efforts and FE activities. Ship availability and sea time act as a bottleneck to individual training throughput. In response to increasing training backlogs and growing numbers of insufficiently qualified personnel, qualification standards and minimum at-sea experience have been reviewed for efficiencies and trimmed. This could be perceived as an argument in favour of maintaining or increasing operations tempo. On the contrary, this challenge to individual training negatively impacts the RCN's readiness. Occupation and career managers seek to remove personnel from the ship the moment a qualification is achieved to offer the next sailor their opportunity, irrespective of a ship's HR status. As noted in the ADM(RS) Ready Naval Forces assessment, "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 ."<sup>28</sup> This practice, like attach-postings, diminishes readiness and merely masks issues surrounding training throughput.
- The most significant concern for sustaining ready naval forces is perhaps the MAR TECH occupation. In a briefing note drafted by the previously mentioned MTAT, it is evident just how close the RCN is to empty – bordering on being unable to crew the current Fleet, even at the expense of depleted positions ashore and recycling of personnel.<sup>29</sup> Shore positions requiring MAR TECH expertise often support FG enablers such as the Fleet Maintenance Facilities and training establishments. Training establishments have received priority however, vacancies in other positions often exacerbate the challenges through insufficient contribution to maintaining materially ready ships. To ensure sailing ships can go to sea, there are instances of over-ranked and over-qualified personnel fulfilling critical sea-going positions and cobbling teams of two or three personnel, who, when combined, meet the minimum requirement for a single qualification.<sup>30</sup> These practices stunt implicated sailors' growth, learning and career progression. The introduction of 2 new Arctic Offshore Patrol Vessels and initial crewing requirements on delivery of the first Joint Support Ship exacerbate not just the MAR TECH crewing challenges but also those observed in the Naval Warfare Officer and Naval Technical Officer occupations. MAR TECH are most affected by the earlier identified attach-posting practices and training bottlenecks. The MTAT lead signalled that unless the RCN redirects critical staff from training establishments, upcoming confirmed MAR TECH releases will result in insufficient crew to safely sustain Maritime Fleet Pacific's planned sailing program come spring 2022. 31 This occupation, critical to the safe sailing of naval ships, is stretched so thin that the line has begun to break.
- 13. At the risk of appearing alarmist, the consequences of overlooking the imbalance between FG and FE can be deadly. Our partners to the south are no stranger. In 2017, the United States Navy experienced two separate devastating accidents involving the USS *Fitzgerald* and

6/10

<sup>&</sup>lt;sup>28</sup> Department of National Defence, *Evaluation of Ready Naval Forces* (Ottawa: Assistant Deputy Minister (Review Services), March 2019), viii

<sup>&</sup>lt;sup>29</sup> Maritime Technician Action Team, *Changes Required to Recover MARTECH Watchkeeping Positions*, Director Naval Personnel, 6 August 2021.

<sup>&</sup>lt;sup>30</sup> *Ibid*.

<sup>&</sup>lt;sup>31</sup> Email, LCdr Mai Guo (MTAT Lead)/Cdr Stephanie Hartzell (JCSP 48 Student), 15 January 2022.

the USS *John S. McCain.*<sup>32</sup> Combined, the lives of 17 sailors were lost.<sup>33</sup> The subsequent investigations discovered that FE demands significantly outweighed the capacity to generate ready forces, undoubtedly contributing to the errors that led to these devastating events.<sup>34</sup> Furthermore, it came to light that leadership knew of these readiness shortfalls, from Fleet Commanders all the way up to Secretary of Navy - for years, reports from below with calls for action going unanswered.<sup>35</sup> An article from USNI shines a light on the "...can-do, don't-say-no culture that tolerates surface ships deploying in less-than-optimal readiness..."

### **CONCLUSION**

14. The RCN is committed to its motto, Ready Aye, Ready. Notwithstanding persistent challenges around generating and sustaining ready ship's crews, the Navy is unwavering when delivering excellence in operations. The Navy has many initiatives to address challenges with crewing and training throughput. Granted, the balance between FG and FE, too long tipped in favour of FE, resulted in slow progress and marginal gains over the last 5-6 years. Practices such as frequent attach-postings and underemphasizing training at sea, aimed at maintaining a high operations tempo, have only served to force the issue of insufficient ready naval personnel to a head. The RCN's shortage of trained personnel continues to grow, exacerbated by COVID-19. The CDS Planning Directive for Canadian Armed Forces Reconstitution offers an opportunity to shift focus to FG – an opportunity that cannot be squandered or risk the health and safety of the RCN's most valuable resource, its people, and failing to deliver future capability and excellence in operations.

#### RECOMMENDATIONS

- 15. The following recommendations were drawn from the discussion for consideration by CRCN:
  - a. Establish clear priorities focused on FG of personnel and ensure leadership buyin. This will ensure limited resources are appropriately attributed and enable
    commanding officers and managers to effectively identify lines of effort that can
    be placed on hold or eliminated. Failure to do so exacerbates the issue through
    unfocused, overworked teams. Any discrepancy between CDS-directed operations
    and Fleet sailing schedules must be scrutinized and limited to sails dedicated to
    FG efforts.
  - b. To rebuild dwindling expertise and qualified naval forces, investigate the feasibility of assigning frigates on each coast as dedicated FG platforms, free of operational commitments. This could be a temporary or permanent measure

<sup>&</sup>lt;sup>32</sup> Sam LaGrone, "Readiness Lapses That Led to McCain, Fitzgerald Collisions Were Years in the Making," *USNI News*, 1 November 2017.

<sup>&</sup>lt;sup>33</sup> *Ibid*.

<sup>&</sup>lt;sup>34</sup> *Ibid*.

<sup>&</sup>lt;sup>35</sup> Robert Faturechi, Megan Rose, and T. Christian Miller, "Years of Warning, Then Death and Disaster: How the Navy Failed Its Sailors," *ProPublica*, 7 February 2019

<sup>&</sup>lt;sup>36</sup> Sam LaGrone, "Readiness Lapses That Led to McCain, Fitzgerald Collisions Were Years in the Making," *USNI News*, 1 November 2017.

- aimed at building shipboard and at-sea experience and increasing the generation of occupation-specific qualifications.
- c. Appropriately incentivize employment within the training establishments and Director Naval Personnel. Communicate their priority to ensure top-quality candidates are directed to these organizations to tackle the RCN's wicked personnel issues and build the necessary foundation to advance other initiatives, develop future capability, and return to an increased operations tempo. Do not accept drawing personnel from these organizations to sustain today's operations tempo.
- d. Engage CMP to explore how to obtain, or if not available, develop means of disaggregating data pertaining to MELs. Specifically with the intent to better track and understand the root causes and impacts of such high instances of MELs on sea-going units.

#### **BIBLIOGRAPHY**

- Canada. Department of National Defence. B-GJ-005-000/FP-001, *CFJP 01 Canadian Military Doctrine*. Ottawa: DND Canada, 2011.
- Canada. Department of National Defence. B-GN-005-RCN/RQ-001, CFCD 129 Royal Canadian Navy Readiness and Sustainment Policy. Ottawa: RCN Canada, 16 July 2018.
- Canada. Department of National Defence. CDS Planning Directive for Canadian Armed Forces Reconstitution. Ottawa: Chief of the Defence Staff, 9 July 2021.
- Canada. Department of National Defence. *Evaluation of Ready Naval Forces*. Ottawa: Assistant Deputy Minister (Review Services), March 2019.
- Canada. Department of National Defence. *Royal Canadian Navy Strategic Plan 2017-2022*. Ottawa: Royal Canadian Navy, 2016.
- Canada. Department of National Defence. *Strong, Secure, Engaged: Canada's Defence Policy*. Ottawa: Government of Canada, 2017.
- Canada. House of Commons. Standing Committee on National Defence. *Evidence*. No. 024, 1<sup>st</sup> Session, 42<sup>nd</sup> Parliament, Thursday, October 27, 2016.
- Canada. House of Commons. Standing Committee on National Defence. *Evidence*. No. 029, 1<sup>st</sup> Session, 42<sup>nd</sup> Parliament, Tuesday, November 22, 2016.
- Faturechi, Robert, Megan Rose, and T. Christian Miller. "Years of Warning, Then Death and Disaster: How the Navy Failed Its Sailors." *ProPublica*, 7 February 2019.
- Gervaud, Pierre-Hughes. *RCN Military Personnel Placemat January 2022*. Director Digital Navy, January 2022.
- Gervaud, Pierre-Hughes. RCN Managed Workforce Health Current TES vs Positions (Weekly). Director Digital Navy, 12 January 2022.
- LaGrone, Sam. "Readiness Lapses That Led to McCain, Fitzgerald Collisions Were Years in the Making" *USNI News*, 1 November 2017.
- Maritime Technician Action Team, *Changes Required to Recover MARTECH Watchkeeping Positions*, Director Naval Personnel, 6 August 2021.
- Maritime Technician Action Team. *MTAT Interim Report*. Director Naval Personnel, 10 January 2022.

Personnel Coordination Center Atlantic, *Fleet Snapshot*, MARLANT, 18 January 2022. Note: This reference is an excerpt from a slide deck delivered weekly at the Commander's Update Brief.