

**Meeting the Deadline: Canada's Arctic Submission to  
the Commission on the Limits of the Continental Shelf**

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## Introduction

Five years ago I returned to my law of the sea roots in response to the large numbers of alarmist headlines in the media and in some academic works, warning that Arctic countries were engaged in a scramble to stake claims for extensions to their continental shelves beyond 200 nautical miles (n.m.), and that Canada was lagging behind in this race.<sup>1</sup> In my 2008 article, I argued that the process of delineating the outer continental shelves<sup>2</sup> of Arctic states is being conducted in an orderly fashion: there is an international legal regime in place and its rules are being observed by all Arctic countries.<sup>3</sup> Under international law, Canada and its Arctic neighbours - Russia, Denmark (on behalf of Greenland) and the United States, already have sovereign rights to their respective continental shelves beyond 200 n.m.; hence, that there is no need to stake claims. Furthermore, they are cooperating in the preparation of their respective submissions to the Commission on the Limits of the Continental Shelf (Commission).

My decision to revisit the topic in this paper is motivated by two factors. First, and most importantly, with the 2013 deadline for Canada's submission fast approaching, I want to update the progress being made, to examine more closely the challenges facing the Commission, which will profoundly effect the timing of its review of Canada's submission, and to address concerns not included in the previous article; namely those pertaining to Article 82 of the Law of the Sea Convention, which requires developed coastal states to pay royalties to the International Seabed Authority in return for being able to exploit nonliving resources beyond 200 n.m. Canadian scientists estimate that the country's outer continental shelf (OCS) in the Arctic will be three quarters of a million square kilometres.<sup>4</sup> Developing resources beyond 200 n.m. presents many, arduous, logistical challenges, including the huge expense and inherent difficulties of exploration and extraction in brutal climatic conditions, the enormous costs

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<sup>1</sup> Anthony Browne, "Melting ice starts rush for Arctic resources" *The Times* (London), January 28, 2006, p. 45; Scott Borgerson, "Averting a cold war on ice: Arctic ambitions" *International Herald Tribune*, August 9, 2007, p. 6; Owen Bowcott, "World battle for seabed" *Mail and Guardian*, January 9, 2008, p. 1; McKenzie Funk, "The Cold Rush: The coming fight for the melting north"; Paul Reynolds, "The Arctic's New Gold Rush", *BBC News*, October 25, 2005; Ed Struzik, "'Who's guarding our back door?': The Arctic has immense oil resources and mineral wealth, but Canada has been slow to protect its northern sovereignty". *Toronto Star*, November 18, 2007, p. A17; Fred Weir, "As icecaps melt, Russia races for Arctic's resources" *Christian Science Monitor*, July 31, 2007, pp. 1-3.

<sup>2</sup> The outer continental shelf extends beyond a coastal state's exclusive economic zone to a distance determined by criteria specified in Article 76 of the Law of the Sea Convention.

<sup>3</sup> Elizabeth Riddell-Dixon, "Canada and Arctic Politics: The Continental Shelf Delimitation" *Ocean Development and International Law* 39(4)(2008): 343-359.

<sup>4</sup> Interview with Jacob Verhoef, Director of the Geological Survey of Canada, Department of Natural Resources, Halifax, February 8, 2008.

and environmental risks of transporting resources to southern markets, and the high insurance premiums; however, the resource potential is considerable. Secondly, although the number of fear mongering articles has diminished over the past five years, they are still prevalent<sup>5</sup> ; hence, some further myth busting is required.

The paper answers several questions critical to Canada's Arctic OCS. How well is Canada positioned to meet the 2013 deadline? How are the Commission's current practices likely to impact Canada's submission? What concerns do the provisions in Article 82 pose for a developed Arctic OCS country like Canada?

This paper confirms the conclusions of the 2008 article, that the process is orderly and characterized by cooperation among Arctic states. Canadian scientist have made excellent progress in collecting and analyzing the data needed for the submission and government officials are well positioned to meet the 2013 deadline. In contrast, the Commission is ill-prepared to provide a timely response in light of the horrendous backlog in its work and its limited resources. Article 82 presents Canadian officials with a particularly thorny problem as its implementation needs to accommodate development on the country's Arctic OCS as well as on its east coast OCS, and the details on which such arrangements must be based will not be fully known until commercial production begins, which is decades away. As is so often the case with implementing international treaty obligations, the devil is in the details and how the LOSC's provisions are interpreted will profoundly affect Canada's resource development beyond 200 n.m.

### **The International Regime Governing the Outer Continental Shelf**

The rules and regulations governing the world's oceans are specified in the *United Nations Convention on the Law of the Sea* (LOSC), which defines the continental shelf as a submerged prolongation of the coastal state's land territory.<sup>6</sup> When such prolongations extend beyond 200 n.m., they belong to the coastal state up to a distance

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<sup>5</sup> For examples see Mike Blanchfield, "Canada-Russia Arctic War Up for Renewal; both Countries Talking Aggressively in Battle for Sovereignty". *Toronto Sun*, March 18, 2010, p. 42; Bill Curry, "The Race to Define 'Last Border of Canada'; Report Arguing Disputed National Boundaries due to UN Authority by 2013". *Globe and Mail*, April 9, 2010; Mark Galeotti, "Cold calling: Competition heats up for Arctic resources, *Jane's Intelligence Review* 20(October 2008): 8-15; Sharon Oosthoek, "The Sound and the Fury; Paranoia Or Last Stand? Sharon Oosthoek Explains Why Mapping the Seabed has the Arctic in an Uproar." *Globe and Mail*, August 7, 2010; Richard Sale and Eugene Potapov. *The Scramble for the Arctic*. (London: Frances Lincoln, 2010); Wei-en Tan, Yu-tai Tsai, "After the Ice Melts: Conflict Resolution and the International Scramble for Natural Resources in the Arctic Circle." *Journal of Politics and Law* 2(1)(2010): 91-99; and Chris Windeyer, "Resource Grab Risks Arctic Arms Race, Study Says." *Nunatsiaq News*, April 5, 2010.

<sup>6</sup> United Nations, *United Nations Convention on the Law of the Sea*. (LOSC). New York, 1983, Article 76(1), p. 27.

of 350 n.m. from the baselines or 100 n.m. measured from the 2,500 metre isobath.<sup>7</sup> On its continental shelf, the coastal state has sovereign rights to explore and exploit “the mineral and other non-living resources of the sea-bed and subsoil together with living organisms belonging to sedentary species”.<sup>8</sup> Thus, the interests at stake may be sizeable.

Responsibility for defining its continental shelf rests with the coastal state, which must conduct scientific research to determine if its continental shelf extends beyond 200 n.m. and, if so, the limits of its outer edge. The LOSC outlines both enabling criteria and constraints. To determine if an OCS exists, a coastal state may use either of two methods. Both procedures require the same first step: identifying the foot of the continental slope, which is defined as “the point of maximum change in the gradient at its base”.<sup>9</sup> In other words, the foot is the point at which the slope becomes very gentle and transitions to the deep seafloor (i.e., about a one percent change).<sup>10</sup> Measuring from the foot of the continental slope, the coastal state may either establish outer limit points where “the thickness of the sedimentary rocks is at least 1 per cent of the shortest distance from such point to the foot of the continental slope”; or determine an outer limit point at a distance not exceeding 60 nautical miles from the foot of the slope.<sup>11</sup>

If the above-mentioned enabling criteria show that the continental shelf extends beyond 200 n.m., it is then necessary to establish the outer limit. To limit unchecked incursions into the international seabed area, the Convention imposed constraints on the area of the continental shelf over which the sovereign rights of the coastal state apply. Again it provided coastal states with two options: the outer limits “shall not exceed 350 nautical miles from the baselines from which the breadth of the territorial sea is measured” or extend beyond “100 nautical miles from the 2,500 metre isobath”.<sup>12</sup> Canada - like other countries - will use the combinations of enabling and constraint criteria that maximize the area of its continental shelf.

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<sup>7</sup> LOSC, Article 76(5), p. 27. The 2,500 metre isobath is a line that connects the parts of the seabed that lie at a depth of 2,500 metres.

<sup>8</sup> LOSC, Article 77, p. 28.

<sup>9</sup> LOSC, Article 76.4(b), page 27.

<sup>10</sup> Interview with Richard MacDougall, Director, Law of the Sea Project, Canadian Hydrographic Service, Department of Fisheries and Oceans, Halifax, December 21, 2007.

<sup>11</sup> LOSC, Article 76.4(a)(I and ii), page 27.

<sup>12</sup> LOSC, Article 76(5), p. 27.

After gathering and analyzing the geological and bathymetric data, the coastal state is required to make a submission to the Commission.<sup>13</sup> The latter reviews the submissions and assesses the extent to which they define OCSs in conformity with international law. When so requested, it also provides scientific and technical advice to assist coastal states in preparing their submissions. The Commission reviews the material submitted and makes

recommendations to coastal States on matters related to the establishment of the outer limits of their continental shelf. The limits of the shelf established by a coastal State on the basis of these recommendations shall be final and binding.<sup>14</sup>

Thus it is the coastal state - not the Commission - that establishes the outer limits of the continental shelf. In cases where the coastal state disagrees with the Commission's recommendations, the former must present a new or revised submission to the Commission within a reasonable period of time

The international regime specifies time constraints for making submissions. Countries, such as Russia, that ratified the LOSC prior to 1999 had until 2009, while states that became parties after 1999 were given 10 years from the time of ratification or accession to make their submissions. Canada ratified in 2003 and Denmark in 2004; hence, they have until 2013 and 2014, respectively, to present their documentation to the Commission. Canada, Denmark and Russia are Parties to the LOSC; hence they are legally bound by it. Although the United States is not a Party, it is nonetheless acting in the belief that, in accordance with Convention, it is entitled to the prolongation of its continental shelf.<sup>15</sup>

The LOSC is clear that the coastal state does not have to exercise sovereignty over the continental shelf in order to enjoy its rights: "The Rights of the coastal State over the continental shelf do not depend on occupation, effective or notional, or on any express proclamation."<sup>16</sup> Thus Russia planting a flag on the Arctic seabed beneath the North Pole was a symbolic gesture but it had no legal significance. It is not a case of "use it or lose it". A state's continental shelf either meets the LOSC's criteria for an extension or it does not. How well is the preparation of Canada's submission progressing?

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<sup>13</sup> LOSC, Article 76.8, p. 28. The mandate, membership, and decision-making procedures for the Commission are outlined in Annex II, pp. 111 - 113.

<sup>14</sup> LOSC, Article 76.8, p. 28.

<sup>15</sup> United States, Geological Survey, "Law of the Sea - Outer Limits of the US Continental Margins". Woods Hole, January 15, 2008, p. 1.

<sup>16</sup> LOSC, Article 77.3, p. 28.

## Preparing Canada's Submission

Three federal departments are centrally involved in the preparation of Canada's submission to the Commission. The Department of Foreign Affairs and International Trade (DFAIT) is coordinating the preparation and presentation of the submission. The scientific research and mapping is being done by Natural Resources Canada and Fisheries and Oceans Canada.<sup>17</sup> The Canadian Hydrographic Service in the Department of Fisheries and Oceans is responsible for bathymetric surveys, which are used to measure the water depth and to map the topography or geomorphology of the ocean floor. This information is essential in determining the foot of the slope of the continental shelf and the 2,500 metre isobath. The Geological Survey of Canada in the Department of Natural Resources is conducting the seismic surveys, which penetrate the layers of the ocean bed to measure sediment thickness and the sound velocity of the rock structures to determine if the rocks are of the same composition as the continental shelf adjacent to Canada's coastline.

Research on Canada's Arctic OCS has been concentrated in two six-to-eight week periods a year: a spring (March/April) program in the eastern Arctic; and a fall (August/September) program in the western Arctic.<sup>18</sup> Although both programs involved seismic and bathymetric research, the methodologies for conducting them varied considerably, largely because the climatic challenges in the eastern and western Arctics are different; hence, each program is discussed separately below. The spring program terminated in 2010. Scientists are hopeful that the data collection can be completed in a final fall session in 2011.

Weather conditions, such as dense fog which makes flying helicopters and airplanes extremely hazardous, and thick ice which can preclude the use of ships, pose severe challenges to Arctic researchers and demand flexibility and ingenuity. Climatic conditions have been particularly challenging in the eastern Arctic where bad weather resulted in the loss of 60% to 70% of the work days in 2006 and 90% in 2007.<sup>19</sup> While no days were lost to bad weather in 2009, weather again proved problematic for the 2010 spring program, when only two days were completely without fog. To address climatic problems, the scientists have employed a range of research methodologies.

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<sup>17</sup> I am indebted to Richard MacDougall and Jacob Verhoef for explaining bathymetric and seismic methodologies, respectively.

<sup>18</sup> The challenges of conducting this research is discussed in Elizabeth Riddell-Dixon, "Not for the Faint-hearted: Mapping Canada's Arctic Continental Shelf Beyond 200 Nautical Miles" *Policy Options* 30(4)(2009): 60-64. The spring program had to be scheduled when there was daylight but before rising temperatures produced snow and ice fog that make operating helicopters extremely dangerous. The fall surveys are conducted when the sea ice is thinnest.

<sup>19</sup> Verhoef, Interview, 2008.

Since 2005, Canada and Denmark have run collaborative research projects each spring to collect data north of Greenland and Ellesmere Island.<sup>20</sup> Their joint research program mapped the Lomonosov and Alpha Ridges - submarine mountain ranges - to determine if they constitute natural prolongations of Canada's and Greenland's submerged land territory.

The original plans for the eastern Arctic involved conducting research from both icebreakers and ice camps but the use of icebreakers to survey the area had to be abandoned in 2007, when they encountered multi-year ice three to five metres thick with the consistency of concrete. Thereafter, the main operations were conducted from base camps, from which both bathymetric and seismic equipment was flown to designated test sites. For bathymetric surveys, a helicopter lands at pre-determined sites every two to five kilometres along selected profiles, the transducer is placed directly on the ice, and sound penetrates both ice and water and echoes off the seabed. The transducer both emits the sound and records the echo that returns on a graph to show how deep the water is. For seismic surveys, between 115 and 150 recording instruments are set out on the ice, one and a half to two kilometres apart. Dynamite charges are set off in sequence and the echoes from the various layers of sediment and rock beneath the seabed are received at each instrument. Both types of survey are labour intensive and while they remain the primary sources of data, other less-labour intensive methods have also been employed.

To expand the area covered and to provide supporting data for the primary finding of the ground research, airplanes have flown large grids over the Alpha and Lomonosov Ridges and little beyond the North Pole. If the aerial readings between the drill holes show similar patterns to those evident from the ground research, they enhance the case for the pattern being continuous and hence for the coastal state having an OCS.

New technologies, such as ice picks and autonomous underwater vehicles, have also been used to expand the area surveyed. Ice picks, each of which contains a seismic transmitter and receiver, were used in the spring of 2008. After being dropped from an airplane, the icepick parachutes down, penetrates through the snow, and lodges in the ice below. These instruments are dropped roughly four kilometres apart. After dropping all the icepicks needed for a profile, the airplane flies to a higher altitude so it can record the data coming from transmitters on the icepicks. The dynamite is detonated, and the sound waves detected by the icepicks are recorded on equipment in the airplane. Whereas it takes days to transport 115 seismic recorders by helicopter and to place each by hand, the airplane can distribute 16 icepicks in five minutes and it can record data from multiple instruments at the same time. In addition, the aircraft can fly much further out from the base camp than can a helicopter, thereby covering a wider territory. Timing is critical, as the plane can only stay in the air for a limited period. Thus, setting the dynamite charge, placing the icepicks, moving the airplane to a higher

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<sup>20</sup> The Memorandum of Understanding was signed by the Geological Survey of Canada and the Geological Survey of Greenland and Denmark in June 2005.

elevation, and deploying the charge must all be carefully coordinated. The operation was effectively deployed and the ice picks generated a lot of useful data.

In the spring of 2010, Canadian and Danish scientists used an autonomous underwater vehicle (AUV), which is a long cylindrical, unmanned submersible that can be programmed to follow a pattern under the ice collecting bathymetric data and to come back to a certain point, where the recorded data can be retrieved and the battery recharged. Once in the water, the AUV can operate regardless of the weather but setting up the docking stations, both at the base camp and at a remote base 350 km off shore, is very difficult in bad weather. To be able to lower the AUV into the water, recharge its battery, and subsequently retrieve it, requires drilling a large hole in the ice. A hot water drill is used to cut the hole; however, it cannot operate in high winds, which were prevalent and caused delays. Once the holes were dug at the base camp and remote camp, they were covered by tents, at which point weather was no longer a major impediment. It took three days for the AUV to travel from the base camp to the remote camp, where it was recharged before being sent out on its missions. The AUV was able to reach places that were too far from base camps to use traditional bathymetric on-ice survey techniques; thus it assisted in filling in the gaps in the bathymetric mapping.

Weather conditions have forced a change in the research plans for 2011. Last spring (2010) a large crack appeared in the ice flow on which the remote camp was based. Although it was not right under the tents, it was too close for comfort. In 2009, they had to stage an emergency evacuation because of cracks in the ice on which the base camp was built. These experiences have led officials to conclude that ice camps are too dangerous; hence, there was no spring camp this year and the final research will be conducted from ships approaching the Alpha and Lomonosov Ridges from the west, as part of the 2011 fall research program.

Prior to 2008, Canadian and American scientists worked independently mapping the seabed of the western Arctic. For the past three fall seasons (2008, 2009, and 2010), *Canadian Coast Guard Ship Louis S. St-Laurent* and *US Coast Guard Cutter Healy* have undertaken joint research programs in the western Arctic, collecting data that both countries need for their respective submissions. A similar joint venture is planned for August-September 2011. In addition, each ship undertakes its own independent research in the period immediately before and after their work together.

Bathymetric transducers, mounted on the hull of the *USCGC Healy*, send out sound waves and record them as they return. The *CCGS Louis S. St-Laurent* tows a seismic airgun 10 metres below the water surface. Behind the airgun is a 300 metre long streamer containing hydrophones. The airgun sets off explosions of air every ten to twenty seconds and the sound generated goes down through the water and reflects from the bottom and the sedimentary layers. The hydrophones pick up and record the velocity of the sound waves that come back from the sediment and rock layers. Generally the *USCGC Healy* leads, while the *CCGS Louis S. St-Laurent* follows,



because the seismic equipment is more vulnerable to ice damage.<sup>21</sup> When they are not conducting seismic research, the two ships reverse order.

While polar environments always present challenges, research in the western Arctic has been aided in recent years by relatively good weather and open water; hence, they have made more progress each year than expected. 2009 was an “amazing” year, in which they collected 60% more data than planned.<sup>22</sup> In 2010, the icebreakers travelled to latitudes as far as 84 degrees north and their data collection surpassed expectations by 40%.<sup>23</sup>

As with the spring program, the fall session requires much planning so that alternative strategies are available if ice conditions delay (or advance) the schedule or prevent following the preordained profile lines. In 2009, the ships managed to travel as far as the Lomonosov Ridge in the vicinity of the North Pole, where they encountered thick ice and the lead icebreaker could only travel one n.m. per hour. Needless to say, such transit is extremely costly and impossible to sustain over long distances because the ship cannot carry sufficient fuel.

Canadian scientists now have 98% to 99% of the data they planned to collect in the Canada Basin. If all goes well, the research needed for Canada’s submission will be completed in the 2011 fall session.<sup>24</sup> This year, in addition to collecting bathymetric and seismic data using the *USCGC Healy* and the *CCGS Louis S. St-Laurent*, the scientists will use an AUV launched from the icebreakers in the northeastern part of route (e.g., over the Alpha Ridge), where the ice may be too thick for the ships to penetrate. This region is the most difficult part of the mapping. The strategy will provide flexibility: the icebreakers can test in parallel lines to the course taken by the AUV, or each ship can chart its own route, while the AUV surveys separate areas. If weather prevents completion of the data collection in 2011, they will plan to finish the work in 2012; however such a postponement would increase the pressure on Canadian scientists to do the analysis in short order so as to meet the 2013 submission deadline.

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<sup>21</sup> A “small” (i.e., a bedroom-sized) chunk of ice between the ship and the tow cable can throw the 4,400 pound seismic airgun sled and streamer out of the ocean and against the large ice blocks churning in the vessel’s wake. Thus, the risk to the equipment is considerable. Verhoef, Interview, 2008.

<sup>22</sup> Verhoef, Interview, 2008.

<sup>23</sup> Jacob Verhoef as quoted in Christina Reed, “Arctic mapping - third consecutive summer”. March 5, 2011, p. 2.  
<<http://northwestpassage2011.blogspot.com/2011/03/arctic-mapping-third-consecutive-summer.html>>

<sup>24</sup> For a discussion of how much has been accomplished vis-a-vis the original survey plans see Jacob Verhoef’s forthcoming article in *Meridian Newsletter* (Ottawa: Canadian Polar Commission, April 2011).

To their credit, the scientists have collected large quantities of high quality data in spite of the harsh Arctic conditions. The thick sediment levels the Beaufort Sea and Canada Basin indicate that Canada has a significant OCS in the western Arctic<sup>25</sup>. Thick sediments (i.e. over three kilometres deep) is a precondition for finding oil and gas, although it is no guarantee that they will be discovered. The Alpha and Lomonosov Ridges are rock capped, so they do not hold promise of oil and gas reserves but they may contain valuable mineral deposits.

As evident in the above discussion, the process of delineating continental shelves beyond 200 n.m. has been marked by cooperation among Arctic countries. In 2007 Canada and Denmark chartered the Russian icebreaker, *50 Years of Victory (50 Let POBEDY)* and the Swedish icebreaker, *Oden*, to conduct surveys in the eastern Arctic. In 2009, when Canada and Denmark again chartered the *Oden* to survey east of Lomonosov Ridge, around the North Pole, a Russian scientist participated as an observer. Collaboration makes good sense in light of the exorbitant costs and the logistical difficulties of Arctic surveys and it also helps to legitimize the findings. Canadian and Danish scientists have not only collected data together but they have also jointly interpreted them. As the commissioners review the submissions in light of accepted scientific knowledge, Canadian and Danish scientists have published their data and their scientific interpretations of them in a joint refereed journal article<sup>26</sup>. They have a second paper close to completion, and they are working on a third. Canadian, Danish and Russian scientists plan to co-author a paper bringing together their analyses of the data they have collected from their respective sides of the Lomonosov Ridge. The Canadians are also working on several articles with their American counterparts.

As the process of getting an article published in a refereed journal is lengthy, Canadian, Danish and American scientists have also presented posters at scientific conferences, which allows them to disseminate their findings more quickly and to get immediate feedback. For example, Canadian scientists presented posters in collaboration with their Danish colleagues as well as with their American counterparts at the 2010 Meetings of American Geophysical Union.

Since 2007, Canadian, Danish and Russian scientists have held annual meetings to discuss scientific and technical matters pertaining to the Arctic OCSs. At the first

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<sup>25</sup> The sediments probably flow from three sources: the MacKenzie River, which empties enormous amounts of sediment into the Beaufort Sea from where it spreads outward; erosion from Canada's archipelagic islands; and erosion from the underwater ridges. If it can be shown that the ridges are extensions of the continental landmass, Canada's case would be even stronger, especially with a continuous sediment profile from the Alpha Ridge into Canada Basin.

<sup>26</sup> H. Ruth Jackson and Trine Dahl-Jensen, "Sedimentary and crustal structure from the Ellesmere Island and Greenland continental shelves onto the Lomonosov Ridge, Arctic Ocean". *Geophysical Journal International* 182(1)(2010): 11–35.

meeting, the Russian scientists shared the charts, maps and data of their 2001 submission to the Commission.<sup>27</sup> Since most of the data, charts and analysis contained in a state's submission are confidential, the only way other states may know the details is through consultations with the submitting state. This sharing on the part of Russian scientists exemplifies the high degree of multilateral collaborative in Arctic research and the importance of these meetings.

In 2009 representatives of their foreign ministries also began to attend the meetings. That same year, American scientists were invited to participate as observers, as Canada and the US had by that time begun to collect data together in the western Arctic. In 2010 the numbers were further expanded to include Norwegian officials.<sup>28</sup> Scientists and diplomats from the five Arctic countries shared research findings and discussed common concerns. Representatives from all five countries will again meet this year. In addition to these annual meetings, officials confer about their respective submissions in other venues, such as the workshop on Arctic margins, which is to be convened in Fairbanks, Alaska, in May-June of 2011.

In the *Ilulissat Declaration* of May 2008, Canada, Denmark, Norway, the Russian Federation and the United States pledged to work cooperatively and in accordance with international law in delineating their Arctic OCSs. Cooperation, not conflict, has characterized relations among these countries in the preparation of their respective submissions. Their meetings provide venues for discussing scientific findings as well as for broaching such politically sensitive issues as overlapping maritime boundaries.<sup>29</sup>

While scientists from the Departments of Natural Resources, and Fisheries and Oceans have been collecting and analyzing the scientific data necessary for the submission, the Continental Shelf Division in DFAIT has been examining the legal aspects, monitoring developments salient to the submission, including the actions of other states and developments at UN, and conducting literature reviews in order to understand the knowledge base that will guide the Commission in its deliberations.

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<sup>27</sup> MacDougall and Verhoef, Interview, 2008. In 2001, Russia became the first country to make a submission to the Commission. Its data on the Lomonosov and Mendeleev Ridges were deemed insufficient; hence, Russia is working on a revised submission.

<sup>28</sup> Norway made its submission to the Commission in 2006 and received a positive recommendation in 2009.

<sup>29</sup> There are likely to be at least some overlaps in the OCSs of Arctic countries, although it is too early to specify if and where they will occur. Recent history shows that such disputes are resolved by peaceful means, as evidenced by the settlement of the Canada-US maritime boundary dispute in the Gulf of Maine, the 2010 Russian-Norwegian accord for the Barents Sea, and the renewed commitment on the parts of both the US and Canada to negotiate an end to their dispute in the Beaufort Sea. The degree of cooperation witnessed to date among Arctic countries in the preparations of their respective submissions and the fact that they are now discussing issues related to overlaps, all bode well for future settlements.

Monitoring practice is vital to the ultimate success of Canada's submission. What questions do the commissioners ask? How are data and analysis presented? What trends or themes are emerging in the reviews? What type of data is deemed necessary to substantiate a point? This analysis is rendered all the more difficult both because the issues are diverse and complex and because practice is evolving, which means one is constantly having to adjust to a moving target.

Canada's submission will be comprehensive, including its OCSs on the east coast and in the Arctic. The Atlantic portion of the submission will be written first as all the necessary data are already compiled. Writing the submission is tricky from many points of view. There is the problem of consistency. How Canada and Denmark approach the area north of Greenland and Ellesmere Island must be consistent with how Canada tackles the Atlantic area, the southern portion of which is adjacent to the US and may require some coordination with this southern neighbour. Likewise, the analysis produced for the eastern Arctic must be consistent with that used in the western Arctic. The submission will be a legal document written in English and French. As both versions will have equal weight, it is important to ensure that they convey the same meaning. Government officials want to have a draft submission prepared one year in advance to allow time to put the necessary data and analysis into an internationally-accepted, user-friendly format so that it will be understood even if Canada's submission is not be reviewed for several decades.

Canada and Denmark have established a Joint Task Force to consider what, if any, part(s) of their respective submissions they want to do together. There are several options, including presenting a joint submission for the area north of Greenland and Ellesmere Island, inserting a common chapter in each country's submission, or preparing entirely separate submissions. Likewise, Canadian and American scientists have collected and analyzed data together but this collaboration does not mean that the two countries will do a joint submission for the areas they surveyed together nor does it rule out such a possibility.

Canada appears well posed to make a full and comprehensive submission in 2013. How well is the Commission positioned to review it?

### **Commission on the Limits of the Continental Shelf**

Every five years, State Parties to the LOSC elect the 21 members of the Commission. The commissioners are chosen individually for their expertise in geology, geophysics or hydrography and collectively to ensure due regard for geographic representation. A state that nominates its national expert for membership on the Commission must pay to send that person to attend meetings in New York, which is a deterrent, especially to poor countries. The Commission is an evolving body, whose interaction with State Parties has increased and which has become more transparent over time.<sup>30</sup> The Commission is developing guidelines, procedures and templates for doing the evaluations, which are important for consistency and fairness.

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<sup>30</sup> Since 2005, the executive summaries of its reviews have been posted on the website.

The major problems confronting the Commission are its heavy workload and inadequate resources.<sup>31</sup> The 21 commissioners are divided among three subcommissions, each of which examines one submission at a time. To date, the Commission has received 55 submissions<sup>32</sup>, yet only 11 have been reviewed. If the Commission continues working at its current pace, Canada's submission will not be reviewed for several decades, by which time the software and surveying techniques may well have changed and most of the key government officials will have retired.<sup>33</sup> The issue of workload has been discussed at the annual June meetings of the States Parties<sup>34</sup>, and UN General Assembly resolutions<sup>35</sup> have called for additional resources for the Commission, but little concrete action has been taken to address the problem.

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<sup>31</sup> See Ted McDorman, "The Role of the Commission on the Limits of the Continental Shelf: A Technical Body in a Political World". *International Journal of Marine and Coastal Law*. 17(3)(2002): 301-324.

<sup>32</sup> At their 2008 meeting, the State Parties realized that many countries would not make the 2009 deadline so they agreed that such states could fulfill their obligations under the LOSC by filing preliminary information indicating that they intend to make a submission, the status of the preparatory work, and when they expect to submit. United Nations, Division for Ocean Affairs and the Law of the Sea, 18th Meeting of the State Parties to the *Convention on the Law of the Sea*, "Decision regarding the workload of the Commission on the Limits of the Continental Shelf and the ability of States, particularly developing States, to fulfil the requirements of article 4 of annex II to the United Nations Convention on the Law of the Sea, as well as the decision contained in SPLOS/72, paragraph (a)". SPLOS/183. (New York, June 20, 2008). To date, 45 files of preliminary information have been received.

<sup>33</sup> In 2009 it was estimated that the Cuban submission - the 51st to be received - would not be reviewed until 2030. Commission on the Limits of the Continental Shelf. *Presentation to the Commission on the Limits of the Continental Shelf to the Informal Working Group, Concerning the Workload of the Commission*. New York: Informal Working Group of the MSP, 2010.

<sup>34</sup> See, United Nations, Division of Ocean Affairs and the Law of the Sea. *Issues Related to the Workload of the Commission on the Limits of the Continental Shelf*. (New York, 2011) <[http://www.un.org/Depts/los/clcs\\_new/clcs\\_workload.htm](http://www.un.org/Depts/los/clcs_new/clcs_workload.htm)>; United Nations, Division for Ocean Affairs and the Law of the Sea, 19th Meeting of States Parties to the *Convention on the Law of the Sea*. *Issues Related to the Workload of the Commission on the Limits of the Continental Shelf – Submissions to the Commission and Receipt of Preliminary Information*. SPLOS/INF/22. (New York, May 22, 2009); United Nations, Division for Ocean Affairs and the Law of the Sea, 18th Meeting of States Parties to the *Convention on the Law of the Sea*. *Issues Related to the Workload of the Commission on the Limits of the Continental Shelf – Tentative Dates of Submission*. SPLOS/INF/20. (New York, January 16, 2008).

<sup>35</sup> United Nations, General Assembly, 62nd Session, *Oceans and the Law of the Sea* (A/62/L.27), December 4, 2007, especially par. 39 and 41, pp. 6.

There was no requirement in the LOSC for assessed contributions to pay for the Commission and the question of who should pay for additional resources is contentious. Developed State Parties, which fund over 50% of UN budget, do not want to incur further financial obligations, especially when most are facing serious budgetary restraints domestically. Landlocked states and states whose continental shelves do not extend beyond 200 n.m. do not want to pay for a process that is of no direct benefit to them. In addition to the question of who should pay, there is the question as to whether greater resources, in particular more experts devoting longer periods of time to reviewing the submissions, will significantly improve the Commission's functioning. At present, membership on the Commission is a part-time job as the body meets for some 11 weeks a year.<sup>36</sup> There are enormous anomalies among the members: some are consultants, some are on government payrolls, the rates of remuneration are different depending on the country of origin, some get benefits, while others do not, some are highly competent professionals, while others are less effective, and some states do not provide the funding needed to send a national to Commission meetings. If membership on the Commission became a full-time job, would states be willing to pay the added expenses? Would highly qualified professionals be willing to sit full-time? If those best qualified were not willing to give up their current jobs, would the full-time requirement result in less qualified people being the only ones willing to serve? Hence the problem of inadequate resources to address the horrific backlog of work does involve questions of increased funding but it is more complicated than just asking for more money. The more politically sensitive issue of whether more resources will result in greater efficiency and better quality and quantity of work must be addressed. The issue of resources will again be discussed at the June 2011 meeting of the State Parties. Decisions about membership have to be made because the 2012 elections are fast approaching and states and individual candidates need to know what will be expected of them.

Canada must decide if it will field a candidate in the 2012 election. Commission members are expected to act independently and to be impartial; hence, they are not involved in the review of their own countries' submissions. Nonetheless, there are advantages to having a national on the Commission: the member can have input into the Commission's guidelines, which serve to interpret and build upon the provisions in the LOSC. He/she can also provide useful guidance on Commission procedures and precedents.

Yet there are also disadvantages to Commission membership. A state is expected to pay the costs of its national attending Commission meetings in New York. Sending an expert to New York means one less person to work on the submission. Who, if anyone, can be spared? Is the information gleaned today through membership going to be relevant in several decades when the Commission gets around to reviewing Canada's submission? Then there are the uncertainties about what membership will entail in future.

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<sup>36</sup> The Commission convenes in New York twice a year, meeting in the spring (March/April) and the fall (August/September).

Thus, DFAIT officials are carefully weighing the advantages and disadvantages of nominating a candidate for the 2012 election. What resources would be required? What time commitment would be involved if a Canadian were elected? Is the timing right? Even if they decide to field a candidate, there would be the challenge getting a Canadian elected. Canada is part of the Western Europe and Others category, which has three seats on the Commission and the opportunity to compete, along with Africa and Asia, for a floating seat. Within the Western European and Others group, the competition is stiff as it includes Australia, France, Ireland, New Zealand, Norway, Spain, Portugal, and the UK - all of which have made submissions.

The LOSC includes checks and balances and reflects trade-offs. Coastal states that meet the prescribed geological criteria have OCSs. The Commission provides scientific checks on coastal states' claims, and developed OCS countries have to make payments as compensation for being allowed to extend their jurisdiction beyond 200 n.m. into the common heritage of humanity. Such requirements are outlined in Article 82 of the LOSC.

## Article 82

The provisions in the LOSC pertaining to the OCS represent a compromise, agreed to at the United Nations Third Conference on the Law of the Sea, between OCS states and countries, particularly the members of the Group of 77, that wanted the international seabed to be as large as possible. The international seabed refers to "the sea-bed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction".<sup>37</sup> Its resources are to be developed to benefit humanity as a whole, giving special consideration to the needs and interests of Southern countries<sup>38</sup>. As extensions to the continental shelf erode the size of the international seabed, coastal states are required make monetary payments or contributions in kind to the International Seabed Authority (ISA) in return for being able to develop seabed resources beyond 200 nautical miles.<sup>39</sup> The obligation to make payments or contributions in kind begins in the sixth year of production at a rate of 1% of the value or volume of production from the site. From the seventh to the twelfth year, the rate increases by 1% annually and thereafter it remains at 7%. The ISA collects and distributes the payments and contributions "on the basis of equitable sharing criteria, taking into account the interests and needs of developing States, particularly the least developed and the land-locked among them".<sup>40</sup>

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<sup>37</sup> LOSC, Article 1.1., p. 2.

<sup>38</sup> LOSC, Article 140, p. 43.

<sup>39</sup> LOSC, Article 82, p. 29. The provisions apply primarily to a relatively small number of developed states as paragraph 3 stipulates that a "developing State which is a net importer of a mineral resource produced from its continental shelf is exempt from making such payments or contributions in respect of that mineral resource."

<sup>40</sup> LOSC, Article 82.4, p. 29.

The provisions in Article 82 are imprecise; thus leaving many important questions unanswered.<sup>41</sup> How will payments and contributions in kind be calculated? The coastal state must pay royalties of 7% after the sixth year of production but 7% of what? How is “value” to be assessed, especially for mining operations? How is volume of production to be measured? Who will determine the value or volume of production? Both value and volume fluctuate according to market conditions, economies of scale in production, and technological innovation. Will royalties be recalculated each year to take account of price fluctuations and changes in other relevant factors? If a coastal state chooses to base the royalties on value, must it continue to use this basis of assessment or can it switch in subsequent years to calculations predicated on volume? Can an OCS state select the type of royalty to be paid (i.e., monetary payments or contributions in kind) on an annual basis or must it choose one form and stick with it? Royalties are due annually but does this mean on the basis of a calendar year or a government’s budgetary year?

Canada’s federated political system adds yet another set of questions to an already complicated scenario. Arctic governance involves diverse sets of actors, including the national government, territorial governments, and Aboriginal land claims bodies, all of which have rights and responsibilities pertaining to natural resources. Furthermore, their respective sets of responsibilities are evolving. A process of devolution - whereby the control and administration of lands and resources is being transferred from the federal government to territorial and Aboriginal governments - has been underway for decades in Canada.<sup>42</sup> At present, offshore resources remain under federal jurisdiction. The question remains: where will Canada be in the devolution process by the time commercial production is into its sixth year of operation? Who will benefit from this production and who will pay the royalties? Will the federal government, which is responsible for upholding the country’s obligations under international law, pay or will it pass the costs on to other entities, such as the territorial

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<sup>41</sup> This paper’s discussion of these questions draws heavily on insights from Jacob Verhoef, Richard MacDougall, and Ted McDorman (Law Professor, University of Victoria) as well as from the detailed examination of the challenges posed by Article 82 for both OCS states and the ISA found in *International Seabed Authority, Issues Associated with the Implementation of Article 82 of the United National Convention on the Law of the Sea*. Technical Study No. 4 (Kingston, Jamaica: ISA, 2009). See also, Michael W. Lodge, “The International Seabed Authority and Article 82 of the UN Convention on the Law of the Sea”. *International Journal of Marine and Coastal Law* 21(3)(2006): 323-333; and Cleo Paskal and Michael Lodge, “A Fair Deal on Seabed Wealth: The Promise and Pitfalls of Article 82 on the Outer Continental Shelf”. Chatham House Briefing Paper. (London, February 2009).

<sup>42</sup> The degree to which devolution has taken place and the specific forms it takes vary from territory to territory, as each negotiates separately with the federal government. For a more in depth treatments of these issues, see Frances Abele, Thomas J. Courchene, F. Leslie Seidle, France St-Hilaire (Eds.), *Northern Exposure: Peoples, Powers and Prospects in Canada’s North* (Montreal: Institute for Research on Public Policy, 2009), pp. 345-372.



government(s), Aboriginal governance bodies, and/or private corporations engaged in resource extraction on the OCS? Are decisions about who pays irreversible or can they be altered as circumstances pertaining to a site change?

While extracting resources from the seabed is always challenging and potentially hazardous, as was all too apparent in last year's horrendous oil spill in the Gulf of Mexico, the difficulties and risks are much greater in the Arctic as a result of harsh climatic conditions; short seasons; enormous distances; huge exploration, exploitation, transportation and insurance costs; inadequate infrastructures; and the fragility of the environment. As a general rule, the deeper the water, the more difficult and expensive the extraction, and Arctic waters can be very deep as exemplified by the 3,800 metre deep Canada Basin. Will Article 82's one-size-fits-all approach to OCS development work in the Arctic? Will the initial five year period of grace, during which no royalties are paid, be sufficient to allow operators to recover exploration and start-up costs?

Consistency in the treatment of production from Canada's OCS and its exclusive economic zone is needed. How will Canada ensure that the royalty arrangements it makes with the ISA pertaining to the OCS are consistent with those it has established in its exclusive economic zone, so that production within 200 n.m. is not privileged over that from the OCS? The need for coherent policy becomes all the more important when a Canadian resource project straddles its exclusive economic zone and its OCS. Canadian OCS sites that overlap with the exclusive economic zones or OCSs of other countries or the international seabed raise further challenging questions. Should Canada and its Arctic neighbours adopt common methods for calculating the royalties? Will Canada in any way compensate for the fact that production carried out under the auspices of the ISA will not be subject to royalty payments in contrast to that undertaken on Canada's OCS?

There are also security considerations? What balance should be struck between the ISA's need for details about a production site and the coastal state's need to protect politically, economically and commercially sensitive information? How will the ISA treat confidential information?

In short, it is unclear what exactly Article 82 will mean for a coastal state like Canada both because the provisions in the LOSC are ambiguous and because developing resources on Canada's OCS is not going to be economically viable in the foreseeable future. Canada and other Arctic states face a "Catch 22" dilemma. On one hand, Arctic production beyond 200 n.m. will not occur for decades which makes it extremely difficult - if not impossible - to address questions whose answers depend on having precise, detailed information about exploration and exploitation. This situation encourages the deferral of decision-making until commercial production actually begins. On the other hand, Canadian officials cannot afford to delay in establishing positions apropos Article 82. The Commission has now reviewed 11 submissions so resource exploitation beyond 200 n.m. will soon be a reality. The implementation of Article 82 is regularly raised in meetings of the ISA. Canada needs clear objectives and strategies to participate effectively in these negotiations. Furthermore, its government has

already granted licences to explore for hydrocarbons on the Atlantic OCS. From Canada's point of view, Article 82 must be implemented in ways that meet not only the requirements of operations within its Atlantic OCS but also those of future resource developments on the Arctic OCS.

## **CONCLUSION**

In light of the high degree of ongoing cooperation among Arctic countries, fears about violent conflicts over Arctic resources are unfounded. Canada is well positioned to make a quality submission in 2013. Unfortunately it is unlikely to receive a timely review because of the terrible backlog in the Commission's work. In the meantime, Canadian officials need to continue to work to ensure that the implementation of the LOSC proceeds in ways that further its interests as well as those of the international community, more generally.