

Coast Guard Collaboration in the Arctic

- Canada and Greenland (Denmark) -

By

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1. Introduction

On her maiden voyage in 1959, the Danish liner *MS Hans Hedtoft* sank off the coast of Western Greenland after colliding with an iceberg. An emergency response was initiated, in the end unsuccessfully, across the ocean in Newfoundland, Canada. The entire crew and all the passengers, 95 in total, perished.

At its narrowest point, only 25 kilometers separate Greenland and Canada, making Greenland (and thus Denmark) a close neighbour of Canada's, although many Canadians would never think of it as such, choosing instead to focus on the United States. This report aspires to explore existing and potential collaborations with Greenland (Denmark), as the close, but oft-forgotten neighbour to Canada's east.

As of the beginning of 2014, the *MS Hans Hedtoft* was the last iceberg strike that resulted in loss of life. The chance of a similar incident occurring, however, is growing. Increased economic activity in the Arctic has led to a rise in all types of shipping throughout the region. Oil and gas exploration, cruise tourism, and industrial activity are contributing to growth in both total tonnage and the number of ships that pass through the North American Arctic¹ every year. Combined with the thawing of the Arctic sea ice, the maritime situation in the Arctic is changing.

The governments of the North American Arctic countries – Canada, Greenland (Denmark) and the United States – are working to catch up with this new reality. In their respective Arctic waters, emergency response capabilities are not matching the increase in hazards. At the same time, it is difficult to allocate major funding to acquire new resources, as competition for public funding has toughened in recent years. However, it might be possible to do more with less, as Arctic coastal states team up and engage in burden sharing where their maritime boundaries meet.

Therefore, this paper will examine the current and potential areas of collaboration between Canada's eastern Arctic and Western Greenland, as two parts of the Arctic with relatively similar characteristics, challenges, and activity levels.

The questions posed in this report are consequently:

1. How are the different public authorities in Greenland and Canada tasked with maritime emergency management?
2. What collaboration exists in their maritime border region?
3. What are the opportunities for increased collaboration between Canada and Greenland?

Whereas the concept of emergency management includes both onshore and offshore activities, this article will focus on the latter, namely the maritime emergency management capabilities. This covers both maritime search and rescue and oil spill preparedness and response. To address these questions, the following section will explore developments in economic activities in the region, the challenges that have resulted and the measures that have been taken to mitigate the risks. Then this report turns towards the specific structures of the

¹ Though Greenland is politically and culturally associated with Europe (specifically Denmark), it is physiographically linked to the continent of North America, and should be considered part of the "North American Arctic" for the purposes of this paper, as it is intended to look at the opportunity for collaboration between neighbouring states.

Canadian and Greenlandic (Danish) coast guards (or equivalent) and their respective capacities in the maritime area in question, with a view to comparison. Finally, the current and future potential collaboration between Canada and Greenland is examined.

The Arctic



Figure 1: The Arctic region. Source: http://www.grida.no/graphicslib/detail/arctic-map-political_365d

2. New Maritime Challenges

The following section aims to outline how both international and regional trends are defining a new situation in the North American Arctic, with a particular emphasis on the maritime border region between Canada and Greenland.

2.1. Increased Destination Shipping

The possibility of trans-Arctic shipping through the Northwest Passage, the Northern Sea Route² or the Transpolar Sea Route, has led to greater attention given to the Arctic region. The continuous melting of the northern icecap has brought questions and forecasts of the viability of these shipping options to the forefront of Arctic-related dialogue since the turn of the 21st century.³ Particular attention has been given to the Northern Sea Route, where ice conditions are most favorable.⁴ Yet, from a Canadian (or North American) perspective, an ice-free Northwest Passage in the summer months is also creating expectations – though not necessarily immediate results – of increased freight traffic and tourism.⁵ There have been multiple publications and extensive writing on the geopolitical, economic and political consequences of these new sea lanes. Additional actors, many from outside the Arctic region itself, have become engaged in the matter.

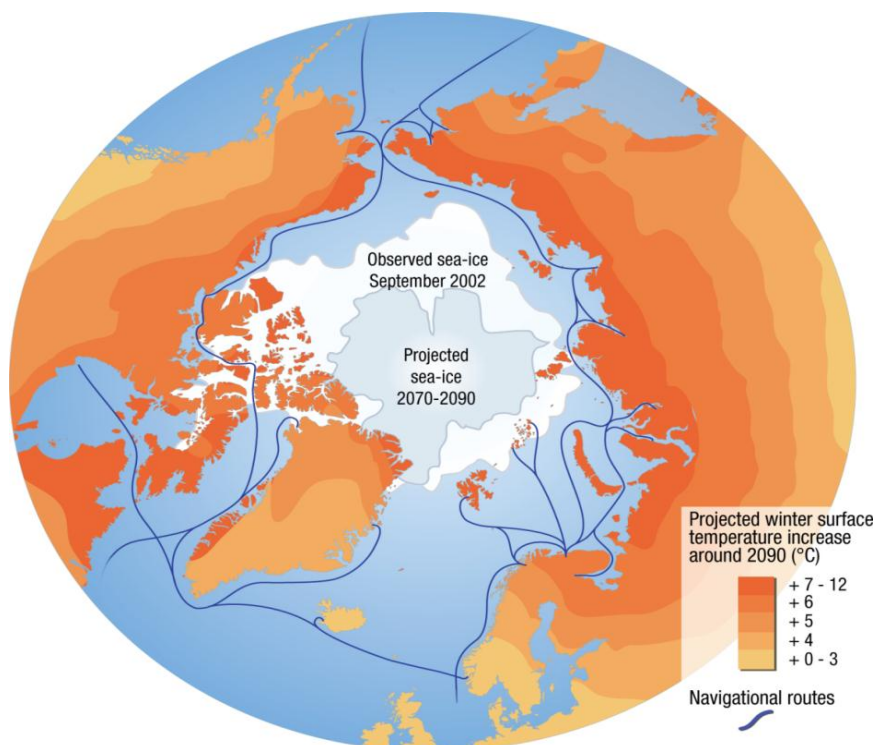


Figure 2: Projected shipping routes in the Arctic. Source: http://www.grida.no/graphicslib/detail/projected-changes-in-the-arctic-climate-2090-with-shipping-routes_1196

² The Northern Sea Route is also commonly referred to as the North-East Passage.

³ Humpert, Malte; Raspotnik, Andreas. *The Future of Arctic Shipping Along the Transpolar Sea Route*. Arctic Yearbook 2012.

⁴ The Globe and Mail. *Study Predicts Arctic Shipping Quickly Becoming a Reality*. March 4, 2013; Borgerson, Scott. *Arctic Meltdown: The Economic and Security Implications of Global Warming*. Foreign Affairs 87, no. 2, 2008.

⁵ Evans, Pete. *Arctic Thaw Heats up Northwest Passage Dreams*. CBC News, September 13, 2012.

Developments in the Arctic, however, are slow by nature. Melting of the Arctic sea ice is occurring gradually. The slow pace of melting, in particular along the Northwest Passage, is one of the challenges to its commercial profitability. Geopolitical questions also exist concerning the status of the Northwest Passage, which Canada maintains constitute internal waters. Traffic levels in recent years of the number of ships that have made use of the complete route during the summer months have varied at very small numbers. From two cruise ships in 2010, it dropped to one ship in 2011 and one in 2012.⁶ The number of small adventure vessels, on the other hand, has increased.⁷ Yet, the total number of full Northwest Passage voyages throughout history is only 183, and companies and politicians alike seem to be catching up to the idea that this project will be long-term.⁸

Looking at destination shipping in the Nunavut and Greenland, another picture emerges. Destination shipping encompasses all shipping with a point in the Arctic as the desired destination. Instead of the trans-Arctic routes that predominantly view the Arctic as a transit region, this shipping serves a purpose to Arctic communities themselves, either as a means of resupplying isolated coastal communities, or bringing natural resources to markets in the South.

With longer periods of ice-free waters during summer months, the season for transportation of goods to and from local communities has increased.⁹ Additionally, in the 2010 and 2011 drilling seasons, Cairn Energy, a Scottish-owned oil and gas exploration and production company, drilled a total of eight wells along the east coast of Greenland, while companies like Shell and Statoil have conducted extensive seismic studies in the area after acquiring leases along the same coast in 2006. As oil and gas exploration have commenced in waters to the east of Greenland, transportation of equipment and fuel have increased accordingly, as seen by the increasing number of ships in Greenlandic waters (see Figure 3). Similarly, an increasing number of cruise liners are operating along the coast of Canada and Greenland in the summer months, offering “Arctic Cruises.”¹⁰ In total, the activity along the Arctic coasts in North America, and in the border regions between Canada and Greenland in particular, has increased in the last decade.

⁶ PAME. *The Arctic Ocean Review Project, Final Report, (Phase II 2011-2013) ed.* Protection of the Arctic Marine Environment (PAME) Secretariat. Kiruna: Arctic Council, 2013.

⁷ Ibid.

⁸ Headland, R. K. *Transits of the Northwest Passage to the End of the 2012 Navigation Season.* Cambridge: Scott Polar Research Institute, 2012.

⁹ Varga, Peter. *Iqaluit Coast Guard office maintains pan-Arctic vigil.* Nunatsiaq News Online, July 26, 2013. http://www.nunatsiaqonline.ca/stories/article/65674iqaluit_coast_guard_office_maintains_pan-arctic_vigil

¹⁰ Fred Olsen Cruise Lines. *Greenland and Arctic Cruises: Arctic Overview.* <http://www.fredolsencruises.com/places-we-visit/region/arctic-greenland-cruises>

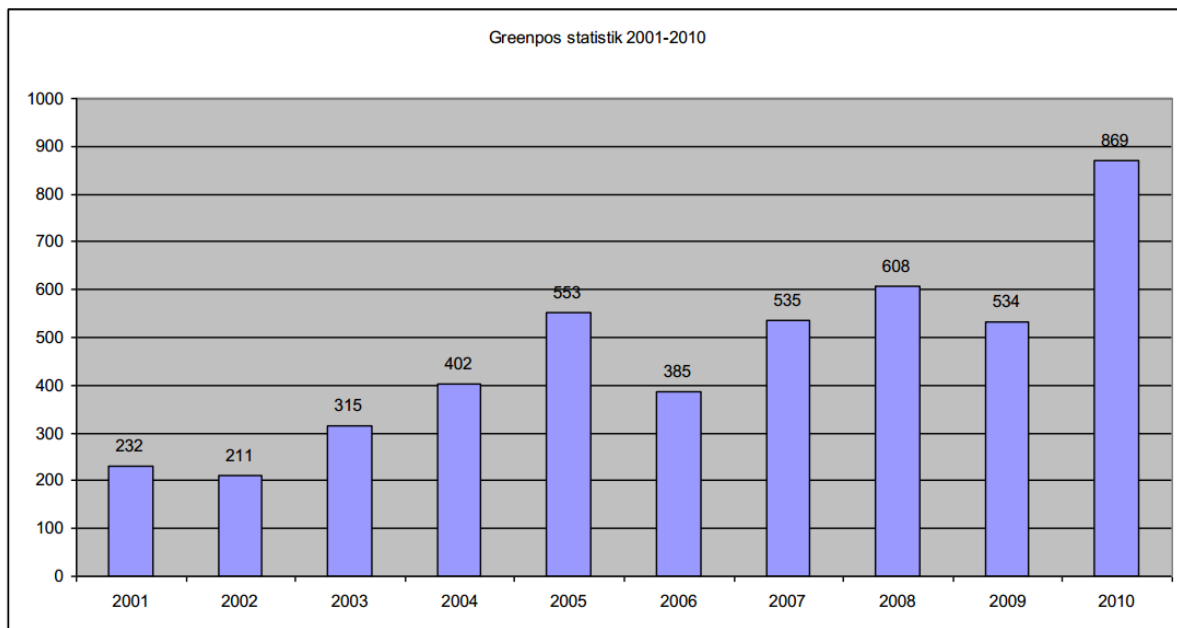


Figure 3: Number of ships in Greenlandic waters from 2001- 2010 registered with GREENPOS. Source: http://www.fmn.dk/nyheder/Documents/Rapport_vedr_placering_af_V%C3%A6rnsfaelles_Arktisk_Kommando.pdf

2.2. Dealing with Risk – International Agreements

As the number of ships in North American Arctic waters increase, there is an inevitable increase in risk. The key factors that contribute to a heightened risk of emergencies in the Arctic can be categorized by *geographic factors*, as well as a *lack of information and/or experience* of the area. *Geographic factors* include such things as ice conditions, which are increasingly difficult to predict as the ice thaws and areas previously covered by sea-ice are opening up. Key challenges associated with ice conditions include ice forecasting, the movement of the ice and the mobility of ice-strengthened equipment that has the ability to operate in this region. Other factors include: low temperatures and darkness throughout the winter months and human settlements and ports of refuge being few and far between.

Lack of information and experience relates to the basic issue of understanding the area in which you operate. Due to magnetic and solar phenomena, communications equipment is limited above the 70th parallel. As stated by the U.S. Department of Defense; “Although adequate for single ships, the communications architecture is insufficient to support normal operational practices of a surface action group or any large-scale Joint Force operations.”¹¹ There are also issues with the use of satellites and the global positioning system (GPS), making it difficult to perform missions with the precision needed for search and rescue.¹² Great portions of the waters in the North American Arctic are not sufficiently mapped. In addition, as information is updated, there is no guarantee that ships operating in the region are using the most up-to-date information. This communications gap, and the lack of accurate information combined with shallow waters, can lead to unnecessary incidents like the 2010 grounding of the *Clipper Adventurer*.¹³

¹¹ U.S. Department of Defense. *Report to Congress on Arctic Operations and the Northwest Passage*. May 2011.

¹² Ibid

¹³ Cohen, Tobi. *Canadian rescue capacity questioned in the wake of Arctic ship grounding*. Canada.com News, August 29, 2010.

Det Norske Veritas (DNV), a Norwegian risk management company, emphasizes that all activities entail an inherent amount of risk. The question, however, is what level of risk society deems acceptable and subsequently how different actors can mitigate risk. In the Arctic region, where maritime activities indisputably have higher risk levels than activities further south, this approach is extremely important. Modified equipment and higher operating standards (such as compulsory pilotage) are mitigation measures, as are international frameworks for collaboration under the auspices of organizations like the International Maritime Organization (IMO) or the Arctic Council. Several frameworks have been developed in recent years to address the increasing amount of activity in the Arctic.

After the Exxon Valdez accident in 1989, the IMO initiated work on a code for shipping in polar waters, which eventually led to *The IMO Guidelines for Ships Operating in Arctic Ice-covered Waters*. However, the Guidelines are not binding and certain sections are vague and lack concrete application.¹⁴ Recently, there has been work done to turn these guidelines into a mandatory “Polar Code for the Arctic.”¹⁵ This work was set to be completed in 2013, but delays over definitions and enforcement have postponed the process further.

The Arctic Council was first created to address environmental issues in the Arctic, as it became apparent in the late 1980s and early 1990s that human activity was having a profound influence on the environment in the Arctic. The earlier Arctic Environmental Protection Strategy (AEPS) provided the foundation for the Arctic Council, a “high level intergovernmental forum to provide a means for promoting cooperation, coordination and interaction among the Arctic States.”¹⁶ The work of the Arctic Council continues to make an impact through seminal projects as the *Arctic Marine Shipping Assessment Report* (2009)¹⁷ which outlines some recommendations around shipping policies in the region.

In a response to the increasing activity levels in the Arctic region, the Arctic Council agreed to a legally-binding search and rescue agreement at its ministerial meeting in Nuuk in 2011. The official agreement, titled the *Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic*, established measures for better collaboration between Arctic countries should an Arctic state request international assistance.¹⁸ In addition, it divides the Arctic into clearer zones of responsibility, as outlined in Figure 4. At the Arctic Council Ministerial meeting in Kiruna, Sweden in 2013, another agreement, *Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic*, was adopted, putting in place the same mechanisms for potential oil spill preparedness and response as was done for search and rescue.¹⁹

<http://www.canada.com/news/Canadian+rescue+capacity+questioned+wake+Arctic+ship+grounding/3457291/story.html>

¹⁴ Jensen, Øystein. *The IMO Guidelines for Ships Operating in Arctic Ice-covered Waters*. FNI Report 2/2007, p. 23.

¹⁵ Molenaar, Erik J.; Corell, Robert. *Arctic Transform: Maritime Shipping*. 2009, <http://arctic-transform.org/download/ShipSum.pdf>.

¹⁶ Arctic Council. *About Arctic Council*. 22.10.2011, <http://arctic-council.org/article/about>

¹⁷ Arctic Council. *Arctic Marine Shipping Assessment 2009 Report*.

http://www.arctic.noaa.gov/detect/documents/AMSA_2009_Report_2nd_print.pdf

¹⁸ Arctic Council. *Search and Rescue: SAR-Agreement*. <http://www.arctic-council.org/index.php/en/oceans/search-and-rescue/157-sar-agreement>

¹⁹ Arctic Council. *Agreement on cooperation on marine oil pollution, preparedness and response in the Arctic Final - Formatted version*. <http://www.arctic-council.org/index.php/en/document-archive/category/425-main-documents-from-kiruna-ministerial-meeting>



Figure 4: Areas of search and rescue jurisdiction in the *Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic* Source: The Arctic Institute

It can be seen through the agreements and work under the auspices of the Arctic Council and the International Maritime Organization that Arctic littoral states are co-operating to develop new circumpolar mechanisms to deal with increased activity. This report now turns towards the specific work being done in some of the Arctic maritime regions, namely on the Canada - Greenland border.

3. Arctic Coast Guards: Canada and Greenland

Maritime search and rescue and oil spill response are typically responsibilities that fall under the competence of coast guards, generally tasked with saving lives, enforcing maritime law and preventing environmental pollution. As climate change opens up oceanic shipping routes in the Arctic region, the different coast guards' responsibilities have expanded in the region, to account for additional search and rescue operations, vessel monitoring and domain awareness, icebreaking, and protecting the environment. Amongst the Arctic states, the structure, capabilities, and responsibilities of the coast guards vary. The following section examines the responsibilities of coast guards (or equivalent) in Canada and Greenland (Denmark), with a view to compare their operations to further understand the potential for collaboration.

3.1 The Canadian Arctic

The Canadian Arctic territory comprises of Yukon, Northwest Territories (NWT) and Nunavut. In total, this covers 3.9 million sq. km, which is almost equivalent to the European Union in size. To the west, Yukon borders the United States and to the east Nunavut borders Greenland, separated by Baffin Bay and the Davis Strait. The total population of Canada's three territories is only 110,000 people, making it one of the most sparsely populated places on the planet.

3.1.1. The Canadian Coast Guard

The Canadian Coast Guard (CCG) is a special agency under the Department of Fisheries and Oceans (DFO). The CCG is a civilian agency without military capabilities, and is not given a mandate to enforce federal law. Civilian coast guards often fall under the department of justice (or equivalent) and therefore have legal authority,²⁰ yet this is not the case in Canada. The federal police force in Canada, the Royal Canadian Mounted Police (RCMP), is responsible for legal affairs, and they frequently team up with the CCG, making use of their vessels.²¹ The same goes for monitoring illegal fishing and management of marine resources, which is mandated by fisheries officers from DFO making use of CCG vessels. Consequently the structure of the CCG is only a limited agency model, mandated to perform only parts of national Canadian maritime tasks that include search and rescue and environmental response.

The CCG's core tasks can roughly be listed as follows:

Table 1 – CCG Core Responsibilities

Task	Type
Search and rescue	Emergency
Environmental protection/pollution response	Emergency
Assist passage and navigation	Assistance

The Canadian Arctic falls under the responsibility of the CCG's Central and Arctic region, which covers the provinces of Ontario and Quebec, in addition to Nunavut and the Arctic coastline of Yukon and NWT. Search and rescue operations in the Eastern Arctic are the responsibility of the Joint Rescue Coordination Centre (JRCC) in Trenton, Ontario, with the exception of the Southern portion of Baffin Island (JRCC Halifax).²² The CCG does not have an Arctic strategy of its own equivalent to that of the U.S. Coast Guard for example, and has not been as publicly vocal as its American counterpart in terms of demanding investment to increase their Arctic capabilities. Currently, the CCG has six heavy and medium icebreakers,

²⁰ Østhagen, Andreas. *Why We Aren't Ready for an Active Arctic*. Canadian International Council: Open Canada, Comments, November 4, 2013. <http://opencanada.org/features/the-think-tank/comments/why-we-arent-ready-for-an-active-arctic/>

²¹ Royal Canadian Mounted Police. *Marine Security Enforcement Teams (MSETs)*. 24.03.2011. <http://www.rcmp-grc.gc.ca/mari-port/mset-esm-eng.htm>

²² Canadian Coast Guard. *Central and Arctic: Search and Rescue*. 24.06.2013. http://www.ccg-gcc.gc.ca/eng/Central_Arctic/Sar_Home

some of which operate in Arctic waters from May to November every year to ensure that the waterways are accessible, and to provide search and rescue capacity when needed.²³

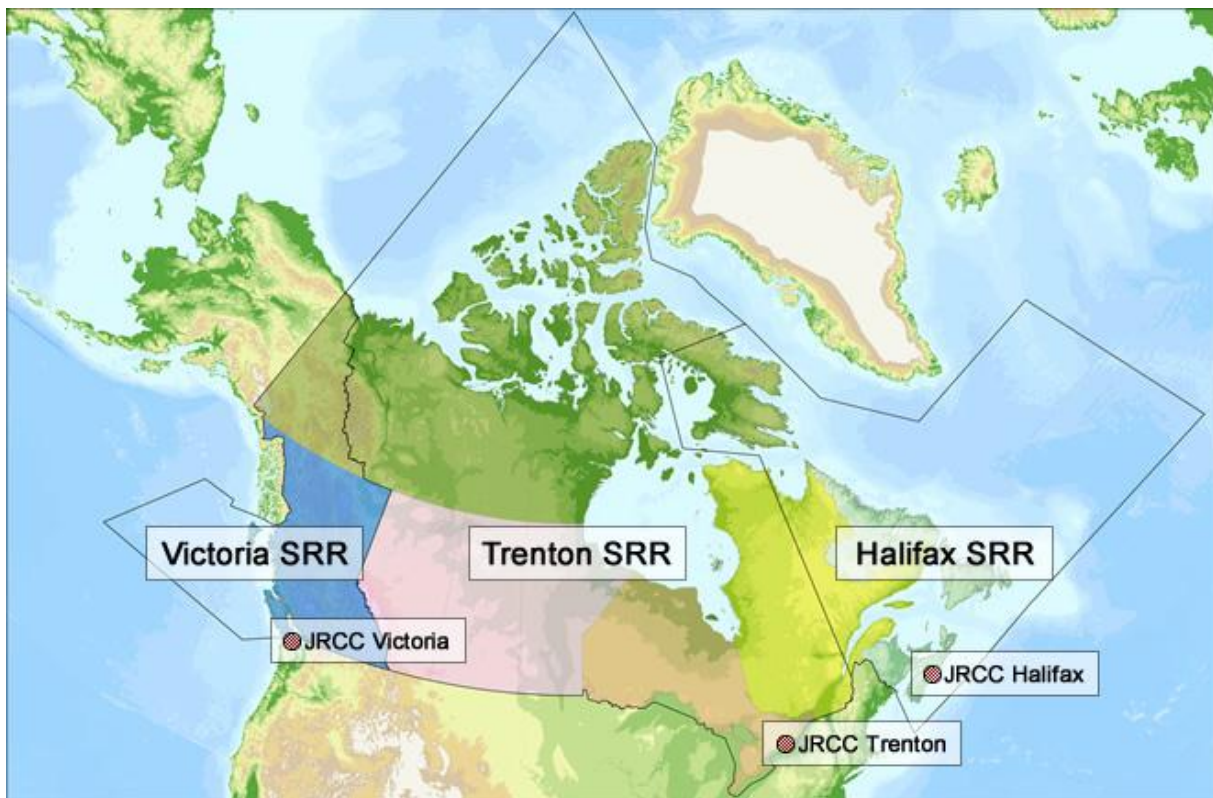


Figure 5: Areas of responsibility: Search and Rescue Canada. Source: <http://www.forces.gc.ca/en/operations-canada-north-america-current/sar-canada.page?doc=overcoming-the-tyranny-of-time-and-distance-major-air-disaster-sarex-2013/ho17esp2>

3.1.2. Future Challenges

For the CCG, changing Arctic conditions require updated information systems. The sheer size of the area and the lack of physical presence throughout the territories make operating in these conditions a prime challenge for the Coast Guard. As a remedy, the CCG establishes forward bases in Nunavut in the months between May and November when the ice thaws and traffic increases.²⁴ The capacity to perform maritime search and rescue and oil spill response is also central to Canada's ability to comply with domestic law and several international obligations, including the Arctic Council's search and rescue agreement.²⁵ If an emergency situation were to occur off the coast of Nunavut, the CCG – in collaboration with JRCC Trenton or Halifax – would be the governmental bodies responsible.

At the end of August 2012 the *World*, the “largest residential yacht on earth,” transited the Northwest Passage from west to east.²⁶ The ship held 508 passengers and crew on-board,

²³ Fisheries and Oceans Canada. *The Fleet of the Canadian Coast Guard: Western Region*. 26.06.2013. <http://www.dfo-mpo.gc.ca/media/back-fiche/2013/CCGW-eng.htm>

²⁴ Varga, Peter. *Iqaluit Coast Guard office maintains pan-Arctic vigil*. Nunatsiaq News Online, July 26, 2013. http://www.nunatsiaqonline.ca/stories/article/65674iqaluit_coast_guard_office_maintains_pan-arctic_vigil

²⁵ Canada Oceans Act, 1996 & Canada Shipping Act, 1985

²⁶ George, Jane. *The World gets green light to transit Northwest Passage*. Nunatsiaq News Online, August 31, 2012.

http://www.nunatsiaqonline.ca/stories/article/65674the_world_gets_the_green_light_to_transit_the_northwest_passage/

making it the largest and most populous vessel ever to transit the Passage.²⁷ Although the journey concluded without incident, grounding similar to that of the considerably smaller vessel *Clipper Adventurer* in 2010²⁸ would have mounted a challenging search and rescue response, including the CCG's Arctic ability to respond.

As with Arctic shipping, offshore oil and gas activities have the capacity to challenge the CCG's capabilities. Future development of the region will be heavily dependent on the commercial viability of wells drilled, related to infrastructure as well as public permits.²⁹ Should offshore exploratory drillings commence as it has in Alaska and Greenland, the threat of oil spills in the Arctic will place further strain on the CCG's limited presence in the region.

These examples demonstrate how increased activity levels are putting pressure on already wide-stretched capacities. Simultaneously, the CCG's Arctic capabilities are at a standstill, while the plan to construct a new heavy icebreaker by 2017, the *CCGS Diefenbaker*, has been delayed to 2022.³⁰ It should also be highlighted that the CCG's current icebreakers were designed to serve the St. Lawrence Seaway, the southern lakes, and waters off Newfoundland, a maritime region with much different operational needs. Additionally, the Canadian icebreaking fleet is approaching the end of its service, as the usual life of an icebreaker is 30 years.³¹

Icebreaker	Year Built
<i>CCGS Louis S. St-Laurent</i> *	1969
<i>CCGS Terry Fox</i> *	1983
<i>CCGS Henry Larsen</i>	1987
<i>CCGS Pierre Radisson</i>	1978
<i>CCGS Des Groseilliers</i>	1982
<i>CCGS Amundsen</i> **	1979

* Heavy icebreaker.

** Dedicated to science in the summer.

Heavy and medium CCG Icebreakers. Source:

<http://www.parl.gc.ca/Content/SEN/Committee/392/fish/rep/rep04jun08-e.pdf>

There are also on-going debates on whether the Coast Guard or the Navy should be prioritized for Arctic operations among Canadian federal decision makers. In 2006, the Government of Canada promised the CCG three to four new icebreakers. Since then, plans have shifted and instead the Royal Canadian Navy is now expected to receive six to eight Arctic patrol ships. These are modeled by the Norwegian Coast Guard vessel *KV Svalbard*, which only has light

²⁷ Ibid

²⁸ CBC News. *Coast Guard seeks damages for Arctic cruise ship accident*. CBC News North, June 19, 2012. <http://www.cbc.ca/news/canada/north/story/2012/06/19/north-coast-guard-clipper-adventurer-damages.html>

²⁹ Østhagen, Andreas. *Arctic oil and gas: the Role of Regions*. Norwegian Institute for Defence Studies, IFS Insight no. 2, September 2013.

http://ifs.forsvaret.no/publikasjoner/ifs_insights/insights_13/Sider/Ins_2_2013_ArcticOil.aspx

³⁰ Byers, Michael. *You can't replace real icebreakers*. The Globe and Mail, March 27, 2012.

<http://byers.typepad.com/arctic/2012/03/you-cant-replace-real-icebreakers.html>

³¹ Canadian Senate. *THE COAST GUARD IN CANADA'S ARCTIC: INTERIM REPORT*. Standing Senate Committee on Fisheries and Oceans, June 2008.

<http://www.parl.gc.ca/Content/SEN/Committee/392/fish/rep/rep04jun08-e.pdf>

icebreaking capabilities and is built mainly for coast guard purposes.³² Some have also argued for making the CCG a branch of the Navy,³³ as a way of improving efficiency and reducing costs. Consequently, the CCG is struggling to acquire sufficient resources and reaching the top of the federal government's priority list, especially when it comes to the Arctic.



Conceptual rendering of the proposed Canadian polar icebreaker CCGS John G. Diefenbaker. Source: http://www.ccg-gcc.gc.ca/vessel-procurement/polar-icebreaker/concept-image-gallery?album_id=19&file_id=34539

3.2. Greenland

Greenland is part of the Realm of Denmark, which also consists of the Faroe Islands and Denmark itself. In 2008, Greenlanders favoured increased independence from Denmark in a referendum, leading to greater self-governance for Greenland on June 21, 2009. Greenland's defense and foreign policies, however, are still under the control of Copenhagen. There are only 57,000 inhabitants residing on an island the size of half of the European Union. Greenland borders Iceland to the east and Canada across Baffin Bay and the Davis Strait, to the west.

3.2.1. The Danish Navy

Denmark does not have a coast guard similar to that of Canada, as it is the Royal Danish Navy (*Søværnet*) which is responsible for providing the services that normally fall to coast guards. The Navy is separated into the 1st and 2nd naval squadrons (*eskadre*). Whereas the 2nd squadron is focused on foreign operations, the 1st squadron is in charge of domestic affairs comprising the North-Atlantic area (Greenland and the Faroe Islands). Their responsibilities include search and rescue, maritime law enforcement, and security and sovereignty enforcement.³⁴ In addition, fisheries inspections and environmental protection are part of the Navy's portfolio— tasks that are normally under the auspices of coast guards. Consequently,

³² CBC News. *Arctic patrol ship plan headed for 'disaster,' says report*. CBC News North, April 11, 2013. <http://www.cbc.ca/news/canada/north/story/2013/04/11/north-arctic-patrol-ship-plan-disaster.html>

³³ Francis, Diane. *Canada's Navy: Deep-Sixed Over the Decades*. Huffington Post Canada, July 24, 2013. http://www.huffingtonpost.ca/diane-francis/canada-navy_b_3641651.html?utm_hp_ref=tw

³⁴ Søværnet. *Om 1. Eskadre: Opgaver og tilhørsforhold*. <http://forsvaret.dk/1ESK/Om%201%20Eskadre/ogaver/Pages/default.aspx>

the Danish Navy, performing coast guard tasks, is a full-spectrum option, as it covers everything from law enforcement to fisheries inspection.

The Danish Navy has a continuous year-round presence in its Arctic waters with its one cutter and four inspection ships built to operate along the coast of Greenland, with light ice-breaking capabilities.³⁵ The two new (2008) offshore patrol vessels in the Knud Rasmussen-class are also strengthened with an ice breaker stem, making it possible to act as light icebreakers when needed.³⁶ Yet as sea ice thickens during winter, the area of operations decreases and ice-breaking capacity is limited.³⁷ A third offshore patrol vessel is expected to be operational by 2018.³⁸ In terms of full icebreaking capacity, the Danish Navy has previously operated three heavy icebreakers, the *HDMS Danbjørn*, *Thorbjørn* and *Isbjørn*. All three were built to serve in waters around Denmark, as ice forms in Danish ports during winter, but in 2013 they were taken out of service as they reached the end of their lifetime.³⁹

Table 2 – Danish Navy Arctic Responsibilities

Task	Type
Security and sovereignty	Defense
Defense readiness	Defense
Enforce maritime law	Legal
Fisheries inspection	Legal
Environmental protection	Emergency
Assist passage and navigation	Emergency
Search and rescue	Emergency

In 2012, Island Command Greenland merged with Island Command Faroes, creating a new Arctic Command, which is headquartered in Nuuk, Greenland.⁴⁰ The Arctic Command is tasked with overseeing all the maritime activity in waters around Greenland and the Faroe Islands, enabling a joint response from the Danish Navy and local authorities to emergency situations. For fishery inspections, the Greenlandic self-government has close-to-shore inspectors (*Jagtbetjente*), but also acts in collaboration with Danish Navy vessels led by the Arctic Command.⁴¹

³⁵ Søværnet. *Om 1. Eskadre: Skibene*.

<http://forsvaret.dk/IESK/OM%201%20ESKADRE/SKIBENE/Pages/default.aspx>

³⁶ Ibid

³⁷ Søværnet. *Nationalt: Nordatlanteren – Aktivitetsoversigt, Nordatlantern*.

<http://forsvaret.dk/SOK/NATIONALT/NORDATLANTEN/Pages/default.aspx>

³⁸ Forsvarsministeriet. *Dansk værft skal bygge skib til forsvaret*. Nyhed: December 17, 2013.

<http://www.fmn.dk/nyheder/Pages/NytskibtilopgaveloesningiArktis.aspx>

³⁹ Maritime Denmark. *Danish government icebreakers off duty*. March 26, 2013.

<http://www.maritimedenmark.dk/?Id=16769>

⁴⁰ Royal Danish Navy. *About us: Admiral Danish Fleet HQs*.

<http://forsvaret.dk/SOK/eng/About/Pages/default.aspx>

⁴¹ Government of Greenland/Naalakkersuisut. *Grønlands fiskerilicenskontrol*.

<http://naalakkersuisut.gl/da/Naalakkersuisut/Departementer/Fiskeri-Fangst-og-Landbrug/Groenlands-Fiskerilicenskontrol>



Three types of Royal Danish Navy inspection ships in Greenland. Source: <http://forsvaret.dk/IESK/OM%201%20ESKADRE/SKIBENE/Pages/default.aspx>

3.2.2. Future Challenges

Currently, Greenland is heavily dependent on economic transfers from Denmark to provide basic services.⁴² As a result, consecutive self-governments have actively encouraged oil and gas exploration and mineral extraction in hopes of providing a means for economic independence from Denmark.⁴³ This has led to a rapid pace of development and an increase in activities along the Greenlandic coast, most notably in terms of oil and gas exploration.

These economic developments, combined with an increasing transfer of governance to the Greenlandic self-government, outline a changing situation for emergency management along the Greenlandic coast. The Royal Danish Navy currently maintains a continuous all-year presence in Arctic waters, heavy icebreaking capabilities, but naval presence is reduced at northern latitudes throughout the winter months as activity decreases. As focus shifts towards Greenlandic home rule, enabling the local/regional level to perform maritime law enforcement and emergency response has become a priority. Yet the economic situation still entails a strong Danish presence, particularly in regards to “hard” security issues and sovereignty enforcement.⁴⁴ At present, the Danish government has requested a study of the delimitation of search and rescue competences between the Greenlandic local police and the Danish Defence.⁴⁵

⁴² European Commission. *EU Relations with Greenland*. February 17, 2012.

http://ec.europa.eu/europeaid/where/octs_and_greenland/countries/greenland_en.htm

⁴³ Østhagen, Andreas. *Arctic oil and gas: the Role of Regions*. Norwegian Institute for Defence Studies, IFS Insight no. 2, September 2013.

http://ifs.forsvaret.no/publikasjoner/ifs_insights/insights_13/Sider/Ins_2_2013_ArcticOil.aspx

⁴⁴ Redder, Gitte; Bræmer, Michael. *Grønland ønsker Canada frem for Danmark*. Ugebrevet A4, April 15, 2013.

http://www.ugebreveta4.dk/da/2013/201316/Mandag/Groenland_ser_til_Canada_frem_for_Danmark.aspx

⁴⁵ Rigsrevisjonen. *Beretning til Statsrevisorene om Danmarks indsats i Arktis*. September 2013.

<http://www.fmn.dk/nyheder/Documents/Rigsrevisionens-beretning-om-Danmark-indsats-i-Arktis.pdf>

In a reversal from the debate occurring in Canada, there have also been arguments from Danish politicians for separating the coast guard's tasks from the Navy.⁴⁶ Both cost efficiency and the ability to specialize in tasks such as oil spill response are highlighted in arguments for separation. Studies in Denmark have also argued that the task of environmental preparedness is suffering under the Danish Navy and would benefit following a civilian coast guard model similar to that of Sweden or Germany.⁴⁷ Mirroring the debate in most western countries, funding of new defense equipment is a contentious topic, although one can argue that the situation in Greenland is not as dire in comparison to Canada. This is a consequence of relatively less activity taking place in the northern parts of Greenland where ice-conditions are the most challenging. Further, recent investment has created two new offshore patrol vessels operational from 2008. However, emergency response capability remains under pressure as cruise vessels can carry more than 4,000 passengers along the Greenlandic coast and further exploration wells are being drilled.⁴⁸

3.3. Comparison

The table below summarizes the main characteristics of the two cases outlined above. Both have helped to identify: which department Arctic emergency management falls under; whether the respective agency is military or civilian; whether it has the mandate to enforce law; whether it is tasked with search and rescue; equipment, and the main challenges to an Arctic presence.

Table 3 – Comparison

	Canadian Coast Guard	Royal Danish Navy
Department	Department of Fisheries and Oceans	Ministry of Defence
Military/Civilian	Civilian	Military
Law Enforcing	No*	Yes
Fisheries Inspection	No*	Yes

⁴⁶ Holm, Erik. *Eksperter og fagfolk vil samle maritime opgaver i én kystvagt*. Ingeniøren, December 15, 2012. <http://ing.dk/artikel/eksperter-og-fagfolk-vil-samle-maritime-opgaver-i-en-kystvagt-134968>; Holm, Erik. *Regeringspartier positive over for dansk kystvagt*. Ingeniøren, December 19, 2012. <http://ing.dk/artikel/regeringspartier-positive-over-dansk-kystvagt-135103>

⁴⁷ Ibid

⁴⁸ Danish Defence. *Rapport Vedrørende Placering af Værnsfælles Arktisk Kommando*. Arbejdsgruppe Værnsfælles Arktisk Kommando, May 19, 2011. http://www.fmn.dk/nyheder/Documents/Rapport_vedr_placering_af_V%C3%A6rnsfaelles_Arktisk_Kommando.pdf

Search and Rescue	Yes	Yes
Equipment	Six heavy to medium icebreakers, nearing the end of their lifetime	Four inspection ships, two new patrol vessels, one cutter, all ice-strengthened for light icebreaking
Challenges	<ul style="list-style-type: none"> - Infrastructure - Permanent Presence - Resources 	<ul style="list-style-type: none"> - Environmental capacity - Competence sharing between Greenland and Denmark

*The RCMP and Fisheries Officers make use of CCG vessels to conduct these actions.

4. Collaboration: Baffin Bay and Davis Strait

As depicted in the previous sections, both Canada and Greenland are experiencing an increase in offshore activity along their Arctic coastlines. A considerable amount of this activity is concentrated on Nunavut's east coast, which is also the Greenlandic west coast— more specifically Baffin Bay and Davis Strait (see Figure 6).⁴⁹ At the same time, emergency capacities in the region are under pressure. Scarce capabilities and domestic discussions on the appropriate allocation of funding, especially in Canada, have the potential to create further gaps between risk and preparedness in the near future. With similar geography and popular polls hinting at a stronger cultural bond to Canada than to Copenhagen, collaboration in this maritime border region arises as a logical remedy to current and future capacity issues.

⁴⁹ Varga, Peter. *Iqaluit Coast Guard office maintains pan-Arctic vigil*. Nunatsiaq News Online, July 26, 2013. http://www.nunatsiaqonline.ca/stories/article/65674iqaluit_coast_guard_office_maintains_pan-arctic_vigil



Figure 6: Map Greenland/Canada Arctic border. Source: <http://www.slaw.ca/wp-content/uploads/2009/06/canada-greenland.png>

4.1. Regional Relationship

Canadian foreign policy has arguably had a tendency to look south (and west), towards its larger American neighbor, with a well-established co-operation ranging from defense to trade. Yet at its closest, Greenland (Denmark), is only 25 kilometres (16 miles) from Canada at the Nares Strait. The flight time from Greenland's capital, Nuuk, to Nunavut's capital, Iqaluit, is only a third of the time it takes to fly to Iqaluit from Trenton, Ontario.⁵⁰ During the summer months, the Canadian Coast Guard's key performance time for icebreaking service is 10 hours.⁵¹ Employing vessels from the Greenlandic coast could potentially reduce this time.

The potential for collaboration on Arctic tasks between two countries that share parts of a common heritage and have been relatively stable democracies for the last century is important to look at as maritime activities increase. In 1973 Denmark (on behalf of Greenland) and

⁵⁰ Air Greenland. *Destinations*. <http://www.airgreenland.com/destinations/greenland>

⁵¹ Canadian Coast Guard. *Icebreaking Levels of Service*. Government of Canada, 2013. <http://www.ccg-gcc.gc.ca/Performance-Targets#A3>.

Canada agreed to a continental shelf boundary.⁵² The boundary runs through the Davis and Nares straits into the Arctic Ocean. However, the agreement did not include the Lincoln Sea to the north of the continents. A minor dispute remains over a small gap in the Kennedy Channel due to disagreement over Hans Island, an island of about 1.3 km². In November 2012, Canada and Greenland (Denmark) reached a tentative agreement on the boundary in the Lincoln Sea to the north of Ellesmere Island and Greenland.⁵³

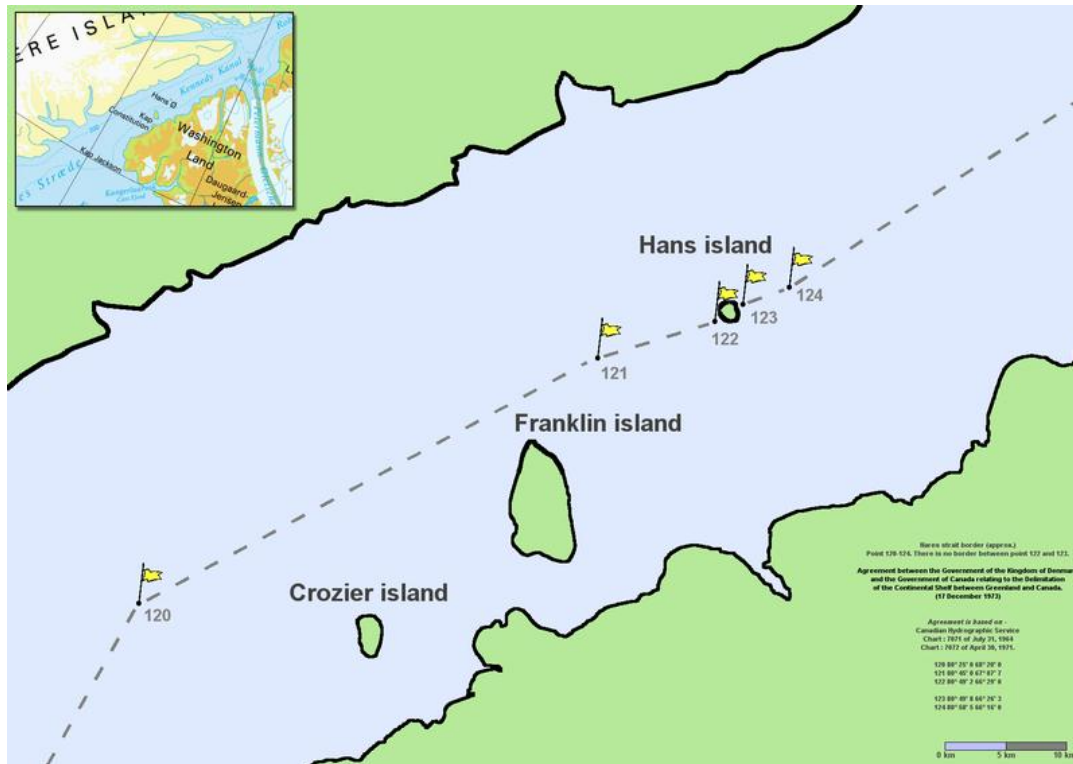


Figure 7: Kennedy channel. Source: [http://en.wikipedia.org/wiki/File:Nares_strait_border_\(Kennedy_channel\).png](http://en.wikipedia.org/wiki/File:Nares_strait_border_(Kennedy_channel).png)

More significantly, it is likely that Denmark and Canada will have overlapping seabed claims up towards the North Pole.⁵⁴ These claims should not be the cause of any serious disagreement, however, as both countries have stated adherence to the regime set by the *United Nations Convention on the Law of the Sea* (UNCLOS) for delineation the extent of their maritime boundaries and to finding common solutions to border issues.⁵⁵ Ultimately discounting some relatively insignificant unresolved disputes, the maritime border region between Greenland and Canada is well established. Beyond adherence to UNCLOS, Canada and Denmark are both NATO-members, actively participating in operations such as Afghanistan and the Gulf of Aden. On a regional level, both countries participate in the North Atlantic Coast Guard Forum with bi-annual meetings and joint working groups. The Forum was established in 2007 to increase co-operation amongst its members, 20 in total.

⁵² United Nations. *No. 13550: Denmark and Canada*. UN Treaty Series, 1974.

<http://treaties.un.org/doc/Publication/UNTS/Volume%20950/volume-950-I-13550-English.pdf>

⁵³ Government of Canada. *Canada and Kingdom of Denmark Reach Tentative Agreement on Lincoln Sea Boundary*. Foreign Affairs, Trade and Development Canada, November 28, 2012.

<http://www.international.gc.ca/media/aff/news-communiques/2012/11/28a.aspx?view=d>.

⁵⁴ Canada's seabed claim was submitted to the UN Commission on the Limits of the Continental Shelf in December 2013. It is expected that Denmark will do the same in 2014.

⁵⁵ Canada-Denmark Joint Statement on Hans Island, September 19, 2005, New York.

4.2. Current Collaboration

In spite of the geographical proximity and cultural similarities between Canada and Greenland, defense and/or coast guard collaboration has not flourished. The issue over Hans Island, no matter how miniscule, has dominated much of the political discourse on Greenlandic/Canadian maritime co-operation. However, as Arctic multilateral and bilateral co-operation has risen in prominence on the agenda, potential for maritime collaboration has attracted more attention.

In 2010, Canada and Denmark signed a Memorandum of Understanding (MoU) on operational co-operation for security and defense matter in the Arctic, which included the promise of joint exercises and the exchange of information.⁵⁶ In relation to this agreement, Danish members of the Sirius dog sled patrol have participated in Canadian-led exercises in the Canadian Arctic since 2010.⁵⁷ Additionally, every summer since 2007, the Canadian Navy, the Army and the Air Force jointly conduct Operation Nanook to practice sovereignty enforcement and emergency preparedness in the Arctic.⁵⁸ Both the Canadian Coast Guard and the Royal Danish Navy (since 2010) are included in specific portions of the exercise, related to typical coast guard tasks such as maritime surveillance, search and rescue operations, and fisheries inspections.⁵⁹

After the signing of the *Agreement on Cooperation on Aeronautical and Maritime Search and Rescue* under the auspices of the Arctic Council in 2011, the Canadian forces also co-ordinated the first table-top search and rescue exercise (SAREX) in Yukon in October 2011, with participants from all eight Arctic states. In 2012 and 2013 real life search and rescue scenarios under SAREX were held in North-East Greenland, co-ordinated by Greenland through their Arctic Command, again with full Arctic Council member participation. In 2014, Canada is co-ordinating the exercise, as the rotating chair of the Arctic Council.⁶⁰

⁵⁶ Government of Canada. *International Arctic Partners*. Foreign Affairs, Trade and Development Canada, May 15, 2013. <http://www.international.gc.ca/arctic-arctique/partners-international-partenaires.aspx?lang=eng>

⁵⁷ Nunatsiaq News. *Canada, Denmark ink Arctic military pact*. Nunatsiaq News Online, May 24, 2010. http://www.nunatsiaqonline.ca/stories/article/240510_canada_denmark_ink_arctic_military_pact1/

⁵⁸ Walter & Duncan Gordon Foundation. *Operation NANOOK*. The Munk-Gordon Arctic Security Program. <http://gordonfoundation.ca/sites/default/files/images/Operation%20NANOOK.pdf>

⁵⁹ Forsvarsministeriet/Ministry of Defence. *Danish minister of defence visited Operation NANOOK 2011*. August 22, 2011. <http://www.fmn.dk/eng/news/Pages/NANOOK2011.aspx>

⁶⁰ Joint Arctic Command. *Search and Rescue Exercise Greenland Sea 2013: Final Exercise Report*. Version 2.0. 2013



SAREX 2012: Danish Navy vessels HVIDBJØRNEN and ENJAR MIKKELSEN in Greenland. Source: http://www.hjv.dk/MHV/Nyheder/Billedbibliotek/_010101%20SAREX%20GRL%20HVB%20og%20EJML.jpg

Despite these efforts, when compared to Canadian/American co-operation in the Arctic, the Canadian/Greenlandic relationship seems underdeveloped. In particular, co-operation through the North American Aerospace Defense Command (NORAD) established in 1958, has institutionalized defense co-operation between the U.S. and Canada. Since maritime surveillance was included in 2006, its relevance for locating potential and actual emergencies in the Arctic has increased. In 2009, the *Tri-Command Framework for Arctic Cooperation* was signed to build on the already established relationships between NORAD, Canada Command and United States Northern Command. The goal of the Framework is to identify areas of improved co-operation and co-ordination in planning, training and exercises, operations, capability development and technology.⁶¹

Strong links exist with regards to coast guard collaboration as well. In March 2010, the American and Canadian Coast Guards participated in a two-day tabletop exercise titled CANUSNORTH to practice a joint response to an oil spill on the Canadian-American border in the Beaufort Sea. Similar exercises have been repeated, most recently in 2013 with the first joint Canadian-American Coast Guard exercise on oil spill preparedness in the Bering Strait.⁶² The 2012 and 2013 search and rescue exercises in Greenland, in comparison, did not include any Canadian Coast Guard vessels, and only minor Canadian contribution in total.⁶³

As seen in this section, the collaborative activities of Canada and the United States have greater depth than those undertaken between Canada and Greenland. This difference does not need to be a missed opportunity for Canada and Greenland to collaborate. In fact, the opportunity exists to examine the strong relationship between Canada and the United States and apply some of its principles and practises in the Eastern Arctic between Canada and Greenland. Consequently, this report argues that there is room for improvement, as will be outlined in the following section.

⁶¹ Government of Canada. *Canadian and U.S. Commanders Sign Arctic Cooperation Framework*. National Defence: News Release, December 11, 2012. <http://news.gc.ca/web/article-eng.do?nid=712179>.

⁶² Bradner, Tim. *Canada, U.S. conduct spill drill in the Bering Strait*. CTV News, August 4, 2013. <http://www.ctvnews.ca/sci-tech/canada-u-s-conduct-spill-drill-in-the-bering-strait-1.1397717>

⁶³ The Canadian participation was limited to one C-130 Hercules transport aircraft and different observers/trainers in 2012 and 2013.

4.2. Improving Collaboration

Increased activity in North American Arctic waters does not necessarily require each Arctic state to maintain a full spectrum of capable ships, aircrafts, and supplies. Shared awareness of assets and efficient collaboration and co-ordination in emergency situations would benefit the responsible Arctic authorities, therefore helping to close an increasing capability gap.⁶⁴

However, some barriers exist with respect to maritime collaboration in the eastern North American Arctic. The mandates, structures and responsibilities vary between the agencies that provide support for search and rescue between Canada and Denmark (Greenland, as outlined in section 3). The Danish model is based on a full-spectrum option, whereas the Canadian is a limited agency model. The Danish military is consequently rendered responsible for tasks often handled by civilian agencies (e.g. environmental protection),⁶⁵ whereas the Canadian Coast Guard is limited in its legal mandate. Such limitations and lack of commonality in both organizational structure and mandate is arguably an obstacle for co-operation. The Danish Navy's direct counterpart, the Royal Canadian Navy, is not actively engaged in the form of tasks that are leading to an increased demand for maritime presence in the Arctic, e.g. search and rescue and environmental protection. This situation might change for the Canadian Navy, due to the potential future acquisition of six to eight Arctic patrol ships which model a Norwegian coast guard vessel,⁶⁶ although a dramatic increase in Arctic tasks and responsibilities seems unlikely.

These coast guard structures have led to a debate in both countries on the best way to organize coast guards, with a view to reduce costs and improve efficiency. For a Canadian defense budget under pressure, with numerous different agencies and/or departments involved, combining responsibilities under one umbrella has been suggested as a cost-saving option. Though defense budgets in Denmark are as heavily scrutinized as in Canada, the growing awareness of the importance of the Arctic, and more specifically the prospects of oil and gas production in Greenlandic waters, have led to arguments for a new civilian structure tasked with maritime environmental protection.⁶⁷ Although a dramatic change in the organizational structure seems unlikely in both countries, sharing the burden of Arctic emergency preparedness in their border region would be one measure to reduce costs and efficiency gaps.

Formalized collaboration between the Danish Navy and the Canadian Coast Guard on matters such as search and rescue can be expanded, although co-operation agreements and memoranda of understanding would need to transcend the civilian/military gap. Greater involvement by the Canadian Coast Guard in exercises and an improved awareness of the current capacities held by each country would be an initial step to deepen collaboration. The development of "burden sharing agreements" is one area of collaboration that can be explored between Canada and its Arctic neighbours.⁶⁸ The creation of these types of agreements would bring clarity to the state of coast guard equipment and response capacities, therefore approaching maritime emergency responses according to the needs of the vessel/persons in

⁶⁴ Caitlyn Antrim. *The New Maritime Arctic; Geopolitics and the Russian Arctic in the 21st Century*. Russia in Global Affairs Volume 8, Number 3, July-September 2010.

⁶⁵ Ibid.

⁶⁶ Government of Canada. *Arctic/Offshore Patrol Ships (APOS)*. National Defence and the Canadian Armed Forces, December 12, 2013. <http://www.forces.gc.ca/en/business-equipment/arctic-offshore-patrol-ships.page>

⁶⁷ Ibid

⁶⁸ Axworthy, Tomas S.; Gestaldo, Vanessa. *Working Together: the case for increased Canada-U.S. cooperation for Arctic emergency preparedness*. Walter & Duncan Gordon Foundation report, Draft, November 14, 2013.

distress, as opposed to jurisdictional boundaries. Sharing information and co-ordinating the strategic development of maritime search and rescue responders for the whole of the North American Arctic is another worthwhile effort to increase capacity and service for the region.

Joint-training and contingency planning exercises will be central to improving co-operation and interoperability among responders. Establishing an *Arctic Coast Guard Forum*, responsible for the creation of an organizational framework to share information and co-ordinate activities, has been continuously raised by experts and scholars alike.⁶⁹ The forum would organize joint-training exercises to improve interoperability, co-ordinate contingency planning, and set up intelligence-sharing systems beyond what is currently in place under Arctic search and rescue agreements. Such an integrated network could be expanded to include Arctic Council stakeholders, Finland, Iceland, Sweden, and “permanent observers” willing to contribute resources and capabilities necessary to ensure safety in the Arctic.

In-depth collaboration does not need to, and most likely cannot, be only circumpolar, but rather must target a specific part of the Arctic. An example of this is the bilateral agreement on search and rescue between Norway and Russia from 1995, which established modes of interaction in case of emergencies. Subsequent work between Russia and Norway on an agreement on oil spill preparedness and response is a model that should be explored for its applicability to the relationship between Canada and Greenland.⁷⁰ The potential for emergencies along border regions to affect both countries (for example, the evacuation of people from one jurisdiction to another), is a scenario that should prompt action.

The inclusion of assets from multinational oil and gas companies is of increasing relevance for the coast guards’ capacity to respond to maritime emergencies. These companies operate and drive most of the processes in the remote and often unpopulated areas where exploration has been, or will be, taking place. Shell, as a part of its development of the Chukchi Sea leases, provided extensive capabilities with several new vessels and innovative technology to be used specifically for oil spill response and preparedness in Arctic conditions.⁷¹ Ensuring that companies operating in the maritime border region between Greenland and Canada, like Shell, Statoil and Dong Energy, are included in information-sharing and joint exercises is integral for capacity development in an area where equipment and actors are few and far between.

5. Conclusion

The Arctic is currently being redefined as social, economic and environmental changes are creating new risks and relationships in the region. Arctic states are looking to mitigate these risks using innovations that limit costs but provide adequate levels of preparedness. Investments in deep-water ports, new icebreakers and forward operating bases are needed, but costly. The return ratio for such an investment can be questioned, as the number of incidents is relatively small when compared to more inhabited areas further south.

⁶⁹ Conley, Heather; Toland, Terry; Kraut, Jamie; Østhagen, Andreas. *A New Security Architecture for the Arctic: An American Perspective*. Center for Strategic & International Studies (CSIS), CSIS Report, January 2012.

⁷⁰ Norwegian Ministry of Foreign Affairs. *The High North*. Meld. St. 7 (2011-2012).
<http://www.regjeringen.no/en/dep/ud/documents/propositions-and-reports/reports-to-the-storting/2011-2012/meld-st-7-20112012-2/10.html?id=697776>

However, the operational environment in the Arctic, regardless of the activity, is more complex than it is south of the Arctic Circle. An oil spill or a sinking cruise ship will prove more challenging, and potentially deadly, in Arctic waters than it will in waters off the coast of Vancouver or Halifax. Investing in preparedness before an emergency occurs can influence the success of an emergency response when it occurs, with the potential to save lives and prevent degradation to the environment.

Potential exists for increased collaboration between Arctic states. Coast guard tasks like search and rescue and environmental response are areas where saving lives and preventing damage to the ecosystem are paramount. The geographical relationship between Canada's eastern Arctic and Greenland is an area where increased co-operation and collaboration in emergency preparedness and response can have a great impact.

The opportunities for collaboration that exist have been highlighted in this paper. These areas include:

- increasing involvement of the Canadian Coast Guard and the Danish Navy in joint exercises organized by Arctic Council states, including SAREX Greenland Sea and Operation NANOOK;
- developing "burden sharing agreements" between the countries and their specific coast guard/navy assets in the region,
- building on established agreements for co-operation in training and exercises between Canada and Denmark to include real-time emergency responses, similar to those between Norway and Russia in the Barents Sea,
- co-operatively working together to develop an Arctic Coast Guard Forum, to supplement the already existing North Atlantic/Pacific forums with dialogue central to the needs of the region.

The two countries in question however, have chosen to organize their coast guard tasks in very different ways. The civilian agency structure in Canada and the military structure in Denmark might prove difficult when further expanding co-operation. This obstacle would need to be addressed in order to expand co-operation to include "burden sharing agreements" between Eastern Canadian Arctic assets and Danish assets in Greenland.

These are some measures to explore further, as offshore activity in the North American Arctic is set only to increase. Responsibility for eventual accidents will undoubtedly be divided between private companies and public authorities, although the latter will always hold the overarching responsibility for public safety. To avoid tragic incidents like the *MS Hans Hedtoft*, co-operation across borders is an easy and inexpensive remedy compared to building up domestic assets in isolation. It does not remove the dire need for investments in Arctic capabilities, but it can help reduce the risk of disaster and improve already existing capacities to co-operate across international borders. Preventing disaster is of interest to both countries, as they determine the future potential of their Arctic territory.

About the Author



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