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## **Military Impact and Effectiveness in the Underwater Space: More Than Just New Submarines**

Commander Roland Spahr

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**Military Impact and Effectiveness: More Than Just New Submarines**

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# MILITARY IMPACT AND EFFECTIVENESS IN THE UNDERWATER SPACE: MORE THAN JUST NEW SUBMARINES

## AIM

1. This service paper aims to convince to create one the most powerful alliances, together with Canada, in the operation and utilization of conventional submarines worldwide.<sup>1</sup> To this end, this paper will highlight the added value of Canada's accession to the German-Norwegian U219-class (former project name U212 Common-Design)<sup>2</sup> procurement project in geo- and military-strategic, as well as security policy dimensions, and demonstrate the short- to medium-term, achievable operational potential of having a Royal Canadian Navy (RCN) and German Navy (GN) submarine cooperation. The recommendation includes a first concrete proposal, the possibility of deeper exchange of experience, and closer cooperation in the field of deployment and operation of maritime high value weapon systems. This Service Paper is for the Commander of the Royal Canadian Navy, Vice-Admiral Angus Topshee.

## INTRODUCTION

2. Canada has initiated the process to renew an aging Victoria-class submarine fleet.<sup>3</sup> In this context, the institutional speed needed for the new procurement, to avoid loss of capability or failure in operational availability of the submarines, is the focus of Commander RCN's consideration.<sup>4</sup> Nevertheless, speed is a relative term within a given process and expresses two things in the military process: a delta between mission and means is apparent, and action is required. However, static institutional structures within a legally predetermined process cannot be changed. The causal-analog approach to procurement projects implies proceeding according to the requirements of the responsible and involved department within the institution, and is therefore slow. Consequently, it is an organizational phenomenon whose causality acts on the entire process chain at the same time, and yet can favor a loss of military capability.<sup>5</sup> A partnership of the RCN and GN with a military-operational focus has at least the opportunity to meet the challenges of the future operational environment for a submarine without disruption, through joint capability development, in the transition from the Victoria-class to its successor.<sup>6</sup> A

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<sup>1</sup> Dominik Kimla, "Conventional (AIP) Submarine – a Weapon of Choice for the 21st Century," Conventional (AIP) Submarine – a Weapon of Choice for the 21st Century, October 1, 2022, 6.

<sup>2</sup> Naida Hakirevic Prevljak, "Germany, Norway Seal Deal for Six Type 212CD Submarines," *Naval Today* (blog), July 8, 2021, <https://www.navaltoday.com/2021/07/08/germany-seals-deal-for-two-u212cd-submarines/>.

<sup>3</sup> Lee Berthiaume, "Royal Canadian Navy to Start Process of Replacing Aging Submarine Fleet - National | Globalnews.ca," Global News, July 14, 2021, <https://globalnews.ca/news/8026392/royal-canadian-navy-replacing-submarine-fleet/>.

<sup>4</sup> Angus Topshee, "OUR ROYAL CANADIAN NAVY" (Lecture, Toronto, Canadian Forces College, January 19, 2023).

<sup>5</sup> National Defence, "MRLs on National Shipbuilding Strategy," navigation page, September 21, 2021, <https://www.canada.ca/en/department-national-defence/corporate/reports-publications/proactive-disclosure/pacp-national-shipbuilding-strategy-25-may-2021/reference-materials/mrl-nss.html>.

<sup>6</sup> Marcello Sukhdeo, "The Capabilities and Challenges of Canada's Future Fleet – Vanguard," October 19, 2021, <https://vanguardcanada.com/the-capabilities-and-challenges-of-canadas-future-fleet/>.

partnership focused on the opportunity for strategic cooperation and collaboration, burden sharing, and mutual benefit in the operation and deployment of conventional submarines.

3. The assessment for the added value of the German-Canadian militarized submarine cooperation is conducted by considering the operational functions of the Canadian Armed Forces (CAF), which are Command, Sense, Act, Shield and Sustain,<sup>7</sup> and are categorized based on published, achieved functional capabilities of the 1st Submarine Squadron GN (1SubSq GN)<sup>8</sup>. The RCN's military strategic foresight "Canada in a New Maritime World LEADMARK 2050" (LM50) provides the overall framework for evaluating the added value of maintaining the capability of conventional submarines.<sup>9</sup> The defense of the global system at sea and from the sea, both at home and abroad, as a requirement for the new procurement of RCN maritime weapon systems according to the LM50, provides the basis for strategically ranking the added value of Canada's accession to the U219 German-Norwegian procurement project.

## DISCUSSION

### Team Sport - International Security Policy

4. A Navy for this Globalized Era.<sup>10</sup> Thyssen Krupp Marine System (TKMS) is one of the world's leading manufacturers of conventional submarines, based in Schleswig Holstein, Germany.<sup>11</sup> The worldwide customer base was most recently made evident by the handover of the U218 weapon system to Singapore from Kiel production.<sup>12</sup> The German Chancellor's participation in the ceremony undoubtedly also highlights the economic dimension of conventional submarine construction for Germany as a business location. In the context of managing the multitude of interrelated global crises and conflicts, years of peacetime economic policies also give rise to security policy anchors in the potential crisis areas of tomorrow.<sup>13</sup> The possibility of shared or logistic resupply arises on the basis of having been a customer of the same seller TKMS. This mainly affects the sea areas of the Mediterranean and Western Atlantic, but also the Pacific with Singapore and South Korea.<sup>14</sup> The addition of state-of-the-art

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<sup>7</sup> Public Services and Procurement Canada Government of Canada, "Canadian Forces Joint Publication. CFJP 3.0, Operation / Issued on Authority of the Chief of Defence Staff : D2-252/300-2010E-PDF - Government of Canada Publications - Canada.Ca," July 1, 2002, <https://publications.gc.ca/site/eng/364825/publication.html>.

<sup>8</sup> Frederic Strauch, Roland Spahr, and Tobias Eikermann, "U-Boote: Katz-und-Maus-Spiel auf See," *marineforum*, June 20, 2022, <https://marineforum.online/u-boote-katz-und-maus-spiel-auf-see/>.

<sup>9</sup> Royal Canadian Navy, "LEADMARK 2050 Canada in a New Maritime World," military strategic foresight, May 13, 2016, <https://hamiltonnaval.ca/wp-naval-content/uploads/2018/01/Leadmark-2050-13-May-2016-1-1.pdf>.

<sup>10</sup> Royal Canadian Navy, "LEADMARK 2050 A Navy for This Globalized Era," military strategic foresight, May 13, 2016, <https://hamiltonnaval.ca/wp-naval-content/uploads/2018/01/Leadmark-2050-13-May-2016-1-1.pdf>.

<sup>11</sup> TKMS, "Thyssenkrupp Marine Systems," February 27, 2023, <https://www.thyssenkrupp-marinesystems.com/en/company>.

<sup>12</sup> Giovanni, "TKMS Launches Two Type 218SG Submarines for Singapore," *Defense aerospace*, December 14, 2022, <https://www.defense-aerospace.com/tkms-launches-two-type-218sg-submarines-for-singapore/>.

<sup>13</sup> European Parliament. Directorate General for Parliamentary Research Services., *Mapping Threats to Peace and Democracy Worldwide: Introduction to the Normandy Index : In Depth Analysis*. (LU: Publications Office, 2019), <https://data.europa.eu/doi/10.2861/156107>.

<sup>14</sup> Sebastien Roblin, "What Makes German Type 212 and 214 Submarines so Popular?," *The National Interest* (The Center for the National Interest, August 23, 2021), <https://nationalinterest.org/blog/reboot/what-makes-german-type-212-and-214-submarines-so-popular-192339>.

submarines to Canada's Atlantic and Pacific coasts, with access to Arctic waters, is another value-added consideration for both security and foreign policy. The essence of a Canadian Blue Water Navy, submarines can be used and deployed wherever it is needed in the world.<sup>15</sup>

5. Protect abroad.<sup>16</sup> The geostrategic advantage of Canada's accession to the German-Norwegian U219 procurement project becomes clear in the visualization of the three nations' spatial responsibility for the defense of vital maritime areas of operation. The eye underwater Germany in the Baltic, North Sea and Western Atlantic, Norway in the Northwest Atlantic in the transition to the Barents Sea and Canada in the Eastern Atlantic, Arctic and Pacific. All three nations are key maritime nations which contribute to the Atlantic strategic operation area. Canada would be one of the partners that could give Germany and Norway access to the Pacific as conventional submarine nations.

6. Protect Canada. "Protect Canada by exercising Canadian sovereignty in our home waters, securing the maritime approaches to North America and contributing to maritime peace and good order abroad" is the self-conception of the RCN.<sup>17</sup> The U219 weapon system has been designed primarily for defense and enforcement capabilities, employable from the continental shelf to shallow water. With U219, the RCN would not only ensure a vital capability to protect the North American continent, but also strengthen it by expanding the current capabilities of conventional submarines with underwater air missiles, anti-torpedoes, naval strike missile, and the enhanced capability to deploy special forces.<sup>18</sup>

7. Prevent.<sup>19</sup> Prevent conflict by strengthening partnerships and deploying forward to promote global stability and deter conflict, is the second of three specifications that future RCN projects must meet according to LM 50. The accession of Canada to the German-Norwegian Cooperation U219 would be understood as a possible contribution and commitment contribution of a nation that stands up for peace and stability worldwide.<sup>20</sup> The process initiated by the CAF to replace the outdated Victoria-Class is a key moment for nations in their common defense policy. That shows they understand that while force is their very last resort, they can see the purpose in deploying power in a scalable manner worldwide with extraordinary capabilities. This forms the security basis of the U219 procurement project beyond its pure military utility. In summary, then, it is more than the nation's effort that can achieve global stability and prevent conflict through joint submarine operations.

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<sup>15</sup> RUSI(NS) Staff, "The Royal Canadian Navy – A Blue Water Force," *RUSI(NS)* (blog), March 5, 2017, <https://rusi-ns.ca/royal-canadian-navy-blue-water-force/>.

<sup>16</sup> Royal Canadian Navy, "LEADMARK 2050 Protect," military strategic foresight, May 13, 2016, <https://hamiltonnaval.ca/wp-naval-content/uploads/2018/01/Leadmark-2050-13-May-2016-1-1.pdf>.

<sup>17</sup> Royal Canadian Navy.

<sup>18</sup> Joachim Brune, "German-Norwegian Submarine Cooperation – U212CD," *NAVAL FORCES Magazine*, June 1, 2021.

<sup>19</sup> Royal Canadian Navy, "LEADMARK 2050 Prevent," military strategic foresight, May 13, 2016, <https://hamiltonnaval.ca/wp-naval-content/uploads/2018/01/Leadmark-2050-13-May-2016-1-1.pdf>.

<sup>20</sup> National Defence, "STRONG SECURE ENGAGED," navigation page - audience page, May 31, 2019, <https://www.canada.ca/en/departement-national-defence/corporate/reports-publications/canada-defence-policy/global-context.html>.

8. Project.<sup>21</sup> Canada's current challenges in the Pacific<sup>22</sup> and Atlantic<sup>23</sup> c areas of operation are diverse and security complex. However, the challenges and threats of the present necessitate the sustainment of scalable military effect for power projection. This also requires, if necessary, the ability to deter worldwide with "state of the art" weapon systems, as called for as the third requirement under "Project Canadian power to shape and, when necessary, restore order to the global system" in the LM50. Conventional U219 submarines are capable of this and are therefore a capability of particular military importance to the battlespace. The ability to achieve a high degree of interoperability by operating the same weapon systems as NATO allies increases the cold-start capability of joint military action in the theater of operations. This inevitably expands the political ability to act and project power as a nation in the security policy dimension.

### **Quo Vadis - Suddenly the silence is broken**

9. Conduct of a campaign.<sup>24</sup> The GN has no influence on the economic policy of TKMS. It does, however, have the opportunity to develop military partnerships through extensive cooperation with obvious synergy effects under its own responsibility. This implies the cooperation of the submarine fleet of the RCN with the 1SubSq GN, and would form the nucleus in the cooperation together with the Underwater Warfare Branch in the Flotilla I of the German Navy.<sup>25</sup> This cooperation is independent of a selection decision regarding the successor to the Victoria-class, and can be initiated independently of this. The operational value of this cooperation is the possibility of providing highly efficient, trained forces that can confidently deploy highly complex weapon systems in the area of operations based on the knowledge of their own strengths.<sup>26</sup>

10. Operational Functions.<sup>27</sup> Pursuing tomorrow's naval capabilities is the RCN's mission according to LM50,<sup>28</sup> and also permanently at the center of 1SubSq GN mission fulfillment. Thus, current capabilities of the GN were published for the first time on June 20, 2022 in the maritime journal "Marineforum" (ANNEX A - free English translation).<sup>29</sup> The 1SubSq GN, in its combination of weapon systems, underwater reconnaissance departments, and its own training facilities, is a deployable naval force in its own right.<sup>30</sup> The squadron's maritime weapon systems consisting of a dedicated command and supply ship *FGS Main* (SSU, Submarine Support

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<sup>21</sup> Royal Canadian Navy, "LEADMARK 2050 Project," military strategic foresight, May 13, 2016, <https://hamiltonnaval.ca/wp-naval-content/uploads/2018/01/Leadmark-2050-13-May-2016-1-1.pdf>.

<sup>22</sup> Global Affairs Canada, "Canada's Indo-Pacific Strategy," GAC, November 24, 2022, [https://www.international.gc.ca/transparency-transparence/indo-pacific-indo-pacifique/index.aspx?lang=eng#a1\\_3](https://www.international.gc.ca/transparency-transparence/indo-pacific-indo-pacifique/index.aspx?lang=eng#a1_3).

<sup>23</sup> NATO, "NATO 2022 STRATEGIC CONCEPT," June 29, 2022, <https://www.nato.int/strategic-concept/index.html>.

<sup>24</sup> Canadian Armed Forces, "Canadian Forces Joint Publication 5.0," Canadian Forces Joint Publication 5.0, April 1, 2008, [https://publications.gc.ca/collections/collection\\_2010/forces/D2-252-500-2008-eng.pdf](https://publications.gc.ca/collections/collection_2010/forces/D2-252-500-2008-eng.pdf).

<sup>25</sup> Bundeswehr, "Flotilla 1," February 27, 2023, <https://www.bundeswehr.de/en/organization/navy/organization/flotilla-1>.

<sup>26</sup> Bundeswehr, "Submarine Training Centre," February 27, 2023, <https://www.bundeswehr.de/en/organization/navy/organization/flotilla-1/submarine-training-centre>.

<sup>27</sup> Public Services and Procurement Canada Government of Canada, "Canadian Forces Joint Publication. CFJP 3.0, Operational Functions," July 1, 2002, <https://publications.gc.ca/site/eng/364825/publication.html>.

<sup>28</sup> Royal Canadian Navy, "LM50," May 13, 2016.

<sup>29</sup> Strauch, Spahr, and Eikermann, "U-Boote."

<sup>30</sup> Bundeswehr, "1 Submarine Squadron," February 27, 2023, <https://www.bundeswehr.de/en/organization/navy/organization/flotilla-1/1-submarine-squadron>.

Unit)<sup>31</sup>, the OSTE-class<sup>32</sup>, and the U212A Batch I & II submarines<sup>33</sup> reflect the performance capabilities of the entire squadron at sea. The Joint Intelligence Surveillance and Reconnaissance<sup>34</sup> Maritime Strike Group (JISR MSG) capability of the 1SubSq would be available to the RCN via the ability to benefit from an operationally based partnership, and achieve joint military excellence in the maritime operations area as a partner at eye level. Participation in a sensor to shooter network is already possible through integration of technology for the Victoria-class or Harry DeWolf-class<sup>35</sup> and does not have to wait for the Navy of tomorrow.<sup>36</sup>

11. Command & Sustain.<sup>37</sup> The operation of an SSU for special logistics for conventional submarines, as well as a command and control platform with a submarine operating authority on board, under direct command of a task group commander in the maritime operations area, has been successfully demonstrated.<sup>38</sup> Capabilities for integrated command and control and sustainment of logistics at sea are performed within GN JISR MSG by the SSU *FGS Main* and are required as per LM50 for the Canadian fleet of tomorrow.<sup>39</sup> These required capabilities may already be transferable to the Harry DeWolf-class through knowledge sharing in a partnership. The RCN would directly benefit from an SSU for conventional submarines that improves the operational functions of command and sustainment in the fictitious mission vignette in the LM50 of a Victoria-class submarine in 2028 in a conflict in the South China Sea.<sup>40</sup> Common interoperable submarine operational procedures for joint operational areas are the goal.

12. Sense.<sup>41</sup> “Maritime and Joint Intelligence, Surveillance and Reconnaissance” is the permanent main task of the 1SubSq. Patrolling directly on the borders of the territorial waters with Russia, the GN with the 1SubSq has the capability of uninterrupted reconnaissance in the transmission of the hydroacoustic and electromagnetic spectrum in the composite.<sup>42</sup> This allows the immediate adaptation of tactical procedures of high value weapon systems of 1SubSq in the

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<sup>31</sup> Bundeswehr, “Tender Typ 404,” February 27, 2023, 4, <https://www.bundeswehr.de/de/ausrustung-technik-bundeswehr/seesysteme-bundeswehr/elbe-klasse-404>.

<sup>32</sup> Bundeswehr, “Flottendienstboote,” February 27, 2023, <https://www.bundeswehr.de/de/ausrustung-technik-bundeswehr/seesysteme-bundeswehr/flottendienstboot-oste-klasse-423>.

<sup>33</sup> Bundeswehr, “U-Boot-Klasse 212 A,” February 27, 2023, <https://www.bundeswehr.de/de/ausrustung-technik-bundeswehr/seesysteme-bundeswehr/u-boot-klasse-212-a>.

<sup>34</sup> NATO, “Joint Intelligence, Surveillance and Reconnaissance,” NATO, February 16, 2023, [https://www.nato.int/cps/en/natohq/topics\\_111830.htm](https://www.nato.int/cps/en/natohq/topics_111830.htm).

<sup>35</sup> National Defence, “Harry DeWolf Class,” education and awareness, April 19, 2013, <https://www.canada.ca/en/navy/corporate/fleet-units/surface/harry-dewolf-class.html>.

<sup>36</sup> Strauch, Spahr, and Eikermann, “U-Boote.”

<sup>37</sup> Public Services and Procurement Canada Government of Canada, “Canadian Forces Joint Publication. CFJP 3.0, Command & Sustain,” July 1, 2002, <https://publications.gc.ca/site/eng/364825/publication.html>.

<sup>38</sup> Strauch, Spahr, and Eikermann, “U-Boote.”

<sup>39</sup> Royal Canadian Navy, “LM50,” May 13, 2016.

<sup>40</sup> Royal Canadian Navy, “LEADMARK 2050 Illustrative Maritime Vignette Crisis in the Asia-Pacific,” military strategic foresight, May 13, 2016, <https://hamiltonnaval.ca/wp-naval-content/uploads/2018/01/Leadmark-2050-13-May-2016-1-1.pdf>.

<sup>41</sup> Public Services and Procurement Canada Government of Canada, “Canadian Forces Joint Publication. CFJP 3.0, Sense,” July 1, 2002, <https://publications.gc.ca/site/eng/364825/publication.html>.

<sup>42</sup> Strauch, Spahr, and Eikermann, “U-Boote.”

maritime domain due to detected changes or capability improvements on the part of Russia.<sup>43</sup> The gathered fundamentals about the Russian Baltic Fleet (RBF) and Russian Northern Fleet (RNF) form the basis of the analysis for the GN's Hydroacoustic Analysis Center (HAC) and are an integral part of the chain of effects in 1SubSq.<sup>44</sup> Benefiting from partnership, the Canadian submarine fleet could increase cold start capability over the RBF and RNF. The GN, on the other hand, could achieve the same from existing bases through the Russian Pacific Fleet (RPF) in Canada. Overall, the military partnership would thus promote political capacity for nations to act beyond the maritime area of the Atlantic, thereby maintaining and expanding the operational fundamentals of the individual to improve joint command to combat.

13. Act.<sup>45</sup> The 1SubSq GN has consistently evaluated all manoeuvre, deployments, torpedo firing sections, and training missions since the first steps in developing a sensor to shooter network and has transferred experimental procedures to operational readiness.<sup>46</sup> The findings reveal potential for the GN in the area of theater anti-submarine warfare (ASW) effects, and in the use of special forces, that exceed previously known benchmarks in the field for effects by a conventional submarine many times over.<sup>47</sup> <sup>48</sup> Military submarine cooperation between the navies of Canada and Germany would enable joint countering of Russian and Chinese capability development in "underwater space" through effective superiority, to be able to meet the challenges of tomorrow's underwater warfare in the best possible way while still functioning in the present.

14. Shield.<sup>49</sup> Reconnaissance information from a surface ship can be relayed to an operational level leader and then transmitted from there to the submerged submarine.<sup>50</sup> Using information from external sensors, the submarine weapon system can generate valid underwater target solutions or identify optimal drop points for special forces within a near-real-time situational picture.<sup>51</sup> With the 1SubSq GN, the German Navy opens up a security policy option for Germany's political leadership. When submerged, the submarine is part of a communication network in a highly dynamic battlespace. Maritime Weapons and Sensors for Joint Action is the

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<sup>43</sup> Bundeswehr, "Submarine Training Centre."

<sup>44</sup> Bundeswehr, "1 Submarine Squadron."

<sup>45</sup> Public Services and Procurement Canada Government of Canada, "Canadian Forces Joint Publication. CFJP 3.0, Act," July 1, 2002, <https://publications.gc.ca/site/eng/364825/publication.html>.

<sup>46</sup> Strauch, Spahr, and Eikermann, "U-Boote."

<sup>47</sup> Leona Alleslev, "NATO ANTI-SUBMARINE WARFARE: REBUILDING CAPABILITY, PREPARING FOR THE FUTURE," *Page 2, Top 6,7 and 8*, October 13, 2019, <https://www.nato-pa.int/document/2019-nato-anti-submarine-warfare-rebuilding-capability-preparing-future-alleslev-150-stc>.

<sup>48</sup> National Defence, "CANSOFCOM - Beyond the Horizon," navigation page - topic page, July 21, 2020, <https://www.canada.ca/en/department-national-defence/corporate/reports-publications/cansofcom-beyond-horizon.html>.

<sup>49</sup> Public Services and Procurement Canada Government of Canada, "Canadian Forces Joint Publication. CFJP 3.0, Shield," July 1, 2002, <https://publications.gc.ca/site/eng/364825/publication.html>.

<sup>50</sup> Clarence Neason, "Operational Leadership- What Is It?," May 21, 1998, <https://apps.dtic.mil/sti/citations/ADA357894>.

<sup>51</sup> Strauch, Spahr, and Eikermann, "U-Boote."



derived requirement from LM50 and the available experiences of the GN may already be part of meeting this requirement.<sup>52</sup>

## CONCLUSION

15. Decisions on the battlefield are weighed against impact and effectiveness for mission accomplishment.<sup>53</sup> Consequently, military policy advice must be able to anticipate the future operational environment as best as possible in order to classify weapon systems such as submarines in terms of their future impact and effectiveness. The U219 procurement project is an opportunity for three nations to become the NATO Alliance's cluster of excellence in the operation and utilization of conventional submarines. They are capable of seamlessly shifting the future battle of linked weapons from the littoral domain to the terrain of "submarine space", becoming the interface of allied nations in the maritime domain between the nuclear and conventional submarine.<sup>54</sup> This is the potential beginning to be able to assess the engagement of linked weapon systems from the seabed in near-real time for impact and effectiveness at the operational level. This is the military strategic momentum for expanding Canada's political capacity with the U219 procurement project and a censure for naval warfare.

16. Should Canada decide to select another submarine project for the succession of the Victoria-class, is not an obstacle to the start of military submarine cooperation between the GN and RCN. The submarine cooperation of the RCN with the GN has greater potential. It is the ability to stand together in high-intensity battles through military strength in the maritime domain. To be able to infiltrate and destroy defensive bastions underwater by focusing joint submarine operations under the leadership of the operational level.<sup>55</sup> Maintaining a military capability for Suppression of Enemy Underwater Defense is the maritime response to challengers and threats to the international peace order.<sup>56</sup> The ability of the Victoria-class and its successors to succeed on the battlefield can be enhanced through partnership with the GN. Therefore, the partnership must not be interpreted simply as a preemptive selection decision, but must be weighed solely in terms of the possibility of improving military impact and effectiveness on the battlefield.<sup>57</sup>

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<sup>52</sup> Royal Canadian Navy, "LEADMARK 2050 Maritime Weapons and Sensors for Joint Action," military strategic foresight, May 13, 2016, <https://hamiltonnaval.ca/wp-naval-content/uploads/2018/01/Leadmark-2050-13-May-2016-1-1.pdf>.

<sup>53</sup> CACSC Black Robe, "The Operational Planning Process: OPP Handbook," *The Operational Planning Process: OPP Handbook*, April 1, 2018, 100.

<sup>54</sup> Naval News Staff, "French Navy's 1st Suffren-Class Nuclear Powered Submarine Enters Service," *Naval News* (blog), June 3, 2022, <https://www.navalnews.com/naval-news/2022/06/french-navys-1st-suffren-class-nuclear-powered-submarine-enters-service/>.

<sup>55</sup> GatewayHouse, "China's Underwater Defence Strategy," *Gateway House* (blog), July 6, 2017, <https://www.gatewayhouse.in/chinas-ocean-expansion/>.

<sup>56</sup> Alleslev, "NATO ANTI-SUBMARINE WARFARE: REBUILDING CAPABILITY, PREPARING FOR THE FUTURE."

<sup>57</sup> Bundeswehr, "Deutsch-norwegische Marine-Kooperation vereinbart," December 8, 2017, <https://www.bundeswehr.de/de/organisation/marine/aktuelles/deutsch-norwegische-kooperationsvereinbarung-unterzeichnet-5032428>.

## RECOMMENDATION

17. Initiate naval staff talks between the RCN and GN regarding submarine cooperation between the navies.

18. Conduct a bilateral exercise in 2025 focused on networked underwater warfare in conjunction with the RCN and GN at the Canadian Atlantic Coastal Area or Arctic.

19. The bilateral exercise require the following considerations:

- Forces disposition of GN, 1 x SSU (+pressure chamber), 1 x U212A, 1 x OSTE – Class (JISR MSG)
- Minimum required CAF forces disposition, 1 x Harry DeWolff class with embarked helo, RCN Halifax Diving Unit embarked or at OSTE – Class or SSU, Royal Canadian Air Force 1x CP-140 (ASW)

20. The joint RCN and GN task force may conduct a Formal Port visit to Halifax with the opportunity to showcase the performance of the 1st SubSq GN for government decision makers in light of the Victoria-class succession decision.

Annex: A. Published article of the German Navy in the "Marineforum" of 20 June 2022. "The hard part about playing chicken is knowin' when to flinch."

## ANNEX A

Free English-language translation of the published article of the German Navy in the "Marineforum" of 20 June 2022.

„The hard part about playing chicken is knowin' when to flinch.“<sup>58</sup>

Commander Frédéric Strauch  
Commander Roland Spahr  
Commander Tobias Eikerman

The steel and almost silent fighter glides through the pitch-dark depths. Tense concentration reigns in the submarine's command center. The commander has ordered silent speed. Only the whispering of the crew occasionally drowns out the low hum of the fans of the detection and weapons engagement systems. In the distance, the sonar operator detect the barely perceptible signals from active sonar systems. Locating a submerged submarine in the oceanographically challenging sea area of the Baltic Sea is like the well-known search for a needle in a haystack. Self-confident, relaxed and with a quiet smile on their faces, the crew meets this attempt to find them.

Suddenly the silence is broken. A loud, high-toned and piercing ping penetrates like a bolt of lightning through the steel hull into the interior of the boat. Now no one is smiling anymore. Things

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<sup>58</sup> Cdr Bart Mancuso, Kdt USS DALLAS in „Jagd auf Roter Oktober“

get hectic in the submarine's operations center. On the bunks, sleepy eyes go wide. Submariners hate that sound. From the commanding officer to the smut, they immediately know what it means. The source of the sonar signal is not far away this time. The submarine has been located. Enraged, the commanding officer storms into the operations center. How can that be? All vehicles in the vicinity of the fighter were classified as container ships. Das Boot befand sich weit außerhalb der angenommenen Ortungsreichweite der Aktivsignale.

What no one in the submarine knows at this point is that the intelligence vessel Federal German Ship Alster has detected and identified the submarine by means of new mobile sensor technology, the detection ranges of which are far beyond the expectations of the submariners. Now the hunter himself is trapped.

„The hard part about playing chicken is knowin' when to flinch.“ This famous quote from the literary character of the commander of the USS DALLAS in the novel "Hunt for Red October" stands on its own and remains valid more than thirty years after the novel was published.

In derivation of the image, many refer to Anti-Submarine-Warfare (ASW) as art rather than science. Most ASW-operators are confronted with this image early in their training. It describes the many challenges of underwater situational awareness under complex environmental conditions. The endless vastness of the oceans, supposedly low sensor and weapon ranges on one's own side and seemingly limitless high sensor and weapon ranges on the submarine's side, make this statement cross the lips of many submariners only too willingly. ASW continues to be one of the most challenging warfare areas in naval warfare.

However, the 1st Submarine Squadron has been able to make decisive progress in this field since the first steps of further development within the WESTLANT deployment and the consistently pursued evaluation of all maneuvers, torpedo firing sections and training missions together with developments of the defense technical maritime branch 71 (WTD71) and the German naval aviators.

This is proven by the experimentally applied newly developed methods using state-of-the-art sensor technology in the Joint Intelligence Surveillance and Reconnaissance Maritime Strike Group (JISR MSG). For the first time, the 1st Submarine Squadron successfully deployed the GM SRSF together with other "stakeholders" such as Kdo CIR, WTD 71, Air Force and Naval Branches in the FRONTIER CONCEIVER 2020 & 2021 Joint Intelligence Surveillance and Reconnaissance (JISR) operations with breakthrough findings. The findings were far from limited to aspects of reconnaissance. They showed us the potentials of the German Navy in the area of impact in theater ASW. The toolbox of instruments with which challenges in ASW can be met has become significantly more extensive and potent. Used in combination, they demonstrably achieve results that exceed the previously known standards in the field of impact many times over.

One crucial fact makes all this all the more remarkable. There is no need for an expensive setup of new fixed platform sensor technology. Low-frequency towed sonar systems are not a mandatory requirement for the application of state-of-the-art underwater tracking systems, such as bi- and multistatic methods. Waiting for new, potent weapon platforms specifically designed for ASW is not necessary. The capabilities and procedures outlined are proven. They work and are available

on the market. Comparatively quickly and with little effort, almost any unit in the Navy can be enabled as a high-performance capability carrier for underwater situational awareness. Our Navy is becoming unpredictable to the steely and silent hunters that face us at sea. Any surface unit can carry mobile sensors that will make a submarine crew sleep more fitfully. A former commander of the 1st Submarine Squadron deliberately exaggerated: "We can hunt submarines with the sailing ship GORCH FOCK". Scenarios like the one described in this article are thus far from being fiction. They are reality. The submarine weapon system faces a growing threat from highly potent underwater sensor systems. Vehicles that the submarine could previously neglect with a clear conscience suddenly pose a real and non-negligible threat. This immensely limits the submarine's freedom of movement.

The adversary not only becomes more potent, it is harder to detect and thus becomes more unpredictable in the first place. This is a serious tactical problem for commanders of conventionally powered submarines who, due to the limited speed of their weapon system, must act primarily by anticipating enemy behavior.

#### Facing the Dawn - submarine as part of conventional deterrence!

Locating the conventional submarine is like looking for a needle in a haystack - this decades-old certainty is no longer lasting. Submariners must also face up to this.

The digitization of the ocean is no longer a buzzword within the military. It must be understood as a challenge and incentive for maintaining the combat value of a manned submarine in the operations area at sea. Above all, this means that a modern submarine cannot be located solely with active sonar signals. Rather, a submarine must be able to receive a digitized picture of the adversary's movement in the joint operation area (JOA). We have successfully demonstrated this within the JISR MSG and successfully integrated the submarine into a dynamic and highly agile task group.

The understanding of the new role of the submarine, far away from the lone fighter underwater, allows the integration into overall networks of effects in the JOA, which do not end at the water surface with the transmission of a cryptographic teletype according to predefined time windows. The integration and near-real-time networking of a submarine in the command and control structures of military commanders is the only way to access the submarine as a means of action without delay. In a dynamic operational environment, this enables the military leader or political decision-maker to direct targeted action by a submarine at any time. These are operational possibilities of a submarine, which we did not know in the 20th century in such quality and condensation. To this day, they are not included in any of our military operational leadership doctrine.

The added value of using the digitization of the ocean and the recognition of scientific progress, the consistent execution of tests in hydrographically difficult waters - all these are key elements that show us that the word ASW falls short to anticipate the entire military complexity of the Underwater Space. The transition between the electromagnetic and acoustic spectrum underwater is becoming increasingly fluid. We must continue to think outside of well-trodden paths.

German submarines, and especially their tactical leaders in the field, are already benefiting extensively from this interconnection and the will to co-create. New communication links and situation picture exchange systems make deeper integration of the submerged submarine into three-dimensional task groups or task forces possible. The commander task group is given direct and near-delayless access to subordinate submarines. They can be coordinated more closely and thus brought to bear in a more targeted manner. The effectiveness within the submarine warfare is even increased to an essential extent. If necessary, the existing information advantage can be immediately converted into an impact advantage.

We now need to disseminate knowledge about the deployment and functioning of these sensor systems and communication channels within the Navy in a timelier manner. Technology and procedures developed must be rapidly incorporated into training and applied in exercises and missions. In close cooperation with the flotillas and squadrons, it is essential to further develop them in a practical manner and to establish them as a procedure in tactical operations. To achieve this, however, there must first be an urgent change in mindset across the board. We do not have to wait for our TAS on the F126 to become ASW capable. We can already make very important contributions to ASW in the Alliance with the systems and successfully tested procedures available to us. The upcoming launch of the F126, the P-8 Poseidon, and the Sea Tiger will complete this process and put us at the forefront of ASW-capable nations. They will decisively expand our capabilities, especially in steadiness and endurance.

While the startled submarine crew sweats and tries to escape the threat, a few nautical miles away on U32 there is tense concentration. The target data of the intelligence vessel Alster were first transmitted to the commander task group on submarine support unit Main and then from there to the submerged submarine. They agree with the own situation picture on U32. With the help of the external sensor network, the own submarine was also able to generate a valid target solution. U32 is waiting for the order to engage the enemy submarine. It can receive this order at any time thanks to the successfully tested new communication procedures.

For the first time, the German Navy holds an impact proviso in its hands.

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