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## UNITED STATES NAVY READINESS REFORM AND THE ROYAL CANADIAN NAVY: PREVENTING AT-SEA COLLISION

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**Lieutenant-Commander T.A. Bain**

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# UNITED STATES NAVY READINESS REFORM AND THE ROYAL CANADIAN NAVY: PREVENTING AT SEA COLLISIONS

## AIM

1. The United States Navy (USN) conducted a complete Readiness Reform following two deadly collisions in 2017 in the Seventh Fleet Area of Operations. This service paper aims to evaluate what similarities in ship operations and training that lead to ship collisions in the USN's Seventh Fleet and how the Royal Canadian Navy (RCN) may mitigate its exposure to possible future accidents. It will prove that there are elements for improvement and a significant oversight in the RCN.<sup>1</sup>

## INTRODUCTION

2. For decades the RCN has responded to arduous operational demands all over the world. Throughout the RCN's history, accomplished commanders managed demanding situations such as combat, disaster relief, and interdiction missions. Ultimately, these operations have provided unimpeded access and security on the high seas for all nations.<sup>2</sup> Likewise, the majority of the time, operational tasks are executed safely and professionally.<sup>3</sup> Improvements in technologies such as propulsion, navigation and combat systems require more training and experience than previously,<sup>4</sup> while maintaining a high proficiency in navigation and seamanship.<sup>5</sup> Concurrently, the operational demands

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<sup>1</sup> Department of the Navy, *Memorandum Readiness Reform Oversight Committee* (Washington, D.C.: Vice Chief of Naval Operations), February 25, 2019, whole document. As a result of the USN investigations, it instituted significant changes to strengthen its culture, create a more reliable fleet manning model, and enhance their Surface Warfare Officer (SWO) assessments. The RCN should consider these for further study as they are outside the scope of this paper.

<sup>2</sup> Department of National Defence, *Canada in a New Maritime World LEADMARK 2050* (Ottawa, ON Canada) Royal Canadian Navy, 2016, iii

<sup>3</sup> CBC News "2 Canadian warships collide en route to Hawaii," last accessed 25 October, 2019. <https://www.cbc.ca/news/canada/2-canadian-warships-collide-en-route-to-hawaii-1.1309679>

<sup>4</sup> Department of the Navy, *Comprehensive Review of Recent Surface Force Incidents*. (Norfolk, VA: U.S. Fleet Forces Command, 26 October 2017), 6.

<sup>5</sup> Rear-Admiral John Charles O'Brien, "Personal and Confidential Message" Office of the Commander Maritime Command, Halifax, NS Canada. 19 April 1967, 2.

continue to rise while the number of ships<sup>6</sup> and sailors have declined.<sup>7</sup> Overall, the RCN is doing more with less.

3. Using the USN Seventh Fleet Collisions and subsequent reforms, this essay will demonstrate that the RCN has resemblances and can avoid similar mistakes and mitigate its exposure to possible future accidents. This paper will compare and contrast training and operations, specifically the training and fatigue readiness reforms of the USN.<sup>8</sup> Firstly, this paper will examine the background of why the USN investigations are relevant to the RCN, followed by a more in-depth examination of training, sea time and assessments, and lastly, personnel fatigue management in the USN and its relevance to the RCN.

## **DISCUSSION**

### **Background – Why the USN Investigations are Relevant to the RCN**

4. Maintaining safe and proper operations at sea has become extremely difficult in the RCN given the limited number of ships, the age of ships, the high cost and lengthy procurement process,<sup>9</sup> and a ten percent shortage of sailors.<sup>10</sup> Given the large number of factors described above correctly identifying personnel and material risks early and mitigating those risks is challenging. These hurdles could lead to increased accidents occurring at sea similar to what occurred in the USN,<sup>11</sup> if not identified early. The loss of

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<sup>6</sup> Macleans “The sinking of the Canadian Navy,” last accessed 25 October 2019, <https://www.macleans.ca/news/canada/the-sinking-of-the-canadian-navy>.

<sup>7</sup> The Canadian Press, “Sailor shortage causing headaches for Royal Canadian Navy,” last accessed 10 October 2019, <https://www.ctvnews.ca/canada/sailor-shortage-causing-headaches-for-royal-canadian-navy-1.4296620>.

<sup>8</sup> Department of the Navy, *Comprehensive Review...*, whole document.

<sup>9</sup> Canadian Global Affairs Institute, *Policy Paper: The Royal Canadian Navy Facing Rough Sea* (Canadian Global Affairs Institute, January 2016), 2.

<sup>10</sup> The Canadian Press, “Sailor shortage...,” whole document.

<sup>11</sup> Department of the Navy, *Memorandum For Distribution Enclosure (1) Report on the Collision USS FITZGERALD (DDG 62) and Motor Vessel ACX CRYSTAL Enclosure (2) Report on the Collision*

ships will limit RCN operations for Canada, similar to when the Canadian Auxiliary Oiler Replenishment and destroyer ships were suddenly retired.<sup>12</sup> Although challenging, the preventable loss of any life and any loss of ships is always a priority.

5. The USN failed to accurately identify personnel and material risks that eventually lead to four significant accidents in 2017 within a few months of each other.<sup>13</sup> It had a grounding and three collisions, two of which were disastrous and caused loss of life and injuries to sailors. The United States Ship (USS) FITZGERALD collided with a Philippine container ship in June 2017 that killed seven sailors. Two months later, the USS JOHN S MCCAIN struck a Liberian merchant vessel, also killing ten sailors. Furthermore, the destroyers sustained millions of dollars in damage.<sup>14</sup> As of October 2017, three USN investigations were completed<sup>15</sup> and the Readiness Reform Oversight Committee implemented ninety-one recommendations.<sup>16</sup> USN Chief of Operations Admiral Richardson stated:

I'll be clear, these accidents were preventable. The causes for the collisions included a failure to plan for safety, failure to adhere to sound navigational practices, failure to execute basic watch standing principles, failure to properly use available navigation tools, failure to respond deliberately and effectively when in extremis of collision, a loss of situational awareness and high traffic density, failure to follow the international rules of the road and for John S. McCain, insufficient knowledge and proficiency of the ship's steering system.<sup>17</sup>

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*between USS JOHN MCCAIN (DDG 56) and Motor Vessel ALNIC MC*, (Washington, D.C.: Chief of Naval Operations), October 23, 2017, whole document.

<sup>12</sup> Canadian Global Affairs Institute, *Policy Paper...*, 4.

<sup>13</sup> Department of the Navy, *Memorandum...Report on the Collision USS FITZGERALD...*, whole document.

<sup>14</sup> Caitlin, Doornbos, "Navy Enact almost all changes recommended after fatal USS Fitzgerald, USS McCain collisions", TCA Regional News; Chicago, 20 March 2019.

<sup>15</sup> Department of the Navy, *Memorandum...Report on the Collision USS FITZGERALD...*, whole document.

<sup>16</sup> Doornbos, "Navy Enacts...".

<sup>17</sup> Department of Defense, Press Briefing by Admiral. Richardson on results of the Fleet Comprehensive Review and investigations into the collisions involving USS Fitzgerald and USS John S, McCain, (Washington, DC: U.S, Chief of Naval Operations), 2 November 2017, 2.

6. What caused the accidents goes much deeper than the failures of the ship's Captains or a failure of the crew to respond to a steering gear breakdown.<sup>18</sup> Canada's Navy faces similar challenges to identify risks or, as Admiral Richardson said, “plan for safety.” Ineffective risk mitigation caused by weakness in personnel training and experience, and a failure to prioritize manning lead to the collisions in the USN.<sup>19</sup> Ultimately, the USN failed to plan for safety by neither training adequately, nor assessing the competency of its sailors in place of putting ships to sea.<sup>20</sup> For example, many USN ships were operating under Risk Assessment and Mitigation Plans, which allowed them to operate without appropriate equipment and training.<sup>21</sup> Examining what led to the USN accidents more profoundly is relevant as the causes were not merely the fault of one individual or one incident.

### **Training and Sea Time**

7. The USN determined that increased at-sea experience, better training and regular assessments for SWOs were critical to mitigating risks caused by personnel. For illustration, the USN created reforms that increased the at-sea experience for the first sea tour to 48 months and created a mariner's logbook to track at-sea experience. Moreover, they started additional formal training for junior SWOs both in the classroom and in simulators. The USN also implemented a SWO career training and competency continuum as seen in Annex A.<sup>22</sup> This discussion will divide the reforms into three

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<sup>18</sup> Department of the Navy, *Memorandum Readiness...*, whole document.

<sup>19</sup> *Ibid.*, 2-4.

<sup>20</sup> *Ibid.*, 2

<sup>21</sup> *Ibid.*, 2.

<sup>22</sup> *Ibid.*, 4.

categories: firstly, formal training outside the fleet, secondly, training after joining the fleet and lastly, the carrier continuum evaluation and assessment.

8. Firstly, formal training before joining the fleet. The USN increased at-sea experience and created better training. For instance, before 2017, the USN had a fourteen-week fundamentals course focused on navigation, seamanship, engineering. However, the follow-on practical assessments were aboard ships using On the Job Training (OJT).<sup>23</sup> As a result, the comprehensive review found that it was not uncommon to have unqualified, untrained and uncertified watch teams.<sup>24</sup> The USN had a significant dependency on SWO training aboard ships in the fleet through OJT, which contributed to the collisions. Most importantly, due to the lack of standards and objective evaluation, COs were left wondering what to expect from their officers who were attach posted from other ships.<sup>25</sup>

9. The RCN has similar schoolhouse training to the USN; however, assessments and standards are integrated into training.<sup>26</sup> The RCN restructured its NWO training in 2010. The at-sea experience in the RCN reduced in recent years, however, maintained a focus on navigation and seamanship.<sup>27</sup> Unlike the USN, the RCN has always placed a high priority on navigation and seamanship training. Rear-Admiral John C. O'Brien, said “ship handling is a skill...like any other skill, it is acquired through practice.”<sup>28</sup> The RCN

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<sup>23</sup> Department of the Navy, *Comprehensive Review...*, 47-49.

<sup>24</sup> *Ibid.*, 49.

<sup>25</sup> *Ibid.*, 49.

<sup>26</sup> Department of National Defence, RCN Qualification Standard and Plan (QSP) Maritime Surface and Sub-Surface 00207 revision 1.2 (Esquimalt: DND Canada, 24 August 2016), whole document, QSP for MARS II, III, IV has standardized evaluations.

<sup>27</sup> Department of National Defence, RCN QSP..., 1-4, Naval Warfare Officer (NWO) core skills training has fifty sea days dedicated at-sea, most of which focus on navigation skills and ship maneuvering.

<sup>28</sup> O'Brien, “Personal and Confidential Message...,” 2.



continues to prioritize at-sea training today. For instance, there are fifty sea days and just over forty simulator days for NWOs core skills training before joining the fleet.<sup>29</sup>

10. However, over the years, the RCN has reduced the at-sea experience for advanced training.<sup>30</sup> For example, the FNO course reduced from three weeks to one, and the Operation Rooms Officer (ORO) course sea phase was eliminated. Conversely, the RCN added a two-week sea phase to the Command Development Course (CDC), which refreshed all NWOs mariner skills.<sup>31</sup> Additionally, there is a ship-handling component of the COs course before taking command.

11. Although the RCN has reduced at-sea experience in some specialty areas, overall, it has increased and focused mariner skills. Despite a reduction in sea days in core training,<sup>32</sup> navigation and ship handling training, and at-sea time has improved for NWOs. Given these improvements, overall, the RCN is meeting requirements for sea time, training and assessments. The USN, unlike the RCN, lacked standardized assessments and sea time before joining the fleet in 2017.

12. Secondly, evaluating training after joining the fleet. The RCN, like the USN, initiated a mariner's logbook to track sea time and ensure a balanced mix of experiences after joining the fleet.<sup>33</sup> The USN instituted the logbook tracking system as they saw weaknesses in experience levels and practical application. For example, the Officer of the

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<sup>29</sup> Department of National Defence, RCN QSP Maritime Surface..., 1-4.

<sup>30</sup> Advanced training would focus on warfighting skills in Director Level Training such as Above Water Warfare Officer, Under Water Warfare Officer and Fleet Navigating Officer (FNO).

<sup>31</sup> Department of National Defense, RCN QSP Command Development DP 2-3 (Esquimalt: DND Canada, 1 June 2014), 75.

<sup>32</sup> Unable to determine an exact number of sea-days reduced at this time as previous QSP is unavailable, but the author was an instructor at the school during this reform.

<sup>33</sup> USNI News "U.S. Surface Warfare Officers Will Now Use Logbooks to Record Time at Sea" last visited 25 October 2019, <https://news.usni.org/2018/09/14/u-s-surface-warfare-officers-will-now-use-logbooks-record-time-sea>.

Deck (OOD) assessments were found to be insufficient, especially in high traffic density areas. Although ninety-one percent of OOD passed the written collision regulation exam,<sup>34</sup> deficiencies in their practical application were revealed.<sup>35</sup> The result of this was two-fold, in addition to the mariners' logbook. Notably, the USN implemented more rigorous simulator scenarios in their fleet training in place of the written exam.<sup>36</sup> Moreover, continuous career assessments for SWOs. The USN determined a need for improved assessments for all SWOs<sup>37</sup> and potential COs of ships.<sup>38</sup>

13. The RCN recently adopted the mariner's logbook model. For both the USN and RCN, the use of the logbook goes beyond merely tracking hours at sea.

Documenting bridge time, simulator time, and special evolutions is necessary to tailor future training and ensure that an officer has been provided the at-sea opportunity necessary to develop mariner skills proficiency.<sup>39</sup>

For example, an NWO aboard a ship may not conduct complex evolutions in high traffic density areas. Similar to pilots, to create a regular and a standardized level of experience, NWOs must be allowed at sea or in a simulator to log the experience. The RCN has recently started to use the mariner's logbook and will meet requirements if implemented as planned.

14. Lastly, career continuum evaluation and assessment. The USN created a ten career milestone assessment process for potential COs.<sup>40</sup> The RCN is in the process of

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<sup>34</sup> Exams designed to test knowledge of International Collision Regulations between shipping.

<sup>35</sup> Department of the Navy, *Memorandum Readiness...*, 3.

<sup>36</sup> Department of National Defence, RCN QSP Maritime Surface..., 1-4.

<sup>37</sup> The OOW is delegated charge from the Commanding Officer and is responsible to the Commanding Officer for the safe and proper movement and operation of the ship and her company similar to the OOD in the USN. The differences are outside the scope of this paper.

<sup>38</sup> Department of the Navy, *Memorandum Readiness...*, 3- 4.

<sup>39</sup> USNI News "U.S. SWOs..." whole document.

<sup>40</sup> *Ibid.*, 4. As seen in Annex A

modernizing its command assessment process.<sup>41</sup> The RCN has its periodic assessments in the form of coursing and boards throughout NWO training. For instance, to be promoted to naval Lieutenant and continue with specialty training, NWOs must achieve a Naval Officer Professional Qualification (NOPQ).<sup>42</sup>

15. The RCN has similar assessment milestones in coursing to the USN model seen in Annex A. However, the RCN model is in the process of modernization and are not clearly defined yet. Nevertheless, in the RCN, there is a gap for mariner skills between the director level and the CDC. To illustrate, following NOPQ, there is a two to five-year period, which focuses on the warrior and the manager pillars for most NWOs, not mariner skills. It is unknown whether or not the USN carrier continuum model has a similar gap. The RCN, however, has the potential for skill fade in the mariner pillar during the post NOPQ period. This gap in mariner skills is an area where the RCN may wish to provide refresher training or evaluation similar to the USN model.<sup>43</sup>

16. On the other hand, advances in technology such as Command Management Systems (CMS) require training, practice and focus, as well as taking time away from ship handling and seamanship. Finding a balance between warfare experience and navigation and seamanship experience is more difficult now than it was fifty years ago.

That said, the RCN has a high priority on navigation and seamanship training before

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<sup>41</sup> Department of National Defence, *Message 231714Z AUG 19*, Subj: Modernized Command Development and Assessment Process (Ottawa: DND Canada, 23 August 2019), whole document, this year, the RCN decided to modernize its Command Development and Assessment Process to evaluate command potential. The tools will track at sea experience like the USN model through the use of a mariner's logbook. Annually unit COs will also assess command potential against the NWO four pillars, Leader, Mariner, Warrior, Manager.

<sup>42</sup> In order to be promoted to the next rank of Lieutenant (Navy) and proceed to Director Level training such as the FNO course, all NWOs must pass a Naval Officer Professional Competency Board to assess knowledge of seamanship, navigation, administration and operations. Part of this board is in the simulator.

<sup>43</sup> See Annex A.

being posted to a ship, unlike the pre-2017 USN model. Therefore, maintaining well-balanced navigation and ship-handling is a critical mitigating measure to prevent collisions at sea. Nevertheless, the USN did determine that at-sea time and standardized carrier assessments were critical to providing the required experiences to mitigate the risk of personnel.<sup>44</sup>

### **Personnel Fatigue Management Planning**

17. Currently, the real risk for the RCN is fatigue management planning, as there is no codified policy or tool. The RCN does have a Risk Assessment (RA) process.<sup>45</sup> The RCN, RA process, is materially focused, as the title “In-Service Naval Material Risk Management” suggests.<sup>46</sup> It evaluates personnel safety, material, mission and environmental protections.<sup>47</sup> Despite all the benefits of the current RCN RA policy, it does not explicitly consider risk caused by personnel, nor provide the tools to help assess risk caused by fatigue.

18. The RCN, like the USN in 2017, does not have a comprehensive personnel fatigue management policy. As a result of the collisions in November of 2017, the USN released a circadian rhythm-based fatigue management policy, which included an individual crew risk management tool to evaluate crew rest.<sup>48</sup> In 2013 and 2014, Defence Research and Development Canada conducted circadian rhythm fatigue management studies aboard HMCS CALGARY.<sup>49</sup> Studies of warship deployment crew modelling and

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<sup>44</sup> Department of the Navy, *Memorandum Readiness...*, 3-4

<sup>45</sup> Department of National Defence, *NAVORD 3001-1*, In-Service Naval Material Risk Management Process, Royal Canadian Navy (Ottawa: DND Canada, 24 April 2014), 1.

<sup>46</sup> *Ibid.*, 1.

<sup>47</sup> *Ibid.*, 6.

<sup>48</sup> Department of the Navy, *Memorandum Readiness...*, 2.

<sup>49</sup> LCdr Travis Bain participated in two circadian rhythm trails aboard HMCS CALGARY 2013 and 2014.

sustainment, continue aboard the “X-SHIP” for the future fleet.<sup>50</sup> Since at least 2014, the RCN has been examining crew fatigue but has yet to develop policy or integrate it into training and fleet education. It is difficult for ships Captains to honestly know if fatigue is a risk factor if the RCN does not have a qualitative tool to aid them.

19. In order to better aid ship’s Captains, the USN instituted a fatigue management policy and individual crew risk management tool for evaluating crew rest.<sup>51</sup> The Royal Canadian Air Force (RCAF) and United States Coast Guard (USCG) crews have had similar policies and tools for years.<sup>52</sup> The comparison to the RCAF is not to say the RCN needs to have a strict number of hours of rest like aircrews. However, the USN saw a need to develop a fatigue management policy, integrate it into the RA process and educate its sailors to properly recognize fatigue in order to improve assessments and crew endurance.<sup>53</sup> Crew fatigue will become more of a concern as new RCN ships are completed and expected to operate with fewer sailors than today's RCN ships.

20. Fatigue in all industries has become a genuine concern. The most recent and visible example in Canada followed the 2016 Humboldt Broncos junior hockey team accident that killed sixteen people.<sup>54</sup> Fatigue was a contributing cause of that accident and as a result, significant regulations for the Canadian transportation industry. Marc Garneau

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<sup>50</sup> Royal Canadian Navy, “X-Ship leads the way in advancing innovative naval concepts” last accessed on 12 October 2019, <http://www.navy-marine.forces.gc.ca/en/news-operations/news-view.page?doc=x-ship-leads-the-way-in-advancing-innovative-naval-concepts/im7aniu3>.

<sup>51</sup> Department of the Navy, *Memorandum Readiness...*, 2.

<sup>52</sup> United States Coast Guard, “Crew Endurance Management” last visited 25 October 2019, [https://www.dco.uscg.mil/Portals/9/DCO%20Documents/5p/5ps/Design%20and%20Engineering%20Standards/Human%20Element%20and%20Ship%20Design%20Division/crew%20endurance%20brochure\\_091814.pdf?ver=2017-06-21-102717-553](https://www.dco.uscg.mil/Portals/9/DCO%20Documents/5p/5ps/Design%20and%20Engineering%20Standards/Human%20Element%20and%20Ship%20Design%20Division/crew%20endurance%20brochure_091814.pdf?ver=2017-06-21-102717-553).

<sup>53</sup> Department of the Navy, *Memorandum Readiness...*, 2.

<sup>54</sup> CBC News, “Federal government takes steps to curb bus, truck driver fatigue in Canada” last visited 25 October 2019, <https://www.cbc.ca/news/politics/truck-bus-driver-fatigue-road-safety-1.5173516>.

Minister of Transportation said that the new electronic tracking system and policy are to “reduce truck and bus crashes due to fatigue.”<sup>55</sup>

21. Fatigue considerations are essential in wartime as well as peacetime. Admiral Sandy Woodward, Falkland's battle group commander, commented throughout his book about crew fatigue and his own.<sup>56</sup> Not all sailors have the experience that Admiral Woodward had to recognize fatigue. That is why the USN, the USCG and other organizations have instituted a policy to create a culture to recognize fatigue and to mitigate risks during all operations.

## **RECOMMENDATIONS**

22. Reconsider the number of training sea days for the FNO and ORO Courses.

23. Integrate high traffic density evolutions as a special evolution to augment the written collision regulations exam. This can be tracked in the mariner's logbook.

24. Conduct an in-depth evaluation of the USN competency continuum to help shape the RCNs future command assessment tools. Is there is potential to create refresher training following NOPQ to avoid skill fade in the mariner domain?

25. Reassess the RCN RA policy to include risk caused by personnel such as training, experience, and fatigue.

26. Create a comprehensive personnel fatigue management policy, individual crew risk assessment tool, integrate fatigue management into training. Generate an evaluation mechanism through Sea Training Group to ensure it is implemented.<sup>57</sup>

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<sup>55</sup> *Ibid.*

<sup>56</sup> Sandy Woodward and Patrick Robinson, *One Hundred Days: The Memoirs of the Falklands Battle Group Commander* (Harper Press, 2012), 76, 316, 680.

<sup>57</sup> The RCN leadership such as ship's Captains, discuss and consider risks, including fatigue. Although discussed, is the RCN providing all the tools to ships Captains to assess fatigue is not. Can a

## CONCLUSION

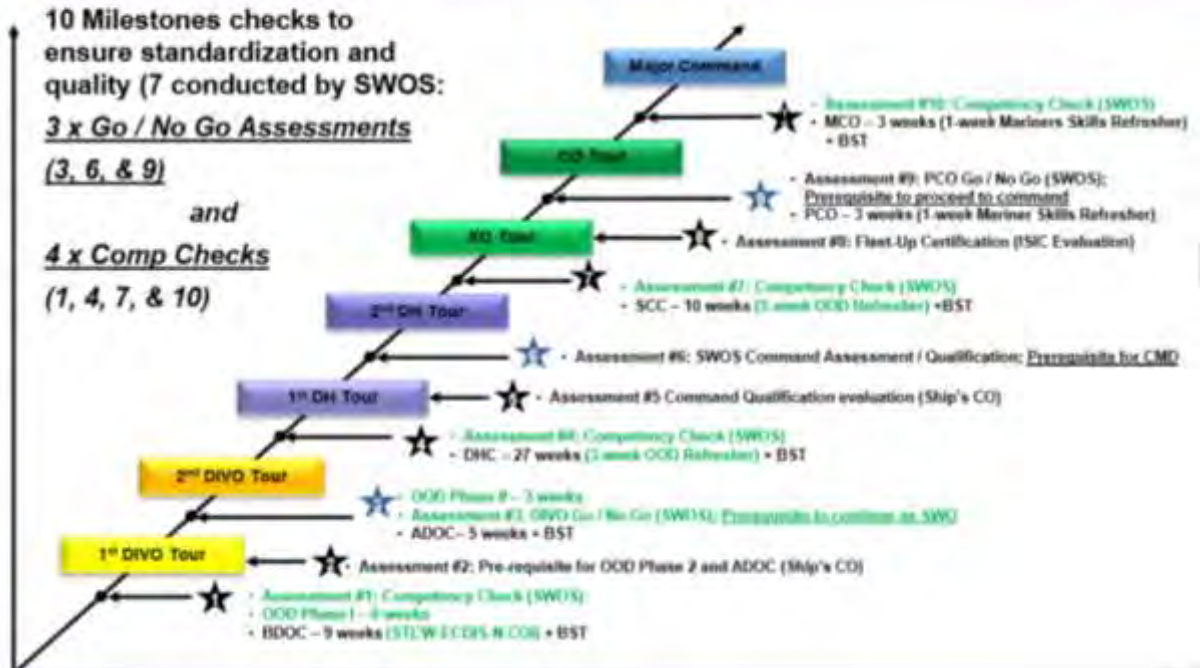
27. In summation, the RCN is meeting requirements in core NWO training, and sea time, however, could review sea time for the FNO and ORO courses as well as fleet assessments for NWOs. Additionally, the RCN is not meeting requirements with regards to a comprehensive personnel fatigue policy, assessment tool, and plan for its Commanders at Sea. The USN, other organizations such as the USCG and the Transport Canada, see fatigue as a significant cause for concern and a contributing cause of accidents. For all these reasons, the RCN needs to create a comprehensive personnel fatigue management plan before a preventable accident occurs. The RCN considers the risk to personnel but not risk caused by personnel from factors like fatigue. Overall the RCN is meeting most training and assessment requirements except for fatigue planning.

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Ships Captain or crew members be expected to efficiently assess fatigue without a codified policy, training or specific fatigue assessment tool? Assessing risk is nothing new to the Navy.



# SWO Competence Continuum



<sup>58</sup>Commander USN Naval Surface Forces, “SWO Career Training and Competency Continuum” last accessed 25 October 2019, <https://www.public.navy.mil/bupers-npc/officer/Detailing/surfacewarfare/Documents/SWO%20Career%20Path%20Brief%202018.pdf>.



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