Journal of Military and Strategic Studies

VOLUME 17, ISSUE 3

**Notes from the Field**

# *Canada's Coast Guard Operations In Our Arctic Ocean*

**J. G. Gilmour**

In the fall of 2016, I had the opportunity to travel on the Canadian Coast Guard's largest icebreaker the "Louis St. Laurent" from October 18 to October 27. The trip took us from Kugluktuk in Nunavut to Iqaluit on Baffin Island, approximately 1700 kilometers from start to finish during the ten day passage. The trip, which encountered various ice conditions, took us through Bellot Strait, the Gulf of Boothia, Fury and Hecla Strait, Foxe Basin, Hudson Strait and finally into Frobisher Bay. Normally anything above the Treeline qualifies as "Arctic" beyond 60°; whereas the "High Arctic" refers to regions north of 74°.

In its Icebreaking Operations Directives,[1] the Canadian Coast Guard (CCG) notes that its icebreaking services include the following:

- Route assistance to escort ships;
- Ice routing and Information Services;
- Harbour breakouts in harbour approaches;

[1] "Icebreaking Operations Directive1: Provision of Icebreaking Services," *Canadian Coast Guard*, http://www.ccg-gcc.gc.ca/eng/CCG/Ice_Home/Ice_Publications/Directive1-Icebreaking-Services.


ISSN : 1488-559X

- Flood Control;
- Northern Resupply to Northern communities; and
- Arctic Sovereignty.

During the summer of 2016, the ship had a very busy schedule. From leaving its port in Halifax it was involved in the Galway project which was an agreement signed off in 2013 between the US, Canada, Norway and the European Union to support the mapping of the Atlantic seabed. The ship was operating in this project from July 22 until August 4.

The ship then reached the North Pole on August 21, along with the Swedish ship the "Oden" to support the UNCLOS project which is mapping the outer limits of Canada's continental shelf.[2]

From September 22 until October 17 the ship was part of an annual Canada/US Ice Study in the Beaufort Sea, and from there the ship transited from Kugluktuk to Iqaluit from October 18 until October 27. The ship will cease operations in the Arctic on November 15, along with the other seven icebreakers deployed in this region.

The icebreaker "Louis St. Laurent" has had an interesting history. It escorted the "SS Manhattan" in the Northwest Passage from August until October 1969. It was also the first Canadian ship to reach the North Pole. During a 1994 science expedition, the ship navigated through 3,700 kilometres of ice, visiting the North Pole as it made the first crossing of the Arctic Ocean from the Pacific to the Atlantic. This joint Canada-US expedition with the USCGS "Polar Sea" took scientists to previously unexplored areas of the Arctic Ocean.

The ship, built in 1968, is considered a heavy Arctic Class 4 icebreaker, with a cruising speed of 16 knots and a maximum speed of 20 knots.[3] It is propelled by five

[2] See: "Canada's Extended Continental Shelf," Global Affairs Canada, http://www.international.gc.ca/arctic-arctique/continental/index.aspx?lang=eng: United Nations Convention on the Law of the Sea, http://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf.

[3] An Arctic Class 4 bow for icebreaking means that the ship is capable of moving continuously through 1.2 metres of ice at a speed of 3 knots.

diesel electric engines; each generating 8,000 horsepower. It has three high strength propellers and a large rudder with an ice horn which protects it from damage caused by ice. The distinctive hull shape of the ship's bow is a reinforced "ice knife" that cleaves through thinner ice at the waterline. The ice knife plating is 54mm thick. The lower part, called the horn, is filled with concrete for ballast and prevents the ship from riding up too far onto an ice sheet and becoming stuck.

The ship also has a 5-centimetre-thick armour steel "ice belt" protecting it from ice damage around the waterline and also employs a powerful bubbler system which blasts compressed air through nozzles in the hull below the waterline to help reduce friction or push ice away.

In locations where the shore is not too rugged, the ship will utilize barges which can land supplies and passengers. Otherwise the Louis St. Laurent carries two new Bell 429 helicopters which carries six passengers and uses cargo nets to transfer tons of cargo quickly and safely between ship and shore. This activity took place when there was a complete crew change in Iqaluit while the ship was at anchor.

The ship's navigation system relies primarily on GPS and various radars, usually operating from 3 to 12 nautical miles, from X to S band. The vessel specifications includes a length of 120 metres, a breadth of 25 metres and a draught of 10 metres.

The ship burns all of its garbage onboard, with the exception of tin cans, and has the facilities to neutralize black and grey water before releasing it back into the ocean.

One critical asset of the ship is its 42 man crew, led by Captain Wayne Duffet. The officers and personnel, including the pilots from Transport Canada, were very professional in all aspects of the ships operations for my ten day passage.

Our trip was interesting based on the fact we had four RCN personnel onboard who will be manning the new Arctic Offshore Patrol Ship (AOPS) vessel, the "HMCS Harry de Wolfe" in 2018, led by L/Cdr Gleason. The purpose of their trip was to observe CCG operations in the Arctic prior to manning their own ship. The "Louis St. Laurent" is to undergo a significant refit in 2017 to examine its three shafts and rudder. It is likely that the only floating drydock to take the ship during this time will be the Davie facility in Quebec. A concern raised by several crewmembers is whether the refit will be complete for the ship to carry out its services in the Arctic for 2017?

**Arctic Sea Ice**

One of the observations of my trip was the various changing ice conditions encountered on the trip, due to weather, wind and currents. In some areas, we encountered multi-year ice which changed dramatically to first year ice. In some areas of the Northwest Passage, such as Foxe Basin, there was open water, although it is likely that within several weeks, such waters will be frozen over for the winter months.

Canadian Ice Services based in Ottawa provides the CCG ships with current ice conditions in the Arctic, utilizing satellites and aircraft surveillance. Such service is vital for the Coast Guard in noting multi-year ice and icebergs in the Arctic Ocean.

According to the officers onboard the ship, ordinary sea ice is one to three metres thick, and the icebreaker would have no problem in operating under these conditions. However, when wind drives large sheets of sea ice against each other, lines of crusted ice build up along these edges forming "pressure ridges" that can present more serious obstacles to the ship. Arctic pressure ridges may run as deep as 25 metres below the water surface, which would impede or slow down the progress of the ship. Captain Duffet demonstrated the ship's ability to tackle multilayer ice by attacking and riding up over the ice and then backing the ship up again to battle the ice once more.[4]

Ridges in sea ice and the convergent forces that form them are a serious hazard to ships traveling in the Arctic Ocean.[5] In a recent study in the Hudson Strait, RADARSAT-1 and RADARSAT-2 synthetic aperture radar (SAR) imagery was used to identify the spatial and temporal distribution of sea ice ridges in this area.

The Strait is approximately 400 km long, an average width of 150 km and a depth ranging from 300 to 900m in depth

[4]"Ice Navigation in Canadian Waters," *Canadian Coast Guard*, Fisheries and Oceans Canada, http://www.ccg-gcc.gc.ca/folios/00913/docs/ice-navigation-dans-les-galces-eng.pdf

[5] O. Mussells, J. Dawson, S. Howell, " Using RADARSAT to Identify Sea Ice Ridges and their Implications for Shipping in Canada's Hudson Strait," *Arctic-Journal of the Arctic Institute of North America* 69, no 4 (December 2016): pp. 421-433.

**Northern Waters Communications**

Canada's concern about its control of the Northwest Passage could be noted after its unilateral declaration of the *Arctic Waters Pollution Prevention Act*[6] in 1970, after the passage of the "SS Manhattan" through these waters in 1969. This legislation was followed by the UNCLOS Article 234 in 1982 which recognized the right of coastal states to regulate commercial and other private navigation in ice-covered waters. Then in 1985 Canada initiated its sovereignty of its Arctic waters, calling them "internal waters" by drawing straight baselines from headland to headland around the Arctic Archipelago. Such steps were certainly contrary to other nations, including the US, in order to protect the freedom of naval action which calls the Northwest Passage an "international strait".

In 2010 Canada initiated the *Northern Canada Vessel Traffic Service For Zone Regulations* (NORDREG)[7] under the *Canada Shipping Act*.[8]

When a vessel of 300 gross tonnage or vessels carrying a cargo of a pollutant or dangerous goods approaches the NORDREG Zone, they must file a Sailing Plan Report.[9] There are three different categories of reporting procedures:[10]

1. General, NORDREG (Arctic Canada Traffic Zone);
2. Coast Guard Icebreaker Escort; and
3. Arctic Ice Regime Shipping System Messages. Whenever the Ice Regime System is used for voyages outside of the existing Zone/Date System, ships are required for ships to submit the following two messages:
    a. Ice Regime Routing Message; and
    b. After Action Report.

[6] See: Arctic Waters Pollution Prevention Act, http://laws-lois.justice.gc.ca/eng/acts/A-12/
[7] See: http://laws-lois.justice.gc.ca/eng/regulations/SOR-2010-127/FullText.html
[8] See: https://www.tc.gc.ca/eng/acts-regulations/acts-2001c26.htm
[9] Ibid.
[10] Transport Canada – "Reporting 4.1 Documentation and Vessel Reporting Procedures" – Transport Publication TP 12819E

The Canadian Coast Guard, in monitoring ship traffic in the Arctic operates the Marine Communication and Traffic Services (MCTS) Centre in Iqaluit for most of the summer/fall operation. Later in the year such services are provided from the Prescott MCTS in Ontario, which also provides a year-round satellite safety information broadcast service for high Arctic waters.

In a publication distributed by the CCG in 2016, the MCTS in Iqaluit reported they were at some times during the summer providing support for approximately 100 vessels per day that are operating in the NORDREG Zone.[11] These vessels included cargo and fishing vessels, cruise ships and pleasure craft.

*Issues:*

1. Is a more effective communication system for marine traffic in the Arctic required?
2. Could UAV's or airships operating out of Iqaluit and Inuvik assist with the monitoring and surveillance of foreign ship traffic in the Northwest Passage?
3. The current NORDREG reporting system is voluntary. How effective is the enforcement of our legislation and regulations in Arctic waters? In order to enforce our laws, Canadian Coast Guard ships must have a member of the RCMP onboard to carry out such obligations.
4. In 2013 the Harper government eliminated the equivalent of about 96 full-time positions and reduced spending by about $6 million in its MCTS centres.[12]

[11]"Canadian Coast Guard Operations Continue Mid-Season," *Canadian Coast Guard*, September 2, 2016, http://news.gc.ca/web/article-en.do?nid=1119939

[12] "Harper government finds waterway spending cuts," *Calgary Herald*, December 28, 2013, p.A-16,.

**Hydrographic Services**

Canadian Hydrographic Service (CHS) personnel are often onboard CCG icebreakers during the summer. Their work includes surveying and charting, using state-of-the art multi-beam sonar systems.

With the ice conditions in the Passage changing significantly each summer, more foreign ships are taking advantage of the various alternative routes available in the Northwest Passage.

*Issues:*

1. There are many areas in Canada's Arctic Ocean which have not been surveyed (ie Foxe Basin). This problem constrains where ships can operate in various ice conditions. In order to reduce costs, will northern marine corridors be established whereby navigation aids and surveys will be completed in time in which ships will be allowed to use it? What happens when severe ice conditions restrict the use of such "mandatory" corridors? In such an event, ships will likely have to rely on CCG icebreakers to open up these corridors.

2. Is it feasible to examine P3 involvement in hydrographic surveys in our Arctic Ocean? Would it be effective to utilize the inclusion of the private sector to complete such important work?

**The Coast Guard's Ageing Icebreaker Fleet**

The CCG has only two heavy icebreakers in its inventory; the "Louis St. Laurent" and the "Terry Fox". As noted earlier, the "Louis S. St. Laurent" was launched in 1969.

Source: http://www.ccg-gcc.gc.ca/Icebreaking/Icebreaker-Requirements/Appendices

The polar icebreaker, the "John G. Diefenbaker" was supposed to be finished in 2017 in which the "Louis St. Laurent" was then to be retired from service. However, the Vancouver shipyard responsible for building the 1.3 billion dollar ship, had a scheduling problem in that two RCN supply ships were scheduled ahead in the construction lineup. The shipyard can evidently only build one ship at a time, and therefore the launching of the "Diefenbaker" is delayed.

In a report conducted by Transport Canada in 2016 on the CCG, they noted:

> "The Canadian Coast Guard fleet is ageing, which has implications for maintenance as well as procurement. Given that 29 percent of the larger vessels are more than 35 years old and close to 60 percent of small vessels are older than the design life of 20 years, it is not surprising that the number of major systems' repairs required is increasing, vessel days are decreasing, and the number of ships out of service is increasing over time… the Canadian Coast Guard is not receiving the political attention, or the administrative and financial resources it requires."[13]

The federal government, on November 17, 2016, asked industry to begin drawing up options for providing icebreaking services, including the potential cost and

[13] "Canada Transport Act Review Report" *Transport Canada Volume 1*, (February 25, 2016): pp. 220-223.

availability of possibly leasing from private companies after one of the Coast Guard ships was taken out of service as a result of an "engineering challenge".[14]

As noted by officials from the Coast Guard, ageing ships come with a greater risk of breakdowns and increased requirements for unplanned maintenance. The Coast Guard has stated they may need as many as five extra icebreakers over the next several years as the current fleet is reaching the limits of their lifecycles; from over 30 years old to close to 50 years old.

*Issues:*

1. The Canadian Coast Guard could encounter a similar "ageing" problem with its icebreaker fleet as did the Royal Canadian Navy with its two support ships, "HMCS Preserver" and "HMCS Protecteur", which went out of service approximately at the same time, leaving the Navy with no replenishment ships for its fleet on either coast. The CCG could be left in the same unenviable position soon without having any heavy icebreakers for Arctic operations; recognizing it will be years before the "John D. Diefenbaker" is built in the Vancouver shipyard as a replacement for the "Louis St. Laurent", and that the two RCN AOR/JSS vessels are first in line to be built ahead of the "Diefenbaker".

   The R.C.N. is currently, for the West Coast fleet, leasing a ship from Chile on a "as required" basis to refuel its ships. On the East Coast, a similar leasing arrangement has been made with the Spanish Navy. In order to provide an interim measure for the loss of the RCN's two AOR's, the Trudeau government in 2015 opted to proceed with the conversion and leasing off a commercial containership, the "MV Asterix", as a Auxiliary Oiler Replenishment Ship or a Multi-Role Naval Support Vessel (MRNSV). Leased from Federal Fleet Services for five years and converted by Federal's sister company, Chantier Davie, the ship will be operated by a civilian crew, but will include RCN personnel for communications and replenishment operations at sea. It is anticipated that the ship will be launched by the autumn of 2017.

[14] L. Berthiaume, "Icebreaker shortage has coast guard looking to lease," *Calgary Herald*, November 18, 2016, p. NP3.

The replacement for the heavy icebreaker the Louis St. Laurent is not due until sometime in the 2020's. It is very likely that this ship will not last until then as it close to 50 years old. As noted by the Coast Guard it is likely they will need five new icebreakers within the next several years to replace their ageing fleet. In order to meet this serious need, it seems likely that it will be necessary to have these icebreakers built in foreign shipyards or leased from other northern countries; sooner than later.

Even if the plan is to replace one icebreaker a year, the median age of the fleet will still not substantially decrease;

2. It doesn't take an accountant too much time weighing the maintenance and refit costs for each ageing vessel in the Coast Guard fleet each year versus acquiring a new ship replacement. Extended refit time is already occurring just to keep their fleet in the water each year?

3. I suggest it is also imperative that deep-water ports be built in the territories to handle increased shipping in our Arctic waters. The Russians have 16 such ports along their Arctic coastline and operate 6 nuclear-powered icebreakers;

4. Their will be significant impact on northern communities and ship traffic in our Arctic Ocean if icebreaking service is significantly reduced as a result of a limited number of available icebreaker vessels from the Coast Guard in future years; just as the number of foreign ships operating in such waters is increasing.

**Arctic Council Initiatives**

On October 30, 2015, the eight Arctic Council states, including Canada, signed an agreement to establish the Arctic Coast Guard Forum (ACGF).[15] The agreement focuses on establishing areas of responsibility and co-operation for search and rescue operations and icebreaking collaboration in Arctic waters.

[15] LT. Katie Braynard, "Establishment of the Arctic Coast Guard Forum," *Coast Guard Compass*, October 30, 2015.

With respect to SAR activities in the Arctic, the area is vast, and includes the Search and Rescue Regions (SRR) of Halifax and Trenton, Ontario. Geographic and weather extremes make such undertakings extremely challenging.

The Minister of National Defense is the lead Minister for SAR and is responsible for co-ordinating federal air and marine SAR activities in Canada.[16]

Fisheries and Oceans Canada is the only department to have a legislated mandate for search and rescue as defined in the *Oceans Act*.[17] The Coast Guard is responsible for all marine SAR operations in the Arctic Ocean.

The National Search and Rescue Secretariat (NSS) was established in 1986 to be a national co-ordinating authority for SAR policy in Canada, and is accountable to the Minister of National Defense. The NSS Executive Director chairs the Interdepartmental Committee on Search and Rescue, which is composed of representatives from departments and central agencies involved in search and rescue activities.

From the air SAR perspective, the RCAF relies primarily on the CC-130 Hercules aircraft based in Trenton, Winnipeg and Greenwood, Nova Scotia. During the summer/fall period in the Arctic, the CCG would primarily rely on their icebreakers to reach marine SAR incidents in either the Halifax or Trenton SRRs.

In the Spring 2013 report from the Office of the Auditor General (OAG) of Canada, the audit "examined whether federal organizations are ready to respond to incidents that require search and rescue, have implemented prevention activities to reduce the number and severity of such incidents, and adequately administer search and rescue activities".[18] The audit covered the period between April 2007 until November 2012.

Although the Report had many recommendations, I will only concentrate in referring to those affecting the Canadian Coast Guard SAR Activities.

The following highlights the OAG's recommendations and the Department's response with respect to SAR issues:

[16] "Federal Search and Rescue Activities," *Report of the Auditor General of Canada*, Spring 2013, Chapter 7.
[17] See: http://laws-lois.justice.gc.ca/eng/acts/o-2.4/.
[18] Ibid.; p.1.

*Para 7.21 Recommendation*_- Fisheries and Oceans Canada's Canadian Coast Guard should systematically analyze its search and rescue data, so that its provision of service is based on current and expected search and rescue needs.

*Department Response* – The Coast Guard is in the process of improving the methodology of its risk-based approach to more systematically define search and rescue needs.

*Para 7.50 Recommendation* – To identify and implement staffing and training needs, Fisheries and Oceans and Canada's Canadian Coast Guard should review its search and rescue training requirements to ensure that they are in alignment with crewing profiles, and track the number of exemptions granted for vessels to proceed without a rescue specialist.[19] [14]

*Department Response* – The Canadian Coast Guard will ensure that cyclical reviews are conducted of the fleet crewing profiles and changes to ensures that competencies are reflective of current regulatory and operational requirements. Compliance or non-compliance with the identified requirements will be tracked using the exemption process and monitored through the Coast Guard's Safety Management System review and audit process.

*Para 7.77 Recommendation* – National Defense, in consultation with Fisheries and Oceans Canada, should develop an information system that meets current and future requirements and develop a plan to cover the gap until the system is replaced.

*National Defense Response* – The project to develop a new integrated Search and Rescue Mission Management System (SMMS) was approved in 2012.

*Para 7.100 Recommendation* – National Defense, in consultation with Fisheries and Oceans Canada, Transport Canada and other federal departments, and the provinces and territories, should take steps to improve the governance structure, including developing objectives, performance indicators and reporting that would enforce search and rescue service and co-ordination.[20] [15]

[19] Ibid.; p.14.
[20] Ibid., p. 24.

*National Defense Response* - As noted in response to recommendation 7.27, a recently initiated National Defense/Canadian Forces and Fisheries and Oceans/Canadian Coast Guard Search and Rescue Operation Governance committee will work to enforce coordination of their respective federal responsibilities for aeronautical and maritime SAR activities.

*Issues:*

1. One of the difficulties involved in marine SAR in the Arctic Ocean are the vast distances a CCG ship may have to travel in order to reach a ship in distress. Compounding such a potential problem is the weather and ice conditions based on the location of the incident. In addition to the rescue attempt by the CCG, an aircraft deployed in Trenton has to fly thousands of miles to reach a stranded ship in distress in the High Arctic, again depending on weather or a night time rescue attempt. For example, the flight from CFB Trenton to Barrow Strait, is approximately 2,300 statute miles.

2. As a result of the ACGF agreement, it is possible that resources and support from the US could be utilized as a result of a major SAR marine incident in our Arctic Ocean. (ie Thule, Greenland and Fairbanks, Alaska)

3. Steps should be taken to train residents of Nunavut, the NWT and the Yukon in SAR rescue activities, since there is a good possibility they could be on the scene of a rescue first, before the arrival of a ship or air support from the federal government.

4. As noted by Martin Shadwick, in reference to the OAG's reports, "the range of issues and challenges explored by the OAG – be they related to readiness, human resources, material resources, information management and technology, prevention activities or governance – is enormous and clearly cannot be resolved overnight".[21]

[21] M. Shadwick, "Reflections on Search and Rescue," *Canadian Military Journal* 13, no. 4 (Autumn 2013): p. 71.

5. It is interesting to note that the AOG's Report was tabled on SAR on April 30, 2013. The following December the federal government announced that Coast Guard services would be facing cuts equivalent to about $20 million by 2014-15 and 300 full-time jobs.[22]

**Oil Spill Response in Arctic Waters**

In 1969, ten ships navigated the Northwest Passage. Since then, as ice in the summer months started to recede, 380 more ships have made the 1,500 kilometer crossing, with most of them carrying out the transit in the past decade. In 2012 alone, 30 vessels made the crossing in one year.

In August 2016, the Chinese-owned cruise ship "Crystal Serenity" became the first large cruise ship to travel the Northwest Passage from west to east, stopping off in several northern communities. This ship carried more than a million litres of fuel oil.[23] It had a tonnage of 69,000 tonnes, a length of 250 metres and a draught of 8 metres.[24]

In 2016, the Chinese government published a document entitled the "Arctic Navigation Guide", to assist their cargo vessels travelling through the Northwest Passage.[25] There will be ships with Chinese flags sailing through this route in the future," stated Liv Pengfei, a spokesman for China's Maritime Safety Administration.

The "Nunavik" in 2014, an ice-strengthened ore carrier, made an unsupported trip from Quebec's Nunavik region to Northeast China. The route was 40 percent shorter than crossing through the Panama Canal.

With climate change and the receding ice conditions in this waterway, it is likely that more and more foreign cargo vessels and cruise ships will be transiting the Northwest Passage. As noted by Professor Rob Huebert of the University of Calgary, "Chinese encouragement of Northwest Passage shipping could force the biggest direct

[22] *Supra*, footnote 8
[23] M. Byers, "Why Arctic Cruises are bad for the Environment," *Globe and Mail*, April 18, 2016.
[24] "Princely Passage," *Calgary Herald*, August 2, 2016, p. NP-2.
[25] N. Vander, "East meets Northwest: China plots Arctic course," *Globe and Mail*, April 21, 2016, p.B-9.

challenge to Canadian sovereignty if Chinese ships are dispatched without Canadian consent.[26] In addition, as more and more foreign ships transit the Passage, it is likely such increased traffic could strengthen the argument of other nations that indeed the Northwest Passage is an "international strait".

As increased ship traffic in the future plan to rely on the Northwest Passage as an alternate route from the Panama Canal, Ottawa must take steps to improve hydrographic services, navigational aids and deep draft port facilities along shipping routes and northern marine corridors. The federal government must now recognize that with increased ship traffic in this region with extreme weather and ice conditions, it is likely that a ship will eventually run aground and spill fuel oil in our Arctic Ocean.

A first report of the Tanker Safety Expert Panel in November 2013 stated in its publication, "A review of Canada's ship-source Oil Spill Preparedness and Response Regime-Setting the course in the Future" reported that the Canadian oil spill regime was in a weakened state overall.[27]

The April 2014 Tanker Safety Expert Panel Phase II Report noted that "change is taking place in the Arctic, both in terms of the extent of multi-year sea ice, as well as economic development.[28] In addition, the Canadian Coast Guard has a more important role to play in the Arctic with respect to ship-source spill preparedness and response than it does south of 60°. Due to the continuously evolving situation in the Arctic, the government must regularly review and adjust its Arctic spill preparedness and response requirements and capabilities over the longer term."

As noted in the Transport Canada Report, it stated that the Tanker Safety Panel "expressed concern that Canadian Coast Guard capabilities have been declining and that this has affected its ability to keep up with the current modest increases in shipping and tourism and a lengthening shipping season. In light of the longer season, it is important to recognize that for the Canadian Coast Guard to adequately fulfill its roles, it will need to be physically present in the Arctic for the duration of the active shipping season. As Canada's eyes and ears on the ocean in the North, it needs to start planning now for the increased demands on its services in the future".

[26] Ibid.
[27] *Supra*, footnote 9, p. 222
[28] Ibid., p. 223.

On the 7th of November 2016, the Prime Minister announced the "Ocean-Protection Plan", in which $1.5 billion will be spent over five years, starting in 2017-2018. The Prime Minister said the plan "will strengthen the Coast Guard, improve information sharing to prevent spills, and enhance laws to ensure owners of problem-vessels are held accountable.[29] Other measures include improved communication plans for the CCG, and the creation of indigenous response teams as well as funding for research into oil spills and improved mapping of commercial waterways.

Although there is already in place a Canadian Ship-Source Oil Pollution Fund, the new plan is supposed to ensure there is enough industry-funded insurance compensation to assist those parties who have been harmed by the oil spill.[30]

For decades researchers and governments have been carrying out various marine oil spill studies and projects in our Arctic Ocean.[31]

In 2015, the federal government announced a $32 million Churchill Marine Observatory, led by the University of Manitoba in collaboration with researchers from the University of Calgary. Located along the west coast of Hudson Bay, the teams will develop ways of detecting oil in ice-covered waters, study oil's impact on the Arctic ecosystem, and develop technologies for mitigating and cleaning-up arctic waters in the event of a spill.[32] The research team recognizes that oil behaves differently based on the temperature of the waters and the presence and thickness of the sea ice. In addition, an oil spill could be hard to detect and monitor in the Arctic using traditional techniques.

The University of Calgary has also been a key player in interdisciplinary research focusing on improving knowledge of oil pollution preparedness and response.[33] [28] This research is being funded by the "Marine Environmental Observation Prediction and Response (MEOPAR) Network".

---

[29] I. Bailey, "Trudeau reveals 'long overdue' ocean protection plan," *Globe and Mail*, November 8, 2016.
[30] Editorial, "Oil and Water," *Globe and Mail*, November 14, 2016.
[31] "Baffin Island Oil Spill Project," "*Journal" Arctic Institute of North America* (AIWA) 40, no. 5 (1987).
[32] A. Kingwell, "New Arctic research station expands oil spill studies," *U-Today*, University of Calgary, July 15, 2015.
[33] A. M. Hubert and S. Bogetti, "'Legal oceanographer' contributes to oil pollution preparedness in Canada's Arctic," *Utoday*, University of Calgary, November 15, 2016.

The program looks at the legal and regulatory frameworks that govern oil pollution response measures both internationally and across jurisdictions domestically. In particular the team will be investigating legal principles that govern the use of marine oil spill response strategies involving risk trade-offs and the policy innovations needed to improve such measures.

*Issues:*

1. Recognizing that the CCG has stored oil spill recovery equipment in various sites in the Arctic, the diesel oil spill from the tug at Bella Bella off the British Columbia coast, flags the following concern:
    - The oil spill containment booms in high winds either broke up or the waves washed over the booms; spilling the fuel along the coastline;
2. In the recovery equipment stored in caches throughout the Arctic, are they outdated or still serviceable?
3. In reaching a major marine oil spill in our Arctic Ocean, how quickly could the CCG or other government agencies respond onsite to such a catastrophe, based on the vast geographic distances to be encountered by the recovery teams?
4. Unlike marine oil spills occurring on either the east or west coast, an oil spill in our Arctic Ocean could encounter extreme weather such as cold and winds, significant sea ice conditions, limited daylight and strong currents hampering clean-up operations of a ship in distress, and oil trapped under the ice;
5. On the basis of the new "Ocean-Protection Plan", further information is needed to clarify such matters as:
    - What measures will be taken to improve the communications plans for the CCG?
    - What is meant by "improving information sharing to prevent spills"?
    - What additional laws will be promulgated to ensure problem vessels are held accountable for oil spills?

- When will response teams be created from communities in the three territories?

6. Will the government be examining new technology and the ways and means to mediate and recover oil spills more effectively in our Arctic Ocean after a shipping accident in our Arctic Ocean?

**Canadian Coast Guard/Royal Canadian Navy Operability In Canada's Arctic Waters**

In 2018, it is anticipated that the first Royal Canadian Navy (RCN) Arctic Offshore Patrol Ships (AOPS) will be launched in Halifax.[34] [29] While onboard the Louis St. Laurent icebreaker during our Northwest Passage trip, the CO and three of his officers/crew of the "HMCS Harry de Wolfe" were getting a "familiarization" tour of the icebreaker and its capabilities in our northern waters.

Source: http://www.navy-marine.forces.gc.ca/en/fleet-units/aops-home.page

It is fair to suggest that both the RCN and the Canadian Coast Guard (CCG) have separate and integral missions and mandates with respect to the conduct of Northern Maritime Operations (NMO's). At the present time the RCN has no ice-strengthened

[34] The original delivery date of the first AOPS vessel was supposed to be in 2013.

warships and no existing deep water port to operate out of in the Arctic, subject to the former Nanisivik mine site port being refurbished by DND on Baffin Island.[35]

Recognizing that the new AOPS ship does not have the same capability in heavy ice as CCG ice breakers, what will be the mission of the AOPS? What areas within the NMO's can the two organization collaborate in? For both the RCN and the CCG, the area of jurisdiction of our Arctic Ocean is vast and the climate extremely challenging. As noted earlier, based on the retreat of sea ice, the Northwest Passage and our Arctic Ocean for foreign ship traffic will become more and more accessible. In other words, the length of time on duty for either RCN or the CCG will likely increase if the ice conditions in this region continue to retreat for longer periods of time. Major factors in ship operations in the High Arctic include extreme weather/wind ice conditions, currents, decreased visibility, limited navigational aids on land and deficient charts.

For the RCN under our existing "Canada First Defense Strategy", one of the Canadian Armed Forces (CAF) missions is "to conduct daily domestic and continental operations, including the Arctic".[36] In "Canada's Arctic Foreign Policy", the document refers to the CAF being able to control our Arctic land and waters and being able to respond when others take actions that adversely affect our national interests.

Subject to the legislative and policy mandates of both the RCN and the CCG, in what areas is it feasible to consider areas within the NMO in which the two organizations could collaborate on? These areas could include the following:

a) Search and Rescue – the Arctic Council is already calling upon Arctic nations to collaborate on SAR matters. Even though distances are great in our Arctic Ocean jurisdiction, the two organizations could assist one another in responding to SAR tasking;

b) Ice Reporting – Both the RCN and the CCG can share information on ice conditions in the Arctic Ocean to both themselves and other ships traffic and government agencies;

c) Northern Communities – It is important that both organizations meet regularly with northern community leaders and organizations on a regular basis to share

[35] Russia has built 16 deep water ports in the Arctic

[36] A New Defence White Paper is supposed to be released by Ottawa in 2017.

information such as the transportation of goods, the Northern Ranger program, surveillance, and training for local SAR missions and oil spill mitigation measures;

d) Sovereignty of our Arctic Waters – The presence of Canadian's ships operating in our Arctic Ocean is important in order to show "the flag" that we are serious in controlling such waters. The difficulty seems to be for either the RCN and the CCG, in order to enforce our legislation, whether it be the AWPPA or NORDREG, a ship must have onboard an RCMP/Fisheries Officer to board a foreign ship to ensure they have complied with our laws, or not. Under the existing regulatory scheme, it is voluntary compliance by foreign ships entering our territorial seas. If a ship is identified by satellite or an UAV, and has not complied with NORDREG, either the RCN or the CCG should be able to react quickly to board such vessel before it enters the Northwest Passage;

e) Refuelling of Vessels – As noted earlier, Canada has no deep water ports in our Arctic waters, which requires immediate attention if both the RCN and CCG are operating in these areas. Possibly the RCN will allow the CCG to use their facilities, when renovations have been completed, at the former Nanisivik mine site on Baffin Island for refuelling their vessels or for other logistical requirements needed to operate in the High Arctic by both the CCG and the RCN.

**Canadian Coast Guard Organization**

In the Transport Canada Review in 2016, it was noted that the CCG reports to the Department of Fisheries and Oceans. In the remarks it states that "Canada is unusual in having a civilian coast guard".[37] [32] In other northern jurisdictions, such as Denmark, Greenland, Norway, Iceland, Finland, Russia and the United States, the coast guard is a military or security organization. As a civilian body, the Canadian Coast Guard does not have the authority to enforce international and national laws and regulations pertaining to the sea, the environment and sovereignty without RCMP officers present,

[37] *Supra,* footnote 9, p. 220

even though Canadian Coast Guard vessels and staff may be the best placed to respond to critical events and detect illegal activity".

*Issues:*

1. Based on the relative size of both the RCN and the CCG, is it time to look at the efficiency and effectiveness of combining the CCG as an integral part of the RCN; similar to the relationship between the USCG and the US Navy, in lieu of falling under the administrative control of the Department of Fisheries and Oceans?

2. On the basis of increased ship activity in the Northwest Passage in future years and the replacement of new icebreaker requirements, it is likely that the budget for the CCG should be increased to meet these demands. For 2015-2016 the total operating budget was $650 million and the total capital budget was $685 million.[38]

[38] Email from Canadian Coast Guard, November 28, 2016.