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## REQUESTING JOINTNESS: THE JOINT SUPPORT SHIP AND ITS VALUE FOR LAND OPERATIONS

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**REQUESTING JOINTNESS:  
THE JOINT SUPPORT SHIP AND ITS VALUE FOR LAND OPERATIONS**

*Service paper for the Commandant of the Canadian Forces College, Brigadier-General K.R. Cotton*

**AIM**

1. The upcoming Joint Support Ship (JSS) brings along limited, but valuable capabilities to enable and support Canadian land operations worldwide. To develop the full potential of the ship's design, requirements and concepts for joint operations have to be defined prior to the construction. Aiming to stimulate an inter-service dialogue, the analysis of selected capabilities of the JSS will outline its broad portfolio as well as joint fields of action based on intended contributions of the Royal Canadian Navy (RCN) to land operations.

**INTRODUCTION**

2. The Canadian Forces (CF) are required to act as a joint force.<sup>1</sup> Hereby, potential non-combat contributions of the RCN in land operations are outlined as “sealift of land forces, sea basing of land assets, and facilitate entry for land forces [...] or function as a [...] command and control (C2) platform.”<sup>2</sup> While the first approach to a Canadian JSS fully took in account these tasks, the actual procurement decision was made in favor of an existing ship design that met the minimum naval requirements.<sup>3</sup> In the near future, the RCN will bring two JSS *QUEENSTON-*

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<sup>1</sup> Department of National Defence, B-GJ-005-000/FP-001, *CFJP 01 – Canadian Military Doctrine* (Ottawa: DND Canada, 2009), v.

<sup>2</sup> Department of National Defence, B-GJ-005-300/FP-001, *CFJP 3.0 – Operation* (Ottawa: DND Canada, 2010), 1-4. The other potential contributions “deterrence operations at sea” and “conduct of sea control or denial” are not considered here as the JSS is a support vessel and not designed for those.

<sup>3</sup> Office of the Parliamentary Budget Officer, *Feasibility of Budget for Acquisition of Two Joint Support Ships* (Ottawa, 2013), 2-3.

class vessels into service, based on the German *BERLIN*-class that is designed to support a naval task group afloat and therefore brings along only limited joint capabilities.<sup>4</sup>

3. In this paper, selected requirements for a JSS will be demonstrated, derived from Canadian joint and land doctrine, and on the basis of the intended RCN contributions to land operations. A comparison with actual capabilities of the *BERLIN*-class will then allow conclusions about interdependencies between the JSS and land forces. These findings will demonstrate possibilities and limitations of the *QUEENSTON*-class for joint operations, show the need for action and thereby plead for a comprehensive joint approach to the Canadian JSS.

## DISCUSSION

4. Designed as a combat support ship for logistical and medical support, the *BERLIN*-class brings along all capabilities that a naval task group requires to extend its sea endurance up to 45 days. This includes the supply with petroleum, oil and lubricants (POL) as well as water, food, ammunition and stores. Besides a large cargo space, the ship has a container capacity of 74 Twenty-foot Equivalent Units (TEU), stored in two levels and movable with deck cranes. Furthermore, the *BERLIN*-class can accommodate up to 239 personnel<sup>5</sup> and embark two helicopters.<sup>6</sup> Overall, this flexible, multi-purpose platform offers capabilities far beyond naval support.

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<sup>4</sup> Office of the Parliamentary Budget Officer, *Feasibility of Budget for Acquisition of Two Joint Support Ships* (Ottawa, 2013), 3-4, Government of Canada, “Joint Support Ship Design Decision,” last modified 8 July 2013, <http://www.forces.gc.ca/en/news/article.page?doc=joint-support-ship-design-decision/hie8w9bu>. and Government of Canada, “Joint Support Ship Design Selected,” last modified 2 June 2013, <http://www.forces.gc.ca/en/news/article.page?doc=joint-support-ship-design-selected/hie8w9bz>.

<sup>5</sup> Including crew; the German *BERLIN*-class ships are normally sailing with a crew about around 150 personnel. Gunther Brückner, “Einsatzgruppenversorger Bonn – Innovationen und Technologien des dritten EGV,” *MarineForum* no. 1/2 (2014): 30.

<sup>6</sup> The German version was designed for the MH 90 helicopter but currently embarks Sea King Mk 41 helicopter for operations. Gunther Brückner, “Einsatzgruppenversorger Bonn – Innovationen und Technologien des dritten EGV,” *MarineForum* no. 1/2 (2014): 27 and ThyssenKrupp Marine Systems, “BERLIN Class Combat Support Ship,” Accessed 1 February 2016, <https://www.thyssenkrupp-marinesystems.com/en/berlin-class-combat-support-ship.html>.

5. During the first decade in German service, the *BERLIN*-class has been increasingly deployed in differing operational roles. Hereby, challenges emerged as a consequence of lacking harmonization between the ship and joint requirements. Military equipment not suitable for storage or operations at sea, limited interfaces and supply-connections, as well as special demands of the services, have caused subsequent cost-intensive and time-consuming modifications.<sup>7</sup>

6. As support vessels are intended to enable long-range operations independent from shore support, the focus here will be on the contribution to international peace and security as one of the CF's major roles.<sup>8</sup> While most of today's global operations require land forces, the JSS will come under RCN control. Therefore, its potential role in the 'Sustain' function for land forces has to be determined to demonstrate the JSS joint capabilities.

7. A precondition for global operations is the transportation of personnel and equipment to the operational area, including *sealift* under the domain 'Sustain'.<sup>9</sup>

- a. The CF has only limited strategic airlift and no organic sealift capacity.<sup>10</sup> While airlift is available at short notice, sealift is not retrievable immediately, which leads to a time gap between the desired and realized departure of land forces. The

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<sup>7</sup> The German author has some knowledge and experience from previous postings on a *BERLIN*-class ship and in the project management for this class. However, due to lacking available sources this paper only presents a general view on crucial points in the ships' design for joint operations from a personal perspective.

<sup>8</sup> Massimo Annati, "Support Ships: 'Sea Cows' or Force Multipliers?" *Naval Forces* 27 (1/2006): 8 and Department of National Defence, *Canada First Defence Strategy* (Ottawa: DND Canada, 2008), 7.

<sup>9</sup> Besides airlift and ground transportation. Department of National Defence, B-GJ-005-300/FP-001, *CFJP 3.0 – Operation* (Ottawa: DND Canada, 2010), 1-5 and Department of National Defence B-GL-300-004/FP-001, *Sustainment of Land Operations* (Ottawa: DND Canada, 2010), 3-10, 3-12.

<sup>10</sup> Martin Shadwick, "How much Strategic Airlift is enough?" *Canadian Military Journal* 13, no. 3 (Summer 2013): 77-78. <http://www.journal.forces.gc.ca/vol13/no3/doc/Shadwick-Pages7679-eng.pdf> and Royal Canadian Navy, "The fleet," last modified 11 June 2015, <http://www.navy-marine.forces.gc.ca/en/fleet-units/frigates-home.page>.

JSS is suitable to close this gap using its sealift capability and will be available exclusively to the CF.<sup>11</sup>

- b. Occasionally, military organizations have to deal with the challenges of relatively long political decision processes, followed by ambitious, tight timings to achieve operational effects. By adopting the concept of ‘prepositioning’ the immediate military effect could be increased significantly. Hereby, military equipment and ammunition is moved towards an operational area and stationed there on call. Directly following the political call, military personnel are airlifted to an embarkation port and receive the equipment.<sup>12</sup> Using the JSS’s limited sealift capabilities for prepositioning can relieve the airlift while supporting rapid deployment of land forces. This necessitates a close link between RCN and land forces.
- c. Making use of these sealift capabilities requires the land forces to adapt containers and packages to the JSS and the maritime environment. The ship is designed mainly to store and handle TEU and lattice box pallets standard which fits into the Army’s aim for “maximum emphasis on containerization and palletization”.<sup>13</sup> Prepackaged TEUs can be moved without reconfiguration by truck or railcar from and to the ship.<sup>14</sup> Sealift requires TEUs in accordance with ‘The International Convention for Safe Containers’ (CSC) and a maximum weight of 24 tons to be

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<sup>11</sup> Government of Canada, “Joint Support Ship (JSS),” last modified 25 January 2016, <http://www.forces.gc.ca/en/business-equipment/joint-support-ship.page>.

<sup>12</sup> Committee on Naval Expeditionary Logistics, *Naval Expeditionary Logistics – Enabling Operational Maneuver From the Sea* (Washington: National Academy Press, 1999), 25.

<sup>13</sup> Department of National Defence B-GL-300-004/FP-001, *Sustainment of Land Operations* (Ottawa: DND Canada, 2010), 3-10.

<sup>14</sup> Committee on Naval Expeditionary Logistics, *Naval Expeditionary Logistics – Enabling Operational Maneuver From the Sea* (Washington: National Academy Press, 1999), 41.

moved by the ship's cranes.<sup>15</sup> While infrastructure to load in Canada is available, a harbor for disembarkation near the operational area is needed. The JSS is constructed to unload independently. Though, in future scenarios the land forces' precondition of "availability of adequate port or beach facilities"<sup>16</sup> might not be realized. In this case, the moving and handling of equipment after disembarkation has to be considered explicitly.

- d. The JSS can store and transport up to 260 tons of naval ammunition in special magazines.<sup>17</sup> Land forces have to define their special demands for sealift, so that ammunition magazines constructively meet all requirements of land and naval forces. Furthermore, harmonized instructions and safety concepts for storing and handling on board are required.
- e. As the dimensions of actual equipment may differ from the standard, land forces might have special demands besides the ship's original design. The JSS can optionally be fitted for the storage of other container sizes.<sup>18</sup> Additional requirements can be taken into account during the construction phase if defined and agreed upon early. In return, there is also a need to consider compatibility with the JSS in the procurement of future land equipment.

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<sup>15</sup> International Maritime Organization, *International Convention for Safe Containers*, n.p., 1972, <http://www.bsa-bg.com/images/circs/conta.pdf> and ThyssenKrupp Marine Systems, "BERLIN Class Combat Support Ship," accessed 1 February 2016, <https://www.thyssenkrupp-marinesystems.com/en/berlin-class-combat-support-ship.html>.

<sup>16</sup> Department of National Defence B-GL-300-004/FP-001, *Sustainment of Land Operations* (Ottawa: DND Canada, 2010), 3-12.

<sup>17</sup> Gunther Brückner, "Einsatzgruppenversorger Bonn – Innovationen und Technologien des dritten EGV," *MarineForum* no. 1/2 (2014): 27.

<sup>18</sup> The rear container areas of the three German ships *BERLIN*, *FRANKFURT AM MAIN* and *BONN* for example are additionally fitted for 30-foot containers. Bundeswehr, "Marineeinsatzrettungszentrum (MERZ)," last modified 25 August 2015, [http://www.marine.de/portal/a/marine/!ut/p/c4/04\\_SB8K8xLLM9MSSzPy8xBz9CP3I5EyrpHK93MQivfLEtLTUvNI8vYzMnLTitMQMvdTMvOLEkqp0kHRmXmpqpn5BtqMiADMbgvQ!/.](http://www.marine.de/portal/a/marine/!ut/p/c4/04_SB8K8xLLM9MSSzPy8xBz9CP3I5EyrpHK93MQivfLEtLTUvNI8vYzMnLTitMQMvdTMvOLEkqp0kHRmXmpqpn5BtqMiADMbgvQ!/)  The integration of mounting points for 20-foot or 40-foot standard containers or special sizes during the construction phase is feasible as well.

8. Although the RCN is explicitly assigned for *sea basing of land assets*, this term is not further defined.<sup>19</sup> Within the RCN ‘seabasing’ is given two meanings: for “mobile offshore logistics bases” and for “an embarked Joint Headquarters”<sup>20</sup>, but it is not explicitly listed as a JSS capability.<sup>21</sup> For land operations, ‘sea’ is only recognized as an option for transport and amphibious operations, while ‘seabasing’ is not mentioned at all.<sup>22</sup> Therefore, it has to be assumed that the CF have no general definition or coherent joint concept of seabasing. A broad vision referring “to the capability to use the sea in the same way that U.S. [United States] forces use overseas regional bases, for deterrence, alliance support, cooperative security, power projection, and other forward operations”<sup>23</sup> seems not to be appropriate for Canada against the background of political ambitions.<sup>24</sup>

9. A Canadian Forces College (CFC) paper, though, approached seabasing in the Canadian context as “the ability to deliver, command, and support forces ashore from a ship or group of ships.”<sup>25</sup> The upcoming JSS capability to *deliver* land forces is limited and discussed here within *sealift* and *facilitate entry for land forces* while *command* will be outlined separately below. So, the task of *sea basing of land assets* is considered in the following section in the sense of

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<sup>19</sup> Department of National Defence, B-GJ-005-300/FP-001, *CFJP 3.0 – Operation* (Ottawa: DND Canada, 2010), 1-4.

<sup>20</sup> Department of National Defence, *Leadmark – The Navy’s Strategy 2020* (Ottawa: DND Canada, 2001), 105, 110.

<sup>21</sup> Royal Canadian Navy, “Joint Support Ships,” last modified 10 June 2015, <http://www.navy-marine.forces.gc.ca/en/fleet-units/jss-home.page>. Though, the capabilities listed officially as ‘Project Details’ actually include “Limited Support to Operations Ashore”. Government of Canada, “Joint Support Ship (JSS),” last modified 25 January 2016, <http://www.forces.gc.ca/en/business-equipment/joint-support-ship.page>.

<sup>22</sup> Department of National Defence B-GL-300-004/FP-001, *Sustainment of Land Operations* (Ottawa: DND Canada, 2010) and Department of National Defence, B-GL-300-001/FP-001, *Land Operations* (Ottawa: DND Canada, 2010), 7-25, 7-36, 8-2, 8-8 – 8-9.

<sup>23</sup> Sam J. Tangredi, “Sea Basing – Concept, Issues, and Recommendations,” *Naval War College Review* 64, no. 4 (Autumn 2011): 29.

<sup>24</sup> Prime Minister of Canada Justin Trudeau, “Minister of National Defence Mandate Letter,” accessed 31 January 2016, <http://pm.gc.ca/eng/minister-national-defence-mandate-letter> and Department of National Defence, *Canada First Defence Strategy* (Ottawa: DND Canada, 2008), 3.

<sup>25</sup> Craig Bradley, “Sea Basing – Enhancing the Relevance of the Navy in an Increasingly Joint Environment,” Joint Command and Staff Programme New Horizons paper (Canadian Forces College, 2009), 3. For a detailed discourse about concept and definition of ‘seabasing’ see Sam J. Tangredi, “Sea Basing – Concept, Issues, and Recommendations,” *Naval War College Review* 64, no. 4 (Autumn 2011): 29-31, 33



*supporting forces ashore*. Hereby, the JSS offers ‘Sustain’ capabilities<sup>26</sup> for land forces mainly in terms of *support services* and *logistics*.

- a. Support vessels are designed to provide a whole spectrum of *support services* at sea. Fundamentally, there is a high degree of congruence between the demands of maritime and land forces as outlined by these examples: “electrical power, [...] communications, fuel, water, food and waste disposal”.<sup>27</sup> In general, the JSS provides all of these. While inherent JSS facilities<sup>28</sup> are completely available for embarked personnel, main challenges in support of land forces result from the integration of movable equipment.
- b. Therefore, land forces must identify integration needs, especially for their own containers, as the JSS is not designed to fully supply all 74 TEUs. Containers used as workspaces at sea may be subject to special naval requirements.<sup>29</sup> Additionally, it has to be considered that the original design does not allow access to the upper container level at sea and therefore has to be changed if necessary. So, integration needs may have direct consequences for the construction of the JSS and/or land equipment. Furthermore, stowage plans need to be prepared to meet both the operational requirements and the concerns over ship safety and stability.
- c. Logistics in land operations include several aspects to move and maintain military forces. The following focus lies on capabilities for “storage, movement [and]

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<sup>26</sup> These are "Sustainment, support services, movements, theatre activation and deactivation". Department of National Defence, B-GJ-005-000/FP-001, *CFJP 01 – Canadian Military Doctrine* (Ottawa: DND Canada, 2009), 2-7. The ship’s inherent ability to maneuver at sea and the resulting potential in terms of *movement* are not considered here.

<sup>27</sup> Department of National Defence B-GL-300-004/FP-001, *Sustainment of Land Operations* (Ottawa: DND Canada, 2010), 3-10 in comparison with Massimo Annati, “Support Ships: ‘Sea Cows’ or Force Multipliers?” *Naval Forces* 27 (1/2006): 10.

<sup>28</sup> Like accommodation or health services, conference or storing rooms.

<sup>29</sup> Such as connection with the ship’s communication and alarm system, securing equipment against rough sea or fire safety regulations.

distribution” of material, “transportation of personnel” and “medical and health service support”.<sup>30</sup>

- d. With large cargo space in the hull and its container area, the JSS brings along a significant capacity to *store* material. Elevators, forklifts and cranes allow *movement* of goods even at sea, including the lower container level. However, special regulations apply for so-called ‘offshore containers’ that require them to be handled in open seas.<sup>31</sup> In terms of *movement* and *distribution*, the limiting factor is transportation from sea to land, which is basically done by tactical sealift with organic boats or tactical airlift by helicopter. Both depend on weight restrictions and weather conditions. Liquids are particularly challenging because the JSS’s connections are designed for large flow volumes, as required for naval vessels.<sup>32</sup> For example, refueling petrol canisters or mobile aggregates with fuel or oil would require reduced volume, pressure and pipe diameter. So, limitations of *movement* and *distribution* from the JSS to the operational area have to be considered with a special focus on liquids.
- e. For the *transportation of personnel by sealift*, the whole JSS can be used as outlined above. Thereby, the ship’s accommodation capacity could be increased by embarking crew containers. As discussed earlier, this option requires the specification of integrating activities. Transportation from ship to shore underlies the same limitations as tactical sealift and airlift. In addition, organic boats must

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<sup>30</sup> Department of National Defence B-GL-300-004/FP-001, *Sustainment of Land Operations* (Ottawa: DND Canada, 2010), 1-1.

<sup>31</sup> International Maritime Organization, *International Convention for Safe Containers*, n.p., 1972, <http://www.bsa-bg.com/images/circs/conta.pdf>, 3, 14-16.

<sup>32</sup> ThyssenKrupp Marine Systems, “BERLIN Class Combat Support Ship,” accessed 1 February 2016, <https://www.thyssenkrupp-marinesystems.com/en/berlin-class-combat-support-ship.html>.

be suitable and certified for transportation of personnel, protective equipment and weapons.

- f. In terms of *medical and health service support*, the JSS design includes the infrastructure for ‘Role 1 Medical Care’ for embarked personnel, offering two treatment rooms, two hospital rooms and room for 24 additional sick beds.<sup>33</sup> As for land forces, this role “must be readily and easily available to all CF personnel”<sup>34</sup>, a ship can only be used for it when moored in a harbor nearby.<sup>35</sup> However, the JSS medical facilities also allow for ‘Role 2 Medical Care’. An activation, though, limits the capabilities of the JSS in terms of accommodation; as more medical personnel have to be embarked, storage room for medical resupply and tactical airlift (as a medical evacuation asset) is required.<sup>36</sup> Therefore, the JSS can generally support tactical level health service support (HSS), but only at the expense of other capabilities.

10. In general, the JSS needs a safe harbor to *facilitate entry for land forces*. Even moored, all JSS capabilities are available independent of land infrastructure for a limited time.
- a. Embarking a core third line support unit for land forces enables immediate working capacity to provide theatre-level sustainment and build-up of the theatre base.<sup>37</sup> Additionally, the ship can supply vehicles alongside a pier with POL<sup>38</sup>

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<sup>33</sup> Gunther Brückner, “Einsatzgruppenversorger Bonn – Innovationen und Technologien des dritten EGV,” *MarineForum* no. 1/2 (2014): 27 and Department of National Defence, B-GJ-005-410/FP-000, *Joint Doctrine – Health Services Support to Operations* (Ottawa: DND Canada, 2007), 1-8.

<sup>34</sup> Department of National Defence, B-GJ-005-410/FP-000, *Joint Doctrine – Health Services Support to Operations* (Ottawa: DND Canada, 2007), 6-5.

<sup>35</sup> Which would cause additional challenges in terms of protection and flexibility not considered here.

<sup>36</sup> Department of National Defence, B-GJ-005-410/FP-000, *Joint Doctrine – Health Services Support to Operations* (Ottawa: DND Canada, 2007), 6-6 – 6-7.

<sup>37</sup> Department of National Defence B-GL-300-004/FP-001, *Sustainment of Land Operations* (Ottawa: DND Canada, 2010), 2-10 – 2-11, 2-13.

<sup>38</sup> Preconditions as outlined under 9. d.

while its canteen kitchen feeds the still-small land force and hull and containers are used to store and distribute material.

- b. Furthermore, the JSS medical capabilities can ensure immediate role 1 or 2 support for early casualties during the land operation, as long as tactical level HSS is not completely built up.<sup>39</sup> Moreover, following the idea of ‘moving rapid surgical interventions’, mobile Forward Surgical Teams could be based on, and deployed from, the JSS using its helicopters.<sup>40</sup>
- c. Essential requirement to realize these capabilities is a safe environment. As soon as the harbor entry or the mooring is opposed, the unprotected JSS will not enter the harbor or stay. Further restrictions may occur from the distance of the harbor to the operational area or local limitations in the use of helicopters and organic boats while moored.

11. The requirement of Canadian land forces “to meet a wide range of challenges”<sup>41</sup> causes a flexible approach under the ‘Command’ domain, tailored to the specific mission. Within a land forces scenario, “a commander exercises C2 by planning for a mission or operation, enabling preparation activities, and directing the execution of the mission or operation.”<sup>42</sup> Although the

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<sup>39</sup> Rebecca Patterson, “Fighting fit: sustaining the Force by fixing afloat health service support on the joint support ship,” Advanced Military Studies Course paper (Canadian Forces College, 2004), 18 and Department of National Defence, B-GJ-005-410/FP-000, *Joint Doctrine – Health Services Support to Operations* (Ottawa: DND Canada, 2007), 6-5 – 6-6.

<sup>40</sup> Rebecca Patterson, “Fighting fit: sustaining the Force by fixing afloat health service support on the joint support ship,” Advanced Military Studies Course paper (Canadian Forces College, 2004), 24.

<sup>41</sup> Department of National Defence, B-GL-300-001/FP-001, *Land Operations* (Ottawa: DND Canada, 2010), 1-4, 2-17, 6-24, 7-149.

<sup>42</sup> Department of National Defence, B-GL-300-001/FP-001, *Land Operations* (Ottawa: DND Canada, 2010), 6-41.

JSS is planned to *function as a C2 platform* for naval operations, its multifunctional design offers such capabilities for land forces, too.<sup>43</sup>

- a. For the purpose of *planning and preparation*, the JSS offers accommodation and ‘hotel services’ for a commander and his staff as well as several conference rooms connected to the ship’s communication system.<sup>44</sup> Optional, containerized elements of a mobile command and control system could be embarked under the preconditions outlined above. Therefore, *planning and preparation activities* could be done or continued at sea or in a harbor. However, compatibility between JSS and the land forces systems is crucial.
- b. In general, the JSS brings along a wide range of communication capabilities including internal networks as well as voice and data communication by radio or satellite.<sup>45</sup> However, the systems are designed for the maritime environment and therefore may not meet all communication requirements of land forces for *directing the execution*. Furthermore, operational demands will differ, depending on the type of mission.<sup>46</sup> To optimize the JSS for uncertainties of future operations, the communication system’s design needs to be flexible and modular, based on a joint requirements profile.

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<sup>43</sup> Gunther Brückner, “Einsatzgruppenversorger Bonn – Innovationen und Technologien des dritten EGV,” *MarineForum* no. 1/2 (2014): 28, 30.

<sup>44</sup> Gunther Brückner, “Einsatzgruppenversorger Bonn – Innovationen und Technologien des dritten EGV,” *MarineForum* no. 1/2 (2014): 30.

<sup>45</sup> Gunther Brückner, “Einsatzgruppenversorger Bonn – Innovationen und Technologien des dritten EGV,” *MarineForum* no. 1/2 (2014): 30.

<sup>46</sup> E.g. United Nations peacekeeping operations use just a rudimentary classification system which is not enforced while the North Atlantic Treaty Organization has an extensive compendium of classification and security procedures to consider. A. Walter Dorn, “United Nations Peacekeeping Intelligence,” in *The Oxford Handbook of National Security Intelligence*, ed. Loch K. Johnson (Oxford: Oxford University Press, 2010), 293 and Federation of American Scientists, “North Atlantic Treaty Organization (NATO) Security Procedures,” accessed 4 February 2016, [http://www.fas.org/sgp/library/ipshbook/Chap\\_10.html](http://www.fas.org/sgp/library/ipshbook/Chap_10.html).

12. The German navy gained initial experience using *BERLIN*-class ships as a base for special forces operations from the sea. Thereby, the outlined considerations for land forces apply also for Special Operation Forces (SOF). To that end, the high flexibility of the JSS could be a particular advantage. However, JSS and SOF equipment compatibility plays a vital role, especially against the background of fast product regeneration cycles.

13. There are several other aspects with regard to possibilities and limitations of the JSS that are not discussed in the scope of this paper, but worth considering in advance.<sup>47</sup> Among them is the crucial point of force protection under the ‘Shield’ domain.<sup>48</sup> While the ship brings along limited self-defence capabilities at sea, it is highly vulnerable in narrow passages and harbors and therefore needs a joint protection concept.

## CONCLUSION

14. Overall, the upcoming *QUEENSTON*-class brings along a portfolio of valuable joint capabilities to support land operations, especially in the ‘Sustain’ and ‘Command’ domains, even if its actual design falls short of the original CF ambitions.<sup>49</sup>

15. Being a flexible, multi-purpose platform, the *QUEENSTON*-class is suitable for several tasks in support of land forces, but is limited by its size and capacity.

16. Currently, the role of Canadian maritime assets in support of land forces is not clearly defined and the terminology found is not harmonized within the CF.

17. To exploit the maximum joint potential of the actual ship design requires a consistent inter-service approach to establish a joint operational concept for the *QUEENSTON*-class.

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<sup>47</sup> A quick overview of inherent maritime logistics strengths presents for example Burton L. Streicher and Daniel D. Steeples, *Joint Theatre Logistics: Maritime Support* (Virginia: CNA, 2006), 55-57.

<sup>48</sup> Department of National Defence, B-GJ-005-000/FP-001, *CFJP 01 – Canadian Military Doctrine* (Ottawa: DND Canada, 2009), 2-7

<sup>49</sup> Rick Mountford, “Joint Support Ship: the future of Canadian Expeditionary Operations,” Command and Staff Course New Horizons paper (Canadian Forces College, 2005), 6-9, 15-20.

18. It is required to derive design details for the *QUEENSTON*-class, JSS requirements for land forces logistics<sup>50</sup>, as well as requirements for landside protection and cargo handling.

### **RECOMMENDATION**

19. It is recommended to enter into an inter-service dialogue about the future role(s) of the *QUEENSTON*-class with a special focus on conceptual and technical harmonization. As the start of construction for the first ship is scheduled for “2016-2017”<sup>51</sup>, it is advisable to discuss any impacts on design details in a timely manner.

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<sup>50</sup> Which includes, among others, “design and development” of materiel. Department of National Defence B-GL-300-004/FP-001, *Sustainment of Land Operations* (Ottawa: DND Canada, 2010), 1-1.

<sup>51</sup> Government of Canada, “Joint Support Ship (JSS),” last modified 25 January 2016, <http://www.forces.gc.ca/en/business-equipment/joint-support-ship.page>.

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