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Defining the Outer Limits of the Continental Shelf across the Arctic Basin: The Russian Submission, States' Rights, Boundary Delimitation and Arctic Regional Cooperation

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Abstract
The Russian submission to the Commission on the Limits of the Continental Shelf (CLCS) provides an excellent example of the difficulty faced by Arctic states in relation to their rights and claims as coastal states. The geology and geography of the Arctic submarine environment are complex and poorly understood. Political maritime boundaries for this semi-enclosed sea are incomplete. The agreed boundaries do not take into consideration the full potential of the legal continental shelves. Viewed against continental shelf issues, possible maritime boundary delimitations and the rights of states to engage in regional initiatives, it is apparent that the Russian submission has not prejudiced the rights of other states. Although the two functions are inherently related, the ability to delimit boundaries with adjacent and opposite states remains separate from the process undertaken by the CLCS.

Keywords
Arctic basin; continental shelf; boundary delimitation

Introduction

Continental shelf boundary delimitation between states is a separate process from the establishment of the outer limits of a continental shelf. In some regions, however, such as the Arctic basin, there are issues of overlapping continental shelf entitlements and a lack of delimited boundaries. Given that the process and recommendations of the Commission on the Limits of the

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Continental Shelf (CLCS or the Commission) established under the United Nations Convention on the Law of the Sea (LOSC)[1] are without prejudice to the delimitation of boundaries, submissions can be examined even in areas of overlapping entitlement and unresolved boundaries. The CLCS can verify that entitlement along the shelf does or does not exist according to the provisions of LOSC Article 76. States are still entitled to negotiate boundaries, knowing that any CLCS recommendations received are without prejudice to any subsequent boundary delimitation. As well, defining the outer limits of the continental shelf does not affect the rights of other states to recognize, accept or acquiesce in the outer limits assigned in a submission to the CLCS. Outer limits, based on the recommendations of the CLCS, cannot be invoked against another state when shelf delimitation between states is still under consideration.[2] In these cases, any continental shelf limit will only be finalized with the delimitation of the boundaries between the states.

Delimitation of the outer limits of the Russian Federation will have an impact on the Arctic, set precedents for other Arctic states, yet need not adversely affect the relations between Arctic states. While regional concerns can be drawn into this process, decisions of the CLCS shall not influence the ability of states to interact on a scientific and diplomatic level. Throughout the process, states retain their legal and political responsibility for delimiting boundaries.[3] While the CLCS process does not alter the ability of states to act with regard to boundaries, the LOSC also provides a foundation for governing the Arctic region and collaborating in scientific research. This paper will examine the Arctic basin portion of the Russian Federation's submission, boundary delimitation in the Arctic basin and the interaction among states regarding submissions to the CLCS and scientific knowledge.

Continental Shelf Delimitation Process

Under the LOSC, all coastal states are entitled to a continental shelf extending to 200 nautical miles (nm) from the baseline from which the territorial sea is

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[1] *United Nations Convention on the Law of the Sea 1982* (LOSC), opened for signature 10 December 1982, 21 *ILM* 1261, entered into force 16 November 1994.

[2] Alex G. Oude Elferink and Constance Johnson, 'Outer Limits of the Continental Shelf and "Disputed Areas": State Practice Concerning Article 76(10) of the LOS Convention', (2006) 21(4) *International Journal of Marine and Coastal Law* 461–487, at p. 464.

[3] Ted. D. McDorman, 'The Role of the Commission on the Limits of the Continental Shelf: A Technical Body in a Political World' (2002) 17(3) *International Journal of Marine and Coastal Law* 301–324, at p. 309.

measured.[4] Where the continental margin continues beyond 200 nm as a natural prolongation of the land territory, a coastal state is entitled to an extended shelf.[5] Beyond 200 nm, the outer limit of the shelf is derived through the application of two formulae described in LOSC Article 76(4). From the foot of the slope, the outer limit line must not extend beyond 60 nm or beyond the point where the sediment thickness is less than 1% of the distance measured back to the foot of the slope.[6] As maximum constraints, the outer limit shall not exceed 350 nm from the territorial baseline[7] or 100 nm from the 2500-m isobath,[8] whichever one is further. These formulae and constraint lines are applied in different circumstances, depending on the characteristics of the margin, namely its shape (morphology) and structure (geology). The use of different constraint lines is also at the discretion of the coastal state, allowing it to take full advantage of the features and characteristics of the appurtenant continental margin and shelf. Together, these limit lines establish the outer limit of the continental shelf separating continental seabed from deep ocean floor beyond national jurisdiction. Data supporting the outer limits are submitted to the CLCS for consideration and recommendations.[9] The CLCS examines the merits of each coastal state submission, assessing scientific and technical information pertaining to the outer limits.[10] On the basis of recommendations by the CLCS, the coastal state establishes the outer limits of the continental shelf.[11]

Actions of the Commission follow the provisions of Article 76 and Annex II of the LOSC. The *Scientific and Technical Guidelines of the CLCS*[12] and the *Rules and Procedures of the CLCS*[13] were formulated to assist in the application of the LOSC. In the case of a dispute in the delimitation of the continental shelf between opposite or adjacent states or in other cases of unresolved land or maritime disputes, submissions may be made and considered in accordance

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[4] Part VI, Article 76(1), *LOSC*.
[5] *Ibid.*, Article 76.
[6] *Ibid.*, Article 76(4).
[7] *Ibid.*, Article 76(5).
[8] *Ibid.*
[9] *Ibid.*, Article 76(8).
[10] *Ibid.*
[11] *Ibid.*, Article 76(8) and 76(9).
[12] UN Document CLCS/11 of 13 May 1999; CLCS/11/Add.1 of 03 September 1999; CLCS/11/Corr.1 of 24 February 2000, *Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf*, at: <http://www.un.org/Depts/los/clcs_new/commission_documents.htm#Guidelines> at 13 May 2008.
[13] UN Document CLCS/40 Rev. 1 of 17 April 2008, *Rules and Procedures of the Commission on the Limits of the Continental Shelf*, at: <http://www.un.org/Depts/los/clcs_new/commission_documents.htm#Rules%20of%20Procedure> at 20 April 2008.

with Annex I of the *Rules and Procedures of the CLCS*.[14] The Commission shall be informed of a dispute and assured by the coastal state that its submission will not prejudice matters relating to boundary delimitation.[15] The Commission "shall not consider and qualify a submission" made by any state concerned in a dispute unless prior consent is given by all states that are party to the dispute.[16] A submission may be made for a portion of continental shelf in order not to prejudice questions relating to boundary delimitation[17] and joint or separate submissions requesting the Commission to make recommendations may be made by agreement.[18] Annex I(1) establishes that

> [T]he Commission recognizes that the competence with respect to matters regarding disputes which may arise in connection with the establishment of the outer limits of the continental shelf rests with the States.[19]

Arctic Coastal States

Four of the five coastal states bordering the Arctic Ocean have ratified the LOSC and are able to make CLCS submissions. The Russian Federation ratified the LOSC in 1997 and made a submission in 2001. Norway made a submission in 2006, while Canada and Denmark have until 2013 and 2014, having ratified the LOSC in 2003 and 2004, respectively. The fifth coastal state, the United States, has not acceded to the LOSC and although the US can prepare scientific data for the purposes of defining the outer limits of the continental shelf, the US cannot receive recommendations from the CLCS.[20] It is still unknown whether the US will accede to the LOSC; however, there are statements that suggest an intention to do so.[21] By states maximizing the

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[14] *Ibid.*, Rule 46.
[15] *Ibid.*, Annex I(2).
[16] *Ibid.*, Annex I(5).
[17] *Ibid.*, Annex I(3).
[18] *Ibid.*, Annex I(4).
[19] *Ibid.*, Annex I(1).
[20] Status of the LOSC available at: <http://www.un.org/Depts/los/reference_files/status2008.pdf>, last accessed at 23 June 2008.
[21] President George W. Bush, *President's Statement on Advancing U.S. Interests in the World's Oceans* (15 May 2007) Office of the Press Secretary <http://www.whitehouse.gov/news/releases/2007/05/20070515-2.html> at 23 July 2008; Deputy Secretary U.S. Department of State John D. Negroponte, *Written Testimony Before the Senate Foreign Relations: Accession to the 1982 Law of the Sea Convention and Ratification of the 1994 Agreement Amending Part XI of the Law of the Sea Convention* (27 September 2007), at: <http://www.virginia.edu/colp/pdf/NegroponteTestimony070927.pdf> at 23 July 2008; Michael J. Mattler, 'The Law of the Sea

extent to which the outer limits can be measured, most of the Arctic basin seabed will be allocated to fall under the national jurisdiction of one of the Arctic coastal states. Furthermore, a significant area of overlap will occur in the central Arctic Ocean between Canada, Denmark and the Russian Federation.

Arctic Governance Framework

Unlike the Antarctic, a continent surrounded by ocean, the Arctic Ocean is surrounded by landmasses, for which territorial sovereignty, for the most part,[22] is not under question. An overarching treaty specific only to the Arctic, like that for the Antarctic, has not been created, with the exception of the 1920 *Treaty Concerning the Archipelago of Spitsbergen.*[23] Indeed, Arctic states, like other states around the world, sign on to bilateral or multilateral treaties (such as the LOSC) that help shape sovereign rights and concomitant responsibilities.

The Arctic states have also engaged in regional governance initiatives such as the Arctic Council, the Barents Euro-Arctic Council and the Northern Forum.[24] The Arctic Council is the most prominent mechanism of Arctic

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Convention: A View from the U.S. Senate' in Myron H. Nordquist, John Norton Moore and Alexander S. Skaridov (eds.), *International Energy Policy, the Arctic and the Law of the Sea* (2005), p. 33; Paul L. Kelly, *Statement by Paul L. Kelly Senior Vice President Rowan Companies Ltd. on behalf of the American Petroleum Institute, the International Association of Drilling Contractors and the National Ocean Industries Association* (2003), at: <http://foreign.senate.gov/testimony/2003/KellyTestimony031021.pdf>

[22] For example, there is an ongoing dispute between Canada and Denmark over the sovereignty of Hans Island, a small island located in the Davis Strait. See Christopher Stevenson, 'Hans Off! The Struggle for Hans Island and the Potential Ramifications for International Border Dispute Resolution', (2007) 30(1) *Boston College International and Comparative Law Review* 263–276, at p. 265 for background to the dispute. The question of sovereignty of the Sverdrup Islands, discovered by the Norwegians, now claimed by Canada, has also surfaced from time to time. See Donat Pharand, 'Canada's Arctic Jurisdiction', (1983) 7(3) *Dalhousie Law Journal* 315–342, at p. 316 for background.

[23] *Treaty Concerning the Archipelago of Spitsbergen (Spitsbergen Treaty)* (Paris, 9 February 1920) 41 *UNTS* 2, 2 *LNTS* 7. Concluded and signed originally by Denmark, France, Great Britain, India, Ireland, Italy, Japan, the Netherlands, Norway, Sweden, and the United States. Other states including Australia have also acceded to this treaty. The *Spitsbergen Treaty* awarded sovereignty over the Svalbard archipelago to Norway while other states maintained equal rights to Svalbard resource exploitation and the islands remain demilitarized. Refer to Articles 3 and 9 of the *Spitsbergen Treaty.*

[24] For further discussion on these regional initiatives the reader is directed to, among others, Julia Jabour and Melissa Weber, 'Is it Time to Cut the Gordian Knot of Polar Sovereignty?' (2008) 17(1) *Review of European Community and International Environmental Law (RECIEL)* 27–40; Oran R. Young, 'Governing the Arctic: From Cold War Theater to Mosaic of Cooperation', (2005) 1(1) *Global Governance* 19–15; Timo Koivurova and David VanderZwaag,

cooperation, but does not produce binding measures. Recently, a proposal for an Arctic convention has been raised to potentially consolidate the interests and governance activities of the Arctic states.[25] Following a recent meeting, the five Arctic coastal states declared, in the *Ilulissat Declaration*, that there was no need for the development of an overarching Arctic-specific convention for the Arctic Ocean.[26] The coastal states declared that they will remain committed to the LOSC, which provides a "solid foundation for responsible management" and to the "orderly settlement of any possible overlapping claims".[27]

Arctic Geography

A description of the physiographic provinces in Jakobsson *et al*. (2003) identifies the continental shelf, slope and rise areas, as well as the abyssal plains, through-running ridges, and submarine highlands of the Arctic Ocean.[28] The deep Arctic Ocean is enclosed by the continental borders of Canada, Greenland, Norway, the Russian Federation and the US. From these borders submerged features extend into the central basin, including the Chukchi Plateau (CP) north of Alaska, United States, the Morris Jessup Plateau north of Greenland, and the Yermak Plateau, north of Svalbard.

The central Arctic Ocean Basin is divided into several smaller basins by through-running ridge structures. The Lomonosov Ridge (LR) traverses the Arctic from the New Siberian Islands off the Russian Federation to an area near the tip of Greenland and Ellesmere Island, Canada. This ridge divides the central Arctic basin into the Amerasia Basin and the Eurasia basin. The Eurasia basin consists of the Nansen Basin and the Amundsen Basin which are separated by the Gakkel Ridge (GR), also known as the Arctic Mid Ocean Ridge, an extension of the Mid-Atlantic spreading ridge. The Amerasia Basin consists of the Podvodnikov and Makarov Basins (located next to the LR) and the Canada Basin. The Alpha-Mendeleev Ridge (AM) separates the

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'The Arctic Council at 10 Years: Retrospect and Prospects', (2007) 40(1) *University of British Columbia Law Review* 121–194.

[25] For a recent review of proposals for an Arctic convention see Koivurova and VanderZwaag (2007), *ibid*. See also T. Potts and C. Schofield, 'Current Legal Developments: The Arctic', (2008) 23(1) *International Journal of Marine and Coastal Law* 151–176.

[26] *Ilulissat Declaration* (29 May 2008) , at: <http://www.cop15.dk/NR/rdonlyres/BE00B850-D278-4489-A6BE-6AE230415546/0/ArcticOceanConference.pdf>, on 11 June 2008.

[27] *Ibid*.

[28] Martin Jakobsson et al., 'Physiographic Provinces of the Arctic Ocean Floor' (2003) 115(12) *GSA Bulletin* 1443–1455.

Podvodnikov and Makarov Basins from the Canada Basin. It is the largest ridge feature in the Arctic basin, spanning the basin from the Canadian and Greenland continental margins to the perched rises off the Siberian continental shelf.

Russian Submission

On 20 December 2001, in accordance with LOSC Article 76, the Russian Federation made its initial submission to the CLCS containing the scientific data supporting an extended continental shelf claim encompassing four distinct regions: two regions in the Arctic and two in the northwest Pacific.[29] This submission was made only four years after the Russian Federation's ratification of the LOSC and well within the ten year timeframe established in Article 4 of Annex II.[30] The executive summary of the submission has been posted on the UN Division of Ocean Affairs and the Law of the Sea (DOALOS) website since its receipt, along with several other documents, including *Notes Verbales* from five states.[31]

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[29] Russian Federation, *Executive Summary* (20 December 2001) at: <http://www.un.org/Depts/los/clcs_new/submissions_files/submission_rus.htm> at 14 May 2008.

[30] Article 4 of Annex II, LOSC reads: 'a coastal state … shall submit particulars of such limits to the Commission along with supporting scientific and technical data as soon as possible but in any case within 10 years of the entry into force of this Convention for that State.' A decision by the States Parties in 1999 has effectively extended the timeframe for states that signed LOSC prior to 1999 to 2009, ten years following the 13 May 1999 decision. See SPLOS/72 of 29 May 2001, *Decision Regarding the Date of Commencement of the Ten-Year Period for Making Submissions to the Commission on the Limits of the Continental Shelf set out in Article 4 of Annex II to the United Nations Convention on the Law of the Sea* at: <http://daccessdds.un.org/doc/UNDOC/GEN/N01/387/64/PDF/N0138764.pdf?OpenElement> at 30 April 2008. A further decision in 2008 states that a coastal state may satisfy the ten-year deadline by submitting preliminary information indicative of the outer limits accompanied by an indication of the status of the preparation, and intended date, for a full submission. See SPLOS/183 of 24 June 2008, *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 Convention, as well as decision contained in SPLOS/72, paragraph (a). Advance, unedited text (English only)* at: <http://www.un.org/Depts/los/meeting_states_parties/documents/splos_183e_advance.pdf> at 03 July 2008.

[31] Russian Submission at *supra* n. 29. Documents include a Press Release SEA/1726 dated 21 December 2001, an unofficial English translation of the Executive Summary which consists of geographical coordinates, maps and a page of map captions. Also posted are the *Notes Verbales* submitted by five states: Canada, Denmark, Japan, Norway and the United States, and a Statement made by the Deputy Minister for Natural Resources of the Russian Federation during the presentation of the Russian submission to the Commission. See *infra* n. 51.

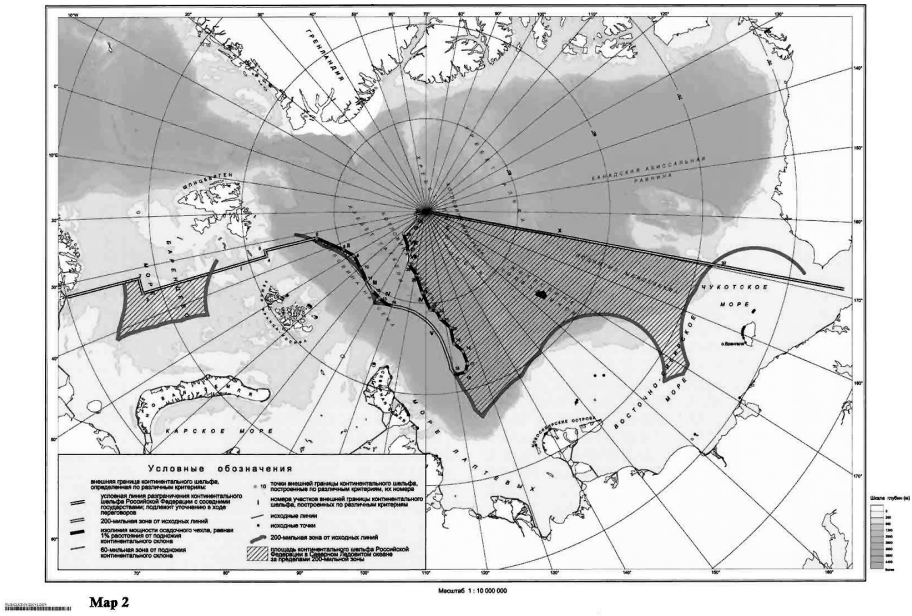

Figure 1. Map pertaining to the 2001 Submission of the Outer Limits of the Continental Shelf for the Russian Federation. Adapted from the Executive Summary of the Russian Federation located on the DOALOS website.[32]

In total the Russian extended continental shelf amounts to 460,000 nm^2 or 1.2 million km^2 (by comparison, Australia's extended shelf is 2.5 million km^2). It will amount to possibly the largest Arctic claim. In the submission, Russia extends the outer limit to the geographical North Pole and far into the central Arctic Ocean Basin along two large features of the Amerasia Basin: the LR and the AM. The outer limits of the submission in the Amerasian Basin combine a *Boundary Agreement*[33] with the US, the sector line extending from the geographical North Pole, and lines measuring 100 nm from the 2500-m isobath along the LR.[34] From the North Pole moving west, the outer limit line combines with the foot-of-slope measurements pertaining to the GR in the Eurasian basin and the outer limits extending north from the western Siberian shelf. Appropriately, in the Eurasian basin the GR is excluded from the submission. In the Barents Sea, the Russian Federation applies the sector principle, consistent with state practice as used in negotiations with Norway (discussed below).

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[32] *Supra* n. 29.

[33] *Agreement between the United States of America and the Union of Soviet Socialist Republics on the maritime boundary*, done at Washington 01 June 1990 (29 ILM 1990, p. 942).

[34] In accordance with Article 76(5) and 76(6), *LOSC*.

The *Notes Verbales* of the five states addressed several different aspects. These include the difficulty of assessing proposed outer limits given the current state of knowledge, problems of overlapping jurisdiction, questionable baselines and differences in the geological interpretation of the central Arctic Ocean.[35] For example, the CP, the AM and the LR are included in the submission on the basis that they are natural prolongations of the Russian continental shelf,[36] but concern was raised by the US over the lack of consensus as to whether the LR and AM complex qualifies as 'natural prolongations of the continental margin'.[37] The US comment addressed this concern directly by providing one interpretation of the geology of the Arctic basin. The US *Note Verbale* describes the AM complex as a "… volcanic feature of oceanic crust that was formed on and only occurs within an area of oceanic crust that underlies the Amerasia Subbasin of the deep Arctic Ocean Basin."[38] Further support is detailed and the US concludes that the AM is not part of any state's continental shelf and cannot be a prolongation of the land-mass of Russia.[39] The US also considers the LR a "freestanding feature in the deep, oceanic part of the Arctic Ocean Basin, and not a natural component of the continental margins of either Russia or any other State".[40]

The LR is understood to be a continental sliver that separated from the continental margin of Scandinavia and northwestern Russia by the sea floor spreading, responsible for propagating the Mid-Atlantic Ridge into the Arctic Ocean.[41] It is the second largest ridge in the Arctic Ocean, described as being more than 1500 km long, rising from water depths of more than 4200 m to less than 700 m.[42] Its appurtenance to the continental margins of Greenland, Denmark and Ellesmere Island on the North American end, as well as the Siberian end, is still subject to some disagreement. It is argued that regardless of the continental origin, at present the LR does not amount to a natural prolongation of either the Russian continental margin or the margins off Greenland or Ellesmere Island. If each of these states, however, extend the

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[35] Ron MacNab and Lindsay Parson, 'Continental Shelf Submissions: The Record to Date', (2006) 21(3) *International Journal of Marine and Coastal Law* 309–322, at p. 311.

[36] *Supra* n. 29.

[37] Representative of the United States of America to the United Nations, *United States of America: Notification regarding the submission made by the Russian Federation to the Commission on the Limits on the Continental Shelf* (2002) at: <http://www.un.org/Depts/los/clcs_new/submissions_files/rus01/CLCS_01_2001_LOS__USAtext.pdf> at July 24 2007.

[38] *Ibid.*

[39] *Ibid.*, at p. 2.

[40] *Ibid.*, at p. 3.

[41] *Supra* n. 28, at p. 1450.

[42] *Ibid.*, at p. 1448.

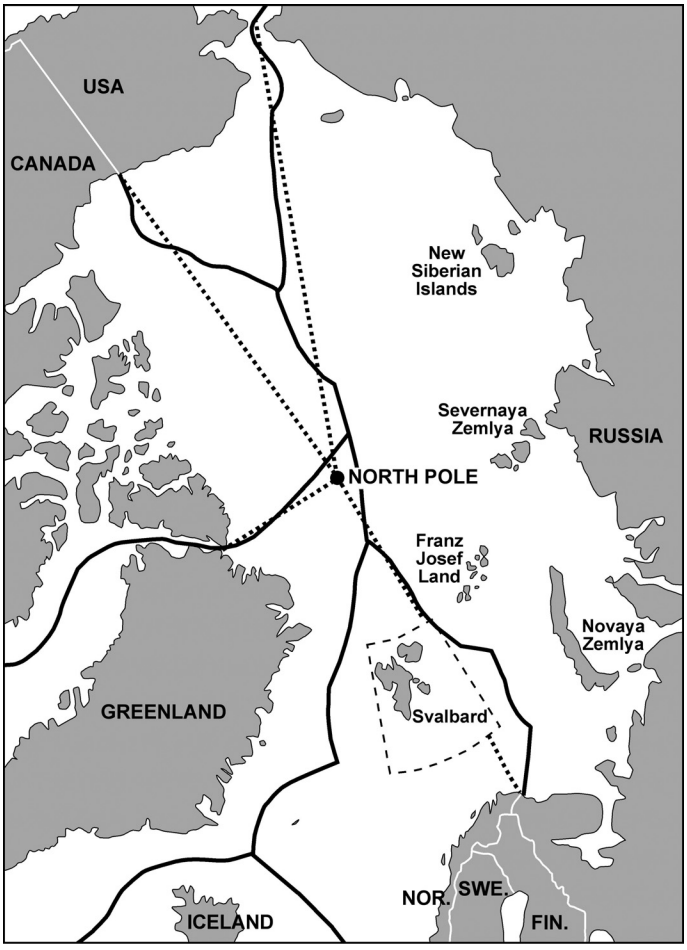

Figure 2. Arctic delimitation possibilities based on equidistance lines or the sector theory from the geographical North Pole, depicting the potential overlap in jurisdiction in the central Arctic. Drawn with reference from Pharand (1983).[43]

outer limits of their continental shelves along this ridge, an area of overlap in jurisdiction in the central Arctic will result (Figure 2).[43]

MacNab *et al*. (2001) describe the Mendeleev and Alpha Ridges as the "extremities of a broad, continuous elevation that links the continental margins of Siberia and North America respectively."[44] Symonds *et al*. (2000)

[43] *Supra* n. 22 (Pharand), at p. 318.

[44] Ron MacNab, Paul Neto and Rob van de Poll, 'Cooperative Preparations for Determining the Outer Limit of the Juridical Continental Shelf in the Arctic Ocean: A Model for Regional Collaboration in Other Parts of the World?' (2001) (Spring) *IBRU Boundary and Security Bulletin* 86–96, at p. 86.

describe the Alpha Ridge as a microcontinent in close proximity to the surrounding continents, the composition of which is often difficult to define, while their origin and method of isolation from major continental landmasses are generally poorly understood.[45] Grantz (2004) states that the AM "was constructed on oceanic crust in the Amerasia Basin" analogous to the origin of the Iceland-Faroe ridge of the North Atlantic, and detached from the surrounding continental margins by an obvious shelf break comprised of deeper oceanic crust.[46] A better understanding of the morphological breaks or bathymetric troughs between the ridge ends and the continental margins is needed to explain the potential morphological breaks.[47] *Notes Verbales* from both Canada and Denmark refer to their inability to agree or disagree with the Russian Federation's Arctic continental shelf submission without further supporting data to analyze.[48] In 2001, neither state had ratified the LOSC nor commenced research towards setting continental shelf limits in the Arctic. Norway, in a *Note Verbale*, consented to the examination of the area representing a maritime dispute between Norway and the Russian Federation in the Barents Sea on the basis of Article 9 of LOSC Annex II, Rule 5 of the CLCS Rules and Procedures concerning maritime disputes, and the inability of the CLCS to prejudice the delimitation of boundaries between states. The full extent of the disputed area occurs landward of the foot of the continental slope in the Barents Sea and within 350 nm of the Norwegian and Russian baselines. This area beyond 200 nm "…may be considered as being part of the continental shelf still to be delimited by the two coastal states concerned without any need for further scientific or technical documentation".[49]

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[45] Philip A. Symonds et al, 'Ridge Issues', in Peter J. Cook and Chris M. Carleton (eds.), *Continental Shelf Limits: The Scientific and Legal Interface* (2000), pp. 285–307, at p. 290.

[46] Arthur Grantz, 'Treatment of Ridges and Borderlands Under Article 76 of the United Nations Convention on the Law of the Sea: the Example of the Arctic Ocean', in Myron H. Nordquist, John Norton Moore and Tomas H. Heidar (eds.), *Legal and Scientific Aspects of Continental Shelf Limits* (2004) 201–214, at pp. 206–207. The US *Note Verbale* also makes a comparison of this ridge to the Iceland-Faroe ridge system in the North Atlantic. See *supra* n. 37.

[47] Ron MacNab, 'Submarine Elevations and Ridges: Wild Cards in the Poker Game of UNCLOS Article 76', (2008) 39(2) *Ocean Development & International Law* 223–234, at p. 226.

[48] Permanent Mission of Canada to the United Nations, *Canada: Notification Regarding the Submission made by the Russian Federation to the Commission on the Limits of the Continental Shelf* (2002) at: <http://www.un.org/Depts/los/clcs_new/submissions_files/rus01/CLCS_01_2001_LOS__CANtext.pdf> at 02 April 2008; Permanent Mission of Denmark to the United Nations, *Denmark: Notification Regarding the Submission made by the Russian Federation to the Commission on the Limits of the Continental Shelf* (2002) at: <http://www.un.org/Depts/los/clcs_new/submissions_files/rus01/CLCS_01_2001_LOS__DNKtext.pdf> at 02 April 2008.

[49] Permanent Mission of Norway to the Secretary-General of the United Nations, *Norway: Notification regarding the submission made by the Russian Federation to the Commission on the*

During the presentation made by the Russian Federation to the CLCS following the receipt of its submission,[50] a statement was made by the Deputy Minister for Natural Resources.[51] The Deputy Minister also responded to the *Notes Verbales*, observing that the responses did not constitute an obstacle to the consideration of the submission.[52]

The subcommission examining the Russian submission did not receive any instructions from the Commission to disregard any of the *Notes*. This differs from the Brazilian case in 2006, when the Commission instructed the subcommission to disregard comments by the US.[53] With respect to both the Russian and Brazilian submissions, the US presented comments regarding submerged features and the application of LOSC Article 76 rather than a delimitation issue or dispute.[54] However, the comment regarding the Russian submission did include reference to the *Boundary Agreement* in place between

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Limits of the Continental Shelf (2002) at: <http://www.un.org/Depts/los/clcs_new/submissions_files/rus01/CLCS_01_2001_LOS__NORtext.pdf> at 09 October 2007.

[50] In accordance with Paragraph 6(3) and 9 of Annex III of the *Rules and Procedures of the CLCS*, a coastal state may make presentations to clarify the contents of the submission. In accordance with Article 5 of Annex II of LOSC, a coastal state may send a representative to the deliberations of the subcommission examining the submission.

[51] UN Document CLCS/31 of 03 April 2002, *Statement made by the Deputy Minister for Natural Resources of the Russian Federation during presentation of the Submission made by the Russian Federation to the Commission, made on 28 March 2002.* Available from the Division of Ocean Affairs and the Law of the Sea (DOALOS) website at: <http://daccessdds.un.org/doc/UNDOC/GEN/N02/318/60/PDF/N0231860.pdf?OpenElement> at 14 May 2008.

[52] *Ibid.*, at p. 4.

[53] UN Document CLCS/42 of 14 September 2004, *Statement by the Chairman of the Commission on the Limits of the Continental Shelf on the progress of the work in the Commission*, at: <http://daccessdds.un.org/doc/UNDOC/GEN/N04/510/12/PDF/N0451012.pdf?OpenElement> at 17 September 2008, para. 17. The Commission noted that both Annex II of the LOSC and the Rules and Procedures of the CLCS provide for only one role to be played by other states in regard to the consideration of the contents of a submission. Only in the case of a dispute between States with opposite or adjacent coasts or in other cases of unresolved land or maritime disputes would the Commission be required to consider communications from states other than the submitting one.

[54] The Deputy Representative of the United States of America to the United Nations, *Diplomatic Note: Notification Regarding the Submission made by Brazil to the Commission on the Limits of the Continental Shelf* (25 August 2004), at: <http://www.un.org/Depts/los/clcs_new/submissions_files/bra04/clcs_02_2004_los_usatext.pdf> at 02 April 2008. This letter highlighted discrepancies between sediment thickness relating to the Victoria-Trindade feature off the coast of Brazil, remarking that differences exist between the sediment thickness as presented in the Brazilian submission and sediment thickness derived from publicly available data. The letter also remarked that the United States doubts whether the feature in question is part of Brazil's continental shelf beyond 200 nm, suggesting the CLCS take a cautious approach.

the US and Russia.[55] Whether the difference in the Commission's decisions reflected the involvement in a boundary dispute is speculative.[56]

Between December 2001 and June 2002, the CLCS considered the Russian submission and made a number of recommendations.[57] The CLCS recommended that upon entry into force of maritime delimitation agreements with the US in the Bering Sea and Norway in the Barents Sea, the Russian Federation shall transmit the charts and coordinates of the delimitation lines to the Commission, as they would represent the outer limits of the continental shelf for the Russian Federation in those Seas.[58] For the central Arctic, a revised submission was recommended.[59] Seven years on, Russia has still not made a revised submission. Work is progressing and there are indications that a submission may be expected in 2010.[60]

Ridge Issues

In light of central Arctic ridge geology, concern over scientific understanding and potential overlap of entitlement that may occur if Canada, Denmark and the Russian Federation maximize their extended continental shelf area along these ridges, consideration of ridge issues related to the application of LOSC Article 76 is warranted. As mentioned, two formulae are used to establish the outer limit lines beyond 200 nm and Article 76(5) sets maximum constraint lines. Article 76(6) further clarifies in which situation the outer limit may extend beyond 350 nm, providing the exception for submarine features that connect to the margin.[61] It reads:

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[55] *Supra* n. 37, at p. 1.

[56] Some indication exists that the timing of the decisions was significant and that the decision made in the Brazilian case was not necessarily helpful to the submission process for Brazil or other states. See generally Edwin Egede, 'Submission of Brazil and Article 76 of the Law of the Sea Convention (LOSC) 1982', (2006) 21(1) *International Journal of Marine and Coastal Law* 33–55.

[57] Paragraphs 38–41 of UN Publication A/57/57/Add.1 of 08 October 2002, *Report of the Secretary-General of the United Nations to the Fifty-seventh Session of the United Nations General Assembly under the agenda item Oceans and the Law of the Sea, New York*, at: <http://daccessdds.un.org/doc/UNDOC/GEN/N02/629/28/PDF/N0262928.pdf?OpenElement> at 14 May 2008.

[58] *Ibid.*, at para. 39.

[59] *Ibid.*

[60] See subsequent section on Arctic collaborative research in this text and *infra* n. 129.

[61] For the history of the negotiations and commentary see Satya. N. Nandan, Shabtai Rosenne and Neal R. Grandy, *United Nations Convention on the Law of the Sea 1982: A Commentary, Volume II* (1995), Martinus Nijhoff Publishers, Dordrecht, at pp. 837–890.

> Notwithstanding the provisions of paragraph 5, on submarine ridges, the outer limit of the continental shelf shall not exceed 350 nautical miles from the baseline from which the breadth of the territorial sea is measured. This paragraph does not apply to submarine elevations that are natural components of the continental margin such as its plateaux, rises, caps, banks and spurs.

Accordingly, the outer limit shall not exceed the 350-nm constraint line along submarine ridges.[62] Where a submarine feature is a natural prolongation of the continental margin, such as a plateau, bank, spur or cap, the outer limit line does not, however, have to be constrained to 350 nm from the territorial baseline.[63] Ridges that are features of the deep seabed, and therefore oceanic, may not be used to extend a continental shelf.[64] How these provisions tie together is not entirely clear. Uncertainty arises in cases where a ridge-like feature demonstrates appurtenance to the continental margin. In such cases, the issue is whether the constraint line has to be 350 nm because it is ridge-like, or whether it can extend to 100 nm from the 2500-m isobath on the basis that it is a natural prolongation of the continental margin. It is not clear which criteria a state should use to establish that the feature is a natural prolongation of the continental margin.

If a submarine ridge is a natural prolongation of the land territory but not a natural component of the continental margin, LOSC Article 76(5) and 76(6) together suggest that the maximum extent of the claim is 350 nm. If a ridge is derived from an oceanic process but has become attached to land territory by plate movement and geomorphological processes, the outer limit along such a ridge would be 350 nm. For submarine ridges that are not oceanic ridges, Article 76(6) may also suggest that a maximum of 350 nm also applies. In this interpretation, all ridges are constrained by 350 nm, a position which can be surmised from the negotiations of the LOSC in 1980. During negotiations of Article 76, Iceland confirmed that the "provision regarding submarine ridges meant that the 350-mile criterion would apply to ridges which were a prolongation of the landmass".[65] The US confirmed that the CP

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[62] Article 76(6), *LOSC*.

[63] *Ibid.*, Article 76(5) and 76(6).

[64] *Ibid.*, Article 76(3) of LOSC states that the continental margin 'does not include the deep ocean floor with its oceanic ridges and subsoil thereof.'

[65] *Supra* n. 61, at p. 870; Philip A. Symonds and Harald Brekke, 'A Scientific Overview of Ridges Related to Article 76 of the UN Convention on the Law of the Sea', in Myron H. Nordquist, John Norton Moore and Tomas H. Heidar (eds.), *Legal and Scientific Aspects of Continental Shelf Limits* (2004), pp. 141–168, at p. 147; and Harald Brekke and Philip A. Symonds, 'The Ridge Provisions of Article 76 of the UN Convention on the Law of the Sea', in Myron H. Nordquist, John Norton Moore and Tomas H. Heidar (eds.), *Legal and Scientific Aspects of the Continental Shelf Limits* (2004), pp. 169–200, at p. 179.

and its component elevations "could not be considered a ridge and were covered by the last sentence of the proposed paragraph" [76(6)].[66] Denmark interpreted submarine elevations to mean those that "belong fundamentally to the same geological structure as the land territory".[67] Oceanic ridges (in the sense of ridges geologically linked to the deep ocean floor with no connection to a continental margin) of the subsoil of the deep ocean floor cannot be included in the continental margin.[68] These ridges accordingly cannot be used to extend the continental shelf beyond 350 nm.[69]

Submarine ridges that are 'natural components of the continental margin' can, however, also meet the criteria applied to submarine elevations through the second sentence of Article 76(6), inasmuch as the morphological ridge-like features are included in the definition of submarine elevations according to common and accepted formal definitions of submarine seafloor.[70] Difficulty may arise in distinguishing between a ridge, rise, and a spur when, for example, spurs and rises are defined as ridges in the International Hydrographic Organization's 'Standardization of Undersea Feature Names'.[71] Along these 'ridges' that are natural components of the continental margin and not geologically tied to the deep ocean floor, the outer limit could extend to 100 nm from the 2500-m isobath. Apparently, either constraint line may apply to submarine ridges depending on the accepted interpretation of the provisions of LOSC Article 76.[72]

~~In 1993, DOALOS compiled a pamphlet on the Definition of the Continental Shelf to assist with the interpretation and application of these provisions.[73] The Commission also released the *Scientific and Technical Guidelines*[74] in 1999 that devote a section entirely to ridges.[75] A number of commentators,~~

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[66] *Supra* n. 61 and *ibid.*, (Symonds and Brekke) at p. 145 and Table 2, at pp. 146–148.
[67] *Ibid.*
[68] *Supra* n. 65 (Brekke and Symonds), at p. 183.
[69] International Legal Association (ILA), 'Committee on the Legal Issues of the Outer Continental Shelf' (2006) Toronto Conference (Second Report) 1–20, Conclusion 3, at p. 5.
[70] *Supra* n. 65 (Brekke and Symonds), at p. 189.
[71] See discussion, *ibid.,* at pp. 148–149 and International Hydrographic Organization, 'Standardization of Undersea Feature Names' (2001) *Bathymetric Publication No. 6*, at 2–25 and 2–28. Also discussed in Victor Prescott and Clive Schofield, *Maritime Political Boundaries of the World* (2nd ed, 2005) Martinus Nijhoff Publishers, Leiden, at pp. 198–199.
[72] For detailed analyses of the 'ridge issues' associated with the application of Article 76 see *supra* n. 45 (Symonds *et al.*) and n. 65 (Symonds and Brekke) and (Brekke and Symonds).
~~[73] *Supra* n. 69.~~
~~[74] *Supra* n. 13.~~
~~[75] Section 7 of the *Scientific and Technical Guidelines of the CLCS.*~~

~~central Arctic basin will occur. This overlap will need to be resolved by the relevant Arctic states.~~

Boundary Delimitations and Continental Margins

Because the Arctic Ocean is semi-enclosed, the coastal states are either adjacent to and/or opposite one another. For the most part, maritime boundaries between these states, including those related to the continental shelf, have not been finalized. Prescott and Schofield (2005) identify nine delimited maritime boundaries in the Arctic region.[90] Most of these do not, however, provide for the delimitation of continental shelf boundaries beyond 200 nm. For example, the boundary between Canada and Greenland was settled in 1973, but does not extend beyond 82°13' N.[91] The exception is the 1990 US-Russia *Boundary Agreement*[92] negotiated between the US and the former Soviet Union on their maritime boundary. This Agreement is still to enter into force; nevertheless, both states apply its terms. The agreed boundary runs along the 168°49'30 West Longitude meridian, with no fixed northern limit. Article 1(1) of the Agreement refers instead to the ability to extend the boundary as far as permitted by international law. Article 1(2) states that "each party shall respect the maritime boundary as limiting the extent of its coastal state jurisdiction otherwise permitted by international law". Thus, coastal state jurisdiction over the continental shelf beyond 200 nm is provided for within the *Boundary Agreement.*

The agreed boundary is derived from the 1867 *Boundary Treaty*[93] (the Convention related to the sale of Alaska to the US). In the *Boundary Treaty*, the meridian line was used as a cartographic device to describe the lands concerned in the matter, not as an agreed state boundary. In 1926, the then Soviet Union issued a decree using the sector principle along this same meridian to enclose territorial lands and islands.[94] Since issuing this decree, the former Soviet Union (now the Russian Federation) has been consistent in its claims over lands and islands within the sector but has never claimed waters beyond national jurisdiction within the sector.[95] In negotiations between Norway and

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[90] *Supra* n. 71 (Prescott and Schofield), at pp. 522–523.
[91] *Ibid.*, at p. 522.
[92] *Supra* n. 33.
[93] *Convention ceding Alaska between Russia and the United States*, 30 March 1867, 134 *CTS* 331, 15 Stat 539. Treaty Series No. 301.
[94] See Leonid Timtchenko, 'The Russian Arctic Sectoral Concept: Past and Present', 50(1) *Arctic* (1997) 29–35, at p. 30 for reproduction of the Soviet Decree. Reproduced from Sobraine Zakonov SSSR (1926) No. 32(203).
[95] *Ibid.*, at p. 34.

the former Soviet Union concerning the continental shelf and economic zones in the Barents Sea (ongoing since 1974), the former Soviet Union (now the Russian Federation) insists on recognition of the sector concept as constituting special circumstances for the region.[96] A similar position was taken in negotiations concerning the Chukchi Sea from 1989, out of which the 1990 *Boundary Agreement* was signed.

In the CLCS submission, the boundary between Canada and Denmark (opposite states), is shown by the Russian Federation as being derived from the same meridian boundary line used in the 1990 *Boundary Agreement* drawn up to the geographical North Pole. The use of the sector concept to bring the line to the North Pole has been consistent state practice of the former Soviet Union, and now the Russian Federation, as a method of enclosing land and island territories.[97] The sector concept was used to enclose sea expanses, but has not been used to lay claim to waters beyond national jurisdiction within the sector.[98] Accordingly, this provides Russia with a provisional outer limit of the continental shelf[99] and will not necessarily represent the boundary between the opposite states such as with Canada and Denmark. In the Barents Sea, Russia also applies the sector principle, maintaining consistency with its negotiating position with Norway (see above). Again, these are the Russian positions and will not necessarily reflect agreed boundaries between states.

Donut Holes

Mapping of the constraint lines available through LOSC Article 76, in the absence of political boundaries, demonstrates that all but two areas of deep ocean floor could potentially be allocated to the respective Arctic states under the LOSC.[100] The first of the two 'donut holes' excluded from the extended continental shelf claims relates to the elongated and meandering area of the GR, circumscribed by a combination of 200-nm, 350-nm and 100-nm segments from the 2500-m isobath lines stretching from the outer limits of Denmark, Norway and Russia.[101] The second is a roughly trapezoidal zone in the Mendeleev Abyssal Plain in the Canada Basin that is circumscribed by both the 350-nm limits and the 2500-m isobath projected seaward by 100 nm, combining the outer limits of Canada, Russia, and the US.[102] The GR area has

[96] *Ibid.*, at p. 32.
[97] *Ibid.*, at p. 34.
[98] *Ibid.*, at p. 32.
[99] *Supra* n. 51, at p. 4.
[100] *Supra* n. 89.
[101] *Supra* n. 44, at p. 92 and Figure 10.
[102] *Ibid.*

been recognized as an oceanic ridge, formed through seafloor spreading in the North Atlantic,[103] while abyssal plains are also not capable of contributing to an extended continental shelf.[104]

The Russian submission was enclosed along the meridian line in the Amerasian basin, rather than extending to the edge of the Mendeleev trapezoidal donut hole. The meridian line favours Russia within 200 nm of the coast, compared to equidistance.[105] However, beyond 200 nm, Russia forfeits 24,600 nm^2 of seabed along the CP in the Canada basin to either the US or Canada.[106] (The US or Canada may be able to include such an area inside the limits of their continental shelf.)[107] In the Eurasian basin, the GR is excluded from the submission, which coincides with the edge of the larger 'donut hole'.

Overlap

Further towards the North Pole there is a discrepancy between the Russian-drawn boundary and where equidistance lines would potentially meet between Canada, Denmark (Greenland) and Russia. The junction of these equidistance lines is in the vicinity of 88°20' N, 155°E on the Russian side of the North Pole, whereas Russia draws its boundary all the way to the Pole. If Canada and Denmark are entitled to seabed in this area along the LR and proceed to the junction of the equidistance lines, rather than just to the North Pole, an overlap of jurisdiction for approximately 22,000 nm^2 may potentially result.[108]

If a geological connection between the LR and the continental margins of the Arctic coastal states cannot be determined, the outer limit along the ridges will be constrained at 350 nm from each coastal state's baseline in accordance with LOSC Article 76(5). Five hundred and twenty nautical miles (520 nm) of ridge beyond the 350-nm constraint lines would not be included in the legal continental shelves of the states and would qualify as seabed beyond national jurisdiction. The continental shelf limits would not meet each other or overlap and boundary negotiations would not be necessary. Seabed of the LR beyond national jurisdiction would be considered part of the 'Area'. Spe-

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[103] *Supra* n. 46 (Grantz), at p. 205.
[104] Article 76(3), *LOSC*.
[105] *Supra* n. 71 (Prescott and Schofield), at p. 523 and p. 527. Depending on the geological structure of the continental margins and the Chukchi Plateau (CP) located in the area east of the sector boundary drawn by Russia, the United States or Canada may be able to include this feature in their extended continental shelf claims.
[106] *Ibid.*, at p. 527.
[107] *Ibid.*
[108] *Ibid.*

cific uses of the Area, including exploitation of the resources of the deep seabed and subsoil, are regulated through Part XI of the LOSC and by the International Seabed Authority.[109]

According to the DOALOS, ridges formed by slivers of continental crust, such as the LR, can be considered as submarine ridges forming a natural component of the continental margin.[110] Because the LR can also be defined by a continuous 2500-m isobath, there is a possibility that the entire ridge may be encapsulated inside the limits of the continental shelves of Canada, Denmark and the Russian Federation.[111] The LR's geological composition could qualify as elements related to natural components of the continental margin. In a symbolic gesture, Russian scientists dropped a flag on the seabed at the North Pole in the northern summer of 2007.[112] These gestures might demonstrate the Russian position of being disinclined to agree to a shift towards equidistance-based boundaries. It is unlikely that formal discussions on this topic will be initiated while the structure of the seabed in the central Arctic is still being investigated.

Submission Rights and Possibilities

Both Canada and Denmark have referred to their inability to agree or disagree with the Russian Federation's Arctic continental shelf submission.[113] By also indicating that an absence of comment does not imply agreement or acquiescence, Canada and Denmark leave open the possibility of overlap occurring.[114] Until there is certainty concerning the overlap, states are not obliged to report a dispute to the Commission in accordance with Annex I of

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[109] *Ibid*. The 'Area' is defined in LOSC as the ocean floor, seabed and subsoil thereof beyond national jurisdiction (Article 1) and is considered to be the common heritage of mankind (Article 136). Part XI of LOSC, and its subsequent Implementing Agreement (1994), establish a regime for exploiting this area and assign the International Seabed Authority to implement the terms of the regime. *Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982* of 28 July 1994, 33 *International Legal Materials* 1309, entered into force 28 July 1996.

[110] *Supra* n. 69.

[111] *Supra* n. 71 (Prescott and Schofield), at p. 528. See *supra* n. 44, at p. 94 where the authors explain that only two sections of the Arctic seabed appear to be exempt from projected jurisdiction: the GR and the Mendeleev Abyssal Plain.

[112] Tom Parfitt, *Russia Plants Flag on North Pole Seabed, The Guardian* (02 August 2007), available at: <http://www.guardian.co.uk/world/2007/aug/02/russia.arctic> at 08 August 2007.

[113] *Supra* n. 48.

[114] *Ibid.*

the Rules of Procedures of the CLCS.[115] However, neither Canada nor Denmark was in a position to deny consideration of the area on the basis of an existing dispute. The consideration of any submission is independent of others. Therefore, Russia's submission does not depend on Canada's or Denmark's. However, there are problems related to leaving a boundary between opposite states open-ended and states may wish to communicate to the CLCS and the Secretary-General of the UN on how issues are being considered.

Tonga, New Zealand and Fiji, for example, had dealt with an overlapping area identified in the 2006 New Zealand submission. The area of overlap concerned the extended continental shelf between Tonga and New Zealand[116] and consultations were undertaken in the spirit of understanding and cooperation to establish provisional arrangements, pending final agreement.[117] The states agreed that, notwithstanding the outcome of the Recommendations made by the CLCS and the outer limit determined by the Government of New Zealand based on those Recommendations, the delimitation of the exclusive economic zone and the continental shelf shall be undertaken by agreement on the basis of international law.[118] The Republic of Fiji commented in a *Note Verbale* that negotiations on the delimitation of the boundary between itself and New Zealand were ongoing and that any recommendations "ought to be without prejudice of *(sic)* future submissions by the Republic of Fiji and of the boundary delimitations."[119] New Zealand assured the CLCS of these initiatives in follow-up correspondence to the UN Secretary-General and the CLCS.[120] Any recommendations from the examination of New Zealand's submission will not override the negotiations between the states.[121]

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[115] Paragraph 2 of Annex I of the *Rules and Procedures of the CLCS* states that, in the case of a dispute, the Commission shall be informed of such a dispute and assured that the submission will not prejudice matters relating to delimitation of boundaries between states.

[116] Government of New Zealand, *New Zealand Submission to the Commission on the Limits of the Continental Shelf pursuant to article 76(8) of the United Nations Convention on the Law of the Sea, Executive Summary* (2006), at: <http://www.un.org/Depts/los/clcs_new/submissions_files/nzl06/nzl_exec_sum.pdf> at September 11 2008.

[117] In accordance with Article 83, *LOSC*.

[118] Permanent Mission of the Kingdom of Tonga to the United Nations, *Diplomatic Note* (08 April 2008), at: <http://www.un.org/Depts/los/clcs_new/submissions_files/nzl06/tonga_e.pdf> at 17 September 2008.

[119] Permanent Representative of the Republic of the Fiji Islands to the United Nations, *Diplomatic Note, at:* (23 June 2006) <http://www.un.org/Depts/los/clcs_new/submissions_files/nzl06/fiji_e.pdf> at 17 September 2008.

[120] Permanent Mission of New Zealand to the United Nations, *Diplomatic Note* (31 July 2008) at: <http://www.un.org/Depts/los/clcs_new/submissions_files/nzl06/nzl_2008_e.pdf> at 17 September 2008.

[121] Recommendations have since been made by the CLCS. A summary of the recommendations is available from the DOALOS website at: <http://www.un.org/Depts/los/clcs_new/

As illustrated in the New Zealand case, boundary negotiations in the central Arctic may be initiated before (or after) Russia makes a revised submission and possibly before Canada and Denmark are due to submit (2013 and 2014, respectively). For the Russian submission, the Commission has no role in recommending that Russia, Canada and Denmark engage in provisional, transitional arrangements; pending final agreement, however, the states are free to consider this option. The *Boundary Agreement* between the US and Russia might be a useful foundation for such arrangements. For example, the boundary line agreed between Canada and Denmark currently ends at 82°13' N.[122] By extending this limit "into the Arctic Ocean as far as permitted under international law", similar to the *Boundary Agreement*, the continental shelf between Canada and Denmark would be delimited out to where the continental shelf areas overlap with those described by Russia. The final delimitation would still be pending until the outcome of the CLCS and final boundary agreements. However, unidirectional extension of an existing boundary is not a necessary solution, or the only option available to the states in order to achieve an equitable solution.

Provisional arrangements with Russia could also employ the wording of the *Boundary Agreement* (consistent with international law) and be based on equidistance lines or the sector theory through special circumstances.[123] Boundary arrangements or final agreements which apply to continental shelf boundaries that occur further than 350 nm from the states' coastline would require geological evidence to prove each state had equal entitlement to extend the shelf beyond 350 nm. Any prior resolution of boundaries related to extended continental shelf claims may still be provisional, pending CLCS consideration. If the scientific data do not support entitlement to extended continental shelf for each of the involved states, the provisionally agreed boundary would need to be altered accordingly. In these cases the states may prefer to enter into boundary negotiations following the receipt of recommendations from the

submissions_files/nzl06/nzl_summary_of_recommendations.pdf>, last accessed at 07 October 2008.

[122] *Supra* n. 71 (Prescott and Schofield), at p. 522.

[123] See Robin R Churchill, 'Claims to Maritime Zones in the Arctic – Law of the Sea Normality or Peculiarity?', in Alex G. Oude Elferink and Donald R Rothwell (eds.), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (2001), pp. 105–124, at pp. 121–122 for a short discussion on the sector application in polar maritime delimitation. A more comprehensive discussion is found in Donat Pharand, *Canada's Arctic Waters in International Law* (1988), at pp. 3, 64 and Chapter 4 (pp. 44–87). See Prescott and Schofield (2005) *supra* n. 71, at Chapter 10 (pp. 215–244) for a comprehensive description of the boundary delimitation process and options.

~~the Russian submission is not dependent on Canada and Denmark, delaying on the basis of a possible overlap is neither worthwhile nor necessary.~~

Collaborative Arctic Research

A key element of developing submissions to the CLCS regarding extended continental shelf area is the need for states to establish appurtenance of submerged features to the continental margin and identify if the features are also natural components of the continental margin. In light of the difficulty and cost of undertaking scientific research in the Arctic,[130] states have engaged in collaborative scientific research expeditions. Canada and Denmark began appurtenance testing of the LR through both independent and joint seismic and bathymetric mapping. The area has also been the focus of two collaborative projects, the LORITA and the LOMROG (see below).

In March–April 2006, the Lomonosov Ridge Test of Appurtenance (LORITA) project began. On-ice bathymetric work was conducted again in April 2007 from the Canadian Forces Station Alert and Canadian scientists joined an International Polar Year (IPY) joint Swedish-Danish expedition to try to fill gaps in the data collection that often occur due to Arctic climatic variables such as ice, fog and sea ice conditions.[131] Joint interpretation and scientific publication of the results of the LORITA project are underway. A workshop attended by scientists from Canada, Denmark and Russia was held in the second half of 2007, and in August 2008, scientists presented results at the International Geological Congress in Norway. Although limited by weather conditions, the scientific results indicate that there is a continuation of sedimentary basins from onshore geology under the bathymetric trough out to the LR and that volcanic structures are responsible for the broadening of the foot of slope.[132] A follow-up workshop on remaining key scientific

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V Poselov et al., 'A Combined Geological and Geophysical Model of the Earth's Crust within the Mendeleev Ridge and its Transition to Adjacent Shelves of the East-Siberian and Chukchi Seas, Based on Results of the "Arctic 2005" Expedition' (Paper presented at the International Geological Congress, Oslo, Norway, 06 to 14 August 2008).

[130] Larry Mayer, Martin Jakobsson and John Hall, 'Challenges of Collecting Law of the Sea Data in the Arctic' in Myron H. Nordquist, John Norton Moore and Alexander S. Skaridov (eds.), *International Energy Policy, the Arctic and the Law of the Sea* (2005) 125–134.

[131] J. Richard MacDougall, Wendell Sanford and Jacob Verhoef, 'Ice and No Ice: The Canadian UNCLOS Bathymetric Mapping Program' (Paper presented at the Canadian Hydrographic Conference and National Surveyors Conference, Victoria, British Columbia, May 2008) 1–13, at pp. 2 and 9.

[132] T. Dahl-Jensen et al., 'Crustal Structure from the Lincoln Sea to the Lomonosov Ridge,

questions occurred in November 2008; however, no meeting material was produced.[133]

The Lomonosov Ridge off Greenland (LOMROG) 2007 project was a Danish/Swedish collaboration using the Swedish Icebreaker *Oden* and the Russian icebreaker *50 Let Pobedy* collecting, *inter alia*, seismic reflection profiles, sediment cores, and gravity measurements from the LR. In addition to Danish/Swedish participants, scientists from Canada, Finland and the United States also took part in the voyage.

The 2001 Russian submission was supported by the findings of seismic and bathymetric investigations carried out by Russian expeditions during the period of 1960 to 1990.[134] In response to the CLCS recommendations, Russia launched an international conference in St. Petersburg, featuring an array of geoscientific topics relevant to the application of LOSC Article 76.[135] Russia also launched several scientific expeditions, including the Arctic-2004, -2005 and -2007 projects, to confirm the existence of a geological link between the Siberian margin and both the LR and AM.[136] In 2007, Russia approached Canada and Denmark for scientific collaboration. Since Canada and Denmark had only just initiated data acquisition, these states had little in the way of new scientific information to provide. However, the above-mentioned workshops were convened.

~~Russian Arctic research projects examined the geological and tectonic linkages between the Mendeleev Ridge and the Siberian continental margin, as well as the history and composition of the LR and AM. The results of two of the Russian Federation expeditions refute any concern over the appurtenance of the LR and AM, confirming the existence of geological links between the ridges and the Siberian shelf.[137] Preliminary results from the Russian Arctic 2005 expedition indicate that a morphological and structural continuity exists~~

Arctic Ocean' (Paper presented at the International Geological Congress, Oslo, Norway, 06 to 14 August 2008).

[133] Christian Marcussen, Senior Advisor, Geophysicist Geological Survey of Denmark and Greenland, Personal Communication, 20 March 2009.

[134] *Supra* n. 51, at p. 1.

[135] See *supra* n. 35, at pp. 311–312.

[136] *Supra* n. 47, at p. 226.

~~[137] *Ibid.*, with reference to both V.D. Kaminsky et al., *Geophysical and Geological Study of the Transition Zone between the Mendeleev Rise and the Adjacent Siberian Shelf: Preliminary Results (Abstract only)* (2005) <Posted on the website of the American Geophysical Union available from http://www.agu.org/cgi-bin/SFgate/SFgate> at 23 May 2008, and V. Poselov, V. Butsenko and V. Glebovsky, 'Preliminary Results of Geophysical and Geological Investigations in the Transition Zone Between the Mendeleev Rise and Adjacent Siberian Shelf', (2006) 87(52) *Eos Trans. AGU. Fall meeting Suppl., Abstract.*~~

between the Mendeleev Rise and the Siberian shelf.[138] Findings were presented in the Fall 2007 meeting between researching states, and at the International Geological Congress in Norway, August 2008.[139] Additional information was discussed at the November 2008 meeting.

Preliminary desktop studies identify the potential for appurtenance of the Alpha Ridge to the Canadian continental margin. Further field studies are required to confirm or reject this assessment. The Alpha Ridge Test of Appurtenance (ARTA) project for the Canadian Continental Shelf Project began on an ice camp offshore in Nansen Sound during March-April 2008. Annual ice camps are scheduled through to 2011.[140] A study conducted from the *USCGC Healy* early in 2005 sought to identify the origin and stratigraphy of the Mendeleev Ridge using seismic reflection and bathymetric data. Results have not been finalized and future studies aim to develop a structural map of the Ridge.[141]

Continued scientific collaboration has contributed to several useful tools, including the recently updated International Bathymetric Chart of the Arctic Ocean (IBCAO) and the Mapping of Arctic Sediment Thickness (MAST) project. MAST was initiated following an international workshop held in 1999 in Znamenkag, Russia.[142] During the course of discussions, it was agreed that creating a database of available marine sediment thickness in the Arctic would be useful for the development of a common understanding of this key factor in the implementation of LOSC Article 76. MAST involved scientists from Canada, Denmark, Norway, Russia and the United States.[143] Known information from all Russian and non-Russian data sets was consolidated. However, by 2005 the project was suspended because new data were not yet

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[138] *Ibid.*, Kaminsky *et al.* (2005).

[139] *Supra* n. 129 and V. Kaminsky et al., 'Current Results of a Geological and Geophysical Study of the Transition Zone Between the Lomonosov Ridge and the Siberian Shelf' (Poster presented at the International Geological Congress, Oslo, Norway, 06 to 14 August 2008).

[140] *Supra* n. 131, at p. 11 and Personal Communication with the lead author, Richard J. MacDougall, Director of the Law of the Sea Project and Fisheries and Oceans' member of the Management Board for Canada's UNCLOS program, 12 June 2008.

[141] D. Dove, B. Coakley and J. Hopper, *Stratigraphy, Structure and Origin; A Geophysical Survey of the Mendeleev Ridge (Abstract only)* (2005) <Posted on the website of the American Geophysical Union available from http://www.agu.org/cgi-bin/SFgate/SFgate?&listenv=table&multiple=1&range=1&directget=1&application=fm06&database=%2Fdata%2Fepubs%2Fwais%2Findexes%2Ffm06%2Ffm06&maxhits=200&="OS53B"> at 23 May 2008.

[142] Stephen Bigras et al., 'MAST: Map of Arctic Sediment Thickness, Meeting of the Working Group' (2005) 1–5, at p. 1. Report provided by Ron MacNab, member of MAST Project Working Group, Personal Communication, 24 July 2008; see also MacNab *et al.* (2000) *supra* n. 44 at p. 90.

[143] *Ibid.*

available from the Western countries and further Russian data were subsequently unable to be released.[144] It was agreed that MAST activity should be maintained so that new data sets anticipated from the ongoing research can be assimilated into the regional map.[145]

Although progress is being made, it appears that the understanding of the Arctic basins and ridges is still far from comprehensive. Nonetheless, scientific collaboration can occur between states with potentially competing continental shelf claims in parallel to the submission process without derogating from the rights of states. The collaborative research with respect to the LR may be discussed in joint fora, such as those occurring between the scientific communities. Collaborative research may also be published jointly. In this manner, one interpretation can be strengthened by the support of two or more states, represented by their academic or government institutions. States may choose to use joint interpretations as further support to a particular issue addressed in their submission, such as appurtenance of a ridge to a continental margin.

While collaboration can occur between the states, the responsibility for interpreting the scientific information ultimately rests with the state preparing the submission. Any disagreement amongst states on the interpretation of the scientific information, as well as its legal application, still does not derogate from a state's right to have a submission considered. Nor does it derogate from a state's ability to inform the Commission of concerns. This was effectively demonstrated by the process undertaken by the Commission with respect to the US comments regarding the Russian and then the Brazilian submission.

Given that submissions are examined on an individual basis and any recommendations of the Commission are without prejudice to the question of the delimitation of boundaries,[146] it is at the discretion of the coastal states to engage in boundary delimitation negotiations and agreements. For the central Arctic, a series of scientific discussions have occurred.[147] However, as of 2008, there has been no formal discussion on delimitation of boundaries between states.

There have also been no requests from Arctic coastal states to have the details of the recommendations pertaining to the Russian submission made publicly available through the UN Secretary-General or the state. Having the Russian recommendations available would undoubtedly assist Arctic and other states in understanding the application of LOSC Article 76. Recommendation sum-

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[144] *Ibid.*, at p. 2.
[145] *Ibid.*, at p. 4.
[146] Article 76(10), *LOSC* and Article 9, Annex II to *LOSC*.
[147] *Supra* n. 131, at p. 11.

maries are now available for some of the submissions, including those by Australia and New Zealand.[148] The Australian submission dealt with a number of ridges in its submission and a precedent for ridges may be identified in the CLCS recommendations. For those summaries not provided yet, such as Russia's, there is no reason that recommendations cannot be made available to states through requests to the state having received the recommendations or to the UN Secretary-General, who serves as a custodian of the recommendations.[149] However, this has yet to occur.

Conclusion

The scientific understanding of Arctic geology and the application of LOSC Article 76 along geological features, including through-running ridges, determine the extent to which continental shelf claims in the central Arctic are possible. Recommendations from the CLCS reflect the adequacy of the scientific data as well as the application of the LOSC. Recommendations shall not prejudice the negotiation of the boundaries between the states. Thus, the resolution of any overlap that may occur in the central Arctic, given the provisions of Article 76, is still at the discretion of the states involved. Boundaries suggested in the Russian submission are inherently provisional, pending the examination of continental shelf entitlement and extent by the Commission, as well as final agreement amongst states involved. Throughout the process of establishing the outer limits of the continental shelf, states retain their rights to negotiate maritime boundaries, enter into provisional arrangements, engage in collaborative scientific efforts, and to act in accordance with other provisions of the LOSC, as well as other treaties and conventions.

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[148] Pursuant to Section V, paragraph 11(3) of Annex III of the Rules and Procedures of the CLCS, Recommendation summaries are available on the DOALOS website along with the submission with which the recommendations are concerned. Summaries shall not contain any information that might be confidential and/or which might violate the proprietary rights of the coastal state.

[149] In accordance with Article 6(3) of Annex II to the LOSC, the CLCS shall submit one copy of the recommendations to the submitting state and one copy to the UN Secretary-General.