Legal Principles of and Application Conditions for Relevant Provisions on the Continental Shelf under the UNCLOS

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Abstract: Apart from affirming the sovereign rights of coastal States over its exclusive economic zone, which stretches from the baseline to 200 nautical miles into the sea, Article 76 of the United Nations Convention on the Law of the Sea (hereinafter referred to as the "Convention") also provides that the continental shelf of a coastal State can be extended for a certain distance beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured in consideration of its topographical and geological conditions, as specified under Article 76. Since the definition of the "continental shelf" is provided as a legal concept under Article 76 of the Convention, therefore it is not only an outcome of the combination of legal factors and political elements, but is also a compromise reached among various political interest groups. However, the complexity lies in the application of the provisions of Article 76, especially those regarding the "ridge", which can be divided into three categories (i.e., ocean ridges, submarine ridges, and submarine elevations) in accordance with Article 76 of the Convention. In the current context where various island States are making attempts to extend their outer continental shelf through tactful interpretation and application of relevant provisions regarding "ridge" under the Convention, it becomes imperative for China to master and correctly apply the provisions of the Convention to safeguard its legal rights and interests. Moreover, in order to be in a favorable position to make corresponding delimitation principles and policies, China must have clarity

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on the delimitation claims of interested island States and their basis of claims to achieve desired delimitation results.

Key Words: Article 76 of the United Nations Convention on the Law of the Sea; Continental shelf; Ridge

According to relevant provisions under Article 76 of the United Nations Convention on the Law of the Sea (hereinafter referred to as the "Convention"), the outer limits of the continental shelf of coastal States may, in light of different topographical and geological conditions of such States, be extend to 350 nautical miles or a longer distance from the baselines from which the breadth of the territorial sea is measured. Such provisions include: "the continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance"; "the continental shelf of a coastal State shall not extend beyond the limits provided for in paragraphs 4 to 6" (i.e. two formula lines and two constraint lines defining the continental shelf beyond 200 nautical miles); and "The continental margin comprises the submerged prolongation of the land mass of the coastal State, and consists of the seabed and subsoil of the shelf, the slope and the rise. It does not include the deep ocean floor with its oceanic ridges or the subsoil thereof."[1]

Moreover, Article 77 and Article 82 of the Convention have provided for the exclusive sovereign rights of a coastal State over its continental shelf for the purpose of exploring it and exploiting its natural resources.[2] However, as deep water area of the outer continental shelf is abundant with mineral resources, such as cobalt-rich crusts, polymetallic nodules, gas hydrates, seafloor hydrothermal sulfide deposits, and associated deep-sea genetic resources on such deposits, great importance has been attached to the submission on the delimitation of the outer continental shelf by coastal States. Following the footsteps of Russia, who was the first coastal State to make its partial submission on the information on the limits of the continental shelf beyond 200 nautical miles from the baselines to the

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1 *United Nations Convention on the Law of the Sea*, Beijing: China Ocean Press, 1992, pp. 39~41.

2 *United Nations Convention on the Law of the Sea*, Beijing: China Ocean Press, 1992, pp. 39~41.

Secretary-General of the United Nations and the Commission on the Limits of the Continental Shelf (CLCS), Brazil, Australia, and Ireland have also officially made their respective submissions.[3] Moreover, in line with Article 4, Annex II of the Convention, such submission should be made within 10 years of the entry into force of the Convention for the State making such submission. As such, both developed and developing States like, Pakistan, Sri Lanka, New Zealand, India, Nigeria, Tonga, the United Kingdom, Myanmar, Guyana and other States have declared that they would make such partial submission on the information on the limits of the continental shelf beyond 200 nautical miles from the baselines before the end of 2009.

Since the definition of "continental shelf" is provided as a legal concept under Article 76 of the Convention, it is not only an outcome resulting from the combination of legal and political factors, but is also a compromise reached among various political interest groups. However, there lies a certain degree of complexity in the actual application of Article 76, especially the provisions relating to "ridge" which also includes its definition, these are the most controversial provisions and consequently the most difficult to implement.[4] In accordance with Article 76 of the Convention, there are four corresponding standards on the establishment of the outer limits of the continental shelf on the three categories of "ridges", which are, ocean ridges, submarine ridges, and submarine elevations. An instance of tactful implementation of the provisions regarding "ridge" can be seen in the partial submission made by Russia on the information on the limits of the continental shelf beyond 200 nautical miles from the baselines in the Arctic Ocean, wherein they attempted to extend their outer continental shelf all the way to the North Pole and if this partial submission were approved, the whole Arctic Ocean would be carved up between States present in such geographical area. Another instance can be seen in the report of June 6, 2003 by Asahi Shimbun where, Japan attempted to, by means of extending the outer limits of its continental shelf and taking advantage of the relevant provisions on the "ridge", acquire sovereignty over several sea areas in the Pacific, including Okinotori Islands (or the "Okinotorishima"), the Kita-Daito Islands (or the "Kitadaitōjima"), the Minami Daitō (or the "Minamidaitōjima"), the Oki Daitō Island (or the "Okidaitōjima"), the Bonin Islands (or the "Ogasawara

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3 Partial Submissions to the Commission by Russia Brazil, Australia, and Ireland, at http://www.un.org/depts/los/clcs_new/clcs_home.htm, 15 July 2005.

4 *Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf* (the Chinese-English Edition) (For Internal Use Only), 2000, pp. 51~53. (in Chinese)

Islands"), the Marcus Island (or the "Minami-Tori-shima"), and the Hachijō-jima, which added to a total area of 650,000 square kilometers, that is 1.7 times the total territorial area of Japan.

In addition, Australia, Iceland, New Zealand and other island States are all actively trying to extend their outer continental shelf using the relevant provisions on the "ridge". Therefore, it becomes imperative for China to master and correctly apply the provisions of the Convention to safeguard its legal rights and interests. In an effort to meet this urgent need of China, this article makes a detailed discussion of the principles on and approaches to the resolution of relevant issues relating to the "ridge" through the mindful application of Article 76 and relevant provisions of the Scientific and Technical Guidelines of the CLCS.

I. The Definition of the Continental Shelf

Relevant provisions elaborating the definition of the continental shelf under Article 76 of the Convention include:

Paragraph 1: "The continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance."

Paragraph 2: "The continental shelf of a coastal State shall not extend beyond the limits provided for in paragraphs 4 to 6.", i.e., the two formula lines and two constraint lines defining the outer limits of the continental shelf provided for under paragraph 4. i

Paragraph 3 (the constitution of the continental margin): "The continental margin comprises the submerged prolongation of the land mass of the coastal State, and consists of the seabed and subsoil of the shelf, the slope and the rise. It does not include the deep ocean floor with its oceanic ridges or the subsoil thereof. "

It should be noted that continental shelf is defined as a juridical concept and not as a scientific concept under the Convention, Article 76. The continental shelf under the Convention is equivalent to the concept of continental margin (or edge), which comprises of the continental shelf, slope, and rise, in the scientific sense (See Fig. 1).

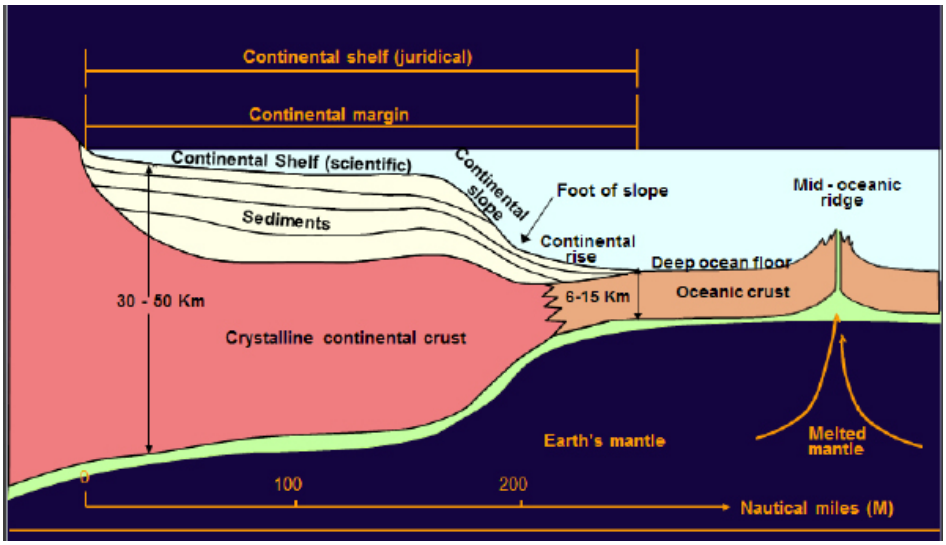

Fig. 1 The Continental Shelf - Juridical vs Scientific Concept
(Harald Brekke, CLCS member)

Paragraph 4 (formula lines):

(a) the coastal State shall establish the outer edge of the continental margin wherever the margin extends beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, by either (see Figure 2): (i) a line delineated in accordance with paragraph 7 by reference to the outermost fixed points at each of which the thickness of sedimentary rocks is at least 1 per cent of the shortest distance from such point to the foot of the continental slope (the Gardiner formula or Irish formula) or (ii) a line delineated in accordance with paragraph 7 by reference to fixed points not more than 60 nautical miles from the foot of the continental slope (the Hedberg formula).

(b) (the definition of the foot of the continental slope): In the absence of evidence to the contrary, the foot of the continental slope shall be determined as the point of maximum change in the gradient at its base." The definition of the foot of the continental slope provided for under Article 76 (4)(b) has put forward the second set of standards for the determination of the foot of the continental slope, i.e., the topographical and structural standards, in compliance of which the foot of the continental slope shall be determined at the point of maximum change in the gradient at its base.

Paragraph 5 (constraint lines): "The fixed points comprising the line of the outer limits of the continental shelf on the seabed, drawn in accordance with

paragraph 4 (a)(i) and (ii), either shall not exceed 350 nautical miles from the baselines from which the breadth of the territorial sea is measured or shall not exceed 100 nautical miles from the 2,500 metre isobath, which is a line connecting the depth of 2,500 metres."

Paragraph 6 (issues relating to the ridge): "Notwithstanding the provisions of paragraph 5, on submarine ridges, the outer limit of the continental shelf shall not exceed 350 nautical miles from the baselines 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."

Paragraph 7 (the rule on the delineation of outer limits): "The coastal State shall delineate the outer limits of its continental shelf, where that shelf extends beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, by straight lines not exceeding 60 nautical miles in length, connecting fixed points, defined by coordinates of latitude and longitude." (See Fig. 2)

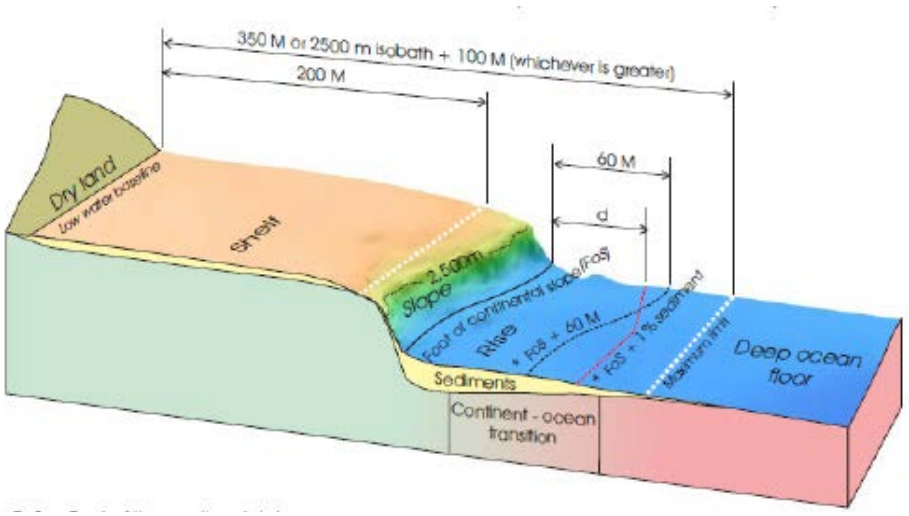

Fig. 2 Extended Continental Shelf (UNCLOS Article 76)[5]

Paragraph 8 (the rule on the application for outer limits): "Information on the limits of the continental shelf beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured shall be submitted by the coastal

5 New Zealand Continental Shelf Project Scientific Advisory Group, New Zealand's Continental Shelf and UNCLOS Article 76, 2003, p. 7.

State to the Commission on the Limits of the Continental Shelf set up under Annex II on the basis of equitable geographical representation. The Commission shall make 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."

II. The Role of Relevant Provisions on the "Ridge" in the Delimitation of the Outer Limits of the Continental Shelf beyond 200 Nautical Miles from Baselines

A. Relevant Provisions under Article 76 of Convention Relating to the Ridge

Paragraph 3: "The continental margin comprises the submerged prolongation of the land mass of the coastal State, and consists of the seabed and subsoil of the shelf, the slope and the rise. It does not include the deep ocean floor with its oceanic ridges or the subsoil thereof."

Paragraph 6: "Notwithstanding the provisions of paragraph 5, on submarine ridges, the outer limit of the continental shelf shall not exceed 350 nautical miles from the baselines from which the breadth of the territorial sea is measured."

In accordance with Article 76 of Convention, ridges can be divided into three categories, namely, ocean ridges, submarine ridges, and submarine elevations. An oceanic ridge is "a long elevation of the deep ocean floor with either irregular or smooth topography and steep sides"; a submarine ridge is "an elongated elevation of the sea floor, with either irregular or relatively smooth topography and steep sides.";[6] submarine elevations include all submarine geomorphies located on a continental margin over which the depth of water is relatively shallow but excludes submarine elevations that are natural components of the continental margin, such as its plateaux, rises, caps, banks and spurs.

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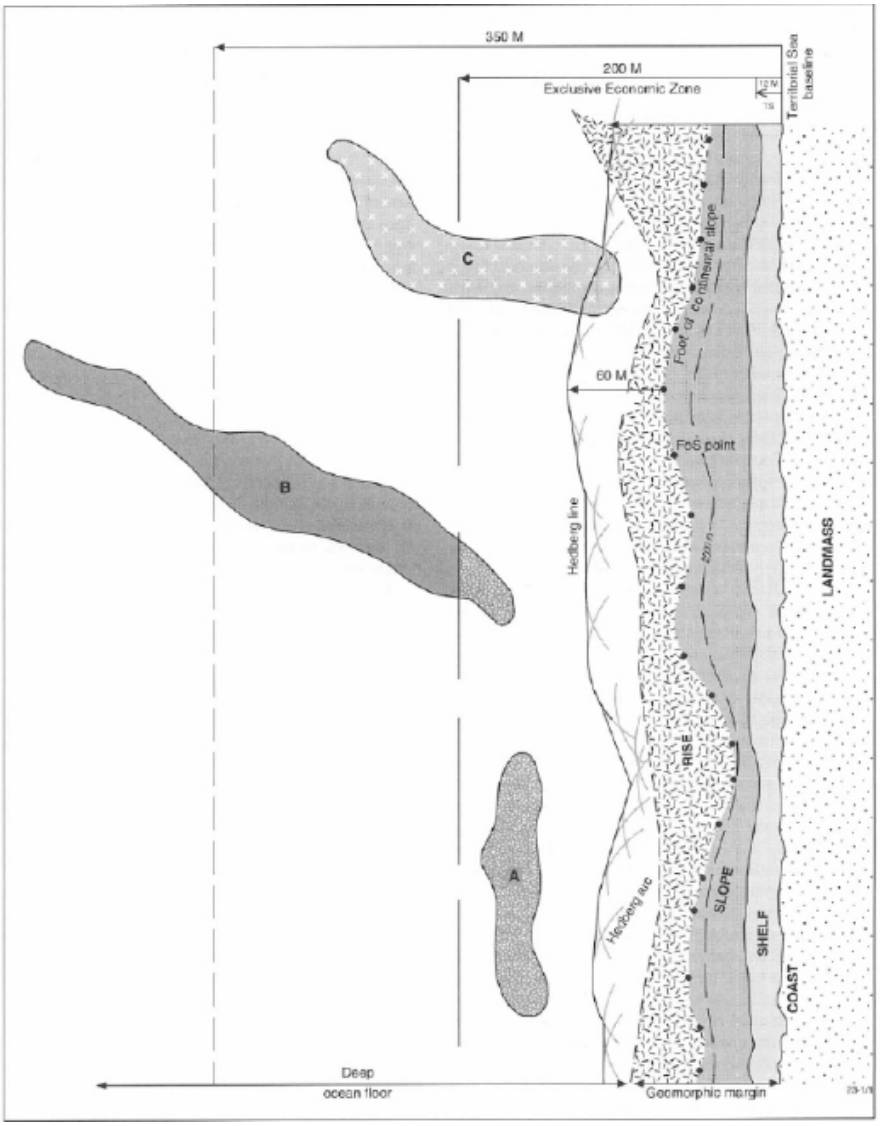
6 International Hydrographic Organization, A Manual on Technical Aspects of the United Nations Convention on the Law of the Sea - 1982, at http://www.iho.int/iho_pubs/CB/C-51_Ed4-EN.pdf, 15 July 2005.


350 M
200 M
Exclusive Economic Zone
Territorial Sea baseline
C
Foot of Continental slope
60 M
B
FoS point
Hedberg line
LANDMASS
RISE
A
Hedberg arc
SLOPE
SHELF
COAST
Deep
ocean floor
Geomorphic margin

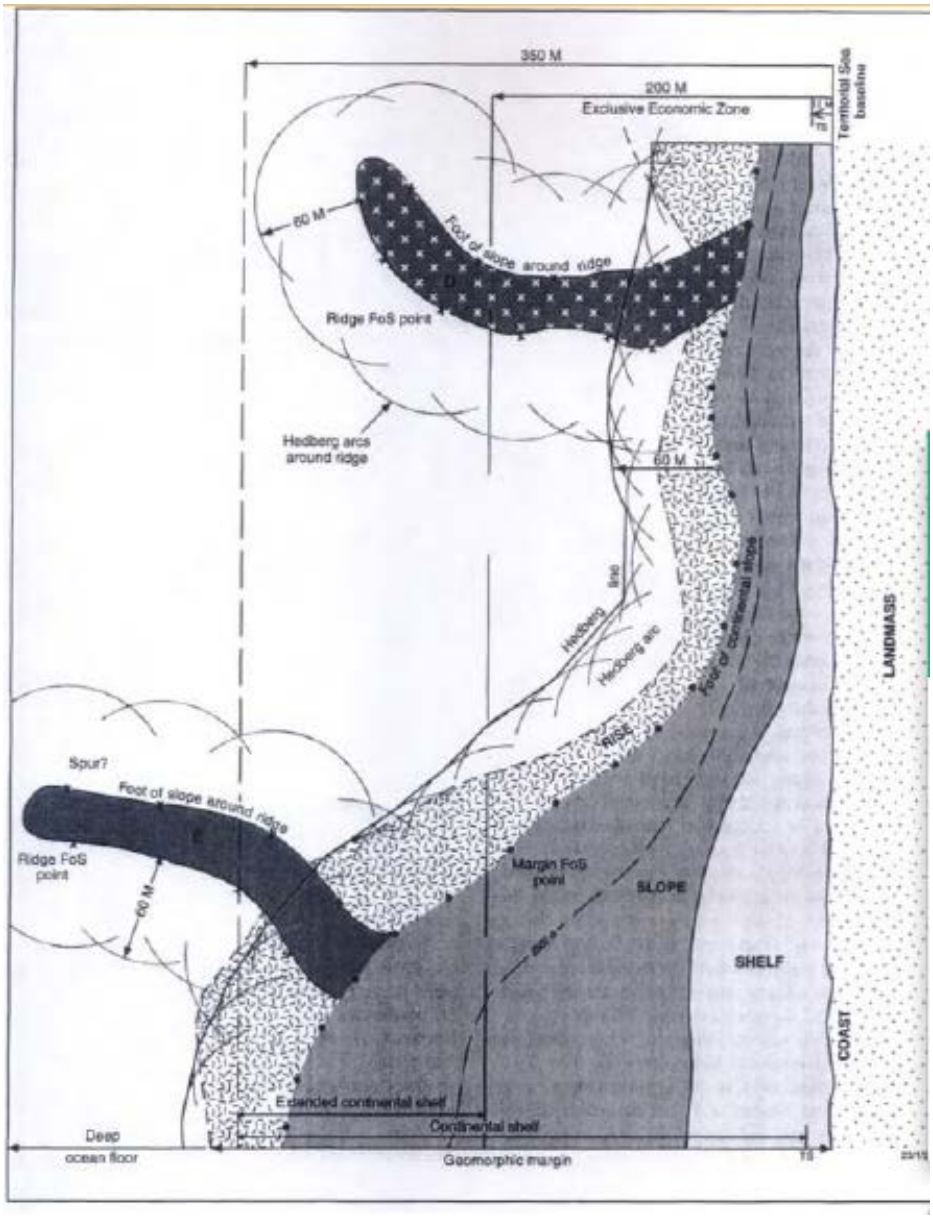


Fig. 3 Conceptual Diagram Showing the Article 76 Interpretation of Various Types of Submarine Ridges and Elevations with Respect to the Legal and Geomorphic Margin[7]

7 P. J. Cook & Chris Carleton eds., translated by International Cooperation Department under the State Oceanic Administration of P.R.C, *Continental Shelf Limits: The Scientific and Legal Interface (For Internal Use Only)*, 2003, p. 317. (in Chinese)

In line with Article 76, paragraph 3 of the Convention, the continental margin does not include the deep ocean floor with its oceanic ridges or the subsoil thereof. Besides this, paragraph 6 provides for the establishment of the outermost limits of the continental shelf on each of the three categories of ridges, namely, ocean ridges, submarine ridges, and submarine elevations:

a. on oceanic ridges, the outer limit of the continental shelf shall not exceed 200 nautical miles from the baselines from which the breadth of the territorial sea is measured (Article 76, paragraph 3);

b. on submarine ridges, the outer limit of the continental shelf shall not exceed 350 nautical miles from the baselines from which the breadth of the territorial sea is measured (Article 76, paragraph 6);

c. on submarine elevations, the outer limit of the continental shelf shall not exceed 100 nautical miles from the 2,500 metre isobath, which is a line connecting the depth of 2,500 metres (Article 76, paragraph 6).

In line with Article 76(1) and Article 77 of the Convention, a coastal State has sovereignty over the seabed and subsoil of the submarine areas which may include the deep ocean floor, any oceanic ridges, or ridges within 200 nautical miles from the territorial baseline, the same has been illustrated by Oceanic Ridge A and B in Figure 3. In accordance with Article 76(4)(a)(ii) of the Convention, though the two ridges in this example are located outside the edge of the continental rise and the outer edge of the continental margin, and both extend to the deep ocean floor, a part of ridge A and B which is lying within 200 nautical miles from the baseline constitutes a portion of the continental shelf of its adjacent coastal State.

Article 76, paragraph 3 of the Convention, defines the term “continental margin” as, the outer limits of the continental shelf on oceanic ridges which, are restricted within 200 nautical miles from the territorial baselines, and has topographical features of the ocean but cannot be included as part of the continental margin. In the view of marine scientists, the mid-oceanic ridges (such as the Atlantic mid-oceanic ridges) located usually close to the center of the ocean basins, can be easily distinguished in general from the shelf, the slope and the rise, which have distinct features of the continental margin.

As pointed out by the Division for Ocean Affairs and the Law of the Sea

(DOALOS) of the United Nations Office of Legal Affairs,[8] the ridge provisions were introduced into Article 76 in part to limit the extension of their continental shelf claims along rides to the middle of the ocean. For example, if ridges are not part of the natural prolongation, restrictions can also be imposed on coastal States' claims to extend their continental shelf substantially from the continental margin to ridges beyond 200 nautical miles from their territorial baseline. However, as per Article 76, paragraph 4(a) of the Convention (the sediment thickness formula, also called the Gardiner formula or Irish formula), when a ridge is located at the outer edge of the natural prolongation, a controversy may arise with regard to the ridge being a part of the continental margin "in the legal sense". An interesting case can be seen with regard to ridge C in Figure 3, which is located outside the continental rise, but within the outer edge of the continental margin established in compliance with the Hedberg formula. Therefore, in such a case, supporters can raise an objection that this ridge can be deemed to be a part of the continental margin in the legal sense and that, the continental margin can be extended to the constraint lines beyond 200 nautical miles in line with paragraph 5 of Article 76. However, such extensions have been disapproved in accordance with Article 76, paragraph 3 of the Convention, which excludes oceanic ridges from the natural prolongation due to the fact that deep ocean floor does not constitute a part of the continental margin. It therefore appears that oceanic ridges beyond 200 nautical miles cannot be deemed as a constitutive part of the continental shelf.

Relevant provisions regarding ocean ridge are most likely to cause controversies: the ocean ridge is a unique topography on the deep ocean floor while submarine ridge is one of the constitutive parts of the continental margin. In the topographical perspective, there will be no such controversy. However, the controversy that exists is, whether the continental margin "in the scientific sense" is related to the continental margin "in the legal sense"? For instance, there may be a controversy in theory as to whether the prominent part of submarine elevation D in Figure 3 be deemed as a constitutive part of the continental margin. As per the optional practice, topographies which have genetic relationship with the ocean, such as mid-oceanic ridges, are deemed to be a constitutive part of the continental margin or the natural prolongation of the land mass of the coastal State. If it has no

8 Division of Ocean Affairs and Law of the Sea, The Law of the Sea, Definition of the Continental Shelf, An Examination of the Relevant Provisions of the United Nations Convention on the Law of the Sea, United Nations Publication Sales No. E. 93.V. 16, United Nations, New York, 1993, pp. 280~284.

topographical basis, then the controversy may exist with respect to that part of the ridge which is a constitutive part of the continental margin "in the scientific sense". According to some experts, the mid-oceanic ridges underneath island land masses can be deemed as the natural prolongation of the island only if they share similar rock formation and are formed by the same geological processes. In other words, these experts propose that mid-oceanic ridges can be deemed as submarine ridges and therefore the continental shelf can be extended to a maximum distance of 350 nautical miles in line with Article 76, paragraph 6 of the Convention. However, there is another group who fiercely defends their view that mid-oceanic ridges should not be confused with continental shelf. Is a claim a reasonable addition to an area of existing extended continental shelf (e.g., feature E in Figure 3), or is it an excessive extension beyond 200 nautical miles (feature D in Figure 3). According to the current basic geological interpretation, an oceanic ridge is composed of oceanic crusts. However, McKelvey in his interpretation of the UNCLOS Article 76 has emphasized on the proposition that, an oceanic ridge is with a continental rather than oceanic crustal composition.[9] When referring to the relevant discussion on ridges, the DOALOS supported the view by adding that "geologists consider that, although not specified in the Convention, the continental margin is composed of continental crust and overlying sediments, primarily of terrestrial origin, and does not include oceanic crust".[10]

In line with the Scientific and Technical Guidelines of the CLCS, ridges under the sea may be formed by several geological processes, including: (a) ridges formed by the seafloor-spreading and associated volcanic-magmatic processes (mid-oceanic ridges); (b) ridges formed along transform faults and created as an inherent part of the seafloor-spreading process; (c) ridges formed by later tectonic activity resulting in uplift of oceanic crust; (d) ridges formed by volcanic activity related to the movements of crust over a hot spot. These ridges are commonly composed of coalescing volcanic features or seamounts and generally occur on oceanic crust; (e) ridges formed by interaction of oceanic crustal plates; (f) ridges formed by regional

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9 Vincent E. McKelvey, Interpretation of UNCLOS III Definition of the Continental Shelf, In D. M. Johnston and N. G. Letalik eds., *The Law of the Sea and Ocean Industry, New Opportunities and Restraints*, *Proceedings of the 16th Convention of the Law of the Sea Institute*, Honolulu, 1982, pp. 465~472.

10 Division of Ocean Affairs and Law of the Sea, The Law of the Sea, Definition of the Continental Shelf, An Examination of the Relevant Provisions of the United Nations Convention on the Law of the Sea, United Nations Publication Sales No. E. 93.V. 16, United Nations, New York, 1993, pp. 465~472.

excessive volcanism related to plumes of anomalously hot mantle; (g) ridges associated with active plate boundaries and the formation of island arc system; (h) ridges formed by rifting (extensions and thinning) of continental crust. It is generally believed that, ridges formed by the first five geological processes fall into the category of oceanic ridges while the last three into the category of submarine ridges.[11]

B. Historical Review of the Formation of Relevant Provisions on Ridges

One of the important tasks of the Third United Nations Conference on the Law of the Sea was to seek to coordinate the various interests of the coastal States and also define "continental shelf" in the legal sense. In defining the term "continental shelf", due consideration should be given to the relationship between submarine elevations (including ridges) and the shelf area. Due to various reasons, some issues relating to submarine ridges and oceanic ridges caused great controversies. These issues were as follows:

1. Whether States located above the ridges be excluded from the ownership of the right to extend the continental shelf to a distance beyond 200 nautical miles in a bid to interpret Article 76;

2. Whether more, less, or equal weight should be given to isobaths (which reflect the geomorphology), as compared to geology, when considering the issues relating to the rights over the continental shelf beyond 200 nautical miles, including issues with respect to the extension of the continental shelf along ridges;

3. Whether it is possible to apply the quoted definition of continental shelf as a natural prolongation of the natural territory to the outer edge of the continental margin under Article 76 to islands sitting on top of oceanic ridges;

4. whether Article 76 can be construed as the approval of coastal States' claims that, the continental shelf can leapfrog the outer edge of the continental margin and be extended all the way to adjacent mid-oceanic ridges;

5. Whether restrictions should be imposed under Article 76 on the application of provisions regarding ridges, so that it becomes impossible for coastal States to extend the outer limits of their continental shelves for no reason.

Therefore, at the 8th Session of the Third United Nations Conference on the

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11 *Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf* (the Chinese-English Edition) (For Internal Use Only), 2000, pp. 51~53.

Law of the Sea, "submarine ridge" became an important topic, and a Negotiating Group 6 (NG6) was setup for its careful consideration. In opposition to the provision that continental margin does not include the "its oceanic ridges or the subsoil thereof", the former Soviet Union put forward its question: what should be the outermost limits of the continental shelf on submarine ridges in cases where submarine ridges were deemed as part of the natural prolongation of the land territories of coastal States? They also proposed that the outer limit of the continental shelf on underwater ridges should not exceed 350 nautical miles from the territorial baselines.[12] In other proposals, an attempt was made to define "submarine ridge" as "long and narrow submarine elevations". Japan proposed that the continental margin should "exclude the deep ocean floor and ridges composed of oceanic crusts". As for States with broad continental shelves, they proposed that the continental margin should include submarine elevations but exclude ridges on the deep ocean floor. As proposed by Australia, plateaux, rises, caps, banks and spurs, as examples of submarine elevations, should be included as a component of the continental margin. An even more peculiar proposal was raised by the former Soviet Union that the continental margin should exclude the deep ocean floor and ridges on it, seamounts, flat-topped seamounts, and any other submarine elevations which were not located on the continental margin. Denmark had made a supplement to the concept of natural prolongation by sharing its view that, due to the "same geological structure of land territory, submarine elevations are a natural component of the continental margin". Iceland proposed that, the outer limits of the continental shelf on ridges relating to the natural prolongation of land mass of a coastal State "shall not exceed 350 nautical miles from its territorial baseline either". The United States showed its support over the comprehensive proposal and was of the view that "Plateau Chukchi located in northern Alaska and its constitutive submarine elevations cannot be deemed as ridges", the contents of which have been incorporated into the last sentence of Article 76, paragraph 6 of the Convention: "This paragraph does not apply to submarine elevations that are natural components of the continental margin, such as its plateaux, rises, caps,

12 Satya N. Nandan and Shabtai Rosenne eds., *United Nations Convention on the Law of the Sea Commentary*, Vol. 2., Dordrecht/ Boston/London: Martinus Nijhoff Publishers, 1995, pp. 852~864.

banks and spurs."[13] As regards to relevant issues relating to submarine ridges, Article 76, paragraph 3 and 6 of the Convention had been drafted on the basis of a holistic incorporation of views of all interested parties made before the Chairman of the NG6.

From a historical review of the formation of relevant conceptions on the "ridge" under Article 76, we can come to the following conclusions: (a) Distinctions have been made between the concepts of "oceanic ridge", "submarine ridge", and "submarine elevation" under Article 76. In line with Article 76, paragraph 3, an "oceanic ridge", which is formed by the interaction of oceanic crustal plates, is not a constitutive part of the continental margin in the legal sense and that, the outer limit of the continental shelf on oceanic ridges shall not exceed 200 nautical miles from the territorial baseline. (b) No reference has been made to the concept of "oceanic crust" or that of "continental crust" under Article 76 of the Convention.

As can be seen from the historical review of their formation in earlier paragraphs, relevant provisions on the "ridge" are an outcome of a political compromise between the efforts of geological and legal experts from those coastal States who had a vital interest to extend their respective continental shelf to the utmost distance. The real intention behind these complex provisions on the "ridge" is reflected in the submissions of Russia, Brazil, and Australia to the United Nations and the CLCS on the information on the limits of the continental shelf beyond 200 nautical miles from the baselines. And one would be surprised to learn about the enormous role of relevant provisions on "ridge" in the determination of the outer limits of the continental shelf beyond 200 nautical miles from the territorial baseline.

C. The Complexity in the Practice of Extending the Outer Limit of the Continental Shelf by Applying Relevant Provisions on the "Ridge"

Relevant issues relating to the "ridge" should be considered in compliance of not only Article 76 but also Article 121 of the Convention concerning island. The issues that arise are: Is there any difference between the legal status of island States and that of island land masses under the Convention? Are island territories

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13 Satya N. Nandan and Shabtai Rosenne eds., *United Nations Convention on the Law of the Sea Commentary*, Vol. 2., Dordrecht/ Boston/London: Martinus Nijhoff Publishers, 1995, pp. 852~864.

treated in the same way as land territories in the determination of the outer limits of the continental shelf beyond 200 nautical miles? The crux to all such issues is the question, whether there is legal basis for the extension of the outer limits of the continental shelf of an island? Article 121 ("Regime of islands") of the Convention is an article specifically designed to define the legal status of islands:

Article 121(1): "An island is a naturally formed area of land, surrounded by water, which is above water at high tide."

Article 121(2): "Except as provided for in paragraph 3, the territorial sea, the contiguous zone, the exclusive economic zone and the continental shelf of an island are determined in accordance with the provisions of this Convention applicable to other land territory."

Article 121(3): "Rocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone or continental shelf."

As provided by the above provisions, excepting those rocks which cannot sustain human habitation or economic life, an island shall enjoy the same rights and be subject to the same restriction as other land territory. Therefore, when the relevant requirements provided under Article 76 of the Convention are said to have been met, the outer limits of the continental shelf of an island or an island State can also be extended beyond 200 nautical miles from the territorial baseline. However, the restrictions on the extension of the outer limits of the continental shelf of an island should be more than that of a land territory due to the different geographic and geomorphic conditions of an island. Moreover, extending the continental shelves of coastal States would mean that more and more seabed resources would be subject to the sovereign rights of coastal States, and consequently the international seabed area, i.e. "the common heritage of mankind", would become smaller.

As most islands and island States on deep-sea basins are lying on the emerging part of bathybic ridges above the sea level, its submerged part tends to stretch far into the sea, the best example of this is Iceland - an island State lying on the mid-Atlantic ridge, which stretches northward all the way to the Arctic Ocean while stretching southward to the South Pole. If there were no restriction on the right of island States or islands concerning the extension of the outer limits of the continental shelf, there would be unimaginable consequences. Therefore, extremely complicated provisions and restrictions have been created under the Convention regarding the "ridge", which are nonetheless very difficult to apply in actual practice.

The most discussed but still controversial case of the Walvis Ridge in the southern Atlantic Ocean off the coast of Namibia in southwest Africa needs specific attention here.

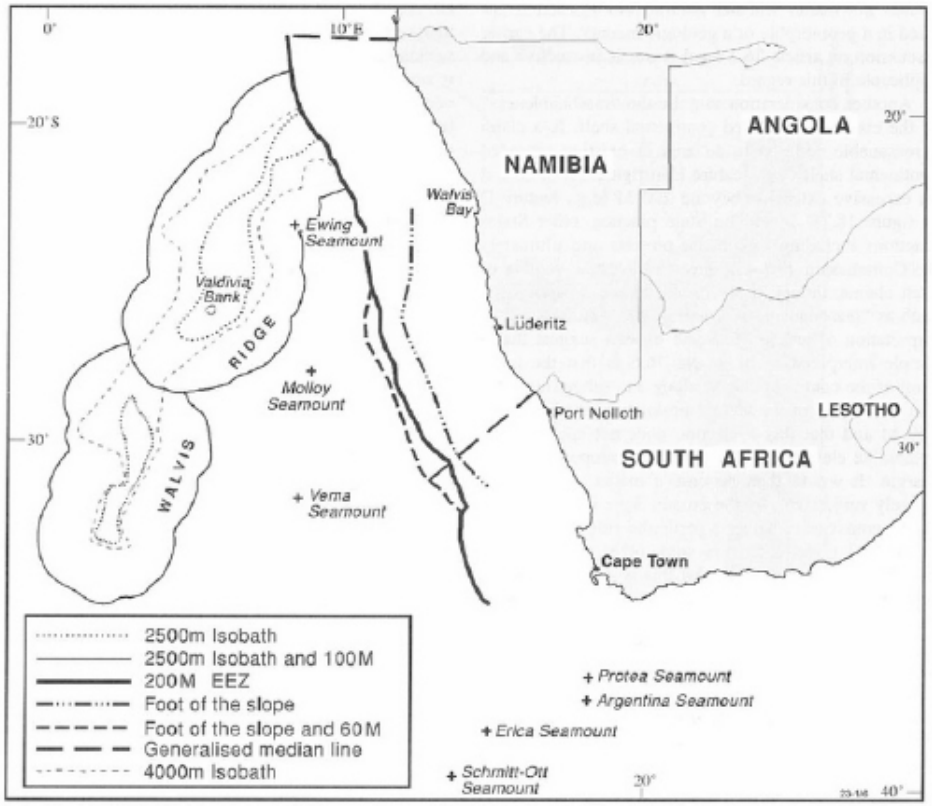

Fig. 4 The Bathymetry and Seabed Boundary Situation in the Walvis Ridge Area

The Walvis Ridge was formed during a period of active hot spot magmatism during the early opening of the South Atlantic about 80~100 million years ago (mid-to late Cretaceous). The ridges broke apart and separated from the continental margin of Brazil during the later stage of sea floor spreading. The Walvis Ridge stretches from a continental flood basalt province on the adjacent African continent to a hot spot ridge composed of alkali basalt suites typical of oceanic volcanic islands in the ocean basin.[14] What adds to the complexity and difficulty in the determination of the nature of the ridge and the outermost limit of the continental

14 James P. Kennett, *Marine Geology*, Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1982, pp. 157~159, 168~170, 192~193, 669~674.

shelf on the ridge are the tectonic movements and evolution in its geological history, i.e., the oceanic ridges which were originally located in the middle of the ocean were then either pushed to the continental margin or subsided beneath the continental crust. Geomorphologically, the ridge has become a protrusion of the natural prolongation which extends about 780 nautical miles beyond the 200 nautical miles exclusive economic zone off Namibia. To make matters worse, the Walvis Ridge is outlined by the 2500 metre isobath and is composed of several closures of such isobaths. In accordance with Article 76, if the Walvis Ridge is deemed as a submarine ridge, the outer limits of the continental shelf on the ridge shall not exceed 350 nautical miles from the territorial baseline; whereas if it is deemed as spurs or other natural component of the continental margin,[15] the outer limits of the continental shelf on the ridge shall not exceed 100 nautical miles from the 2,500 metre isobath and can be extended along the ridge to the constraint line beyond the outer limits of its exclusive economic zone; however, if it is deemed as an oceanic ridge, which is not a constitutive part of the continental margin, the outer limits of the continental shelf on the ridge shall not exceed 200 nautical miles from the territorial baseline.

The application of Article 76 of the Convention and the determination of the outer limits of the continental shelf beyond 200 nautical miles are the most complex and controversial issues. A typical example in this regard is Russia's partial submission on the information on the limits of the continental shelf beyond 200 nautical miles from the baseline in the Arctic Ocean, in which Russia attempted to extend its continental shelf in the Arctic Ocean all the way to the North Pole by tactful application of relevant provisions on the "ridge". In other words, Russia attempted to extend its continental shelf in the Arctic Ocean to the maximum degree in the hope that, the ridge can be deemed as a submarine elevation and the same being a natural component of the continental margin would mean that the provisions with respect to submarine elevations under Article 76 would not apply. To this end, Russia has been giving scientific evidences that the two major ridges (the Lomonosov Ridge and the Mendeleyev Ridge) in the Arctic Ocean comprise of continental crusts, which affirms that the two ridges should be deemed as natural component of the continental margin. Therefore the outer limit of the continental

15 Victor Prescott, National Rights to Hydrocarbon Resources of the Continental Margin beyond 200 Nautical Miles, In Gerald H. Blake, Martin A. Pratt, and Clive H. Schofield eds., *Boundaries and Energy: Problems and Prospects*, The Hague: Kluwer Law International, 1998, pp. 51~82.

shelf can be extended, in line with relevant provisions, all the way to the North Pole. Apart from Russia, Japan, the United States, Australia, New Zealand, Iceland and other island States are also seeking to establish the outer limits of their respective continental shelf beyond 200 nautical miles through flexible and mindful application of the relevant provisions concerning the "ridge".

III. Conclusion

Since the concept of "continental shelf" is provided in the legal sense under Article 76 of the Convention, it is not only an outcome of a combination of legal factors and political elements, but also a compromise among various political interest groups. It is therefore inevitable for controversies to exist in the actual implementation of the definition of and relevant provisions on the "ridge". In a bid to help in the delineation of the outer limits of China's continental shelf beyond 200 nautical miles from its baseline, and help China secure its due share in the upcoming round of international "blue enclosure movement", the academic community of the law of the sea in China should master and strengthen its studies on the legal basis, principles, conditions and application of Article 76 of the Convention. In order to achieve the most desirable delimitation results, a close eye needs to be kept on the claims of interested island States and regions concerning the delineation of the outer limits of the continental shelf, so that China can be aware of the delimitation principles being adopted and the basis of these claims. Such knowledge will keep China more prepared about the corresponding principles and policies and help to avoid political issues such as sovereignty disputes arising out of insufficient information.

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