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Classification of Seafloor Highs according to UNCLOS article 76

How the practice of the CLCS on seafloor highs relates to UNCLOS article 76 interpreted in accordance with articles 31 and 32 of the Vienna Convention on the Law of Treaties.

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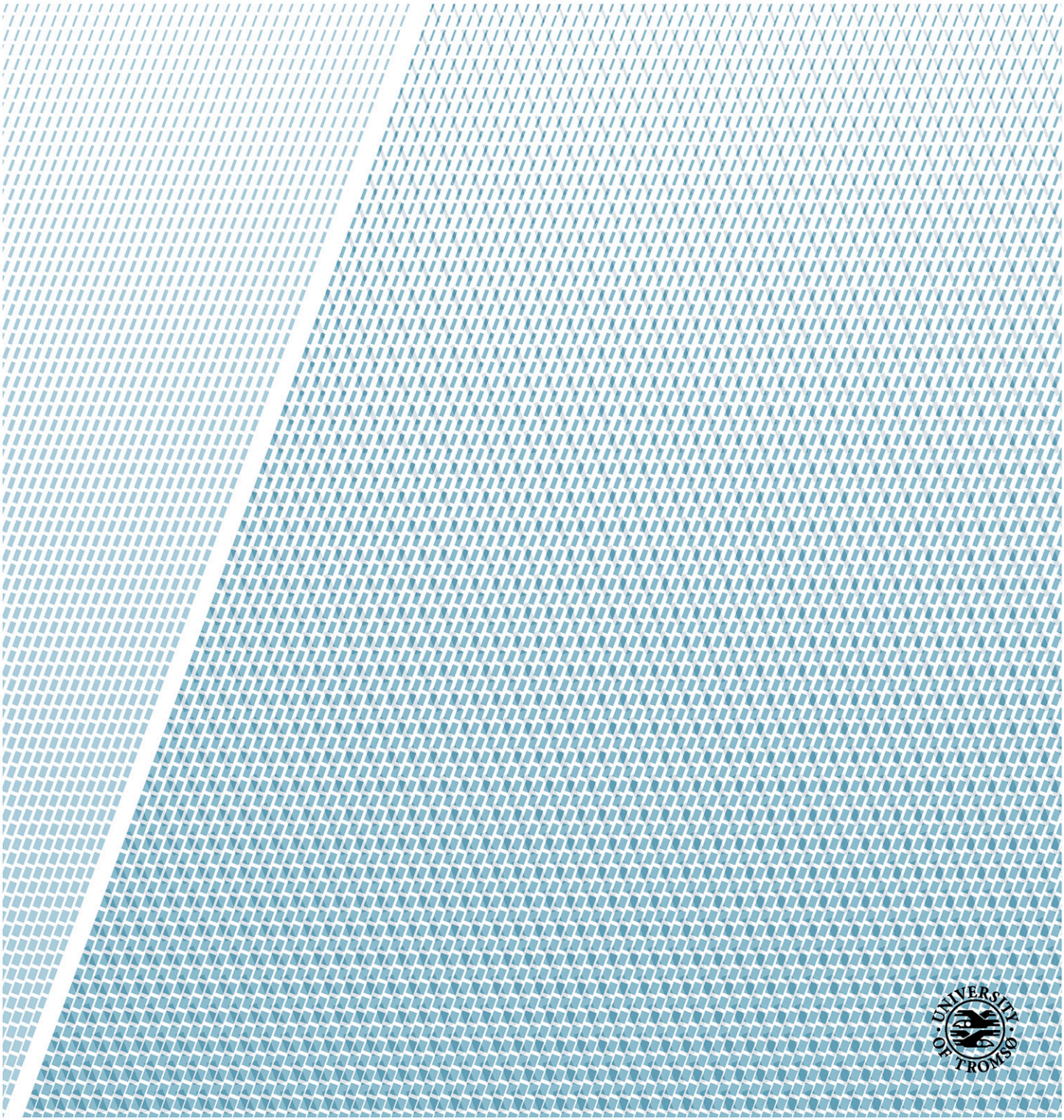

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Acronyms

Cf. – Confer

CLCS – The Commission on the Limits of the Continental Shelf

DOALOS - Division for Ocean Affairs and the Law of the Sea (United Nations)

Nm – Nautical Miles

M – Nautical Miles (used by the Commission)

O.L.A – Office of Legal Affairs

S&T Guidelines – Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf

STG – Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf

UN – United Nations

UNCLOS – United Nations Convention on the Law of the Sea

Introduction

The subject and objective of the thesis

The subject of this thesis is the classification of seafloor highs under article 76 (3) and (6) of the United Nations Convention on the Law of the Sea ("UNCLOS", "the Convention" or "Law of the Sea").

Article 76 (3) and (6), of the United Nations Convention on the Law of the Sea reads as follows:

> **Article 76 Definition of the continental shelf**
>
> "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."
>
> "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. 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."

Article 76 of the Law of the Sea regulates the definition of the legal continental shelf and the process by which coastal States may determine the outer limits of said shelf. The legal continental shelf as defined by article 76 of the Law of the Sea does not coincide with the continental shelf as defined by science. The concept of the "legal continental shelf" is constructed for the purpose of the Law of the Sea Convention, and is the result of the comprehensive negotiations of the United Nations Third Conference on the Law of the Sea, which occurred between 1973 and 1982.[1]

Article 76 refers to three different categories of seafloor highs, each with a unique consequence for the outer limit of the legal continental shelf. There are the oceanic ridges of

[1] Codification Division, Office of Legal Affairs. "Third United Nations Conference on the Law of the Sea, 1973-1982". *United Nations Diplomatic Conferences.* (2009) URL: http://legal.un.org/diplomaticconferences/lawofthesea-1982/lawofthesea-1982.html

the deep ocean floor, as defined in paragraph 3; submarine ridges of paragraph 6; and submarine elevations that are natural components of the continental margin, also defined by paragraph 6.

In accordance with article 76 (1), the legal continental shelf extend to either a limit of 200 nautical miles, or where the natural prolongation of the land mass extends beyond this point to the outer edge of the continental margin. The first seafloor high category, *oceanic ridges of the deep ocean floor*, is not considered as being part of the continental margin, cf. article 76 (3). As a consequence, when a seafloor high is classified in this category, the continental shelf of said high is limited "to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured", cf. article 76 (1). The other two categories, *submarine ridges* and *submarine elevations*, are both considered as being part of the legal continental margin, cf. article 76 (3). They are however subject to different constraint criteria in article 76 (6).

A seafloor high classified as a submarine ridge, will have an absolute outer limit of 350 nautical miles from the baselines from which the breadth of the territorial sea is measured (the "distance constraint"), cf. article 76 (6). On the other hand, a seafloor high classified as a *submarine elevation,* allows the coastal State to establish the outer limits of the legal continental shelf by using the depth constraint rule of article 76 (5). This states that the outer limit "shall not exceed 100 nautical miles from the 2,500 metre isobath, which is a line connecting the depth of 2,500 metres". This implies that where these conditions are met, the legal continental shelf may extend far beyond 350 nautical miles from baselines from which the breadth of the territorial sea is measured along a *submarine elevation*.

When a coastal State wishes to establish the outer limits of its legal continental shelf, it is required, by the Law of the Sea article 76 (8), to do so based on the recommendations of the Commission on the Limits of the Continental Shelf ("the Commission" or "CLCS"). The Commission was established alongside article 76 and the Law of the Sea.

The purpose of the Commission is "to facilitate the implementation of the United Nations Convention on the Law of the Sea (the Convention) in respect of the establishment of the

outer limits of the continental shelf beyond 200 nautical miles (M) from the baselines from which the breadth of the territorial sea is measured".[2]

The Commission consist of 21 members who are experts in geology, geophysics or hydrography, cf. UNCLOS Annex II article 2 (1). These members are tasked with interpreting the coastal States submissions *in accordance with the legal regime* established in article 76 of the Convention, cf. UNCLOS Annex II article 3 (1) (a).

The objective of this master thesis is to examine *how the practice of the CLCS on seafloor highs relates to UNCLOS article 76 interpreted in accordance with articles 31 and 32 of the Vienna Convention on the Law of Treaties.*

The goal is to determine whether or not the Commissions recommendations with regards to seafloor highs are in accordance with the legal interpretation of article 76, under the provisions on treaty interpretation in the Law of Treaties. The thesis will also give a presentation on the process of the Commission in dealing with seafloor highs and whether it is consistent or not.

Relevance

The coastal State has sovereign rights for the purpose of exploring and exploiting the natural resources of their continental shelf, cf. UNCLOS article 77 (1), and as such it is in any States' self interest to establish as large a legal continental shelf as possible. Therefore, where the natural prolongation of the continental margin is extended by a seafloor high, the classification of this feature, by the CLCS, will be of great importance. Despite this fact, the Law of the Sea gives very little guidance on how the different seafloor high categories should be defined and what distinguishes one from the other. As such the seafloor high question has been referred to as "(…) one of the most difficult issues to be dealt with in delineating the outer limits of the continental shelf (…)".[3]

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[2] Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs. "Commission on the Limits of the Continental Shelf (CLCS) Purpose, functions and sessions". United Nations. (2012) URL: http://www.un.org/depts/los/clcs_new/commission_purpose.htm. First paragraph

[3] Gao, Jianjun. "The Seafloor High Issue in Article 76 of the LOS Convention: Some Views from the Perspective of Legal Interpretation." Ocean Development & International Law. (2012) p.121

The outer limit of the continental shelves of coastal States in the Arctic Ocean is currently in question, and exemplifies the importance of the seafloor high question. As opposed to the South Pole which lies on the Antarctic continent, the North Pole is not part of any land mass. The South Pole is subject to the Antarctic Treaty, which reserves the area for scientific purposes and bans all military activity on the continent,[4] whereas no similar international agreement has been made with regards to the North Pole. The North Pole area is perpetually covered in ice and is to be regarded as part of the Arctic Ocean.[5] As such the only international treaty with the power to regulate international affairs in terms of sovereignty in this area, is the Law of the Sea.

Underwater ridges such as the Lomonosov Ridge, the Alpha Ridge, the Gakkel Ridge and the Mendeleev Ridge divide the Arctic seafloor into different basins.[6] The classification of these seafloor highs will determine the sovereignty in the Arctic Ocean, and possibly which Arctic State will hold sovereignty over the North Pole. Currently there are three Arctic States in the process of proving to the CLCS that one or more of these ridges are the natural prolongation of their land territory, cf. article 76 (1), and more than likely that they also classify as submarine elevations. These are Canada, Denmark and the Russian Federation. Together their collective claims could theoretically cover almost the entire Arctic Ocean.

As much as it is in every States self interest to establish as large a continental shelf as possible, one can argue that this is more so the case in the Arctic Ocean. Not only because of the vast resources that expected to be found in the area, but also because of the prestige connected with the North Pole.

The Russian Federation was the very first coastal State to make a submission to the CLCS. In its 2001 submission the Russians claimed that the *Lomonosov ridge* is a component of the

[4] Secretariat of the Antarctic Treaty. *The Antarctic Treaty* (2011). URL: http://www.ats.aq/e/ats.htm article 1 and 2.

[5] Wikipedia. *North Pole.* (2015). URL: http://en.wikipedia.org/wiki/North_Pole third paragraph.

[6] Wikipedia. *Arctic Ocean.* (2015). URL: http://en.wikipedia.org/wiki/Arctic_Ocean#Underwater_features

continental margin[7] and therefore claimed a continental shelf beyond 350 nautical miles, as far north as the Pole.[8]

The Lomonosov Ridge is a 1,800 km long submarine high that spans to/from the New Siberian Islands across the middle of the ocean, north towards a point near the North Pole and south to Ellesmere Island on the continental shelf of North America.[9] The Commission neither confirmed nor denied that the Lomonosov Ridge could be classified as a part of the continental margin; instead they recommended that the Russian Federation should make a revised submission "(…) in respect of its extended continental shelf in that area based on the findings contained in the recommendations".[10] The Russian Federation has recently stated that the revised submission will be made to the CLCS in the spring of 2015.[11]

The Kingdom of Denmark made its submission with regards to the Arctic Ocean on 15 December 2014, where they claimed that the "Lomonosov Ridge is both morphologically and geologically an integral part of the Northern Continental Margin of Greenland".[12] In their submission the outer limit of the continental shelf reaches as far as the 200 nautical mile line of the Russian Federation.[13] As this submission was made very recently the CLCS has not yet made any recommendation on the matter.

Canada has made a partial submission to the CLCS, but has as of yet not submitted their claim for the continental shelf in the Arctic Ocean.[14] Canada has submitted preliminary information concerning the outer limits of the continental shelf in the Arctic Ocean where it is

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[7] The Commission on the Limits of the Continental Shelf. "CLCS/31 Statement made by the Deputy Minister for Natural Resources of the Russian Federation on 28 March 2002". *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission*. United Nations. (2002) p.5, second-to-last paragraph

[8] DOALOS O.L.A. "Area of the continental shelf of the Russian Federation in the Arctic Ocean beyond 200-nautical-mile zone (jpg)." *Commission on the Limits of the Continental Shelf (CLCS) Outer limits of the continental shelf beyond 200 nautical miles from the baselines: Submissions to the Commission: Submission by the Russian Federation*. United Nations. (2009)

[9] Encyclopædia Britannica. *Lomonosov Ridge*. (2007) URL: http://global.britannica.com/EBchecked/topic/346795/Lomonosov-Ridge

[10] United Nations General Assembly. "A/57/57/Add.1 Oceans and the law of the sea Report of the Secretary-General*." Oceans and the Law of the Sea in the General Assembly of the United Nations Reports of the Secretary-General. United Nations. (2002) paragraph 41

[11] Sputnik International. "Russia Completes Research to Apply for Arctic Shelf Borders Expansion." *Sputnik International* (2014) and Staalesen, Atle. "Territorial expansion on Arctic agenda." Barents Observer. (2014)

[12] Government of the Kingdom of Denmark together with the Government of Greenland. "Partial Submission of the Government of the Kingdom of Denmark together with the Government of Greenland." (2014) p.12

[13] Government of the Kingdom of Denmark together with the Government of Greenland. "Partial Submission of the Government of the Kingdom of Denmark together with the Government of Greenland." (2014) p.8

[14] DOALOS, O.L.A. *Submissions, through the Secretary-General of the United Nations, to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea of 10 December 1982*. United Nations. (2014)

indicated that the Lomonosov Ridge will be considered as a "seafloor elevation" and a "submerged prolongation of the land mass of Canada.[15]

Based on the above it seems clear that Canada, Denmark and the Russian Federation will make overlapping claims in the Arctic ocean, and that all of them seem to regard the Lomonosov Ridge as both the natural prolongation of their respective land territory, and a *submarine elevation* that is a natural component of their continental margin.

The subject of classification of seafloor highs under article 76 of the Law of the Sea has previously been discussed by: Brekke & Symonds (2011), Gao (2012), Macnab (2008), Symonds et.al. (2000), and Weber (2009) among others.

Legal Sources and Method

Based on the thesis objective the primary source will be the United Nations Convention on the Law of the Sea article 76, and the Vienna Convention on the Law of Treaties articles 31 and 32.

Additional material subject to examination as part of the analysis of CLCS practice are: preparatory works on the Law of the Sea, UN resolutions, the Law of the Seas Annex II, the CLCS' Scientific and Technical Guidelines and the Rules of Procedure of the Commission, as well as certain legal and scientific literature devoted to the topic.

Another primary source of the thesis, will be recommendations made by the Commission.

Not all submissions to the CLCS require the Commission to deliberate the seafloor high issue. The Commission has made a total of 21 recommendations on the basis of coastal State submissions. The Commission must make recommendations to every coastal State that wishes to establish its outer limit of the continental shelf beyond 200 nautical miles, but this is not synonymous with theoretically having its continental margin extended along a seafloor high. The seafloor high issue is therefore not part of every recommendation made by the Commission.

[15] Government of Canada. "Preliminary Information concerning the outer limits of the continental shelf of Canada in the Arctic Ocean." (2014) Second page, second paragraph.

Nine recommendations have been chosen for analysis in this thesis. These were chosen because the Commission considers the seafloor high issue as part of their recommendation. Some recommendations have been excluded even though they concern themselves with the seafloor high question. For example the recommendation made based on the submission of New Zealand, because the Commission does not comment on how they came to their conclusion. This does not contribute to the understanding of how the Commissions practice of the seafloor high issue relates to the legal interpretation of UNCLOS article 76, and is therefore not part of the analysis.

According to the Commissions rules of procedures annex III section V paragraph 11 (3) the recommendations "prepared by the subcommission shall include a summary thereof, and such summary shall not contain information which might be of a confidential nature and/or which might violate the proprietary rights of the coastal State over the data and information provided in the submission." This summary is the only part of the recommendation that is made public and therefore is available for examination and analysis. This applies to all the chosen recommendations, except for the one pertaining to Australia. The Australian recommendation seems to have been published in its entirety, in addition to the summary. There is given no explanation as to why this has occurred.

A comparison of the Australian recommendation and the executive summary is able to tell us that the Commission doesn't always include the considerations made with regards to the submarine high issue. For example with regards to the Lord Howe Rise, see page 19 paragraph 64 of the summary recommendation[16] and page 31 paragraph 107 in the full recommendation text[17]. The full recommendation text has a full paragraph considering the seafloor high, while the summary recommendation only briefly refers to article 76 (6).

With that in mind one must recognize that it might never be possible to give a full account on the Commissions practice on this issue (or others for that matter). The goal of this thesis is therefore to give as complete a picture as possible on the issue, based on the information available. The traditional legal methods will be used to achieve this goal.

The thesis is composed of five parts, beginning with an account of the history of the law of the sea and the continental shelf, with special attention given to the Third Conference on the

[16] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... AUSTRALIA...* (2008)

[17] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008)

Law of the Sea. The second part will consist of a legal interpretation of the seafloor high issue in article 76 of the Law of the sea, made in accordance with the relevant provisions of the Vienna Convention on the Law of Treaties. Following this will be a presentation of the Commission on the Limits of the Continental Shelf and the Scientific and Technical Guidelines adopted by the Commission. Here there will be given particular consideration to the Commissions treatment of the seafloor high issue in the Guidelines. Next is a presentation of the relevant recommendations of the Commission and a preliminary analysis of the practice concerning seafloor highs. The final part will be a comparison of the Commissions treatment of the seafloor high issue and the legal interpretation of article 76 in accordance with the Law of Treaties.

History of the Law of the Sea and the Continental Shelf

This chapter will give a presentation of the history of the Law of the Sea and the legal continental shelf.

The history of the *legal* continental shelf is quite young, and all of the development in this area took place in the last 70 years. For a very long time the oceans and the seafloor was subject to little or no regulations. This was the case because international relations were dominated by the principle of the freedom of the sea. The potential value and resources of the continental shelf was not known, and the possibilities where otherwise limited. There was simply no need for more extensive regulation.

The Dutch philosopher and jurist Hugo Grotius was one of the first to be credited with developing the principle of the freedom of the sea. In his book *Mare Liberum,* from 1608, Grotius makes the argument that the oceans, by its very nature, is free for all and cannot belong to any one nations sovereignty. He compared the sea to the air, and argued neither was "susceptible of occupation".[18] He also stated that the sea was

[18] Grotius, Hugo. *Mare Liberum The freedom of the seas, or, the right which belongs to the Dutch to take part in the East Indian trade.* Edited by James Brown Scott. Translated by Ralph Van Deman Magoffin. Vol. 2004. Union, New Jersey: The Lawbook Exchange, LTD., (1608) p.28

> "(…) so limitless that it cannot become a possession of any one, and because it is adapted for the use of all (…)".[19]

In its raw form the principle of the freedom of the sea would mean that the coastal States had no right to regulate any part of the sea outside their coast. However, the rule was modified by the principle of *terrae dominum finitur, ubi finitur armorium vis*; "the dominion of the land ends where the range of weapons ends". The idea was that the territorial waters of the coastal State would cover as large an area as the State would be able to protect from its shores. This rule has been named "the cannon shot rule", as it was the range of a cannon that would determine the limit of the individual States' jurisdiction at sea. At that time this was approximately three nautical miles.[20]

These regulations did not make any distinction between the ocean and the seabed (or subsoil), but then again this was in a time when the resources and possibilities of the oceans where not yet discovered.

These simple principles ruled the international law of the sea for several hundred years. The first significant change came in 1945, with a proclamation from the American president Harry S. Truman. Truman declared that the government of the United States of America regarded the

> "(…) natural resources of the subsoil and sea bed of the continental shelf beneath the high sea but contiguous to the coasts of the United States as appertaining to the United States, subject to its jurisdiction and control".[21]

Several other countries, such as Chile, Argentina and Peru, followed Americas' lead[22], and suddenly the international community discovered a need for the establishment of a legal regime pertaining to the oceans.

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[19] Ibid p.28

[20] Bederman, David J. *The Oxford Handbook of the History of International Law*. Edited by Anne Peters Barbo Fassbender. Oxford: Oxford University Press (2013) p.370 and Oxford University Press. *Overview Cannon-shot rule.* (2014) URL: http://www.oxfordreference.com/view/10.1093/oi/authority.20110803095546425

[21] Truman, Harry S. "150 - Proclamation 2667 - Policy of the United States With Respect to the Natural Resources of the Subsoil and Sea Bed of the Continental Shelf." *The American Presidency Project*. Edited by John T. Woolley Gerhard Peters. (1945) paragraph 6.

[22] DOALOS, O.L.A. "The United Nations Convention on the Law of the Sea (A historical perspective)." *Oceans & the Law of the Sea United Nations.* United Nations. (1998) A historicla perspective section, fourth parargraph

The United Nations held its first conference on the Law of the Sea in 1958 (UNCLOS I),[23] which resulted in four treaties; the Convention on the Territorial Sea and the Contiguous Zone, the Convention on the High Seas, the Convention on Fishing and Conservation of the Living Resources of the High Seas and last but not least the *Convention on the Continental Shelf* (which entered into force 10 June 1964).[24]

With the Convention on the Continental Shelf a legal definition of the continental shelf was made. The convention also created outer limits for the coastal States sovereignty. According to article 1 of the treaty, the continental shelf is referring:

> "(a) to the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 meters or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources of the said areas; (b) to the seabed and subsoil of similar submarine areas adjacent to the coasts of islands".[25]

In addition to establishing these limitations on the continental shelf, the Convention on the Continental Shelf also contained regulations on the coastal States rights. In its article 2 it was determined that the coastal State exercises sovereign rights for the purpose of exploiting natural resources on the shelf,[26] and the State may do so exclusively, in the sense that if the coastal State does not undertake such activities, no one else may do so either, without the consent of the State.[27] Further on the rights of the State was not to depend on any form of occupation or proclamation.[28]

Three years later, in 1967, the Maltese ambassador to the UN, Arvid Pardo, held a speech for the United Nations General Assembly concerning: "Examination of the question of the reservation exclusively for peaceful purposes of the sea-bed and the ocean floor, and the

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[23] Codification Division, OLA. "United Nations Conference on the Law of the Sea, 1958." *United Nations Diplomatic Conferences.* United Nations. (2009) Fourth paragraph

[24] Ibid.

[25] Convention on the Continental Shelf. Done at Geneva, on 29 April 1958 article 1 (URL: http://sedac.ciesin.columbia.edu/entri/texts/continental.shelf.1958.html)

[26] Convention on the Continental Shelf Article 2 (1)

[27] Convention on the Continental Shelf Article 2 (2)

[28] Convention on the Continental Shelf Article 2 (3)

subsoil thereof, underlying the high seas beyond the limits of present national jurisdiction, and the use of their resources in the interests of mankind".[29]

In his speech Pardo listed many of the known resources and possibilities found on and under the seabed and the ocean floor and expressed his concern for the consequences of the "exploration, occupation and exploitation" [30] of these areas. According to Pardo the international law at the time would allow a costal State to "extend its jurisdiction over the ocean floor as far as its technology permits exploitation".[31] The consequences of which are quite disturbing, according to Pardo:

> "The process has already started and will lead to a competitive scramble for sovereign rights over the land underlying the world's seas and oceans, surpassing in magnitude and in its implication last century's colonial scramble for territory in Asia and Africa. The consequences will be very grave: at the very least a dramatic escalation of the arms race and sharply increasing world tensions, caused also by the intolerable injustice that would reserve the plurality of the world's resources for the exclusive benefit of less than a handful of nations. The strong would get stronger, the rich richer, and among the rich themselves there would arise an increasing and insuperable differentiation between two or three and the remainder. Between the very few dominant Powers, suspicions and tensions would reach unprecedented levels. Traditional activities on the high seas would be curtailed and, at the same time, the world would face the growing danger of permanent damage to the marine environment through radio-active and other pollution: this is a virtually inevitable consequence of the present situation".[32]

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[29] Pardo, Arvid. "Examination of the question of the reservation exclusively for peaceful purposes of the sea-bed and the ocean floor, and the subsoil thereof, underlying the high seas beyond the limits of present national jurisdiction, and the use of their resources in the interests of mankind." *United Nations General Assembly Twenty Second Session Official Records 1515th and 1516th meeting of the First Committee.* (1967) 1515th Meeting p.1, paragraph 3

[30] Ibid p.1, paragraph 6

[31] Pardo, Arvid. "Examination of the question of the reservation exclusively for peaceful purposes of the sea-bed and the ocean floor, and the subsoil thereof, underlying the high seas beyond the limits of present national jurisdiction, and the use of their resources in the interests of mankind." *United Nations General Assembly Twenty Second Session Official Records 1515th and 1516th meeting of the First Committee.* (1967) p.10, paragraph 70

[32] Pardo, Arvid. "Examination of the question of the reservation exclusively for peaceful purposes of the sea-bed and the ocean floor, and the subsoil thereof, underlying the high seas beyond the limits of present national jurisdiction, and the use of their resources in the interests of mankind." *United Nations General Assembly Twenty Second Session Official Records 1515th and 1516th meeting of the First Committee.* (1967), 1515th Meeting p.12, paragraph 91

Pardo concluded by calling for an effective international regime over the seabed and the ocean floor beyond a clearly defined national jurisdiction as it would be the only alternative by which one could hope to avoid the escalating tensions that would be inevitable if the situation was allowed to continue.[33]

Following Pardos' speech the UN General Assembly established the *Committee on Peaceful Uses of the Sea-bed and the ocean floor beyond the Limits of National Jurisdiction* in December 1968 with resolution 2467 A (XXIII), and in 1970 decided that the Third Conference on the Law of the Sea ("the Conference") should convene in 1973, of which the committee would act as a preparatory body.

The Third Conference on the Law of the Sea was determined to establish an

> "(…) equitable international regime – including an international machinery – for the area and the resources of the seabed and the ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction". [34]

It would seek to define and regulate every possible legal aspect of the oceans, above and below the ocean floor.[35]

The Conference began in 1973 and held eleven sessions, with 160 participating States. Nine years later, 10 December 1982 the conference had succeeded with the adoption of the United Nations Convention on the Law of the Sea ("UNCLOS" or "the Convention"). The Convention entered into force 16 November 1994, one year after it had been ratified by its

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[33] Pardo, Arvid. "Examination of the question of the reservation exclusively for peaceful purposes of the sea-bed and the ocean floor, and the subsoil thereof, underlying the high seas beyond the limits of present national jurisdiction, and the use of their resources in the interests of mankind." *United Nations General Assembly Twenty Second Session Official Records 1515th and 1516th meeting of the First Committee.* (1967), 1516th Meeting p.1, paragraph 3

[34] United Nations General Assembly. "2750 (XXV). Reservation exclusively for peaceful purposes of the sea-bed and the ocean floor, and the subsoil thereof, underlying the high seas beyond the limits of present national jurisdiction and use of their resources in the interests of mankind, and convening of a conference on the law of the sea." United Nations. (1970) Section C p.26 paragraph 2

[35] United Nations General Assembly. "3067 (XXVIII) Reservation exclusively for peaceful purposes of the sea-bed and the ocean floor, and the subsoil thereof, underlying the high seas beyond the limits of present national jurisdiction and use of their resources in the interests of mankind, and convening of the Third United Nations Conference on the Law of the Sea." United Nations. (1973) p.14, paragraph 3

sixtieth State, as determined by UNCLOS article 308. The Convention consisted of 320 articles and nine annexes.[36]

In order to achieve its goals the Third Conference on the Law of the Sea had decided to divide itself into three main committees, where the Second committee was in charge of the continental shelf topic (in addition to the topics of the territorial sea, the contiguous zone, the exclusive economic zone, the high seas, land-locked countries, shelf-locked States and States with narrow shelves or short coastlines and the transmission from the high seas).[37]

The challenge facing the Second Committee relating to the continental shelf issue would be to discover a way to balance the need to preserve as much of the seabed and subsoil of the worlds oceans for the common heritage of mankind as possible, and the sovereign rights enjoyed by the coastal States according to the 1958 Continental Shelf Convention. This would mean that the new Convention needed to establish a clearly defined and *definite* outer limit of the continental shelf.

According to the United Nations Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs many States had started claiming "wide continental shelf jurisdiction since the Truman proclamation of 1945", but these States:

> "(…) did not use the term "continental shelf" in the same sense. In fact, the expression became no more than a convenient formula covering a diversity of titles or claims to the seabed and subsoil adjacent to the territorial seas of States."[38]

Another conflict that would have to be navigated was between States that had an extensive continental shelf and the States that did not. The Division for Ocean Affairs and the Law of the Sea explains:

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[36] Codification Division, Office of Legal Affairs. "Third United Nations Conference on the Law of the Sea, 1973-1982." United Nations Diplomatic Conferences. United Nations. (2009) Seventh paragraph.

[37] Third United Nations Conference on the Law of the Sea. "A/CONF.62/29 Organization of the second session of the Conference and allocation of items: decisions taken by the Conference at its 15th meeting on 21 June 1974." *Third United Nations Conference on the Law of the Sea Volume III Documents of the Conference, First (New York, 3-15 December 1973) and Second (Caracas, 20 June to 29 August 1974) Sessions.* United Nations. (1974) p.60

[38] DOALOS, O.L.A. The United Nations Convention on the Law of the Sea (A historical perspective)." *Oceans & the Law of the Sea United Nations.* United Nations. (1998) Continental shelf section, third paragraph

> "States with a naturally wide shelf had a basis for their claims, but the geologically disadvantaged might have almost no shelf at all. The latter were not ready to accept geological discrimination".[39]

And further on:

> "Already, as the Third United Nations Conference on the Law of the Sea got under way, there was a strong consensus in favour of extending coastal State control over ocean resources out to 200 miles from shore so that the outer limit coincides with that of the EEZ. But the Conference had to tackle the demand by States with a geographical shelf extending beyond 200 miles for wider economic jurisdiction."[40]

The States with a naturally wide shelf was by far outnumbered by the "geologically disadvantaged", as they were about 30 States. Nevertheless the solution would in the end be a compromise that satisfied both groups.

Article 76 therefore give the coastal States the right to establish a legal continental shelf of at least 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, cf. paragraph 1. And, where the continental margin reaches beyond 200 nautical miles the outer limits of the continental shelf may be established out to 350 nautical miles, or further if "certain geological criteria" is meet.[41]

Additional compromises were made, such as shared revenue, as explained here by DOALOS:

> "To counterbalance the continental shelf extensions, coastal States must also contribute to a system of sharing the revenue derived from the exploitation of mineral resources beyond 200 miles. These payments or contributions from which developing countries that are net importers of the mineral in question are exempt are to be equitably distributed among States parties to the Convention through the International Seabed Authority."[42]

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[39] Ibid. Continental shelf section, second paragraph

[40] Ibid. Continental shelf section, fifth paragraph

[41] Ibid. Continental shelf section, sixth paragraph

[42] Ibid. Continental shelf section, ninth paragraph

The Convention also established the Commission on the Limits of the Continental Shelf. When establishing the outer limits of the continental shelf beyond 200 nautical miles from the baselines the costal States are obligated to send a submission with pertinent information to the Commission cf. UNCLOS article 76 (8). The Commission will then consider the material submitted by the States and make recommendations, cf. article 76 (8) and article 3 (a) of Annex II of the Convention. In addition the coastal States may request scientific and technical advice from the Commission during its preparation of the data for their submission, cf. article 3 (b) of Annex II. The limits of the shelf established on the basis of these recommendations are final and binding, UNCLOS article 76 (8).

The Legal Continental Shelf and the Seafloor High Issue

In this chapter there will be an interpretation of article 76 in accordance with the traditional legal method, with special attention given to the seafloor high-types mentioned in the article.

Treaty interpretation is necessary to determine how the international agreements should be understood. The purpose of treaty interpretation is to decipher the content of the agreement and the objective to understand what the treaty parties have agreed upon.

Traditionally there are three theories on treaty interpretation in international law: the objective theory – where the treaty is interpreted based on the ordinary understanding of the text and words of the treaty; the subjective theory – where the treaty is interpreted based on the intention of the parties of the treaty; and the teleological theory – where the treaty is interpreted based on the treaty's objectives and purpose.[43]

Vienna Convention on the Law of Treaties

The chosen method of treaty interpretation for this thesis is based on customary international law, which is codified in the 1969 Vienna Convention on the Law of Treaties ("VCLT"/"Law of Treaties").[44] The relevant provisions are found in the treaty's part III, section III, article 31 and 32.

[43] Ruud, Morten, and Geir Ulfstein. *Innføring i folkerett.* 3. utgave. Oslo: Universitetsforlaget (2008) p.92

[44] Ruud and Ulfstein (2008) p.85

Article 31 (1) of the VCLT stipulates the general rule of interpretation, which can be said to require the application of all three traditional interpretation theories:

> **Article 31 GENERAL RULE OF INTERPRETATION**
>
> "1. A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose".

When determining what the treaty parties have agreed upon, the wording of the treaty text is essential, and must be the basis of interpretation. The general rule of interpretation suggests that the text should be interpreted in accordance with the "ordinary meaning" given to the "terms of the treaty", cf. VCLT article 31 (1).

This applies to article 76 of the Law of the Sea, however article 31 (4) of the VCLT stipulates that:

> "4. A special meaning shall be given to a term if it is established that the parties so intended."

As previously stated, the legal continental shelf of article 76 in the Law of the Sea is a constructed concept for the purpose of the Convention. This entails that several terms of the provision have been given a special meaning, which does not match the ordinary meaning of said term. UNCLOS article 76 concerns features of the earth, and as such contains several terms with an established scientific definition; it is however not given that the legal meaning of the words coincides with these definitions. Article 31 (4) of the VCLT therefore applies to article 76 of the Law of the Sea in this regard.

The interpretation of such terms should therefore be made in "good faith" with the intended meaning of the parties of the treaty "in their context and in light of its object and purpose", cf. VCLT article 31 (1) and (4).

To make an accurate interpretation of the seafloor high provisions of article 76 in the Law of the Sea, it must be read in the context of the entire article. This follows directly from the wording in the Law of Treaties article 31 (1), and the same articles paragraph 2, which clearly

states that the context of the treaty includes the text of the treaty, including the preamble and annexes. The wording of article 31 (2) of the VCLT is as follows:

> "2. The context for the purpose of the interpretation of a treaty shall comprise, in addition to the text, including its preamble and annexes:
>
> (a) Any agreement relating to the treaty which was made between all the parties in c connexion with the conclusion of the treaty;
>
> (b) Any instrument which was made by one or more parties in connexion with the conclusion of the treaty and accepted by the other parties as an instrument related to the treaty."

Where an interpretation in accordance with the VCLT article 31 does not clarify what the treaty parties have agreed upon, the supplementary means of interpretation in VCLT article 32 may be applied. Article 32 has the following wording:

> **Article 32 SUPPLEMENTARY MEANS OF INTERPRETATION**
>
> "Recourse may be had to supplementary means of interpretation, including the preparatory work of the treaty and the circumstances of its conclusion, in order to confirm the meaning resulting from the application of article 31, or to determine the meaning when the interpretation according to article 31:
>
> (a) leaves the meaning ambiguous or obscure; or
>
> (b) leads to a result which is manifestly absurd or unreasonable."

This simply recognizes that "preparatory work of the treaty" and "the circumstances of its conclusion" can contribute to the understanding of what the treaty parties has agreed upon. The word "including" suggests that this is not an exhaustive list of supplementary means of interpretation.

UNCLOS article 76 Definition of the Continental Shelf

The Law of the Sea regulates the continental shelf issue in its part VI, where article 76 is the most central provision. Article 76 consists of a legal definition of the continental shelf, as well

as the criteria and procedures by which the coastal States may establish the outer limits of the shelf.

The definition of the legal continental shelf is established in the first paragraph of article 76 of the Law of the Sea, and should be regarded as comprising of:

> "… the seabed and subsoil of the submarine areas that extend beyond its [the coastal States] 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."

Based on the above paragraph 1 it is clear that every coastal State has the right to establish a legal continental shelf to a minimum of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, regardless of whether or not the natural prolongation of the land territory reaches such a distance.

Where the natural prolongation of the land territory reaches beyond this distance the rules become more complex. According to article 76 (1) outer limit of the continental shelf is aligned with the "outer edge of the continental margin".

The legal continental margin is defined in the Law of the Sea article 76 (3):

> "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."

The continental margin is thereby positively defined as "the submerged prolongation of the land mass of the coastal State", consisting of "the seabed and subsoil of the shelf, the slope and the rise", cf. UNCLOS article 76 (3).

The "submerged prolongation of the land mass" must be considered as part of the "natural prolongation of the land territory", as determined by UNCLOS article 76 (1) above, to give the State the right to establish the outer limit of their continental shelf beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured. The

"natural prolongation" rule is essential to the establishment of the outer limits of the continental shelf beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, and applies to all of the provisions of UNCLOS article 76.

Paragraph 3 of article 76 of the Law of the Sea also negatively defines the continental margin as not including "the deep ocean floor with its oceanic ridges or the subsoil thereof". This determines that where the land mass of the coastal State is connected to the first of three seafloor high-types of article 76, the *oceanic ridge of the deep ocean floor*, the coastal State may not establish the outer limits of the continental shelf beyond 200 nautical miles from which the breadth of the territorial sea is measured. The wording of paragraph 3 is quit clear in this regard; it does however not explain how to distinguish the deep ocean floor, or its ridges, from other features that can be considered as part of the continental margin.

UNCLOS article 76 (2) states that the outer limit of the continental shelf shall not extend beyond the limits provided in article 76 (4) to (6).

Article 76 (4) (a) contains the formula for establishing "the outer edge of the continental margin wherever the margin extends beyond 200 nm from the baselines from which the breadth of the territorial sea is measured", and it presents to interchangeable options to do so:

> "(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; 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 "foot of the continental slope" mentioned in article 76 (4) (a) (i) and (ii) is determined in accordance with article 76 (4) (b):

> "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".

UNCLOS Article 76 (7), as referred to in paragraph 4 (a) (i) and (ii), reads as follows:

> "7. 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."

Paragraphs 4 and 7 of article 76, does not mention any of the seafloor high-types that are relevant to this thesis. However, where *oceanic ridges of the deep ocean floor* are discussed it is usually in context of determining the foot of the continental slope envelope, as will be evident when analysing the recommendations of the CLCS further down. Even so, this thesis will not be exploring the complexities of the limitation formulas to a deeper extent.

The absolute other limits of the legal continental shelf is determined by the provisions of paragraph 5 and 6 of article 76 of the Law of the Sea.

Paragraph 5 reads as follows:

> "5. 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".

Article 76 (6) establishes how the outer limit of the continental shelf is delimitated on submarine ridges and submarine elevations.

In accordance with paragraph 6 the outer limit of the continental shelf on *submarine ridges* "shall not exceed 350 nautical miles from the baselines from which the breadth of the territorial sea is measured" regardless of the provisions of article 76 (5). This does not apply to *submarine elevations*, which according to the article 76 (6) are "natural components of the continental margin, such as its plateau, rises, caps, banks and spurs".

Accordingly, *submarine elevations* are regulated by the constraint requirements of article 76 (5) and "shall not exceed 100 nautical miles from the 2,500 metre isobath, which is a line connecting the depth of 2,500 metres".

This means that the outer limit of the continental shelf on seafloor highs are as follows:

- 200 nautical miles on *oceanic ridges of the deep ocean floor*, cf. article 76 (3),

- 350 nautical miles on *submarine ridges* from the baselines from which the breadth of the territorial sea is measured, cf. article 76 (6), and
- not exceeding 100 nautical miles from the 2,500 metre isobath, which is a line connecting the depth of 2,500 metres on *submarine elevations* that are "natural components of the continental margin, such as its plateau, rises, caps, banks and spurs", cf. article 76 (6).

Classification of Seafloor Highs

As with paragraph 3 of article 76, paragraph 6 does not specify or clearly define what constitutes a *submarine ridge* or a *submarine elevation*. The *submarine elevations* must be "natural components of the continental margin" and mentions the examples "such as its plateau, rises, caps, banks and spurs" cf. article 76 (6).

The three different seafloor high-types of article 76 must be distinct from each other, which is evident because of how each category is subject to different provisions in article 76. Meaning that a *submarine ridge* or a *submarine elevation* cannot be part of the deep ocean floor, and that *oceanic ridges* and *submarine ridges* cannot be a natural component of the continental margin.

The wording of article 76 does not suggest that there might be any other legal seafloor high categories, which would indicate that all seafloor highs must fall into one of the three categories mentioned in the article. By means of elimination that would suggest that every seafloor high that is either part of the "deep ocean floor", cf. article 76 (3), or a "natural component of the continental margin", cf. article 76 (6) cannot be classified as a *submarine ridge*.

As determined by article 76 (3) the border between the deep ocean floor and the legal continental shelf is the outer edge of the continental margin. It thereby follows that every seafloor high that is <u>not</u> found within the outer edge of the continental margin is an *oceanic ridge of the deep ocean floor*, cf. article 76 (3). *Submarine ridges* and *submarine elevations* must therefore be found within the outer edge of the continental margin; this also follows based on the fact that the outer limit of the continental shelf on an submarine ridges may extend beyond "200 nautical miles from the baselines from which the breadth of the territorial sea is measured", cf. article 76 (1).

The distinction between a *submarine elevation and a submarine ridge* must therefore be made on whether or not the seafloor high in question is a "natural component of the continental margin". It also indicates that there must be possible to differentiate between being a part of the continental margin and being a "natural component" of it. Both must be part of the natural prolongation of the land territory, cf. article 76 (1).

Natural prolongation of the land territory

When speaking of natural prolongation of the land territory of a coastal State, there are three optional scientific disciplines one might refer to:

> "(…) *morphologic*, the seafloor continues the shape of the land mass; *geologic*, the rocks beneath the sea floor are the same as or related to those of the land mass; and *tectonic*, the rocks beneath the sea floor share their history with those of the land mass".[45]

These different disciplines are also used when making the distinction between the different seafloor high-types.

Some will claim that the natural prolongation of the continental margin is a combination of these sciences:

> "Geophysical and geological data show that the morphological prolongation of the land mass is a manifestation of the other two senses of prolongation. The morphology of the margin of a land mass is described in terms of a shelf, a slope, and a rise. Beyond the rise lies the deep ocean floor. This morphological transition, from land mass to deep ocean floor, is the result of the composition and density of the rocks beneath the sea floor, the geologic processes that form and shape them, and the tectonic forces that act on them. Land masses are comprised of rocks that are less dense, on average, than those of the deep ocean. These less dense rocks extend beneath the ocean and contribute to the relatively shallow depth of the shelf, slope and rise. Tectonic and geologic processes such as subduction, volcanism, and sedimentation also contribute to the shallow depth of the margin. The fundamental

[45] GNS Science, Te Pü Ao; National Institute of Water and Atmospheric Research: *Prolongation of the land mass* (n.d.) URL: http://www.gns.cri.nz/static/unclos/naturalprolongation.html. Fourth paragraph.

> distinction between land masses and the deep oceans, therefore, is geological and tectonic in origin".[46]

Others might refer to the understanding of the continental margin at the time when the treaty was entered into:

> "The definition of the continental margin is made with reference to the scientific term continental margin, which in its essence is a geomorphological concept. The original meaning of the term continental margin was geomorphological, i.e. based on the characterists of the submarine landscape and near-surface geological formations found at the edge of the continents. With increasing advances in the geosciences, it has evolved to contain more geological aspects, especially aspects of deep geological structure".[47]

Customary legal method dictates that a treaty should be interpreted in based on the understanding the treaty parties had when adopting the treaty. This is part of the treaty context. This would imply that "natural prolongation of the land mass" must be proven by geomorphology; which in turn would mean that both *submarine ridges* and *submarine elevations* must be part of the continental margin in a geomorphological sense.

Geomorphology is "the scientific study of the land-forms on the Earth's surface and of the processes that have fashioned them" according to the Oxford Dictionary of Geology and Earth Sciences.[48]

For the continental margin to have a "submerged prolongation of the land mass of the Coastal State", cf. article 76 (3), extending beyond 200 nautical miles in a geomorphological sense, there would have to be no significant breaks in the land form of the "…the shelf, the slope and the rise", cf. article 76 (3) that could be said to disruption the prolongation. The margin

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[46] GNS Science, Te Pü Ao; National Institute of Water and Atmospheric Research: *Prolongation of the land mass* (n.d.) URL: http://www.gns.cri.nz/static/unclos/naturalprolongation.html. Seventh paragraph.

[47] Gudlaugsson, Steinar Thor. "Natural Prolongation and the Concept of the Continental Margin." In Legal and Scientific Aspects of Continental Shelf Limits, by Center for Oceans Law and Policy, edited by Myron H. Nordquist, John Norton Moore and Thomas H. Heidar. Leiden: Martinus Nijhoff Publishers (2004), p.63-64

[48] Oxford Reference. *geomorphology.* Edited by Michael Allaby. Oxford University Press (2014) URL: http://www.oxfordreference.com/view/10.1093/acref/9780199653065.001.0001/acref-9780199653065-e-3425?rskey=BmLYwI&result=3671

must be one coherent formation, and the *submarine ridges* and *submarine elevations* must be part of this formation.

Natural component of the continental margin

The text of article 76 differs between *submarine ridges* and *submarine elevations* by stating that the latter are "natural components of the continental margin, such as its plateaux, rises, caps and spurs," cf. article 76 (6). *Submarine ridges* must therefore be part of the submerged natural prolongation of the landmass, and thereby have a geomorphological connection to the continental margin, but not be a *natural component* of it.

As established above "natural prolongation", cf. article 76 (1), is determined on a geomorphological basis, and this enables one to make a distinction between *oceanic ridges of the deep ocean floor* on one hand and *submarine ridges* and *submarine elevations* on the other hand. Also established above is the fact that all seafloor highs must fall into one of the three seafloor high-categories mentioned in article 76, as the treaty text excludes all other possibilities.

Therefore one might draw the conclusion that since both *submarine ridges* and *submarine elevations* has to be in geomorphological conformity with the continental margin, one can't make a distinction between them on the basis of geomorphology. When determining what constitutes as "natural components of the continental margin", cf. article 76 (6), there must be a consideration of one of the other scientific disciplines (geology or tectonics).

The ordinary understanding of the term "natural component of…" is that of *something* being an integral part of something else, which seems to be pointing to a geological perspective in the case of article 76. It is from a geological perspective one can determine what the continental margin consists of, and as such what a *submarine elevation* in turn must consist of, to be considered as a natural component of the margin.

It is clear that there needs to be a geological conformity throughout the entire seafloor high for it to be considered a natural component of the continental margin. If the seafloor high had a different geological nature in some areas, it would hardly be a natural component, as it would seem to consist of different components.

"… such as its plateaux, rises, caps, banks and spurs."

Some have questioned the importance of the examples given in article 76 (6), of some of the possible *submarine elevations*. Galo Carrera, a current member of the CLCS[49] held a presentation at the Summer Academy on the Continental Shelf on the subject of "The Classification of Seafloor Highs" in June 2014. The presentation represented his personal views on the issue[50] and addressed some opinions expressed by Harald Brekke and Philip Symonds, who, according to Carrera:

> "(…) have proposed in a series of papers that the list of seafloor highs which may be considered as submarine elevations (such as plateaux, rises, caps, banks and spurs) may not be exhaustive and it could also include certain ridges provided that geological continuity is demonstrated between the land territory and the ridge."[51]

Carrera questioned the following:

> "If geology, and not morphology, is the *sine qua non* key to the differentiation between submarine elevations and submarine ridges, What would be the implication to morphological submarine elevations such as such as plateaux, rises, caps, banks and spurs, which do NOT satisfy geological continuity?"[52]

He further suggested that the "geological continuity test" "…fails to address the fact seafloor highs such as ridges, plateaux, rises, caps, banks and spurs in article 76 represent morphological units under crustal neutrality".[53]

The International Hydrographic Organization ("IHO"), an "intergovernmental consultative and technical organization that was established in 1921 to support safety of navigation and the protection of the marine environment"[54] has made an online International Hydrographic Dictionary that, among other thing, defines the different examples of UNCLOS article 76, paragraph 6 with regards to *submarine elevations*:

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[49] DOALOS, O.L.A *Commission on the Limits of the Continental Shelf (CLCS) Members of the Commission.* United Nations. (2014)

[50] Carrera, Galo. "The Classification of Seafloor Highs." Summar Academy on the Continental Shelf. (2014) slide 2

[51] Carrera, Galo. "The Classification of Seafloor Highs." Summar Academy on the Continental Shelf. (2014) Slide 17

[52] Carrera, Galo. "The Classification of Seafloor Highs." Summar Academy on the Continental Shelf. (2014) Slide 27

[53] Ibid.

[54] The International Hydrographic Organization: *About IHO* (2015) URL: http://www.iho.int/srv1/index.php?option=com_content&view=article&id=298&Itemid=297&lang=en

- *Plateau*: "A flat or nearly flat elevation of considerable areal extent, dropping off abruptly on one or more sides; a tableland."[55]
    - Tableland: "An elevated region of land with a generally level surface of large or considerable extent; a lofty plain; a plateau."[56]
- *Rise*: "A broad elevation that rises gently and generally smoothly from the sea floor."[57]
- *Cap*: "A feature with a rounded cap-like top."[58]
- *Bank*: "An elevation of the sea floor over which the depth of water is relatively shallow."[59]
- *Spur*: "A subordinate elevation, ridge or rise projecting outward from a larger feature."[60]

Each of the above definitions is made based on the shape and form of the feature, with no reference to the any geological traits. If this constitutes the ordinary meaning of the terms, that would suggest that Carrera has a point.

In response one could argue that the terms of article 76 of the Law of the Sea are constructed for the purpose of the convention, and that there are many other submarine highs on the ocean floor than those mentioned in the treaty text. Also, the wording of article 76 is not strong enough to require that all plateaux, rises, caps, banks and spurs is classified as a *submarine elevation*. They are just examples of some of the features that may be classified in this manner. If such a feature does not meet the "natural component" requirement, it will have to be classified as either a *submarine ridge* or an *oceanic ridge of the deep ocean floor*.

An interpretation based on the traditional legal method would suggest that the decisive part of article 76 (6), is the "natural component" requirement, and that this is the part that must be emphasized.

In conclusion, the distinction between and the classification of seafloor highs must be made on a combination of geomorphology and geology. The *oceanic ridges of the deep ocean floor*

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[55] The International Hydrographic Organization: *plateau* (2011) URL: http://hd.iho.int/en/index.php/plateau

[56] The International Hydrographic Organization: *tableland* (2009) URL: http://hd.iho.int/en/index.php/tableland

[57] The International Hydrographic Organization: *rise* (2014) URL: http://hd.iho.int/en/index.php/rise

[58] The International Hydrographic Organization. *cap* (2009) URL: http://hd.iho.int/en/index.php/cap

[59] The International Hydrographic Organization: *bank* (2011) URL: http://hd.iho.int/en/index.php/bank

[60] The International Hydrographic Organization: *spur* (2009) URL: http://hd.iho.int/en/index.php/spur

does not establish the right to extend the continental shelf beyond 200 nautical miles, and can therefore not be part of the legal continental margin. This is determined by geomorphology, as a seafloor high that is in geomorphological conformity with the continental margin is considered as either a *submarine ridge* or a *submarine elevation.* As both submarine ridges and submarine elevations are in geomorphological conformity with the continental margin, the distinction between these features must be made on a geological basis. This entails the consideration of rock types and the crust of the land mass and the seafloor high.

The Commission on the Limits of the Continental Shelf

This chapter will give a presentation of the Commission on the Limits of the Continental Shelf and the sections of the Scientific and Technical Guidelines of the Commission that relates to the seafloor high issue.

UNCLOS article 76 (8) of the Law of the Sea states that:

> "8. 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 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."

The Commission on the Limits of the Continental shelf ("the Commission" or "the CLCS") was established with the Law of the Sea in 1982. As mentioned in the introduction, the Commission consists of 21 members, who are experts in the fields of geology, geophysics or hydrography. The members serve in personal capacities, but are elected by States who are parties to the Convention among their own nationals, cf. UNCLOS Annex II article 2 (1). Each member is elected for a term of five years, but are eligible for re-election, cf. UNCLOS Annex II article 2 (4).

The purpose of the Commission is, according to the UN Division for Ocean Affairs and the Law of the Sea ("DOALOS"), to facilitate the implementation of the Convention:

> "(…) in respect of the establishment of the outer limits of the continental shelf beyond 200 nautical miles (M) from the baselines from which the breadth of the territorial sea is measured".[61]

The functions of the Commission, cf. UNCLOS Annex II article 3 (1), are as follows:

> "(a) to consider the data and other material submitted by coastal States concerning the outer limits of the continental shelf in areas where those limits extend beyond 200 nautical miles, and to make recommendations in accordance with article 76 and the Statement of Understanding adopted on 29 August 1980 by the Third United Nations Conference on the Law of the Sea;
> (b) to provide scientific and technical advice, if requested by the coastal State concerned during the preparation of the data referred to in subparagraph (a)".

When a coastal State wishes to establish the outer limits of its continental shelf beyond 200 nautical miles, it is required to make a submission to the Commission containing scientific and technical data in support of its claim, cf. UNCLOS article 76 (8) and UNCLOS Annex II article 4. The submission should be made "as soon as possible but in any case within 10 years of the entry into force of this Convention for that State".[62]

When the Commission takes a coastal States' submission under consideration it divides itself into sub-commissions consisting of seven members, "appointed in a balanced manner taking into account the specific elements of each submission by a coastal State", cf. UNCLOS Annex II article 5.

The Commission is required to meet at least once a year "for the effective performance of its functions under the Convention, in particular, to consider submissions by coastal States and to make recommendations thereon", cf. rule 2 of the CLCS Rules of Procedure. According to DOALOS the Commission "ordinarily meets twice a year" at the UN Headquarters in New York, once in the spring and once in the fall. According to the Rules of Procedure rule 23 "the meeting of the Commission, its subcommission and subsidiary bodies are held in private, unless the Commission decides otherwise."

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[61] DOALOS, O.L.A. "Commission on the Limits of the Continental Shelf (CLCS) Purpose, functions and sessions." *Oceans and the Law of the Sea United Nations*. United Nations. (2012) URL: http://www.un.org/depts/los/clcs_new/commission_purpose.htm First paragraph

[62] UNCLOS Annex II article 4

The Subcommission makes its recommendation to the Commission, who in turn must approve it, before anything can be made official.[63] Two thirds of the Commission members must be present to make a quorum, cf. rule 24 of the CLCS Rules of Procedure, and the approval of a recommendation requires a majority of two thirds of the Commission members who are "present and voting".[64]

The Commission shall then send a written recommendation back to the coastal State who made the submission in the first place, and to the Secretary-General of the United Nations.[65]

If the coastal State does not agree with the recommendations of the Commission, the coastal State will have the opportunity to make a revised or new submission to the CLCS, "within a reasonable time".[66]

In situations such as the one mentioned in the Arctic Ocean where two or more costal States with "opposite or adjacent coasts", cf. UNCLOS article 76 (10), have overlapping claims with regards to the legal continental shelves, the Commissions acts without prejudice "relating to delimitation of boundaries between States".[67] Only the coastal States have the sovereign right to decide where their boundaries are going to be established, and the Commission must therefore remain neutral in such matters.

Scientific and Technical Guidelines

The Scientific and Technical Guidelines signifies the Commissions first attempt at interpreting UNCLOS article 76, and lies as the basis of every recommendation made by the Commission. A presentation of the Guidelines is therefore appropriate and necessary when analysing the Commissions practice on any subject.

The History of the Guidelines

The Scientific and Technical Guidelines ("S&T Guidelines"/"STG"/"the Guidelines") of the CLCS (adopted 13 May 1999) is the third basic document of the Commission (the other two

[63] UNCLOS Annex II article 6 (1) and (2)

[64] UNCLOS Annex II article 6 (2)

[65] UNCLOS Annex II article 6 (3)

[66] UNCLOS Annex II article 8

[67] UNCLOS Annex II article 9

being the Rules of Procedure and the Modus Operandi)[68] and are aimed at "assisting coastal States to prepare their submissions regarding the outer limit of their continental shelf".[69]

During its second session in September 1997, the Commission set up six technical working groups "to deal with the technical guidelines with respect to the data and information to be included in the submission by a coastal State".[70] This was the first of two stages in the preparation of the Guidelines, and "(…) consisted of background research conducted along disciplinary and interdisciplinary lines."[71] The six working groups where divided by the following topics: *hydrography*, *geodesy*, *geology*, *geophysics*, *foot of the continental slope*, and *outer edge of the continental margin*.[72]

The second stage where "the preparation of draft Guidelines", which began during the Commissions third session in May 1998. The Commission established an editorial Committee, with Galo Carrera elected as its Chairman. Mr Carrera proposed a document structure for the Editorial Committee to adopt.[73] At the same session, thirteen working groups[74] where established:

> "(…) in order to prepare 10 chapters and two annexes on special criteria contained in article 76 of the Convention for the definition of the continental shelf and on the requirements for data and other material to be included in the submissions".[75]

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[68] DOALOS, O.L.A. "Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission." *Oceans & the Law of the Sea United Nations*. United Nations. (2015)

[69] DOALOS, O.L.A. "Scientific and Technical Guidelines." *Oceans & Law of the Sea United Nations.* United Nations. (2009) First paragraph.

[70] CLCS: "CLCS/4 Statement by the Chairman of the Commission on the Limits of the Continental Shelf on the progress of work in the Commission." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission*. United Nations. (1997) p.3 paragraph 16

[71] CLCS: "CLCS/11 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. (1999) p.4, first paragraph.

[72] CLCS: "CLCS/11 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. (1999) p.4, second paragraph (a)-(f).

[73] CLCS: "CLCS/11 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. (1999) p.4, third paragraph.

[74] CLCS: "CLCS/11 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. (1999) p.4, fourth paragraph.

[75] CLCS, "CLCS/7 Statement by the Chairman of the Commission on the Limits of the Continental Shelf on the progress of work in the Commission." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. (1998) p.3 paragraph 11.

The final Guidelines where adopted by the Commission on 13 May 1999, and at the sixth session of the Commission. 3 September 1999 Annex II to IV of the Guidelines followed.[76]

The Ridge Issue as presented in the Guidelines

The Scientific and Technical Guidelines of the CLCS deals with the ridge/elevation issue in its chapter 7.[77]

Chapter 7 of the Guidelines opens with the Commission addressing the " special attention given to *oceanic ridges*, *submarine ridges* and *submarine elevations*

> "(…) with respect to issues of entitlement to an extended continental shelf and the delineation of its outer limits".[78]

The Commission then recognizes that neither of the seafloor high-types have been given a precise definition in article 76, but points out that the term "ridge" seems to be used on purpose,[79] even if:

> "(…) the link between "oceanic ridges" of paragraph 3 and the "submarine ridges" of paragraph 6 are unclear. "Both terms are distinct from the term "submarine elevations" of paragraph 6".[80]

In the opinion of the Commission, the interpretation of article 76 suggests that all the different seafloor high-types are "distinct legal categories" as they are "subject to separate provisions regarding the maximum outer limit".[81]

The Commission then states that the distinction between the seafloor highs shall not:

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[76] CLCS. "CLCS/11/Add.1 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf Annexes II-IV* to the Guidelines adopted by the Commission on 3 September 1999 at its sixth session." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. (1999) p.1

[77] CLCS. "CLCS/11 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. (1999) p.52-55

[78] CLCS. "CLCS/11 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations (1999) p.52, paragraph 7.1.1

[79] CLCS. "CLCS/11 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. (1999) p.52, paragraph 7.1.3

[80] Ibid.

[81] CLCS. "CLCS/11 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. (1999) p.52, paragraph 7.1.4 – 7.1.6

> "(…) be based on their *geographical denominations* [emphasis added] and names used so far in the preparation of the published maps and charts and other relevant literature".[82]

This establishes that when the Commission, for instance, is considering the Lomonosov Ridge, the classification shall not be made based on the fact it is called a ridge.

The distinction "for the purpose of article 76" must be based on "scientific evidence taking into account the appropriate provisions of these Guidelines".[83] In the aforementioned example the classification of the Lomonosov Ridge would have to be based on scientific evidence submitted by Denmark, Canada or the Russian Federation in support of their individual claims.

Oceanic ridges and submarine ridges

On the subject of oceanic ridges and submarine ridges, the Commission begins its explanation by referring to the geological processes in which ridges may be formed. The Commission lists several of the possible processes:

- "Ridges formed by the sea-floor spreading and associated volcanic-magmatic processes;
- Ridges formed along transform faults and created as an inherent part of the sea-floor spreading process;
- Ridges formed by later tectonic activity resulting in uplift of oceanic crust;
- Ridges formed by volcanic activity related to the movement of crust over a hot spot. These ridges are commonly composed of coalescing volcanic features or seamounts and generally occur on oceanic crust;
- Ridges formed by interaction of oceanic crustal plates;
- Ridges formed by regional excessive volcanism related to plumes of anomalously hot mantle;
- Ridges associated with active plate boundaries and the formation of island arc systems. They could occur as active and inactive (remnant) volcanic arcs, and forearc

[82] CLCS. "CLCS/11 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. (1999) p. 53 paragraph 7.1.8

[83] Ibid.

and back-arc ridges. Such ridges commonly reflect different stages in the progressive development of island arc systems and may result from variations in factors such as the rate and direction of convergence, and from the nature of the plate being subducted;

- Ridges formed by rifting (extension and thinning) of continental crust. This process commonly forms broader features, such as marginal plateaux and rises, but sometimes creates elongated slivers of continental crust separated by oceanic or highly extended continental crust."[84]

The list is not meant to be "exhaustive and complete owing to the variety of the tectonic settings of the sea floor".[85]

Moving on the Commission suggest that the term "oceanic ridges" have not been used "in an entirely strict sense" in scientific literature:

> "In some cases it clearly refers to oceanic spreading ridges only, while in others it seems to apply to all ridges composed of oceanic basaltic rocks (i.e. the first five categories in the list above)".[86]

For submarine ridges, the Commission states that:

> "(…) the provisions of paragraph 3 and 6 may create some difficulties in defining ridges for which the criterion of 350 M in paragraph 6 may apply on the basis of the origin of the ridges and their composition".[87]

The *principle of crustal neutrality* is established in the Guidelines paragraph 7.2.9:

> "Article 76 makes no systematic reference to the different types of the earth's crust. Instead it only makes reference to the two terms: "the natural prolongation of… land territory" and "the submerged prolongation of the land mass" of coastal States as

[84] CLCS. "CLCS/11 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. (1999) p.53, paragraph 7.2.1

[85] CLCS. "CLCS/11 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. (1999) p.53, paragraph 7.2.1-7.2.2

[86] CLCS. "CLCS/11 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. (1999) p.54, paragraph 7.2.3

[87] CLCS. "CLCS/11 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. (1999) p.54, paragraph 7.2.6

> opposed to oceanic ridges of the deep ocean floor. The terms "land mass" and "land territory" are both *neutral terms with regard to crustal types in the geological sense* [emphasis added]. Therefore the Commission feels that geological crust types *cannot be the sole qualifier* [emphasis added] in the classification of ridges and elevations of the sea floor into the legal categories of paragraph 6 of article 76, even in the case of island States".[88]

The Commission does not exclude geology as being part of the classification of *submarine ridges* and *submarine elevations,* it only suggest that geology alone is not enough. Based on the above the Commission decided that when it comes to ridges its view should be based on:

> "(…) such scientific and legal considerations as natural prolongation of land territory and land mass, morphology of ridges and their relation to the continental margin as defined in paragraph 4, and continuity of ridges".[89]

It also decided that the ridge issue would have to "be examined on a case-by-case basis".[90]

Submarine elevations

The Commission then turns its attention towards the term *submarine elevations*. First by commenting on the "selection of highs" included in article 76 (6) ("…plateaux, rises, caps, banks and spurs"), which serves as examples of *submarine elevations*:

> "Common to all of these elevations is that they are natural components of the continental margin. This makes it relevant to consider the processes that form the continental margins and how continents grow. The growth of the present continents is and/or was primarily caused by geological processes along the continental margins (e.g., Rudnick 1995)".[91]

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[88] CLCS. "CLCS/11 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. (1999) p.54

[89] Ibid, paragraph 7.2.10

[90] CLCS. "CLCS/11 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. (1999) p.55, paragraph 7.2.11

[91] CLCS. "CLCS/11 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. (1999) p.55 paragraph 7.3.1

Based on this the Commission will consider *submarine elevations* on the following considerations

> "(a) In the active margins, a natural process by which a continent grows is the accretion of sediments and crustal material of oceanic, island arc or continental origin onto the continental margin. Therefore, any crustal fragment or sedimentary wedge that is accreted to the continental margin should be regarded as a natural component of that continental margin;
>
> (b) In the passive margins, the natural process by which a continent breaks up prior to the separation by seafloor spreading involves thinning, extension and rifting of the continental crust and extensive intrusion of magma onto and extensive extrusion of magma through that crust. This process adds to the growth of the continents. Therefore, seafloor highs that are formed by this breakup process should be regarded as natural components of the continental margin where such highs constitute an integral part of the prolongation of the land mass".[92]

With this the Commission clearly makes a distinction between "active" and "passive" margins. According to the Oxford Dictionary of Geology & Earth Sciences continental margins are divided into

> "active and passive margins depending on their coincidence, or otherwise, with plate margins."[93]

A "plate margin" is "the boundary of one of the plates that form the upper layer (the lithosphere) and together cover the surface of the Earth."[94] A continental margin is "active" when it is also a plate margin, and "passive" when it is not also a plate margin.[95]

This means that when the coastal States continental shelf extends beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured along a continental margin that also happens to be a plate margin, the classification of a submarine

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[92] CLCS. "CLCS/11 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. (1999) p.55 paragraph 7.3.1 (a) and (b)

[93] Allaby, Michael. *Oxford Dictionary of Geology & Earth Sciences*. Oxford: Oxford University Press (2013) p.130

[94] Allaby (2013) p.449

[95] Allaby (2013) p.6 and p.428

elevation is determined on whether or not any crustal fragment or sedimentary wedge is accreted to the margin, cf. S&T Guidelines paragraph 7.3.1 (a).

And, when the continental margin is not also a plate margin, the classification of submarine elevations is determined by whether or not the feature is formed by the process "by which a continent breaks up prior to the separation by seafloor spreading" which adds to the growth of the continents by "thinning, extension and rifting of the continental crust and extensive intrusion of magma onto and extensive extrusion of magma through that crust", cf. S&T Guidelines paragraph 7.3.1 (b).

As the Guidelines are meant to be helping the coastal States in the preparation of their submission,[96] it should follow that when the Commission considers the classification of the seafloor highs and make their final recommendation there should be a clear link between the arguments of the Commission and the Guidelines. Whether or not this is the case will be determined in the next chapter.

Recommendations of the CLCS on the Seafloor High Issue

When determining how the practice of the CLCS on seafloor highs relates to UNCLOS article 76 interpreted in accordance with articles 31 and 32 of the Vienna Convention on the Law of Treaties, one must analyse the recommendations of the Commission.

The recommendations chosen for analysis are based on the submissions of: Brazil, Australia, Norway, France in French Guiana and New Caledonia, United Kingdom on Ascension Island, Japan, Mauritius & Seychellene, France in the French Antilles and the Kerguelen Islands and Denmark outside the Farao Islands. The recommendations are presented and analysed in chronological order, based on when the recommendations where made.

The submissions and recommendations are usually divided into geographic regions; within some of these regions there might be one, none or several seafloor highs. The thesis will only present and analyse the sections of the recommendation concerning the seafloor high question.

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[96] DOALOS, O.L.A. "Scientific and Technical Guidelines." *Oceans & Law of the Sea United Nations*. United Nations. (2009) URL: http://www.un.org/depts/los/clcs_new/commission_guidelines.htm First paragraph.

The presentation of the recommendations will be divided into four sections (when applicable):

- The Commissions description of the region and seafloor high in question;
- information on the formation of the seafloor and the process behind it;
- other relevant factors considered by the Commission; and
- concluding remarks and recommendations made by the Commission.

In some recommendations the consideration of the formation process and the conclusion is made together.

The analysis will highlight what the Commissions decisions where based on, and discuss how this decision relates to the Law of the Sea article 76 interpreted in accordance with articles 31 and 32 of the VCLT.

Brazil[97]

Brazil was the second coastal State to make a submission to the CLCS, after the Russian Federation. The submission was made on 17 May 2004, and the recommendation was adopted, with amendments, on 4 April 2007.[98]

There are two regions in the Brazilian submission where the Commission was required to consider a seafloor high classification: the Vitória-Trindade Ridge Region and the Sao Paulo Plateau Region.

Vitória-Trindade Ridge Region[99]

In the Vitória-Trindade Ridge Region the seafloor high in question is the Vitória-Trindade Ridge.

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[97] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... BRAZIL…* (2011)

[98] DOALOS, O.L.A. *Submissions, through the Secretary-General of the United Nations, to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea of 10 December 1982.* United Nations (2009)

[99] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... BRAZIL…* (2011) p.18-19

Description

It is established that Brazil has the right to establish its outer limits beyond 200 nautical miles in the Vitória-Trindade Ridge Region by the following statement:

> "The Submission of Brazil satisfies the Test of Appurtenance to extend the outer limit of its continental shelf beyond 200 nautical miles in the Minerva Region. The Minerva seafloor high is a natural prolongation and an integral part of the continental margin". [100]

As there are given no other explanation, it is my understanding that the Minerva Region/seafloor high is the Vitória-Trindade Ridge Region. There is no reference to the Minerva seafloor in any other regions in the Brazilian recommendation, and the Commission does not make a similar comment when specifically mentioning the Vitória-Trindade Ridge Region. It is therefore probable that this is a situation where the explanation is lost in the summary, but part of the recommendation.

By establishing that the seafloor high is a natural prolongation and an integral part of the continental margin, the Commission also establishes that there must be a geomorphological continuity between the landmass and the Vitória-Trindade Ridge. Thereby excluding the possibility that the ridge might be classified as an *oceanic ridge of the deep ocean floor*, cf. UNCLOS article 76 (3).

The Commission stated that it remained uncertain about the nature of the Vitória-Trindade Ridge:

> "Based on the data contained in the Submission of Brazil, the Commission remains uncertain about the exact nature of the Vitória-Trindade Ridge and criteria to be applied to extend the outer limit of the continental shelf beyond 200 nautical miles". [101]

The Vitória-Trindade Ridge is further described as follows:

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[100] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... BRAZIL...* (2011) p.18, paragraph 84

[101] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... BRAZIL...* (2011) p.18, paragraph 86

> "The Vitória-Trindade Ridge (chain) is an igneous feature regarded as a physiographic entity which runs through the continental rise (Palma et al., 1979; Palma, 1984; Chang et al., 1992; Cainelli and Mohriak, 1999). It is composed of several flat top seamounts forming a distinct east-west trend".[102]

The igneous feature-description means that the ridge is of a volcanic nature.

The description of the ridge as a "physiographic entity" must be understood as a "geomorphological feature". Geomorphology is the sub-branch of physiography that is most relevant when used in this regard, and the only explanation that makes sense.[103] The Commission does not use the same expression in any other of the analysed recommendations.

Formation

The following comments on the formation process of the ridge is made by the Commission:

> "It [the Vitória-Trindade Ridge] is an outcome of widespread volcanic magmatism. This magmatic activity occurred on (a) the South American continent during the period of 85 – 55 Ma before present; (b) offshore on rifted crust of passive margin in the period of 55 – 40 Ma ago; and (c) the oceanic crust since 40 Ma ago (Meisling et al., 2001). The Vitória-Trindade volcanic islands chain were extruded from the oceanic crust in a pattern of eastward-younging age progression since 40 Ma ago (Karner, 2000; Meisling, 2001; Dickson et al., 2003)."[104]

There are three possible geological time periods in which the formation of the Vitória-Trindade Ridge could have taken place. The Commission does not clarify in which of these periods the ridge actually was formed, but points out that the Vitória-Trindade volcanic islands chain was extruded in the last of the mentioned time periods.

Other relevant factors of consideration

The data and scientific evidence submitted by Brazil does not constitute the basis of the recommendation made by the Commission alone. The CLCS also relies on international

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[102] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... BRAZIL...* (2011) p.18, paragraph 87

[103] Wikipedia: *Physical geography* (2015) URL: http://en.wikipedia.org/wiki/Physical_geography#Sub-branches

[104] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... BRAZIL...* (2011) p.18, paragraph 87

scientific literature, as is often the case when making it is making its recommendations. The Commission is thereby not bound by the submitted material alone.

In the case of the Vitória-Trindade Ridge the Commission states the following in this regard:

> "The international scientific literature reflects a variety of understanding about the development and current nature of this sea floor high (Cainelli and Mohriak, 1999; Chang et al. 1992; Karner, 2000)".[105]

> "Other than the Abrolhos Bank, which is a submarine elevation, the broad international scientific literature does not seem to consider the Vitória-Trindade Ridge as a submarine elevation in the same sense as plateau, rises, caps, banks or spurs are regarded under the Convention".[106]

Concluding remarks and recommendation

When making its recommendation the Commission refers to both a geological and a morphological perspective:

> "The Commission concludes from a geological perspective that the part of the Victória-Trindade Ridge is an igneous sea floor high that rises from continental and oceanic crust. But its most potentially relevant part in this Submission runs through the continental rise and beyond the continent/ocean crust transition zone."[107]

> "From a morphological perspective, the Vitória-Trindade Ridge is a discontinuous igneous feature different from a submarine elevation (such as plateau, rise, cap, bank or spur) under the Convention."[108]

Based on the evidence provided by Brazil, the Commission ended up classifying the Vitória-Trindade Ridge as a *submarine ridge* "but it remains uncertain about its status and the exact position of the outer limit of the continental shelf in this region".[109]

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[105] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... BRAZIL...* (2011) p.19, paragraph 89
[106] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... BRAZIL...* (2011) p.19, paragraph 90
[107] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... BRAZIL...* (2011) p.19, paragraph 91
[108] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... BRAZIL...* (2011) p.19, paragraph 92
[109] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... BRAZIL...* (2011) p.19, paragraph 93

The seafloor high was not proven to be a natural component of the continental margin as a *submarine elevation* should be under UNCLOS article 76 (6). The feature was part of the continental margin of the landmass in a geomorphological way, which would point to a classification as a submarine ridge cf. UNCLOS article 76 (6).

It is not exactly clear what the decisive factor was for the classification. It seems like there is some uncertainty about the formation process and geological nature of the ridge. The understanding of the scientific community may also have been a factor. The formation process was somewhat unclear and the Commission was of the opinion that the ridge was different from a submarine elevation in a morphological sense. In addition, the geological factor indicated that the ridge was not in geological conformity with the continental margin along its entire feature, which is a requirement for being considered as a natural component of the continental margin.

The Commissions must have felt that there was enough evidence to prove that the seafloor high in question could not be classified as a submarine elevation, because in other similar situations the Commission has chosen to not make a recommendation.

São Paulo Plateau Region[110]

Description

In the São Paulo Plateau Region the seafloor high under consideration by the CLCS is the São Paulo Plateau.

The Commission considers the São Paulo Plateau to be "a submerged prolongation and a natural component of the continental margin".[111] As such it is excluded from being classified as an *oceanic ridge of the deep ocean floor*, cf. UNCLOS article 76 (3). The statement would also suggest the classification as a *submarine elevation*, cf. UNCLOS article 76 (6), which is the case when the seafloor high is considered as being "a natural component of the continental margin".

The São Paulo Plateau is further described by referencing the scientific literature:

[110] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... BRAZIL...* (2011) p.20-25

[111] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... BRAZIL...* (2011) p.20, paragraph 100

> "In the literature, the São Paulo Plateau is generally regarded as a physiographic province that lies between the upper continental slope and continental rise – that is, part of the lower slope (Palma, 9184; Mello et al., 1992; Cainelli & Mohriak, 1999)".[112]

Similar to the recommendation in the Vitória-Trindade Ridge Region, "physiographic" used in this matter means "geomorphological". This description thereby excludes the possibility that the São Paulo Plateau could be considered as an *oceanic ridge of the deep ocean floor* as well.

Formation

The formation process of the São Paulo Plateau is more precisely explained than in the previous the Vitória-Trindade Ridge Region:

> "The formation of the São Paulo Plateau is genetically related to the break-up of Gondwana and the formation of the South Atlantic passive margin in the Early Cretaceous (see discussion of geodynamic evolution of the South Atlantic margins in Mohriak et al., 2002), and its general configuration is the result of the interaction of tectonic, magmatic and sedimentary processes that began in the Late Jurassic/Early Cretaceous (Emery and Uchupi, 1984, Mello et al., 1992). The plateau is underlain by extended, thinned and magmatically-modified continental crust resulting from the rifting and breakup processes. It is associated with ubiquitous late-synrift evaporites that were deposited in the period leading up to Early Cretaceous breakup and seafloor spreading in this region (Davison, 1997; Karner & Driscoll, 1999; Karner, 2000)".[113]

The fact that "the plateau is underlain by extended, thinned and magmatically-modified continental crust resulting from the rifting and breakup processes", as seen above, matches the relevant provision of the S&T Guidelines of the Commission pertaining to *submarine elevations* formed on a passive margin, paragraph 7.3.1. (b). This description thereby substantiates the understanding of the previous statement, that the Plateau is a natural component of the landmass, and thereby should be classified as a *submarine elevation*.

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[112] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... BRAZIL...* (2011) p.20, paragraph 102

[113] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... BRAZIL...* (2011) p.20, paragraph 103

Concluding remarks and recommendation

Even though all evidence points to the mentioned conclusion, the circumstances of the region makes the need for an actual classification unnecessary:

> "The Constraint defined by the envelope of arcs constructed 100 nautical miles beyond the 2500 m isobaths (the depth constraint) does not exceed the breadth of the envelope of arcs constructed 350 nautical miles from the baselines from which the territorial sea is measured (the distance constraint) at any location throughout the São Paulo Plateau Region." [114]

A classification as a submarine elevation allows for the use of the depth constraint on a seafloor high, cf. UNCLOS article 76 (6) and (5), however where the outer edge of the depth constraint line does not exceed 350 nautical miles, it is more favourable for the coastal State to apply the distance constraint.

As explained above, the São Paulo Plateau conforms to the requirements for classifying it as a *submarine elevation*, but the Commission does not specifically conclude that this is the case. It is however clear that this would have been their conclusion, if the nature of the region had required a classification to be made.

The Brazilian recommendation (for both regions) tells us that the Commission does focus on the formation process and the geological nature of the feature when determining how to classify seafloor highs. The geomorphological aspect is also included, but is often more easily confirmed, and thereby given less attention. However, the combination is necessary for the classification of a *submarine elevation* under UNCLOS article 76 (6).

Brazil did not accept the Commissions recommendations and is therefore planning on making a revised proposal to the CLCS.[115]

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[114] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... BRAZIL...* (2011) p.24, paragraph 125

[115] Interministerial Commission for Sea Resources. *BRAZILIAN CONTINENTAL SHELF SURVEY PLAN.* (n.d.) URL: https://www.mar.mil.br/secirm/leplac-i.html#meta Fourth-to-last paragraph.

Australia[116]

Australia made its submission to the CLCS on 15 November 2004. Making it the third State overall to do so. The Commission adopted its recommendations on 9 April 2008.[117]

The recommendation for the Australian continental shelf is special because both a summary of the recommendations and the full recommendation text is made public. The thesis will be referring to the full recommendation text when analysing the recommendation.

There are several regions in the Australian submission where the seafloor highs question is of relevance. These include the Kerguelen Plateau, the Lord Howe Rise, the Naturaliste Plateau; the South Tasman Rise, and the Wallaby and Exmouth Plateaus.

Kerguelen Plateau Region[118]

Description

The Kerguelen Plateau Region is one of the regions where there are multiple seafloor highs under consideration, namely the Northern, Central and Southern Kerguelen Plateau, the Elan Bank and the Williams Ridge.

The Kerguelen Plateau Region is described as follows:

> "The Region defined as the Kerguelen Plateau Region in the Submission made by Australia is located in the Southern Ocean and encompasses the Kerguelen Plateau. This is a large, NNW-SSE trending composite sea-floor high, about 2300 km long and 600 km in average width and consists of the elements: Northern, Central and Southern Kerguelen Plateau (NKP, CKP and SKP), Skiff Bank (SB), Elan Bank (EB) and Williams Ridge (WR)".[119]

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[116] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008)

[117] DOALOS, O.L.A. *Submissions, through the Secretary-General of the United Nations, to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea of 10 December 1982*. United Nations (2009)

[118] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.17-24

[119] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.17, paragraph 62

This description alone does not make any particular contributions to the classification of the seafloor highs.

The landmass connected to the seafloor highs in question are the Heard and McDonald Islands, which is under Australian sovereignty. Of these islands the Commission states the following:

> "The volcanic Heard and McDonald Islands (Australia) are situated on the CKP and constitute the Australian landmass in the Region. The different components of the Kerguelen Plateau form a continuous, elongated morphological feature that constitutes a submarine prolongation of that landmass",[120]

The above-mentioned morphological continuity excludes the possibility of the seafloor highs being classified as *oceanic ridges of the deep ocean floor*, cf. UNCLOS article 76 (3), as it constitutes that the Plateau is part of the continental margin.

Concluding remarks and recommendation

Thus far the description does not point to whether or not the parts of the Plateau may also be considered as a *submarine elevation*. For that the Commission must consider the formation process of the seafloor highs of the Plateau, as it does when making its conclusions.

The Commission first makes their recommendation on the Central Kerguelen Plateau, the Southern Kerguelen Plateau and the Elan Bank:

> "The Heard and MacDonald Islands are situated on the large underwater feature known as the Central Kerguelen Plateau (CKP). The two islands are built up by Moiocene to Recent magmatism erupting through and embedded in the older parts of the crust of the CKP."[121]

> "The major part of the CKP's crust, which has a thickness of up to 25 km, is made of Late Cretaceous magmatic rocks, ca 100 Ma old. In the southern part of the CKP these magmatic rocks show chemical evidence of contamination by the continental crust.

[120] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.18, paragraph 64

[121] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.22, paragraph 80

> Seismic evidence shows that the magmatic crust in the eastern part of CKP continues westwards beneath the Kerguelen-Heard Basin and the Heard Island itself."[122]

This suggests that the Central Kerguelen Plateau is a natural component of the continental margin of the landmass, cf. UNCLOS article 76 (6) and S&T Guidelines of the Commission. When a seafloor high is formed by the "extrusion of magma through the crust", cf. S&T Guidelines of the Commission paragraph 7.3.1 (b), it should be considered as a natural component of the continental margin.

Further on:

> "The CKP is connected morphologically to the large underwater feature known as the Southern Kerguelen Plateau (SKP). The major parts of the SKP is also made up of Late Cretaceous magmatic rocks, ca 100 Ma old (90 – 118 Ma), similar to the crust of the CKP. In the SKP the magmatic rocks show a general contamination by continental crust. The continental crust signature in the magmatic rocks of the CKP and SKP shows the involvement of crust similar to that of the Elan Bank in the deeper levels of the CKP and SKP. The Heard and MacDonald Islands are embedded within the late Cretaceous magmatic crust of the CKP. Consequently, the CKP, SKP and EB are natural components of the continental margin of the Heard and Macdonald Islands being subject to the application of the depth criterion constraint as well as the distance criterion constraint".[123]

The Central Kerguelen Plateau, Southern Kerguelen Plateau and Elan Bank are all determined to be "natural components of the continental margin of the Heard and MacDonald Islands" [124] and thereby classified as *submarine elevations*, cf. UNCLOS article 76 (6).

The reasoning behind this classification is based on a combination of geomorphological and geological evidence. The island landmass is situated on the Central Kerguelen Plateau, which is connected morphologically to the Southern Kerguelen Plateau. The island landmass is "built up by Moiocene to Recent magmatism erupting through and embedded in the older parts of the crust of the CKP". [125] The CKP and the SKP are determined to be originating

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[122] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.22, paragraph 81

[123] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.22, paragraph 82

[124] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.22, paragraph 82

[125] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.22, paragraph 80

from the same time period and show contamination by continental crust in its magmatic rock.[126] In the deeper levels of the CKP and SKP the continental crust signature "shows the involvement of crust similar to that of the Elan Bank (…)".[127] The key to the classification of the seafloor high thereby seems to be the continental crust signature and the crust similarities in the CKP, SKP and EB, as well as a formation process in accordance with the S&T Guidelines of the Commission.

The assessment of the CKP, SKP and EB is in accordance with the legal interpretation of UNCLOS article 76 (6), cf. article 31 and 32 of the VCLT.

Again the formation process and the geological nature of the seafloor high is the focal point of the classification, equal to the Brazilian recommendation.

After making its classification of the CKP, SKP and Elan Bank, the Commission moves on to consider the Williams Ridge seafloor high:

> "The data submitted for the WR seems to give only indirect evidence of its nature and origin and the Commission is of the opinion that the geological origin of the WR still remains unresolved. The Commission therefore questions whether the application of paragraph 7.3.1.b of the Guidelines is justified in the case of WR. Therefore the Commission does not consider it justified that the WR is regarded as a submarine elevation that is a natural component of the continental margin in the sense of article 76, paragraph 6, qualifying for the application of the depth criterion constraint."[128]

The Williams Ridge is not found to be a natural component of the continental margin, and thereby can't be classified as a *submarine elevation,* cf. UNCLOS article 76 (6). This suggests that the Williams Ridge could be classified as a *submarine ridge* under the same provision, however the Commission does not make a formal classification.

The consequence is the same as if a classification had been made, as the Ridge does not qualify the use of the depth constraint when determining the outer limits of the continental margin.

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[126] CLCS: *RECOMMENDATIONS ... AUSTRALIA…* (2008) p.22, paragraph 81 and 82

[127] CLCS: *RECOMMENDATIONS ... AUSTRALIA…* (2008) p.22, paragraph 80-82

[128] CLCS: *RECOMMENDATIONS ... AUSTRALIA…* (2008) p.22-23, paragraph 83

In this case it is the lack of information pertaining to the nature of the seafloor high and its formation process that excludes the possibility of making the classification. As much as it is not proven that the ridge is a *submarine elevation*, it is also not proven that it is not such a feature. The Commission is wise to act with caution in these matters.

However, the Commission also expressed uncertainty when considering the Vitória-Trindade Ridge of the Brazilian submission, but in this case they classified the feature as a *submarine ridge*. The only reasonable explanation for the different approaches is that there where less available information on the Williams Ridge, than the Vitória-Trindade Ridge. Based on the Commissions comments in regards to the latter, this seems to have been the case.

The conclusion is in accordance with the legal interpretation of article 76.

Lord Howe Rise Region[129]

Description

The Lord Howe Rise is the seafloor high under consideration in the Lord Howe Rise Region.

The Commission begins its description of the region as follows:

> "The Lord Howe Rise Region comprises the area between the Australian Continent and New Zealand and encompasses several structural elements, including the Dampier Ridge, the Middleton Basin, the Lord Howe Basin, the Lord Howe Rise, the New Caledonia Basin and the Norfolk Ridge. The Lord Howe Island and the Norfolk Island are located on the Lord Howe Rise and the Norfolk Ridge, respectively. The Lord Howe Rise Region is flanked to the southwest by the Tasman Basin, to the south by the landmass of New Zealand, and to the north by the landmass of New Caledonia. The Lord Howe Rise Region has an elevation of more than 3500m above the abyssal plain of the Tasman Basin (see Figure D.1)."[130]

The description does not make any particular contributions to the classification of the seafloor high. The Lord Howe Rise Region is further described as follows:

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[129] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.25-35

[130] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.25, paragraph 90

> "The Lord Howe Rise Region is a complex morphological feature forming a submarine prolongation of the Lord Howe Island and the Norfolk Island".[131]

Similarly to the previous recommendations, the Commission simply states that there is a geomorphological continuity between the seafloor high and the landmass of the region. Again this entails the exclusion of the possibility that the feature is classified as an *oceanic ridge of the deep ocean floor*, cf. UNCLOS article 76 (3), as the Lord Howe Rise is an integral part of the continental margin of the landmass.

Concluding remarks and recommendation

In its conclusion and final consideration of the seafloor high question, the Commission considered the regions geological origins and the formation process:

> "Geologically, the Lord Howe Rise Region is of a complex origin comprising continental, island arc and oceanic elements. The Commission agrees that the Lord Howe Rise is of continental origin that is well evidenced by deep sea drilling data, bottom sampling data, seismic reflection/refraction studies, and gravity modelling. The rifting structure and its process through geologic time are well documented by the scientific studies submitted. The overall extension tectonics controlled the Region through early Cretaceous to mid-Tertiary. The Lord Howe Rise and other associated continental blocks were once parts of the Australian continent and separated from it by extension and possible seafloor spreading."[132]

Based on the above the Commission concludes by classifying the Rise as a submarine elevation and a natural component of the continental margin under UNCLOS article 76 (6), and in accordance with paragraph 7.3.1.b of the Guidelines.[133]

The Commission refers to the well-documented continental origin of the Lord Howe Rise, but only gives a short summary of this and the formation process. It is evident that the process described qualifies for the classification as a submarine elevation under UNCLOS article 76 (6). The comment above, stating that: "The Lord Howe Rise and other associated continental blocks were once parts of the Australian continent and separated from it by extension and

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[131] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.26, paragraph 92

[132] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.31, paragraph 107

[133] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.31, paragraph 107

possible seafloor spreading" is in conformity with the S&T Guidelines of the Commission paragraph 7.3.1 (b).

The method used by the Commission matches the previous recommendations where similar conclusions have been drawn.

Naturaliste Plateau Region[134]

Description

The seafloor high in question in the Naturaliste Plateau Region is the Naturaliste Plateau.

The Commission describes the plateau as follows:

> "The Naturaliste Plateau is a plateau extending westwards from the south-western coast of the Australian continent. The plateau is connected with the Yallingup Shelf of the Australian continent by a slightly deeper saddle area named the Naturaliste Trough. The Naturaliste Trough is only 200–300 m deeper than the outer parts of the plateau which is at a general depth of 2400 m. Thus, the Naturaliste Plateau rises 2500 m and 3000 m above the abyssal plains to the north and south, respectively."[135]

This initial description does not make any particular contribution to the seafloor high classification.

When establishing the geomorphological connection between the seafloor high and the landmass, the Commission simply states that the Naturaliste Plateau is considered to be morphological feature and a submarine prolongation of the landmass, as they have done in several other recommendations.[136] This excludes the possibility of classifying the seafloor high as an oceanic ridge of the deep ocean floor, cf. UNCLOS article 76 (3) as the plateau is considered to be part of the continental margin of the landmass.

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[134] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.38-44

[135] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.38, paragraph 128

[136] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.39, paragraph 131

Concluding remarks and recommendation

The Commission concludes with classifying the Plateau as a *submarine elevation* based on a consideration of seismic and geologic data (as well as rock samples):

> "The seismic data submitted show that the Naturaliste Plateau is underlain by classical rift basins with tilted fault blocks, of which the Mentelle Basin beneath the Naturaliste Trough is the largest. The available geological data show that the rifted crust is of continental origin. Furthermore, the seismic data show that the outer parts of the Naturaliste Plateau is underlain by seaward dipping reflector sequences testifying to a thickened magmatic crust amalgamated with the continental crust to the east. Based on this evidence as well as the rock samples of continental affinity acquired by dredging and deep sea drilling the Commission considers the Naturaliste Plateau to be classified as a submarine elevation in the sense of article 76, paragraph 6, and in accordance with paragraph 7.3.1.b of the Guidelines."[137]

Again the Commission follows the same procedure as with the other recommendations, which is establishing the geomorphological continuity early on, and moving on to consider the geological nature of the seafloor high and its formation process. It is the magmatic crust integrated with the continental crust and the rock samples of continental affinity that is decisive for the Commissions classification, in addition to the evidence pointing to a "thickened magmatic crust amalgamated with the continental crust". The classification is in accordance with the legal interpretation of UNCLOS article 76 (6) and the S&T Guidelines paragraph 7.3.1 (b).

South Tasman Rise Region[138]

Description

The South Tasman Rise is the seafloor high under consideration in the South Tasman Rise Region.

[137] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.43, paragraph 147

[138] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.45-52

The South Tasman Rise Region is described as constituting of "two major geomorphological structural elements the South Tasman Rise and the East Tasman Plateau"[139], however, the Commission only makes a classification with regards to the South Tasman Rise.

The Rise is initially described as follows:

> "The South Tasman Rise is a large, NNW-SSE trending elongated plateau extending approximately 700 km southwards from the Australian state of Tasmania (Figure G.1). The South Tasman Rise is bounded to the west by the NNW-SSE trending Tasman Fracture Zone, and to the south and east by the abyssal plain of the Tasman Basin. In the northeast the South Tasman Rise is separated from the East Tasman Plateau by the L'Atalante Depression. In the north, the South Tasman Rise is attached to the rest of the Australian continent through the South Tasman Saddle having seafloor depths in the order of 3000 m".[140]

As this description mostly clarifies the location of the seafloor high, it does not contribute to its classification.

The Commission then established geomorphological continuity between the seafloor high and the landmass in its usual fashion, by stating the following:

> "The South Tasman Rise is a morphological feature forming a submarine prolongation of the Australian continent. The saddle area, the South Tasman Saddle, rises more than 1000 m above the abyssal plains in the west and east. In the view of the Commission, this implies that the South Tasman Rise is in morphological continuity with the Australian Continent".[141]

This excludes the possibility of the South Tasman Rise being classified as an oceanic ridge of the deep ocean floor, cf. UNCLOS article 76 (3), because the Rise is constituted as a part of the continental margin of the landmass.

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[139] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.45, paragraph 151

[140] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.45, paragraph 152

[141] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.46, paragraph 155

Concluding remarks and recommendation

The Commission classifies the Rise as a *submarine elevation* based on its continental origin, determined by geological and geophysical data:

> "The Commission has examined the geological and geophysical data submitted to document the geological nature of the South Tasman Rise. Seismic reflection data show rift related tectonics. Geological sampling have documented that the underlying crust includes pre-Mesozoic metasediments and other metamorphic rocks overlain by up to 4 km rift basin infill of Late Cretaceous to Eocene siliciclastics and younger pelagic sediments. Parts of the South Tasman Rise are dominated by volcanic vents and lava flows related to the break-up process in Late Cretaceous and subsequent volcanism. Based on the data provided, the Commission is of the opinion that the South Tasman Rise is of continental origin and is a natural submerged prolongation of the Australian continental landmass. Consequently, the Commission is of the opinion that the South Tasman Rise should be classified as a submarine elevation that is a natural component of the continental margin in accordance with article 76, paragraph 6, and paragraph 7.3.1.b of the Guidelines."[142]

As with the other seafloor highs in the Australian recommendation, the Commission establishes the geomorphological continuity, and mainly focuses on the geological nature and formation process when making its conclusion. The conclusion shows that the seafloor high seems to have been formed by a breakup process consistent with the S&T Guidelines paragraph 7.3.1 (b), and as such the recommendation is in accordance with UNCLOS article 76 (6).

Wallaby and Exmouth Plateaus Region[143]

Description

The seafloor highs under consideration in the Wallaby and Exmouth Plateaus Region, is the Wallaby Composite High, the Exmouth Plateau (including the Wombat Plateau and the Platypus Spur) and the Joey Rise.

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[142] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.51, paragraph 169

[143] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.58-67

The Wallaby and Exmouth Plateaus Region consists of "two major geomorphological structural elements of the Wallaby Plateau and the Exmouth Plateau, both being prominent submarine highs extending from the north-western coast of the Australian continent."[144]

The Commission makes separate descriptions of the Wallaby and Exmouth Plateaus as follows:

> "The Wallaby Plateau is part of a composite structural high extending from the landward shallow Carnarvon Terrace to the southeast, and consisting of the deep Wallaby Saddle, the Wallaby Plateau itself and the Quokka Rise to the northwest. This structural high, herein further referred to as the Wallaby Composite High, is bounded to the south by the northwest-southeast trending Wallaby-Zenith Fracture Zone, to the northwest by the Gascoyne Abyssal Plain and the Wallaby-Zenith Basin, and to the northeast by the Cuvier Abyssal Plain".[145]

> "The Exmouth Plateau constitutes a composite submarine high to the north of the Cuvier Abyssal Plain. The Wombat Plateau, Platypus Spur and the Joey Rise are situated on the northern margin of Exmouth Plateau. The Exmouth plateau is bounded to the south by the northwest-southeast trending Cape Range Fracture Zone, to the northwest-southeast trending Cape Range Fracture Zone, to the northwest by the Gascoyne Abyssal Plain, and to the northeast by the Argo Abyssal Plain."[146]

Neither of the descriptions contributes substantially to the classification of the seafloor highs.

Both the Wallaby Composite High and the Exmouth Plateau are further classified as a prolongation of the Australian continent. The Wallaby Composite High "is a morphological feature forming a submarine prolongation of the continent",[147] while the Exmouth Plateau is described as "an equidimensional morphological feature forming a submerged prolongation of the continent".[148] The features should therefore not be classified as *oceanic ridges of the deep ocean floor*, cf. UNCLOS article 76 (3), as they both are morphologically connected to the continental margin.

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[144] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.58, paragraph 193

[145] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.58, paragraph 194

[146] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.58, paragraph 195

[147] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.59, paragraph 197

[148] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.60, paragraph 198

Since the Commission separates its consideration of the Wallaby and Exmouth Plateaus, it is only natural that the analysis of the recommendation is made separately as well.

The Wallaby Composite High

Other relevant factors of consideration

Australia views the Wallaby Composite High as *submarine elevation* in accordance with article 76 (6) of the Law of the Sea[149]:

> "Based on morphology only, Australia holds the view that the Wallaby Composite High is not a ridge and, in addition, Australia maintains that the high is formed under the rifting and break-up of the continent in accordance with paragraph 7.3.1.b of the Guidelines."[150]

Concluding remarks and recommendation

The Commission focuses on geophysical and geological evidence when making its finale conclusion about the Wallaby Composite High:

> "The Commission agrees that the Wallaby Saddle is underlain by seaward dipping reflectors older than the break-up unconformity demonstrating that this part of the feature was formed during the rifting and break-up of the continent. However, on the basis of the data and information presented the geological origin of the whole Wallaby Composite High still remains unresolved. Nevertheless, on the balance of morphological and geological evidence presented, the Commission agrees that the Wallaby Composite High is to be regarded as a submarine elevation that is a natural component of the continental margin in the sense of article 76, paragraph 6, qualifying for the application of the depth criterion constraint."[151]

In previous recommendations, where the Commission stated that they felt there was uncertainty about the formation process or geological nature, the feature was not classified as *submarine elevations* in accordance with article 76 (6). The Williams Ridge, also of the

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[149] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.64, paragraph 217

[150] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.64, paragraph 217

[151] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.64, paragraph 218

Australian submission, was not classified at all by the Commission, and the Vitória-Trindade Ridge of the Brazilian submission was classified as a *submarine ridge* cf. UNCLOS article 76 (6).

The recommendation and conclusion made by the Commission with regards to the Wallaby Composite High thereby differs from previous recommendations in method and reasoning. The Commission states that the geological origin of the whole Wallaby Composite High remains unresolved, but classifies it as a *submarine elevation* nonetheless. The decisive factor is "the balance of morphological and geological evidence".[152]

The Commission seemed to have little or no information on the Williams Ridge, which explains their reluctance to classify the seafloor high. There where more available information in regards to the Vitória-Trindade Ridge, which also seems to be the case in this matter. The Vitória-Trindade Ridge was found to be morphologically different from a *submarine elevation* under the Convention and not in geological conformity with the continental margin along its entire form.

The Commission comments on the formation process of the Wallaby Composite High, and it seems to match the requirements of the S&T Guidelines of the Commission paragraph 7.3.1 (b), and it is specifically the geological origin that is uncertain.

In the final analysis this classification will be compared further to other similar situations.

The Exmouth Plateau

Concluding remarks and recommendation

In its concluding remarks the Commission comments on the morphology of the Exmouth Plateau Region:

> "Bridged by the Platypus Spur, the Joey Rise constitutes the north-westernmost extension of the Exmouth Plateau. The morphological expression of this spur-and-rise pair allows the establishment of a foot of the continental slope envelope around them. A seismic line, GA-162/15, is shot across the critical bridging point between the two structures, which demonstrates that the spur and the rise are in morphological

[152] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.64, paragraph 218

> continuity, implying that the foot of the continental slope envelope of the Joey Rise is in continuity with the foot of the continental slope envelope of rest of the continental margin".[153]

In the view of Australia the Joey Spur should be classified as a *submarine elevation*. In this regard the Commission notes the following:

> "Based on morphology only, Australia holds the view that the Joey Rise is not a ridge and, in addition, Australia maintains that the rise is formed under the rifting and break-up of the continent in accordance with paragraph 7.3.1.b of the Guidelines."[154]

The Commission has considered "the geophysical and geological evidence provided" [155] in support for this claim:

> "The view of the Commission, however, is that the data presented on the origin of the Joey Rise is too sparse to be conclusive. The combination of the two seismic lines GA-162/11 and GA-162/15 shows the crustal structure of the Platypus Spur and the Joey Rise. The crust of the Platypus Spur comprises clear internal reflectors indicative of continental crust. The lack of reflectors and structures in the seismic profile across the Joey Rise, however, indicates a magmatic origin of that crust. Based on the data provided, it is furthermore not clear whether the Joey Rise was formed as part of the seafloor spreading process in the Argo Basin or the subsequent rifting and break-up along the western side of the Exmouth Plateau. Therefore the Commission does not consider it proven that the Joey Rise should be regarded as a submarine elevation that is a natural component of the continental margin in the sense of article 76, paragraph 6, qualifying for the application of the depth criterion constraint".[156]

The Commission points to the geologic nature of the Joey Spur, which indicates a magmatic origin of the crust, and the formation process, which remains unclear for the Commission, when determining that it does not agree with Australia in their view of the seafloor high. The Commission does however recognize that the Joey Spur is part of the continental margin of

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[153] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.64, paragraph 219

[154] Ibid.

[155] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.65, paragraph 220

[156] Ibid.

Australia by way of the foot of the slope envelope and morphology.[157] This should imply that the Spur be classified as a submarine ridge under article 76 (6), however the Commission does not make a final classification of the Joey Spur. The consequence is nonetheless the same with regards to the constraint criteria.

The reason for not making a classification is *similar* to the situation of the Williams Ridge, it is neither proved nor disproved that the feature is a *submarine elevation*, as the formation process in unclear for the Commission.

The Commission concludes differently in regards to the other features of the Exmouth Plateau:

> "Based on the geological and geophysical data provided, the Commission is of the opinion that the Exmouth Plateau, including the Wombat Plateau and the Platypus Spur, is continental in origin and constitutes a natural prolongation of the Australian continental landmass. The commission is of the opinion that the Exmouth Plateau is classifies as a submarine elevation that is a natural component for the continental margin in the sense of article 76, paragraph 6, and qualifies for the application of the depth criterion constraint".[158]

The Exmouth Plateau, including the Wombat Plateau and the Platypus Spur is found to have continental origin based on geological and geophysical data. It is thereby classified as a *submarine elevation*. In this case the Commission does not comment on the data it refers to or the formation process behind the seafloor high(s), thereby making it impossible to consider whether or not the conclusion was just.

Norway (North East Atlantic and the Arctic)[159]

Norway has made a couple of submissions to the Commission. Its submission to the CLCS on 27 November 2006 was in regards to the North East Atlantic and the Arctic, which is the area

[157] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.65, paragraph 221

[158] CLCS: *RECOMMENDATIONS ... AUSTRALIA...* (2008) p.65, paragraph 222

[159] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... NORWAY...* (2009)

connected to Mainland Norway and Svalbard and the island of Jan Mayen. The Commission adopted its recommendations, with amendments, on 27 March 2009.[160]

In the Norwegian submission, there is one region where the seafloor high issue is present: the Banana Hole in the Norwegian and the Greenland Seas.

The Banana Hole in the Norwegian and Greenland Seas[161]

The Banana Hole Region contains four seafloor highs for the Commission to classify: the Mohns Ridge, the Vøring Spur, the Vøring Plateau and the Jan Mayen Micro-Continent/Iceland Plateau ("JMMC/IP").

Description

The Commission describes the continental margin of Norway and the Greenland Seas as consisting of the two parts of Mainland Norway and Svalbard, and that "associated with the island of Jan Mayen".[162]

The area is describes as follows:

> "The Banana Hole is the area of the Norwegian and Greenland Seas that is totally enclosed by the 200 M limits of Mainland Norway and Svalbard in the east, and the Faroe Islands, Iceland, Jan Mayen and Greenland in the south and west."[163]

> "The Banana Hole area covers a number of tectonically and morphologically complex features: the Mohns Ridge – a zone of active seafloor spreading; the Bjørnøya Fan – a large trough-mouth, glacio-marine fan; the Lofoten Basin; the Vøring Spur, Vøring Plateau and Jan Mayen Fracture Zone; the Norway Basin and Ægir Ridge – an inactive seafloor spreading system; and in the west it is associated with the Jan Mayen Micro-continent/Iceland Plateau composite high."[164]

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[160] DOALOS, O.L.A. *Submissions, through the Secretary-General of the United Nations, to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea of 10 December 1982.* United Nations (2009)

[161] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... NORWAY...* (2009) p.18-30

[162] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... NORWAY...* (2009) p.18, paragraph 41

[163] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... NORWAY...* (2009) p.18, paragraph 42

[164] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... NORWAY...* (2009) p.18, paragraph 43

This initial description does not make any special contributions to the classification of the seafloor high.

Concluding remarks and recommendation

The presentation and analysis of the recommendations are divided by the separate seafloor highs in question.

Mohns Ridge

The Mohns-Knipovich Ridge system is "an active seafloor spreading system" which dominates the northern Banana Hole Region.[165]

Norway viewed the Mohn Ridge as a *submarine ridge* in accordance with UNCLOS article 76 (6). As such Norway used the ridge to locate "critical FOS points … within the central valley on the Mohns Ridge (…)",[166] of which the Commission remarked the following:

> "This base of slope location related to Norway's view that the slope sediments of the Bjørnøya Fan had buried the eastern flanks of the Mohns and Knipovich spreading ridges where the two ridges meet, and that the south-eastern flank of the central trough of the Mohns Ridge is connected to the continental slope of the Bjørnøya Fan. In this approach, and on a purely morphological basis, it was Norway's view that the inner, south-eastern flanking ridge of the Mohns Ridge system forms a submarine ridge in the sense of article 76 paragraph 6, and the base of slope lies on the outer, north-western margin of the flanking ridge; that is, within the central valley.[167]

However, the Subcommission did not share this view of the Mohn Ridge:

> "The Subcommission was of the view that regionally significant inflections in seafloor gradient indicated that the Bjørnøya Fan is separated from the Mohns-Knipovich Ridge system by a continuous zone of flat to very low-gradient seafloor that is not part of the continental slope. In this approach, the Mohns-Knipovich Ridge system, including its central valley, is considered to be part of the deep ocean floor and/or rise

[165] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... NORWAY...* (2009) p.19, paragraph 48

[166] Ibid.

[167] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... NORWAY...* (2009) p.19-20, paragraph 48

provinces on morphological and geological grounds.[168]

Based on the above recommendation of the Commission, it seems like the ridge should have been classified as an *oceanic ridge of the deep ocean floor*, cf. UNCLOS article 76 (3). The Commission does however not make an explicit classification of the ridge. Instead the Commission recommends that Norway "explore more landward possibilities for the base of slope associated with regionally significant inflections in the gradient of the seafloor".[169]

The actual conclusion that the ridge should be considered as part of the deep ocean floor is in accordance with UNCLOS article 76 (3). A break in the morphological continuity is synonymous with this decision. The Commission gives no explanation as to why it does not classify the ridge.

The Vøring Plateau

The Commission classified the Vøring Plateau as a *submarine elevation* under UNCLOS article 76 (6), by stating the following:

> "The Vøring Plateau is a large, 1300-1500 m deep feature within the margin that is underlain by extended continental crust that merges with anomalously thick, break-up related magmatic crust beneath its outer part. Based on the evidence in the Submission, including the additional material provided by Norway (NOR-DISC-005-08-06-2007), the Commission agrees that the Vøring Plateau is a submarine elevation that is a natural component of the continental margin of Mainland Norway in the sense of article 76, paragraph 6."[170]

The Commission makes comments on the nature of the crust and the formation process, in addition to specifying that the feature is part of the continental margin. This is in accordance with the interpretation of article 76 (6) of the Law of the Sea, and the S&T Guidelines of the Commission paragraph 7.3.1 (b), because the seafloor high is underlain by continental crust and was formed through a breakup process.

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[168] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... NORWAY...* (2009) p.20, paragraph 49

[169] Ibid.

[170] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... NORWAY...* (2009) p.27, paragraph 75

The Vøring Spur

The Vøring Spur seafloor high "extends northwest from the Vøring Plateau, to the north of the East Jan Mayen Fracture Zone."[171]

The Commission recognises that the Spur is morphologically, and by way of the foot of the slope part of the submerged prolongation of the landmass of Mainland Norway,[172] which excludes the possibility of classifying the Spur as an *oceanic ridge of the deep ocean floor*, cf. UNCLOS article 76 (3).

The classification of the seafloor high is based on the following consideration:

> "Although it remains poorly understood, information in the Submission and additional material provided by Norway (NOR-PRE-007-31-01-2008) indicates that the Vøring Spur is underlain by thick magmatic crust and has a different evolution and geological character to the adjacent Vøring Plateau. In the view of the Commission, the Vøring Spur cannot be regarded as a submarine elevation that is a natural component of the continental margin of Mainland Norway in the sense of article 76, paragraph 6. It is, however, part of the continental margin of Norway for the purposes of the Convention. Hence, 2500 m isobaths associated with the Vøring Spur that lie inside its foot of continental slope envelope can contribute to the construction of the depth constraint line used to delineate the outer limits of the continental shelf of Mainland Norway (Figures 11 and 12)."[173]

The Commission specifically comments on the nature of the crust, the formation process and the geological character of the Vøring Spur in a comparison with the Vøring Plateau. The evolution of the Spur differs from that of the Vøring Plateau, and the Spurs crust is of a magmatic nature.

The Commission does, once again not make an explicit classification of the feature, even though the morphological connection to the continental margin suggests that it should be classified as a *submarine ridge*, cf. UNCLOS article 76 (6). The consequence is non-the-less

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[171] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... NORWAY...* (2009) p.27, paragraph 76

[172] Ibid.

[173] Ibid.

the same as if a classification had been made in terms of the constraint criteria applied on the seafloor high.

The Jan Mayen Micro-Continent/Iceland Plateau

The Jan Mayen Micro-Continent/Iceland Plateau is morphologically, and by way of the foot of the slope, part of the submerged prolongation of the landmass of the Jan Mayen Island. [174]

The Commission makes the following statements regarding the geological data of the JMMC/IP:

> "On the basis of seismic reflection and refraction (OBS) data, potential field interpretation and plate-kinematic models the JMMC/IP composite high has long been interpreted to be underlain by highly extended, magmatically-altered continental crust; however, the exact lateral and southward extent of this crust is poorly defined. The younger volcanic rocks of the Jan Mayen landmass are embedded within the older underlying crust of the JMMC/IP and represent an integral part of the geological development of the composite high and have contributed to the growth of its crust".[175]

The classification of the seafloor high was made on the basis of the literature and the balance of morphological and geological evidence. The Commission concluded that Jan Mayen Micro-Continent/Iceland Plateau was to be considered as a *submarine elevation* under article 76 (6) of the Law of the Sea that is a natural component of the continental margin.[176]

As with the Wallaby Composite High of the Australian submission, this classification is made on the balance of morphological and geological evidence. With the Wallaby Composite High there was uncertainty about the geological origin of the seafloor high, that suggested the need to reference morphology in the conclusion. In this case it is not clear why the Commission felt the need to make a balanced conclusion. As stated above it is proven that "the younger volcanic rocks of the Jan Mayen landmass are embedded within older underlying crust of the JMMC/IP and represent an integral part of the geological development of the composite high", which seems to point towards the seafloor high being a natural component of the continental margin of the land mass.

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[174] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... NORWAY...* (2009) p.29, paragraph 77

[175] Ibid.

[176] Ibid.

France (French Guiana and New Caledonia)[177]

France has made several submissions to the CLCS regarding different areas of the world. The first one, concerning French Guiana and New Caledonia was made 22 May 2007. The Commission adopted the recommendation on 2 September 2009.[178]

New Caledonia Region[179]

Description

The seafloor highs in question are the Lord Howe Rise and the Northern Lord Howe Rise. Both are included in the New Caledonia Region and are considered together, rather than one by one.

The region is initially described as follows:

> "New Caledonia includes the landmasses of the main island of New Caledonia, the Chesterfield Islands and the Bellona Reefs, all situated in the tectonically complex area between the northern parts of the Fiji Basin in the east and the Tasmania Sea in the west (Figure 6). The main island of New Caledonia is situated in the northern extension of the Norfolk Ridge underlain by rifted continental crust".[180]

> "(…) The Norfolk Ridge and the Lord Howe Rise are separated by the New Caledonia Basin, which is underlain by crust of uncertain nature. The Chesterfield Islands and the Bellona Reefs are located on the Bellona Plateau, which together with the Fairway Ridge constitutes the northern extension of the Lord Howe Rise (sensu lato), also underlain by rifted continental crust".[181]

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[177] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH GUIANA AND NEW CALEDONIA)…* (2009)

[178] DOALOS, O.L.A. *Submissions, through the Secretary-General of the United Nations, to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea of 10 December 1982.* United Nations (2009)

[179] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH GUIANA AND NEW CALEDONIA)…* (2009) p.13-21

[180] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH GUIANA AND NEW CALEDONIA)…* (2009) p.13, paragraph 41

[181] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH GUIANA AND NEW CALEDONIA)…* (2009) p.13, paragraph 42

At this point it is not possible to draw any conclusions, as the description leads to several questions. For instance which land mass should be the starting point of the consideration of the seafloor high and how does the uncertain nature of the crust beneath the New Caledonia Basin affect the classification?

Other relevant factors of consideration

The Commission addresses the questions mentioned above when considering whether or not the submerged prolongation of the landmass entitles the State to establish a continental shelf beyond 200 nautical miles in the Western Area.

France originally submitted to the Commission that the entire area between the South Fiji basin in the east and the Tasman Sea in the west constituted the submerged landmass of the New Caledonia Island:

> "This would imply that there is submerged prolongation in the sense of paragraph 3 of article 76 throughout and between the tectonic elements of the Norfolk Ridge, the New Caledonia Basin and the Lord Howe Rise, with their northward extensions." [182]

However, the Subcommission disagreed with the French in this regard, because of the uncertain nature of the crust underlying the New Caledonia Basin, which separates the Lord Howe Rise and the Norfolk Ridge:

> "Therefore, the Subcommission recommended to France that the Lord Howe Rise should be viewed as one entity not connected to the ridges further east. The Lord Howe Rise should then form the basis for the submerged prolongation of the nearest appurtenant land territory of New Caledonia dependencies, in this case the Bellona Islands, to the area beyond 200 M in the Western Area".[183]

France agreed to this for practical reasons, [184] and demonstrated:

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[182] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH GUIANA AND NEW CALEDONIA)...* (2009) p.14, paragraph 47

[183] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH GUIANA AND NEW CALEDONIA)...* (2009) p.14, paragraph 48

[184] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH GUIANA AND NEW CALEDONIA)...* (2009) p.15, paragraph 49

> "(…) that in terms of both crustal characteristics and morphology, this area is underlain by the submerged prolongation of the landmass of the Bellona Islands". [185]

It is thereby established that the Lord Howe Rise and its northern extension is an integral part of the continental margin of the French landmass, and excludes the possibility that the seafloor highs could be classified as an *oceanic ridge of the deep ocean floor*, cf. UNCLOS article 76 (3).

Concluding remarks and recommendation

The Commission concludes by classifying the Lord Howe Rise and its northern extension as *submarine elevations* under UNCLOS article 76 (6), on the basis of a well-documented formation process and geological data. The consideration of the Commission reads as follows:

> "Geologically, the New Caledonia Region is complex comprising continental, island arc and oceanic elements. The Commission agrees that the Lord Howe Rise and its northern extension is of continental origin that is well evidenced by deep sea drilling data, bottom sampling data, seismic reflection/refraction studies, and gravity modelling. The rifting structure and its process through geologic time are well documented by the scientific studies submitted. Overall, extension tectonics controlled the Region through early Cretaceous to mid-Tertiary. The Lord Howe Rise and other associated continental blocks were once parts of the Australian continent and separated from it by extension and possible seafloor spreading. Based on this evidence, the Commission considers the Lord Howe Rise to be classified as a submarine elevation that is a natural component of the continental margin of France in the sense of article 76, paragraph 6, and in accordance with paragraph 7.3.1.b of the Guidelines."[186]

Based on the above considerations the recommendation is in accordance with the interpretation of UNCLOS article 76, cf. articles 31 and 32 of the VCLT.

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[185] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH GUIANA AND NEW CALEDONIA)...* (2009) p.15, paragraph 50

[186] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH GUIANA AND NEW CALEDONIA)...* (2009) p.19, paragraph 68

The seafloor highs are proven to be both in geomorphological conformity with the continental margin and geologically documented to be of continental origin. And, as stated above "The Lord Howe Rise and other associated continental blocks were once parts of the Australian continent and separated from it by extension and possible seafloor spreading", which indicates that the geological formation process is consistent with what is required for a passive margin under the S&T Guidelines of the Commission paragraph 7.3.1 (b).

The method and process behind the classification is similar and consistent with the practice of the Commission in regards to the previously analysed recommendations.

United Kingdom (Ascension Island)[187]

The United Kingdom made it submission with regards to the Ascension Island on 9 May 2008. The Commission adopted the recommendation, with amendments, on 15 April 2010.[188]

Description

The seafloor high under consideration is the Mid-Atlantic Ridge, which the United Kingdom views as a *submarine ridge* in accordance with UNCLOS article 76 (6).

The Commission describes Ascension Island as follows:

> "Ascension Island is the sub-aerial expression of a volcanic seamount that is located in the central Atlantic Ocean about 90 km west of the median rift valley of the Mid-Atlantic Ridge (MAR) (Figure 1B). Ascension Island lies within the segment of the Atlantic Ocean floor between the Ascension and Bode Verde Fracture Zones (Figure 1B). The Ascension Island edifice formed as a result of magmatic events related to a hot spot, a localised mantle anomaly or some other mechanism, and sits on 7 Ma oceanic lithosphere that was created at the axis of the MAR by seafloor spreading. There is evidence that the volcanism underpinning Ascension Island initiated in proximity to the spreading centre".[189]

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[187] CLCS: *SUMMARY OF THE RECOMMENDATIONS …UNITED KINGDOM (ASCENSION ISLAND)…* (2010)

[188] DOALOS, O.L.A. *Submissions, through the Secretary-General of the United Nations, to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea of 10 December 1982.* United Nations (2009)

[189] CLCS: *SUMMARY OF THE RECOMMENDATIONS …UNITED KINGDOM (ASCENSION ISLAND)…* (2010) p.3, paragraph 16

Other relevant factors of consideration

As the Ascension Island is located on the Mid-Atlantic Ridge there where some disagreements between the United Kingdom and the Subcommission about the interpretation of article 76 of the Law of the Sea.

The United Kingdom held the understanding that the natural prolongation of the land territory had to be considered before applying article 76 (4) to delineate the outer edge of the continental margin.[190]

The United Kingdom also expressed the following:

> "The United Kingdom *"…do not regard establishment of the "natural prolongation" of the land territory as referred to in Article 76 to require a particular "morphology", or set of morphological features, considered in isolation from other data. The technical arguments for natural prolongation, foot of slope position, base of slope region can all be developed and established through analyses of a range of data, including geology and geophysics, in addition to morphology.*"[191]

The UK holds the opinion that as the Ascension Island itself can't be regarded as part of the deep ocean floor, the same would have to apply to "the associated parts of the MAR"[192], which according to the UK should be considered as a *submarine ridge* under article 76 (6).[193]

Concluding remarks and recommendation

When ridges and other morphological features that rises from the deep ocean floor is surmounted by islands, the Commission recognizes their rights to a "continental margin" and "continental shelf"[194] as established in article 76, (1) and (3):

> "In the case of ridges surmounted by islands the question arises as to which parts of such ridges are of the deep ocean floor, and which parts represent the continental

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[190] CLCS: *SUMMARY OF THE RECOMMENDATIONS …UNITED KINGDOM (ASCENSION ISLAND)…* (2010) p.5, paragraph 20

[191] CLCS: *SUMMARY OF THE RECOMMENDATIONS …UNITED KINGDOM (ASCENSION ISLAND)…* (2010) p.5, paragraph 21 (i)

[192] CLCS: *SUMMARY OF THE RECOMMENDATIONS …UNITED KINGDOM (ASCENSION ISLAND)…* (2010) p.9, paragraph 30

[193] CLCS: *SUMMARY OF THE RECOMMENDATIONS …UNITED KINGDOM (ASCENSION ISLAND)…* (2010) p.9, paragraph 32

[194] CLCS: *SUMMARY OF THE RECOMMENDATIONS …UNITED KINGDOM (ASCENSION ISLAND)…* (2010) p.12, paragraph 43

margin of the island".[195]

The right to establish the outer limits of the continental shelf beyond 200 M is dependent on "the location of the base and the FOS within the submerged prolongation of those islands": [196]

> "Therefore, the FOS must be situated more than 140 M from the territorial sea baselines in order to establish an outer edge of continental margin beyond 200 M using the 60 M distance formula. For this to be the case for a small oceanic island like Ascension, it would have to surmount a discrete seafloor high, that itself rises above the average "ruggedness" of the deep ocean floor. In turn, such a discrete seafloor high would have to be of sufficient areal extent for the continental slope and its base to be within the necessary distance of the 200 M line or beyond".[197]

Based on the data submitted by the United Kingdom, the Commission does not consider this to be the case,[198] and makes the following observations:

> "The United Kingdom regards the rift valley of the spreading axis and the deeps of associated fracture zones as parts of the continental slope of Ascension Island. However, in the view of the Commission, ocean spreading structures, which are normally part of the deep ocean floor, can only form the continental slopes of island landmasses in cases where such structures form part of the discrete seafloor highs from which the island edifices rise".[199]

According to the Commission this was not the case for Ascension Island, as it

> "(…) has a very restricted volcanic pedestal that rises directly from the normal deep ocean floor around it. It is not connected to any other discrete morphological feature that rises above the general "ruggedness" of the surrounding seafloor (Figure 6)".[200]

The data and material in the submission suggests to the Commission that the crustal structure of the island differs from the surrounding ocean floor, which is composed of normal oceanic

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[195] CLCS: *SUMMARY OF THE RECOMMENDATIONS …UNITED KINGDOM (ASCENSION ISLAND)…* (2010) p.12, paragraph 43

[196] CLCS: *SUMMARY OF THE RECOMMENDATIONS …UNITED KINGDOM (ASCENSION ISLAND)…* (2010) p.12, paragraph 44

[197] Ibid.

[198] Ibid.

[199] CLCS: *SUMMARY OF THE RECOMMENDATIONS …UNITED KINGDOM (ASCENSION ISLAND)…* (2010) p.13, paragraph 45 ()

[200] CLCS: *SUMMARY OF THE RECOMMENDATIONS …UNITED KINGDOM (ASCENSION ISLAND)…* (2010) p.13, paragraph 46

crust[201]:

> "Although there is evidence that the volcanism underpinning Ascension Island initiated in proximity to the spreading centre, the main phases of construction of Ascension Island occurred at a substantial distance off-ridge. The Commission is of the view that Ascension Island is distinct from the surrounding ocean floor, morphologically, geologically, geophysically and geochemically".[202]

The Commission does not straight out say that the Mid-Atlantic Ridge is thereby classified as an oceanic ridge of the deep ocean floor, but this is evident from its conclusion:

> "The Commission recommends that, in the area around Ascension Island, the United Kingdom does not establish the outer limits of its continental shelf beyond 200 M on the basis of the technical and scientific documentation contained in the United Kingdom's Submission of 9 May 2008 and other data and material provided by the United Kingdom".[203]

In addition the Commission states that this recommendation does not exclude the possibility that other islands may establish a continental shelf beyond 200 nautical miles:

> "This does not mean that islands, in general, cannot generate a continental margin that extends beyond 200 M (see paragraph 54)".[204]

The Commission explains its decision well, and the conclusion seems to be in accordance with the interpretation of UNCLOS article 76, cf. articles 31 and 32 of the VCLT. When the evidence shows that the feature is different from the landmass in a morphological, geological, geophysical and geochemical sense, the only option is to consider it as an *oceanic ridge of the deep ocean floor*, cf. UNCLOS article 76 (3).

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[201] CLCS: *SUMMARY OF THE RECOMMENDATIONS …UNITED KINGDOM (ASCENSION ISLAND)…* (2010) p.14, paragraph 47

[202] Ibid.

[203] CLCS: *SUMMARY OF THE RECOMMENDATIONS …UNITED KINGDOM (ASCENSION ISLAND)…* (2010) p.15, paragraph 54

[204] CLCS: *SUMMARY OF THE RECOMMENDATIONS …UNITED KINGDOM (ASCENSION ISLAND)…* (2010) p.14, paragraph 51

Japan[205]

Japan made its submission to the CLCS on 12 November 2008, and the recommendation was adopted, with amendments, on 19 April 2012.[206]

The seafloor highs of the Japanese submission are found in the Ogasawara Plateau Region.

The Ogasawara Plateau Region (OGP)[207]

There are two seafloor highs in the Ogasawara Plateau Region that is considered for classification by the Commission the Ogasawara Composite High and the Ogasawara Ridge.

Description

The regions' continental margin is described as follows:

> "The continental margin of Japan in the OGP region as defined by Japan is constituted by the N-S trending eastern flank of the Izu-Ogasawara Arc and its associated E-W trending features of the Ogasawara composite high and the Uyeda Ridge (Figure 10)".[208]

This initial description does not contribute to the classification of the seafloor highs.

The Ogasawara Plateau is divided into three parts: the western (the Plateau), the eastern (the Ridge) and the southeastern (the Hotokenoza Seamount Group).[209] The Commission defines the Ogasawara Plateau as "a complex, composite seafloor high composed of several seamounts",[210] and the different parts are described as follows:

- "The western part is a plateau-like feature with general depths of 3000 to less than 2000 meters that hosts the two large Minami and Higashi Seamounts, and the

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[205] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... JAPAN...* (2012)

[206] DOALOS, O.L.A. *Submissions, through the Secretary-General of the United Nations, to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea of 10 December 1982.* United Nations (2009)

[207] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... JAPAN...* (2012) p.13-20

[208] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... JAPAN...* (2012) p.13, paragraph 84

[209] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... JAPAN...* (2012) p.13 and 14, paragraph 85 and 88

[210] Ibid.

minor Nishi Seamount. This is the part of the composite high named Ogasawara Plateau by Okamura et al., 1992, and which is currently colliding with the Izu-Ogasawara Arc and clogging up the subduction trench in the area where the Mariana Trench joins the Izu-Ogasawara Trench".[211]

- "The eastern part is a ridge-like feature with subordinate spurs. It lies at similar depths to the plateau of the western part and hosts large, flat topped seamounts, which from west to east are the Yabe, Hanzawa and Katayama seamounts, respectively, and named (Uda and East Katayama) and unnamed spurs. This part of the composite high is named Michelson Ridge by Okamura op.cit. The western part (the plateau) and the eastern part (the ridge) are morphologically continuous at a common depth of 2500-3500 meters".[212]
- "The southeastern part is an isolated group of seamounts, located south of the eastern end of the ridge-like (eastern) part of the composite high. The Hotokenoza Seamount is the largest of these seamounts. The area between this seamount group and the East Katayama Spur to the north is part of a gentle swell of the deep ocean floor underpinning the seamounts. According to the submission, this swell constitutes the morphological connection at 5400-5500 meters depth between the East Katayama Spur and the Hotokenoza seamount group of the southeastern part".[213]

The Plateau and the Ridge part is considered by the Commission as constituting "the submerged prolongation of the land mass of Japan's islands on the Izu-Ogasawara Arc"[214], thereby excluding them from being considered as oceanic ridges of the deep ocean floor, cf. UNCLOS article 76 (3).

Formation

The Commission considers the process of formation of the Ogasawara composite high (the Plateau and Ridge part) as follows:

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[211] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... JAPAN...* (2012) p.13-14, paragraph 85

[212] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... JAPAN...* (2012) p.14, paragraph 86

[213] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... JAPAN...* (2012) p.14, paragraph 87

[214] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... JAPAN...* (2012) p.15, paragraph 94

"Japan provides evidence that in the west, parts of the Ogasawara composite high are accreted to the Izu-Ogaswara Arc, and suggests that accretion is still at an early stage and that further accretion will take place in the future. According to the submission, the process of accretion "…causes various materials, e.g., sedimentary and igneous components of the oceanic crust, seamounts, oceanic plateaus, island arcs, and continental blocks, to be transferred from the footwall to the hangingwall of the subduction zone and thus become incorporated in the upper plate as part of a continent or island arc. (Paragraph 17 of MB-OGP-DOC-04)." [215]

"Based on the data and information submitted by Japan, the Commission agrees that the Plateau Part have been accreted to the arc and that further accretion may take place in the future".[216]

The description of the formation process indicates that the Plateau part should be classified as a *submarine elevation*, cf. UNCLOS article 76 (6), as the process matches the required provision in the S&T Guidelines of the Commission (as described below by the Commission).

Concluding remarks and recommendation

The classification of the Ogasawara composite high is concluded by confirming that the Plateau part may be considered as a submarine elevation, while the Ridge part should be considered as a submarine ridge, both in the understanding of UNCLOS article 76 (6)[217]:

"This view is based on the following arguments and observations:

(i) The Plateau Part of the composite high is cut by low-angle thrust faults that separate the rocks of the Plateau Part from the oceanic crust of the Pacific plate and therefore, this part has been accreted to the Izu-Ogasawara Arc (i.e. the land mass of Japan). These thrust faults are evident in the bathymetric data, and extend only up to the western end of the Yabe Seamount.

(ii) At this point, the Commission refers to the wording in paragraph 7.3.1 (a) of the Scientific and Technical Guidelines of the Commission, which states that in the case of active margins "… any crustal fragment or sedimentary wedge

[215] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... JAPAN...* (2012) p.18, paragraph 117

[216] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... JAPAN...* (2012) p.18, paragraph 118

[217] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... JAPAN...* (2012) p.18, paragraph 119

that is accreted to the continental margin should be regarded as a natural component of that continental margin". This consequently implies that those parts of any crustal fragment or sedimentary wedge that are morphologically connected but not (yet) accreted to the continental margin are not to be regarded natural components of that margin.

(iii) The Ridge Part also satisfies the criteria that the saddle area across the trench is substantially elevated above the FOS envelope on the seafloor seaward of the trench.

(iv) The Ridge Part of the composite high, comprising the Yabe, Hanzawa and Katayama seamounts, are not involved in the tectonic accretion process and, as such represent a subsidiary feature of the plateau that is not in itself accreted to the Izu-Ogasawara Arc. The feature was originally formed within the oceanic environment away from the subduction zone and the deep ocean floor.

(v) At present, the Ridge Part is part of the continental margin of Japan by way of the FOS envelope. However, considering its geological characteristics, it should not be considered a natural component of the continental margin in the sense of the inner Plateau Part that is clearly accreted. Consequently, the Commission considers the Ridge Part is to be regarded as a submarine ridge in the sense of article 76, paragraph 6, and as such subject only to the 350 M distance constraint."[218]

The continental margin where the Ogasawara composite high is located is an active margin, and as such it is the S&T Guidelines of the Commission paragraph 7.3.1 (a), which determines how the formation process of the relevant features must present itself. The Commission has found that the western part of the Ogasawara composite high meets the required criteria, and subsequently classified the Plateau part as a *submarine elevation* cf. UNCLOS article 76 (6). In addition the Commission has found that the Ridge part was not part of the "tectonic accretion process" mentioned in conjunction with the Plateau part. However, the Ridge part is still found to be part of the continental margin, and as such is classified as a *submarine ridge*, cf. UNCLOS article 76 (6).

The focal points of the classifications are the geological nature of the seafloor highs and the formation process behind them. The Commissions' process is similar to the previous analysed

[218] CLCS: *SUMMARY OF THE RECOMMENDATIONS ... JAPAN...* (2012) p.18-19, paragraph 120

recommendations, and is found to be in accordance with the legal interpretation of UNCLOS article 76 cf. articles 31 and 32 of the VCLT.

Mauritius & Seychelles (Mascarene Plateau)[219]

Mauritius and the Seychelles made a joint submission concerning the Mascarene Plateau Region on 1 December 2008. The Commission made its recommendation on 30 March 2011.[220]

Mascarene Plateau Region[221]

Description

The seafloor high in question in the Mascarene Plateau Region is the Mascarene Plateau.

On the location of the Plateau, the Commission states the following:

> "The Plateau extends north-south for over 2300 km from the granitic islands of the Seychelles that surmount Seychelles Bank, on a south-easterly trend through the Correira Bank Rise, to Saya de Malha Bank (that includes Ritchie Bank), and then on a south-south-westerly trend through the Nazareth Bank and the Cargados-Carajos Bank, with its surmounting islands of the St. Brandon Group (Cargados-Carajos Shoals), to the main island of Mauritius". [222]

This does not contribute to the classification of the seafloor high. The region is further described as follows:

> "The Mascarene Plateau region is located in the southwestern part of the Indian Ocean to the northeast of Madagascar. It is dominated by the Mascarene Plateau, which is a large, arcuate, composite seafloor high that lies between 4º S and 21º S and constitutes

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[219] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...MAURITIUS AND SEYCHELLES...* (2011)

[220] DOALOS, O.L.A. *Submissions, through the Secretary-General of the United Nations, to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea of 10 December 1982.* United Nations (2009)

[221] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...MAURITIUS AND SEYCHELLES...* (2011) p.2-24

[222] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...MAURITIUS AND SEYCHELLES...* (2011) p.2, paragraph 15

> the submerged prolongation of the land masses of the two coastal States, Seychelles to the north and Mauritius to the south".[223]

The establishment of the morphological connection between the Plateau and the landmass of the two coastal States, excludes the possibility of classifying the feature as an *oceanic ridge of the deep ocean floor*, cf. UNCLOS article 76 (3).

Formation

The Mascarene Plateau has been subject to a complex formation process and geological evolution:

> "The understanding of the Commission, based on the data and material contained in the Joint Submission, is that the geological evolution of the Mascarene Plateau involved (i) several episodes of rifting and break-up of the Gondwana supercontinent since the Jurassic; (ii) Large Igenous Province (LIP) magmatism associated with the emplacement of the Deccan flood basalts in the Late Cretaceous; (iii) further magmatism associated with the southward path of the Deccan-Rèunion hotspot, and, finally, (iv) significant Tertiary carbonate platform development. All these events and processes contribute to the formation of the large, elongated, mid-ocean seafloor high that is now the Mascarene Plateau with its rectilinear margins, and deep, broad, low-gradient pedestal surmounted by narrower, steep-sided, flat-topped carbonate platforms."[224]

> "The Subcommission views the Mascarene Plateau, from both a morphological and geological perspective, as being a complex and composite seafloor high".[225]

Concluding remarks and recommendation

The Commission concludes by classifying the Mascarene Plateau as a *submarine elevation* under UNCLOS article 76 (6) "on the basis of its morphology and geology".[226] The basis for

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[223] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...MAURITIUS AND SEYCHELLES...* (2011) p.2, paragraph 14

[224] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...MAURITIUS AND SEYCHELLES...* (2011) p.2-3, paragraph 16

[225] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...MAURITIUS AND SEYCHELLES...* (2011) p.5, paragraph 17

[226] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...MAURITIUS AND SEYCHELLES...* (2011) p.19, paragraph 56

the conclusion is made on a substantial amount of data and information, as explained by the Commission:

> "The Joint Submission includes a substantial amount of scientific data and information concerning the morphology, geology, crustal structure, and related tectonics of the Mascarene Plateau. In examining the nature of the Mascarene Plateau, the Commission has also utilized international literature and information from public domain data portals".[227]

The concluding considerations are as follows:

> "The Mascarene Plateau is a morphologically continuous feature consisting of a series of banks and seafloor highs, namely the Seychelles Bank, the Correira Bank Rise, the Ritchie Bank, the Saya de Malha Bank, the Nazareth Bank and the Cargados-Carajos Bank. Evidence of modified continental crust beneath the Mascarene Plateau from Seychelles Bank to the Nazareth Bank can be derived from seismic refraction data, as well as from outcrops on some islands and drilling data from the northern part of the Mascarene Plateau. Drilling data also indicate that the continental basement was covered by Cenozoic volcanic rocks that were emplaced as a result of the Reunion hotspot activity, and were then overlain by a thick accumulation of late Cenozoic carbonate rocks. The above stratigraphy is consistent with the plate reconstruction model provided in the Joint Submission and with other plate reconstruction models published in international scientific journals. The Commission recognises that the Mascarene Plateau originated as a microcontinent between the Madagascar and Indian continents. It has a complex history involving several phases of rifting and continental break-up, subsequent hotspot volcanism and carbonate platform development. The Mascarene Plateau presently forms a continuous morphological feature with a composite geological structure that has developed through its evolution".[228]

The Commission found there to be morphological continuity and evidence of the geological nature of the plateau. It also found a well-documented formation process described as "A complex history involving several phases of rifting and continental break-up, subsequent hotspot volcanism and carbonate platform development". Together indicated that the feature

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[227] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...MAURITIUS AND SEYCHELLES...* (2011) p.19, paragraph 54 (2011)

[228] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...MAURITIUS AND SEYCHELLES...* (2011) p.19, paragraph 55 (2011)

had to be considered as a natural component of the continental margin of the landmasses of the coastal States. This is in accordance with the interpretation of UNCLOS article 76 (6).

France (French Antilles and the Kerguelen Islands)[229]

The French submission for the French Antilles region and the Kerguelen Islands was made on 5 February 2009. The Commissions recommendation was adopted, with amendments, on 19 April 2012.[230]

The seafloor high under consideration is located in the Kerguelen Island Region.

The Kerguelen Island Region[231]

Description

The seafloor highs in question are the un-named Skiff Bank Spur and the Gallieni Ridge.[232]

The French landmass in the Kerguelen Islands Region is the Kerguelen Islands, which are located on the North Kerguelen Plateau:

> "The Northern Kerguelen Plateau (NKP) is located between 46°S and 50°S and forms the shallower parts of the plateau (water depths less than 1000 m). It is characterized by basement highs that rise 3000 to 4000 m above the abyssal plain, with the culminating point of this province being represented by the Kerguelen Islands."[233]

The Kerguelen Plateau is:

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[229] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH ANTILLES AND THE KERGUELEN ISLANDS)...* (2012)

[230] DOALOS, O.L.A. *Submissions, through the Secretary-General of the United Nations, to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea of 10 December 1982.* United Nations (2009)

[231] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH ANTILLES AND THE KERGUELEN ISLANDS)...* (2012) p.7-15

[232] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH ANTILLES AND THE KERGUELEN ISLANDS)...* (2012) p.12, paragraph 79

[233] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH ANTILLES AND THE KERGUELEN ISLANDS)...* (2012) p.7, paragraph 47

> "(…) a large, NNW-SSE trending composite sea-floor high, about 2300 km long and 600 km in average width; extending over an area of more than 1.5 million km^2".[234]

This initial description does not remarkably contribute to the classification of the seafloor high.

The Northern Kerguelen Plateau is one of the many sections of the Kerguelen Plateau. The Kerguelen Plateau also consists of the Central and Southern Kerguelen Plateau (CKP and SKP), as well as the Skiff Bank (SB), Elan Bank (EB) and the Williams Ridge (WR).[235]

The Commission establishes the morphological connection between the Kerguelen Plateau and the landmass in its usual fashion:

> "The different components of the Kerguelen Plateau form a continuous, elongated morphological feature that constitutes a submarine prolongation of that land mass".[236]

The possibility of considering the seafloor highs as *oceanic ridges of the deep ocean floor* is thereby excluded, because of the proven morphological continuity, cf. UNCLOS article 76 (3).

Concluding remarks and recommendation

Skiff Bank Spur

The Commissions consideration of the Skiff Bank Spur is significantly shorter than the consideration of the Gallieni Ridge.

The following statement is made on the spurs nature:

> "The un-named spur is bounded to the west by a steep major escarpment and to the east by less steep flank, which is semi parallel to fracture zones further east. The major escarpment of the spur has a different strike than the associated fracture zones. The un-named spur exhibits an internal fabric that is continuous with the internal fabric of

[234] CLCS: *SUMMARY OF THE RECOMMENDATIONS …FRANCE (FRENCH ANTILLES AND THE KERGUELEN ISLANDS)…* (2012) p.7, paragraph 46

[235] Ibid.

[236] CLCS: *SUMMARY OF THE RECOMMENDATIONS …FRANCE (FRENCH ANTILLES AND THE KERGUELEN ISLANDS)…* (2012) p.8, paragraph 48

> the Upper Cretaceous basement of the Skiff Bank area and is highly oblique to both the western, major escarpment and the fracture zones".[237]

It is not possible to make any conclusion based on this statement alone. The Commission does not add much to the statement, but concludes that the Spur should be classified as a *submarine elevation*. The conclusion is made on a balance of morphological and geological evidence:

> "Based on the morphological and geological evidence in the Submission, the additional material provided by France (Annex III), and the literature, the Commission agrees, on balance, that the said spur is a tectonic sliver of the Kerguelen Plateau formed by rifting. Accordingly, the Commission agrees that the spur is to be classified as a submarine elevation that is a natural component of the continental margin of the Kerguelen Islands of France in the sense of article 76, paragraph 6, of the Convention".[238]

The Commission comments very little on the formation process, but states that the Spur is formed by rifting, and thereby conforming with the provision of the S&T Guidelines. The Commission hits all the required marks for the classification of a seafloor high as a *submarine elevation*, with comments on geomorphology, geological nature and the formation process. It follows the same procedure as with other similar recommendations, and is in accordance with the legal interpretation of UNCLOS article 76 (6).

Gallieni Ridge

France claimed that the Gallieni Ridge should be considered as a *submarine elevation* under UNCLOS article 76 (6).[239] The Subcommission was, however, not immediately convinced of such a classification, and expressed uncertainty about the origin of the ridge, and argued that it could be classified as a *submarine ridge* as it could be related to:

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[237] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH ANTILLES AND THE KERGUELEN ISLANDS)…* (2012) p.14, paragraph 90

[238] Ibid.

[239] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH ANTILLES AND THE KERGUELEN ISLANDS)…* (2012) p.12, paragraph 81

> "(…) the evolution of both the Kerguelen Plateau and the surrounding deep ocean floor".[240]

But, the Subcommission declared that it could not make such a classification based on the data available.[241]

France responded by referring to a PhD thesis of Courrèges from 2012, which "described and analysed"[242] several characteristics of the Gallieni Ridge, with particular attention given to

> "(…) the age calculation based on the elastic thickness of the crust on which the ridge was emplaced at the time of the ridge emplacement. According to this, the ridge was emplaced (as a line of coalescing volcanoes) on the pre-existing ocean spreading crust within a relatively short time span about 26 Ma ago".[243]

> "France also pointed out that it is not in alignment with the fracture zones of the ocean crust, and conclude that it is an expression of the Kerguelen hotspot and, as such, should be regarded as a natural component of the margin."[244]

After examining the new information provided by France, the Subcommission responded that:

> "(…) the Gallieni Ridge is probably a chain of volcanoes formed along the trace of a hot spot. It is a common view that such volcanic chains form as an oceanic plate moves over a stationary hotspot (hereafter termed "hotspot ridge"). In this case it could be related to the trailing edge of the Kerguelen hotspot itself after the Kerguelen Plateau split and separated from the Broken Ridge (as indicated in the model of Dyment et al., 2007, referred to in slide No 9 in FRA1_PRE_SC_004_10_03_2011)".[245]

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[240] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH ANTILLES AND THE KERGUELEN ISLANDS)…* (2012) p.12, paragraph 82

[241] Ibid.

[242] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH ANTILLES AND THE KERGUELEN ISLANDS)…* (2012) p.12, paragraph 83

[243] Ibid.

[244] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH ANTILLES AND THE KERGUELEN ISLANDS)…* (2012) p.12-13, paragraph 83 (2012)

[245] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH ANTILLES AND THE KERGUELEN ISLANDS)…* (2012) p.13, paragraph 84 (2012)

France responded by repeating its position, and

> "(…) pointed to the fact that the emplacement of the ridge had taken place in a very short time (2 – 4 Ma according to the crustal age model) and that the length of the ridge is incompatible with that deduced from existing Kerguelen hot spot trace models".[246]

The Subcommission agreed that this would strongly indicate that:

> "(…) the Gallieni Ridge is not a "hotspot ridge" of the more "common" type. The Subcommission also added the following observations:
>
> - The Gallieni Ridge straddles the transition between the thickened, anomalous crust of the Northern Kerguelen Plateau and the normal spreading ocean crust (deep ocean floor);
> - The ridge was emplaced about 10 – 15 Ma after the onset of seafloor spreading between the Kerguelen Plateau and the Broken Ridge, and hence was not formed by the tectonic breakup process, but by a later magmatic event;
> - According to Courrèges (2010), the Gallieni Ridge was probably emplaced as a chain of volcanoes along a fracture in the ocean crust, possibly propagating from west to east. However, the author points out that there are no direct age datings to confirm such propagation; and
> - From its morphology (and age model) it seems likely that the ridge did propagate from the Kerguelen Plateau, and as such the ridge and the plateau should have a similar geochemical character. However, there are no geochemical samples available to compare with the Kerguelen Plateau. In this connection, the Subcommission notes that the emplacement of the Gallieni volcanoes took place 15-16 Ma later than the end of the last main magmatic pulse of the Kerguelen hotspot (about 40 Ma)".[247]

The Commission finally made its conclusion and decided that it was not proven that the Gallieni Ridge should be regarded as a *submarine elevation*:

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[246] CLCS: *SUMMARY OF THE RECOMMENDATIONS …FRANCE (FRENCH ANTILLES AND THE KERGUELEN ISLANDS)…* (2012) p.13, paragraph 85

[247] CLCS: *SUMMARY OF THE RECOMMENDATIONS …FRANCE (FRENCH ANTILLES AND THE KERGUELEN ISLANDS)…* (2012) p.13, paragraph 86

> "Based on the above facts and discussion, the Subcommission concluded that there are still considerable uncertainties and a lack of data with regard to understanding the Gallieni Ridge, its geochemical character, its tectono-magmatic emplacement mechanism, and the exact age and time span of that emplacement".[248]

The Gallieni Ridge was still considered as being part of the submerged prolongation of the landmass of the Kerguelen Islands and part of the continental margin of France in this region:

> "The Commission recognises, however, by way of the foot of the continental slope envelope and morphology, the Gallieni Ridge is part of the submerged prolongation of the landmass of the Kerguelen Islands and, as such, is part of the continental margin of France in the Kerguelen Plateau region".[249]

Here the Commission choses not to make a classification because of insufficient data with regard to the Gallieni Ridge and "its geochemical character, its tectono-magmatic emplacement mechanism, and the exact age and time span of that emplacement". The Gallieni Ridge is best compared to the Williams Ridge and the Joey Rise of the Australian submission, where the Commission also chose to not make a classification based on the uncertainty of the surrounding the seafloor highs.

This shows that the Commission is consistent in its process and method, and choses to avoid making a final recommendation where it is not proven that the seafloor high falls into one or the other category under UNCLOS article 76.

The consequence of not making a classification is the same as if the seafloor high was classified as a *submarine ridge* cf. UNCLOS article 76, with regards to the constraint criteria.

Denmark (North of the Faroe Islands)[250]

Denmark has made several submissions to the CLCS, but has only received one recommendation back. The first submission was made 29 April 2009, concerning the

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[248] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH ANTILLES AND THE KERGUELEN ISLANDS)…* (2012) p.13, paragraph 87

[249] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...FRANCE (FRENCH ANTILLES AND THE KERGUELEN ISLANDS)…* (2012) p.13, paragraph 88

[250] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...DENMARK (THE FAROE ISLANDS)…* (2014)

continental shelf north of the Faroe Islands. The Commission made its recommendation on 12 March 2014.[251]

Description

The seafloor high under consideration for the Commission is the Ægir Ridge.

According to the Commission, it is possible to divide the continental shelf North of the Faroe Islands into three distinct geographic regions: "the North Sea Fan region; the Týr Ridge and Faroe-Iceland Ridge region; and the Ægir Ridge region".[252]

The Commission gives a thorough description of the region north of the Faroe Islands:

> "The continental margin of Denmark North of the Faroe Islands is part of the North-East Atlantic Margin that extends from the Rockall and Hatton Banks in the south-west to the Møre and Vøring margins in the north-east. Towards the north-west, the continental margin extends along the Faroe-Iceland Ridge onto the Ægir Ridge. The Faroe Islands are part of the North Atlantic Igneous Province and were formed by extrusive and intrusive volcanic activity during the breakup of the super-continent Pangea and the opening of the North Atlantic Ocean in early Tertiary times, approximately 55 million years ago (Figure 2). The Ægir Ridge comprises an extinct part of the spreading ridge system that created oceanic seafloor beneath the Northern Deep as well as the Faroe-Iceland Ridge. The active spreading ridge today is located beyond the continental margin of the Faroe Islands."[253]

This initial description tells us that the Ægir Ridge is an extinct part of "the spreading ridge system that created oceanic seafloor beneath the Northern Deep as well as the Faroe-Iceland Ridge". This suggests that the Ridge may have a different origin than the landmass, which might exclude it from being classified as a *submarine elevation*. The region is further described as follows:

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[251] DOALOS, O.L.A. *Submissions, through the Secretary-General of the United Nations, to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea of 10 December 1982.* United Nations (2009)

[252] CLCS: *SUMMARY OF THE RECOMMENDATIONS …DENMARK (THE FAROE ISLANDS)…* (2014) p.6, paragraph 29

[253] CLCS: *SUMMARY OF THE RECOMMENDATIONS …DENMARK (THE FAROE ISLANDS)…* (2014) p.6, paragraph 27

> "The margin North of the Faroe Islands is characterised by a number of elevated seafloor highs that extend from the shelf and slope region into the Northern Deep. The most pronounced of these seafloor highs are the Faroe-Iceland Ridge and the Ægir Ridge which, in its southern part, merges with the northern slope of the Faroe-Iceland Ridge. The northern part of the Ægir Ridge protrudes well beyond 200 M North of the Faroe Islands (see Figure 1). Ocean currents, glacial periods and mass wasting events along the southern and eastern margins of the Northern Deep have resulted in large scale sediment transport from the shelf and slope regions to the basin floor. Consequently, the basin floor of the Northern Deep beyond the base of the continental slope can be characterised as a classical continental rise."[254]

The fact that the Ægir Ridge extends beyond 200 nautical miles north of the Faroe Islands, justifies the consideration of the Commission. The ridge is also described as being part of the continental margin of the Faroe Islands, which excludes the possibility of it being classified as an oceanic ridge of the deep ocean floor, cf. UNCLOS article 76 (3).

Concluding remarks and recommendation

According to the Commission, Denmark considers the Ægir Ridge to be a *submarine ridge* under UNCLOS article 76, (6) of, because it is:

> "(…) morphologically continuous with the continental margin north of the Faroe Islands and falls within a common envelope of the foot of the continental slope, yet is an extinct seafloor spreading ridge that is geologically different from the landmass of the Faroe Islands".[255]

Denmark noted that:

> "(…) a seafloor high that is a natural component needs to be geologically linked to the continental margin in its entirety to be classified as a submarine elevation. In contrast, submarine ridges are seafloor highs that are morphologically an integral part of the

[254] CLCS: *SUMMARY OF THE RECOMMENDATIONS …DENMARK (THE FAROE ISLANDS)…* (2014) p.6, paragraph 28

[255] CLCS: *SUMMARY OF THE RECOMMENDATIONS …DENMARK (THE FAROE ISLANDS)…* (2014) p.8, paragraph 34

continental margin, but may be geologically different along parts or the entire length of the ridge from the landmass of the coastal State from which the margin extends." [256]

The Commission states that the Subcommission agreed with this view,[257] and it did not dwell further on the seafloor high issue. The Ægir ridge is thereby classified as a *submarine ridge*. The arguments presented by Denmark matches the interpretation of UNCLOS article 76 on the seafloor high issue perfectly.

The Commissions statement that it agrees with the presented view on *submarine ridges* and *submarine elevations* might be applicable to other cases, even though the Commission has stated in its Guidelines that the *submarine ridges* must be considered on a case-to-case basis. The description in the recommendation is very general, and does not reference the Danish submission specifically. It is however clearly a representation of the Danish view of article 76, but the Commission does nothing to suggest that this is not also their general opinion.

This recommendation is the most recent recommendation made by the Commission.[258]

Final Analysis and Conclusions

This chapter will give a final analysis of the CLCS practice on seafloor highs. There will be a summation of the cases presented in the previous chapter, and I will address the issues that have presented themselves through the analysis of the individual recommendations, and other general issues with the Commissions treatment of seafloor highs.

In this thesis, 25 seafloor highs considered by the Commission on the Limits of the Continental Shelf under article 76 of the Law of the Sea are presented. The Commission classified 16 of them as *submarine elevations*, cf. UNCLOS article 76 (6), three as *submarine ridges*, cf. UNCLOS article 76 (6), and the final six was not classified. Of the seafloor highs that were not classified, some were found to be morphologically connected to the continental

[256] CLCS: *SUMMARY OF THE RECOMMENDATIONS ...DENMARK (THE FAROE ISLANDS)...* (2014) p.8, paragraph 34

[257] Ibid.

[258] DOALOS, O.L.A. *Submissions, through the Secretary-General of the United Nations, to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea of 10 December 1982.* United Nations (2009)

margin, whereas others were found to be part of the deep ocean floor. The Commissions reasons for not making a classification in these cases will be considered in this chapter.

CLCS practice on Seafloor Highs

The considered recommendations of the Commission are presented in the table below. It shows the decided classification of the seafloor highs, and a summarized description of the reasoning behind the classification, divided into geological and geomorphological arguments. The table will a comprehensible view of the practice of the Commission, and will be used as an aid in making the final analysis and conclusions.

Table 1: CLCS recommendations on seafloor highs presented, and its arguments for the classification of the seafloor highs.

CLCS practice on Seafloor Highs						
General information				Decision of the CLCS and its reasons		
No.	**Submitting State(s)**	**Relevant region**	**Seafloor high in question**	**Classified as:**	**Geology**	**Geomorphology**
1.	Brazil	Vitória-Trindade Ridge Region	Vitória-Trindade Ridge	Submarine Ridge	- Formation process unclear. - Not in geological conformity along the entire feature.	- Natural prolongation and an integral part of the continental margin. - Different from a submarine elevation.
2.	Brazil	São Paulo Plateau Region	São Paulo Plateau	Submarine Elevation	- Formation process matches STG 7.3.1 (b)	- Part of the lower slope of the continental margin.
3.	Australia	Kerguelen Plateau	Central Kerguelen Plateau	Submarine Elevation	- Formation process matches STG 7.3.1 (b) - Geological nature = continental crust signature and crust similarities in the relevant seafloor highs.	- The different components of the Kerguelen Plateau form a continuous, elongated morphological feature that constitutes a submarine prolongation of that landmass.
4.	Australia	Kerguelen Plateau	Southern Kerguelen Plateau	Submarine Elevation		
5.	Australia	Kerguelen Plateau	Elan Bank	Submarine Elevation		
6.	Australia	Kerguelen Plateau	Williams Ridge	Not classified	- Geological nature = the geological origin remains unresolved.	- A continuous, elongated morphological feature that

						constitutes a submarine prolongation of that landmass.
7.	Australia	Lord Howe Rise	Lord Howe Rise	Submarine Elevation	- Formation process matches STG 7.3.1 (b). - Geological nature = The Lord Howe Rise is of continental origin.	- A submarine prolongation of the Lord Howe Island and the Norfolk Island.
8.	Australia	Naturaliste Plateau	Naturaliste Plateau	Submarine Elevation	- Formation process matches STG 7.3.1 (b). - Geological nature = crust of continental origin.	- The Commission considers the Naturaliste Plateau to be a morphological feature and the submarine prolongation of the continent.
9.	Australia	South Tasman Rise	South Tasman Rise	Submarine Elevation	- Formation process matches STG 7.3.1 (b). - Geological nature = the South Tasman Rise is of continental origin.	- The Rise is a morphological feature forming a submarine prolongation of the Australian continent.
10.	Australia	Wallaby Plateau	Wallaby composite high	Submarine Elevation	- Geological nature = the geological origin remains unresolved. - On the balance of morphological and geological evidence presented the Wallaby Composite High is regarded as a submarine elevation.	- The Wallaby Composite High is a morphological feature forming a submarine prolongation of the continent
11.	Australia	Exmouth Plateau	Joey Rise	Not classified	- Formation process unclear. - Geological nature = magmatic origin of the crust.	- By way of the foot of the continental slope envelope and morphology the Joey Rise is part of the submerged prolongation of the landmass of Australia.
12.	Australia	Exmouth Plateau	Exmouth Plateau,	Submarine Elevation	- Geological nature = continental origin.	- The Exmouth Plateau is an

			including the Wombat Plateau and the Platypus Spur		- Natural component of the continental margin based on geological and geophysical data.	equidimensional morphological feature forming a submerged prolongation of the continent.
13.	Norway	Banana Hole in the Norwegian and Greenland Seas	Mohns Ridge	Not classified	- Regionally significant inflections in seafloor gradient indicated that the Bjørnøya Fan is separated from the Mohns-Knipovich Ridge system by a continuous zone of flat to very low-gradient seafloor that is not part of the continental slope. In this approach, the Mohns-Knipovich Ridge system, including its central valley, is considered to be part of the deep ocean floor and/or rise provinces on morphological and geological grounds	
14.	Norway	Banana Hole in the Norwegian and Greenland Seas	Vøring Plateau	Submarine Elevation	- Formation process matches STG 7.3.1 (b) - Geological nature = continental crust	- The Vøring Plateau is a large, 1300-1500 m deep feature within the margin.
15.	Norway	Banana Hole in the Norwegian and Greenland Seas	Vøring Spur	Not classified	- Formation process: different evolution than the Vøring Plateau. - Geological nature = magmatic crust.	- The Spur is morphologically, and by way of the foot of the slope part of the submerged prolongation of the landmass of Mainland Norway
16.	Norway	Banana Hole in the Norwegian and Greenland Seas	Jan Mayen Micro-Continent/Iceland Plateau Composite High	Submarine Elevation	- Geological nature = Natural component of the continental margin. - On the balance of morphological and geological evidence the Jan Mayen Micro-Continent/Iceland Plateau is considered as a submarine elevation.	- The Jan Mayen Micro-Continent/Iceland Plateau is morphologically, and by way of the foot of the slope, part of the submerged prolongation of the landmass of the Jan Mayen Island
17.	France (French Guiana and New Caledonia)	New Caledonia	Lord Howe Rise	Submarine Elevation	- Formation process matches STG 7.3.1 (b) - Geological nature = continental origin	- Both morphologically and crustal characteristics proves that the area is underlain by the submerged prolongation of the
18.	France (French	New Caledonia	Northern Lord Howe Rise	Submarine Elevation		

	Guiana and New Caledonia					landmass of the Bellona Islands.
19.	United Kingdom (Ascension Island)	Ascension Island	Mid-Atlantic Ridge	Not classified	- Different from the landmass in a morphological, geological, geophysical and geochemical sense.	
20.	Japan	The Ogasawara Plateau Region	The Ogasawara Plateau	Submarine Elevation	- Formation process matches STG 7.3.1 (a) - Geological nature = separated from the oceanic crust	- Constitutes the submerged prolongation of the land mass of Japan's islands on the Izu-Ogasawara Arc
21.	Japan	The Ogasawara Plateau Region	The Ogasawara Composite High	Submarine Ridge	- Formation process does not match STG 7.3.1 (a)	
22.	Mauritius & Seychelles	Mascarene Plateau	Mascarene Bank	Submarine Elevation	- Formation process = A complex history involving several phases of rifting and continental break-up, subsequent hotspot volcanism and carbonate platform development. - The Mascarene Plateau presently forms a continuous morphological feature with a composite geological structure that has developed through its evolution.	- Constitutes the submerged prolongation of the landmasses of the two coastal States, Seychelles to the north and Mauritius to the south.
23.	France (French Antilles and the Kerguelen Islands)	The Kerguelen Island Region	Skiff Bank Spur	Submarine Elevation	- Formation process matches STG 7.3.1 (b) - On the balance of morphological and geological evidence the Skiff Bank Spur is considered as a submarine elevation	- The different components of the Kerguelen Plateau form a continuous, elongated morphological feature that constitutes a submarine prolongation of that land mass
24.	France (French Antilles and the Kerguelen	The Kerguelen Island Region	Gallieni Ridge	Not classified	- Considerable uncertainties and a lack of data with regard to understanding the Gallieni Ridge, its	

	Islands)				geochemical character, its tectono-magmatic emplacement mechanism, and the exact age and time span of that emplacement	
25.	Denmark		Ægir Ridge	Submarine Ridge	- Not in geological conformity along the entire feature.	- Morphologically continuous with the continental margin north of the Faroe Islands and falls within a common envelope of the foot of the continental slope,

The method and process of a CLCS recommendation

The recommendations of the Commission follow the same pattern, more or less. First there is given a geographical description of the region under consideration. Then the Commission establishes the foot of the slope envelope, which determines whether or not the continental margin extends beyond 200 nautical miles.

Where a seafloor high is considered as potentially being a part of the continental margin, the Commission establishes if the feature is in morphological continuity with the extension of the landmass and thereby a part of the continental margin. If this is not the case, the Commission does not dwell further on the seafloor high issue.

Where the seafloor high is found to be a part of the continental margin, the Commission considers how the constraint criteria should be applied. Where the coastal State has claimed that the seafloor high in question is a *submarine elevation*, cf. UNCLOS article 76 (6), the Commission considers whether or not this is the case. There are some variations in this process, as seen in the previous chapter, but generally speaking the Commission is looking at the geological origin and nature of the seafloor high, the formation process and history of the feature, and other factors that may be relevant. The Commission then makes its recommendation based on the evidence presented by the coastal State and any significant/relevant scientific literature.

This consistent process ensures some predictability. This is important for the Commission to be able to fulfil its purpose, especially because the recommendations are made in

Subcommissions. It is not always the same people who make the recommendations, even though the members of the Commission vote on the final recommendation.

The importance of the formation process

When the Commission classifies a seafloor high as a *submarine elevation*, cf. UNCLOS article 76 (6), it is most often the formation process that seems to be the decisive factor. This is shown in 14 of the total 16 *submarine elevation* classifications. The last two are classified based on a balance of geological and morphological evidence. These are the classification of the Jan Mayen Micro-Continent/Iceland Plateau (Norway) composite high and the Wallaby Composite High (Australia). The Jan Mayen Micro-Continent/Iceland Plateau is however also found to be a proven natural component of the continental margin.

The formation process is also important when the Commission classifies a seafloor high as a *submarine ridge*, cf. UNCLOS article 76 (6). Two out of three seafloor highs where classified as a *submarine ridge* because of the formation process. The third, the Ægir Ridge (Denmark), is classified as a *submarine ridge* because the coastal State submitted the view that it should be classified as such based on the geological nature of the seafloor high.

Of the six recommendations where the Commission does not make a classification, four of the seafloor highs are considered to be a part of the continental margin. In three of these cases the reason for not classifying the seafloor high as a *submarine elevation,* was the uncertainty regarding the formation process. These are the Gallieni Ridge (France in the French Antilles and the Kerguelen Islands), Vøring Spur (Norway) and the Joey Rise (Australia). The fourth, the Williams Ridge (Australia) was not classified because the geological origin remained unresolved.

These numbers indicate that the Commission has a consistent approach, and that its recommendations are in line with their interpretation of UNCLOS article 76 according to their Scientific and Technical Guidelines.

There is a lot more variation when the Commission comments on the geological nature of a seafloor high. The considerations are mostly concentrated on the geological origin of the feature and the nature of the crust, but there is no clear pattern. Then again it is not to be expected that all the seafloor highs should have the same geological nature.

It is however clear that the coastal States must present evidence on the formation process of the seafloor high in order for the Commission to make a recommendation.

No classification made by the Commission

The seafloor highs that is not classified by the Commission falls into one of two groups: Those who are not morphologically connected to the continental margin, and those who are morphologically connected to the continental margin.

Not morphologically a part of the continental margin

The summary of the classifications above show that the Commission avoids classifying a seafloor high as an *oceanic ridge of the deep ocean floor*, cf. UNCLOS article 76 (3).

There are two recommendations where the Commission considers a seafloor high and choses to not make a classification, where the seafloor high is not found to be a morphological part of the continental margin. These are the Mid-Atlantic Ridge (UK on Ascension Island) and the Mohns Ridge (Norway).

As seen above, the Mid-Atlantic Ridge was not classified because it was found to be different from the landmass in a morphological, geological, geophysical and geochemical sense, whereas the Mohns Ridge was considered to be part of the deep ocean floor and/or rise provinces on morphological and geological grounds.

This means that the seafloor high was proven to not be a morphological part of the continental margin. According to the legal interpretation of article 76 (3) this fulfils the requirements for being considered as an *oceanic ridge of the deep ocean floor*. It is therefore hard to understand why the Commission does not make this classification, as it doesn't seem to be in accordance with the interpretation of article 76 in accordance to articles 31 and 32 of the VCLT.

The only reason that comes to mind for the Commission to not make such a classification is that it didn't feel like it was necessary to do so, as the consequences are the same with or without a classification. Another explanation might be that a classification was made, but not included in the summary. The latter does however seem unlikely.

Morphologically part of the continental margin

Four seafloor highs that were not classified by the Commission, could be considered as part of the continental margin of the landmass. These are the Gallieni Ridge (France in the French Antilles and the Kerguelen Islands), Vøring Spur (Norway), the Joey Rise (Australia) and the Williams Ridge (Australia).

The reasoning behind not classifying these seafloor highs as *submarine elevations* under UNCLOS article 76 (6) is explained above. That does however not explain why the seafloor highs were not classified as *submarine ridges* under the same provision. After all, the requirement for classifying a seafloor high as a submarine ridge, cf. UNCLOS article 76 (6) is that the feature is a part of the continental margin, but not a natural component of it.

The seafloor highs that were classified as *submarine ridges*, the Vitória-Trindade Ridge (Brazil), the Ogasawara Composite High (Japan) and the Ægir Ridge (Denmark) was classified under this category for different reasons. The formation process of the Ogasawara Composite High did not match the required criteria of the S&T Guidelines of the Commission with regards to *submarine elevations* on an active margin, paragraph 7.3.1 (a). The Ægir Ridge was not a submarine elevation in the view of the coastal State, because it was not in geological conformity with the continental margin along the entire feature. The Vitória-Trindade Ridge on the other hand was found to have an uncertain formation process and that it was not in geological conformity with the continental margin along its entire feature.

Common among these classifications is that the Commission seems to have found evidence that excludes the possibility of the seafloor highs being classified as a *submarine elevation*, cf. UNCLOS article 76 (6). This is however not the case with the above seafloor highs that hasn't been classified. In those situations the Commission finds that something is unclear or uncertain. This does not exclude the possibility that these seafloor highs are submarine elevations.

The Commission is not a judicial body, and may therefore chose not to make a classification of the seafloor highs. This may make it easier for the coastal State to consider making a revised submission. Also it could upset the relation between the coastal States and the Commission, if the coastal States felt that the Commission had made a wrongful classification. No classification at all might be easier to swallow. The Commission is

therefore wise to thread carefully, and their decisions matches perfectly with the legal interpretation of UNCLOS article 76. This is of course pure speculation based on observation, as the Commission does not explain why they chose not to classify the seafloor highs.

Classification based on balance of morphological and geological evidence

Three seafloor highs were classified on the basis of a balance of morphological and geological evidence. In addition to the two mentioned above, the Jan Mayen Micro-Continent/Iceland Plateau Composite High (Norway) and the Wallaby Plateau (Australia), is the Skiff Bank Spur (France in the French Antilles and the Kerguelen Islands). The Skiff Bank Spur differs from the previous two, as its formation process matches the relevant provision of the S&T Guidelines of the Commission. The Jan Mayen Micro-Continent/Iceland Plateau Composite High is also found to be a proven natural component of the continental margin on a geological basis.

The classification of the Skiff Spur and the Jan Mayen Micro-Continent/Iceland Plateau Composite High seems to be in accordance with the legal interpretation of UNCLOS article 76 (6).

This was, as mentioned, not the case with the Wallaby Plateau (Australia). This is problematic because the legal interpretation of UNCLOS article 76 (6) regulates the requirements for a seafloor high to be classified as a *submarine elevation*, and to classify on a balance of morphological and geological evidence is not part of the interpretation.

The seafloor high is proven to be a morphological part of the continental margin, but the geological nature is still uncertain. As seen above there are several examples of the Commission choosing not to classify a seafloor high because of uncertainty regarding the formation process. It is therefore strange that the Commission chose to make a classification in this case, and not consider the same method in the other ones.

As the Wallaby Plateau is part of the recommendation to Australia, it is also clear that the explanation is not hidden in the summary, because the full recommendation has been published and is the basis for the analysis.

The full recommendation does not give an explanation for the Commissions classification choice. It is however clear that the seafloor high must be proven to be a natural component of

the continental margin of the coastal State from a geological perspective. The Commission has not made considerations that points to this being the case, and without more information the classification seems to collide with the legal interpretation of UNCLOS article 76 (6). Especially considering that the Williams Ridge of the same recommendation was not classified because of uncertainty regarding the geological origin of the seafloor high.

Conclusions

The Commission on the Limits of the Continental Shelf is found to treat the seafloor high issue of UNCLOS article 76 in a mostly consistent manner that is in accordance with the legal interpretation of the provision.

There are however some cases where one might argue that the Commission has not treated the question consistently. Such as the Mid-Atlantic Ridge (UK on Ascension Island), the Mohns Ridge (Norway) and the Wallaby Plateau (Australia). These three constitute a very small part of the total seafloor highs considered by the Commission, and it is impossible to conclude with absolute certainty that the Commission has made a mistake. One can at least conclude that the Commission has not explained its choices well enough in these cases.

As mentioned in the introduction, it might never be possible to give a full account on the Commissions practice on the seafloor high issue because of the limited public access to the Commission and its decisions. Also the Commission is highly technical in its approach, which makes it challenging to make a legal analysis of its practice. Without a background in the geological sciences it is difficult to determine whether or not the Commission concludes correctly.

The analysis can only evolve around the explanation given by the Commission, when it makes its decisions, it cannot determine if the explanation is scientifically correct.

Conventions

Convention on the Continental Shelf. Done at Geneva, on 29 April 1958. (Available at: http://sedac.ciesin.columbia.edu/entri/texts/continental.shelf.1958.html)

United Nations Convention on the Law of the Sea of 10 December 1982. (Available at: http://www.un.org/depts/los/convention_agreements/texts/unclos/closindx.htm)

Annex II. Commission on the Limits of the Continental Shelf. (Available at: http://www.un.org/depts/los/clcs_new/documents/annex2.htm)

Vienna Convention on the Law of Treaties (with annex). Concluded at Vienna on 23 May 1969. (Available at: https://treaties.un.org/doc/Publication/UNTS/Volume%201155/volume-1155-I-18232-English.pdf)

Bibliography

Allaby, Michael. *Oxford Dictionary of Geology & Earth Sciences.* Oxford: Oxford University Press, 2013.

Bederman, David J. *The Oxford Handbook of the History of International Law.* Edited by Anne Peters Barbo Fassbender. Oxford: Oxford University Press, 2012.

Brekke, Harald, and Philip Symonds. "Submarine Ridges and Elevations of Article 76 in the Light of Published Summaries of Recommendations of the Commission on the Limits of the Continental Shelf." *Ocean Development & International Law*, 09 November 2011: 289-306.

Carrera, Galo. "The Classification of Seafloor Highs." Summar Academy on the Continental Shelf, 27 June 2014.

Codification Division, Office of Legal Affairs. "Third United Nations Conference on the Law of the Sea, 1973-1982." *United Nations Diplomatic Conferences.* United Nations. 2009. http://legal.un.org/diplomaticconferences/lawofthesea-1982/lawofthesea-1982.html (accessed September 19., 2014).

—. “United Nations Conference on the Law of the Sea, 1958.” *United Nations Diplomatic Conferences.* United Nations. 2009. http://legal.un.org/diplomaticconferences/lawofthesea-1958/lawofthesea-1958.html (accessed September 15., 2014).

Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs. “Area of the continental shelf of the Russian Federation in the Arctic Ocean beyond 200-nautical-mile zone (jpg).” *Commission on the Limits of the Continental Shelf (CLCS) Outer limits of the continental shelf beyond 200 nautical miles from the baselines: Submissions to the Commission: Submission by the Russian Federation.* United Nations. 30 June 2009. http://www.un.org/depts/los/clcs_new/submissions_files/rus01/RUS_CLCS_01_2001_LOS_2.jpg (accessed September 1, 2014).

—. *Commission on the Limits of the Continental Shelf (CLCS) Members of the Commission.* United Nations. 8 August 2014. http://www.un.org/depts/los/clcs_new/commission_members.htm#Members (accessed April 17, 2015).

—. “Commission on the Limits of the Continental Shelf (CLCS) Purpose, functions and sessions.” *Oceans and the Law of the Sea United Nations.* United Nations. 2012. http://www.un.org/depts/los/clcs_new/commission_purpose.htm (accessed April 30, 2015).

—. *Submissions, through the Secretary-General of the United Nations, to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea of 10 December 1982.* United Nations. 24 October 2014. http://www.un.org/depts/los/clcs_new/commission_submissions.htm (accessed November 6, 2014).

—. “The United Nations Convention on the Law of the Sea (A historical perspective).” *Oceans & the Law of the Sea United Nations.* United Nations. 1998. http://www.un.org/depts/los/convention_agreements/convention_historical_perspective.htm (accessed November 13, 2014).

Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs, United Nations. “Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.” *Oceans & the Law of the Sea United Nations.* United Nations. 12 January

2015. http://www.un.org/depts/los/clcs_new/commission_documents.htm#Basic documents (accessed April 10, 2015).

—. "Scientific and Technical Guidelines." *Oceans & Law of the Sea United Nations.* United Nations. 8 April 2009. http://www.un.org/depts/los/clcs_new/commission_guidelines.htm (accessed April 4, 2015).

Dixon, Martin. *Textbook on International Law.* 7th edition. Oxford: Oxford University Press, 2013.

Encyclopædia Britannica. *Lomonosov Ridge.* 1 December 2007. http://global.britannica.com/EBchecked/topic/346795/Lomonosov-Ridge (accessed November 4, 2014).

Evans, Malcom D. *International Law.* Second edition. Oxford: Oxford University Press, 2006.

Gao, Jianjun. "The Seafloor High Issue in Article 76 of the LOS Convention: Some Views from the Perspective of Legal Interpretation." *Ocean Development & International Law*, 3 May 2012: 119-145.

GNS Science, Te Pü Ao; National Institute of Water and Atmospheric Research. *Prolongation of the land mass.* http://www.gns.cri.nz/static/unclos/naturalprolongation.html.

Government of Canada. "Preliminary Information concerning the outer limits of the continental shelf of Canada in the Arctic Ocean." 6 December 2013. http://www.un.org/Depts/los/clcs_new/submissions_files/preliminary/can_pi_en.pdf (accessed November 6, 2014).

Government of the Kingdom of Denmark together with the Government of Greenland. "Partial Submission of the Government of the Kingdom of Denmark together with the Government of Greenland." 15 December 2014. http://www.un.org/depts/los/clcs_new/submissions_files/dnk76_14/dnk2014_es.pdf (accessed April 8, 2015).

Grotius, Hugo. *Mare Liberum The freedom of the seas, or, the right which belongs to the Dutch to take part in the East Indian trade.* Edited by James Brown Scott. Translated by

Ralph Van Deman Magoffin. Vol. 2004. Union, New Jersey: The Lawbook Exchange, LTD., 1608.

Gudlaugsson, Steinar Thor. “Natural Prolongation and the Concept of the Continental Margin.” In *Legal and Scientific Aspects of Continental Shelf Limits*, by Center for Oceans Law and Policy, edited by Myron H. Nordquist, John Norton Moore and Thomas H. Heidar, 61-91. Leiden: Martinus Nijhoff Publishers, 2004.

Interministerial Commission for Sea Resources. *BRAZILIAN CONTINENTAL SHELF SURVEY PLAN.* https://www.mar.mil.br/secirm/leplac-i.html#meta (accessed Januar 5, 2015).

Macnab, Ron. “Submarine Elevations and Ridges: Wild Cards in the Poker Game of UNCLOS Article 76.” *Ocean Development & International Law*, 09 May 2008: 223-234.

Oxford Reference. *geomorphology.* Edited by Michael Allaby. Oxford University Press. 2014. http://www.oxfordreference.com/view/10.1093/acref/9780199653065.001.0001/acref-9780199653065-e-3425?rskey=BmLYwI&result=3671 (accessed April 17, 2015).

Oxford University Press. *Overview Cannon-shot rule.* 2014. http://www.oxfordreference.com/view/10.1093/oi/authority.20110803095546425 (accessed September 15., 2014).

Pardo, Arvid. “Examination of the question of the reservation exclusively for peaceful purposes of the sea-bed and the ocean floor, and the subsoil thereof, underlying the high seas beyond the limits of present national jurisdiction, and the use of their resources in the interests of mankind.” *United Nations General Assembly Twenty Second Session Official Records 1515th and 1516th meeting of the First Committee.* 1 November 1967. http://www.un.org/depts/los/convention_agreements/texts/pardo_ga1967.pdf (accessed September 15, 2014).

Ruud, Morten, and Geir Ulfstein. *Innføring i folkerett.* 3. utgave. Oslo: Universitetsforlaget, 2008.

Secretariat of the Antarctic Treaty. *The Antarctic Treaty.* 2011. http://www.ats.aq/e/ats.htm.

Sputnik International. “Russia Completes Research to Apply for Arctic Shelf Borders Expansion.” *Sputnik International.* 30 October 2014. http://sputniknews.com/science/20141029/1014090154.html (accessed November 29, 2014).

Staalesen, Atle. “Territorial expansion on Arctic agenda.” *Barents Observer.* 30 October 2014. http://barentsobserver.com/en/arctic/2014/10/territorial-expansion-arctic-agenda-30-10 (accessed November 29, 2014).

Symonds, Philip A., Mike F. Coffin, George Taft, and Hideo Kagami. “Ridge Issues*.” In *Continental Shelf Limits: The Scientific and Legal Interface*, by Peter J. Cook and Chris M. Carleton, 285-307. New York: Oxford University Press, 2000.

The Commission on the Limits of the Continental Shelf. “CLCS/11 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf.” *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. 13 May 1999. http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N99/171/08/IMG/N9917108.pdf?OpenElement (accessed April 15, 2015).

—. “CLCS/11/Add.1 Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf Annexes II-IV* to the Guidelines adopted by the Commission on 3 September 1999 at its sixth session.” *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. 3 September 1999. http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N99/338/93/PDF/N9933893.pdf?OpenElement (accessed April 20, 2015).

—. “CLCS/31 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.” *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. 5 April 2002. http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N02/318/60/PDF/N0231860.pdf?OpenElement (accessed September 30, 2014).

—. “CLCS/4 Statement by the Chairman of the Commission on the Limits of the Continental Shelf on the progress of work in the Commission.” *Commission on the Limits of the*

Continental Shelf (CLCS) Selected documents of the Commission. United Nations. 17 September 1997. http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N97/243/69/PDF/N9724369.pdf?OpenElement (accessed April 8, 2015).

—. "CLCS/7 Statement by the Chairman of the Commission on the Limits of the Continental Shelf on the progress of work in the Commission." *Commission on the Limits of the Continental Shelf (CLCS) Selected documents of the Commission.* United Nations. 15 May 1998. http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N98/136/51/PDF/N9813651.pdf?OpenElement (accessed April 8, 2015).

—. "RECOMMENDATIONS OF THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF (CLCS) IN REGARD TO THE SUBMISSION MADE BY AUSTRALIA ON 15 NOVEMBER 2004 ." 9 April 2008. http://www.un.org/depts/los/clcs_new/submissions_files/aus04/Aus_Recommendations_FINAL.pdf.

—. "RECOMMENDATIONS OF THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF IN REGARD TO THE PARTIAL SUBMISSION MADE BY THE GOVERNMENT OF THE KINGDOM OF DENMARK TOGETHER WITH THE GOVERNMENT OF THE FAROES IN RESPECT OF THE CONTINENTAL SHELF NORTH OF THE FAROE ISLANDS ON 29 APRIL 2009." 12 March 2014. http://www.un.org/depts/los/clcs_new/submissions_files/dnk28_09/2014_03_14_SCDNK_REC_COM_20140521.pdf.

—. "SUMMARY OF RECOMMENDATIONS OF THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF IN REGARD TO THE SUBMISSION MADE BY FRANCE IN RESPECT OF FRENCH GUIANA AND NEW CALEDONIA REGIONS ON 22 MAY 2007." 2 September 2009. http://www.un.org/depts/los/clcs_new/submissions_files/fra07/COM_REC_FRA_02_09_2009_summary.pdf.

—. "SUMMARY OF RECOMMENDATIONS OF THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF IN REGARD TO THE SUBMISSION MADE BY

JAPAN ON 12 NOVEMBER 2008." 19 April 2012. http://www.un.org/depts/los/clcs_new/submissions_files/jpn08/com_sumrec_jpn_fin.pdf.

—. *SUMMARY OF RECOMMENDATIONS OF THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF IN REGARD TO THE SUBMISSION MADE BY THE UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND IN RESPECT OF ASCENSION ISLAND ON 9 MAY 2008.* 15 April 2010. http://www.un.org/depts/los/clcs_new/submissions_files/gbr08/gbr_asc_isl_rec_summ.pdf (accessed April 17, 2015).

—. "SUMMARY OF THE RECOMMENDATIONS OF THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF (CLCS) IN REGARD TO THE SUBMISSION MADE BY AUSTRALIA ON 15 NOVEMBER 2004." 9 April 2008. http://www.un.org/depts/los/clcs_new/submissions_files/aus04/aus_summary_of_recommendations.pdf (accessed April 17, 2015).

—. "SUMMARY OF THE RECOMMENDATIONS OF THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF (CLCS) IN REGARD TO THE SUBMISSION MADE BY NEW ZEALAND 19 APRIL 2006." 19 April 2006. http://www.un.org/depts/los/clcs_new/submissions_files/nzl06/nzl_summary_of_recommendations.pdf.

—. "SUMMARY OF THE RECOMMENDATIONS OF THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF IN REGARD TO THE JOINT SUBMISSION MADE BY MAURITIUS AND SEYCHELLES CONCERNING THE MASCARENE PLATEAU REGION ON 1 DECEMBER 2008." 30 March 2011. http://www.un.org/depts/los/clcs_new/submissions_files/musc08/sms08_summary_recommendations.pdf.

—. "SUMMARY OF THE RECOMMENDATIONS OF THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF IN REGARD TO THE PARTIAL SUBMISSION MADE BY THE REPUBLIC OF FRANCE IN RESPECT OF THE AREAS OF THE FRENCH ANTILLES AND THE KERGUELEN ISLANDS ON 5 FEBRUARY 2009." 19 April 2012.

http://www.un.org/depts/los/clcs_new/submissions_files/fra09/SUMREC_FRA1_19_04_2012.pdf.

—. “SUMMARY OF THE RECOMMENDATIONS OF THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF IN REGARD TO THE SUBMISSION MADE BY BRAZIL ON 17 MAY 2004 OF INFORMATION ON THE PROPOSED OUTER LIMITS OF ITS CONTINENTAL SHELF BEYOND 200 NAUTICAL MILES.” 24 August 2011. http://www.un.org/depts/los/clcs_new/submissions_files/bra04/Summary_Recommendations_Brazil.pdf.

—. “SUMMARY OF THE RECOMMENDATIONS OF THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF IN REGARD TO THE SUBMISSION MADE BY NORWAY IN RESPECT OF AREAS IN THE ARCTIC OCEAN, THE BARENTS SEA AND THE NORWEGIAN SEA ON 27 NOVEMBER 2006.” 27 March 2009. http://www.un.org/depts/los/clcs_new/submissions_files/nor06/nor_rec_summ.pdf.

The International Hydrographic Organization . *cap.* 21 November 2009. http://hd.iho.int/en/index.php/cap (accessed April 17, 2015).

—. *plateau.* 22 February 2011. http://hd.iho.int/en/index.php/plateau (accessed April 17, 2015).

The International Hydrographic Organization. *About IHO.* 25 March 2015. http://www.iho.int/srv1/index.php?option=com_content&view=article&id=298&Itemid=297&lang=en (accessed April 17, 2015).

—. *bank.* 22 February 2011. http://hd.iho.int/en/index.php/bank (accessed April 17, 2015).

—. *rise.* 4 April 2014. http://hd.iho.int/en/index.php/rise (accessed April 17, 2015).

—. *spur.* 20 November 2009. http://hd.iho.int/en/index.php/spur (accessed April 17, 2015).

—. *tableland.* 20 November 2009. http://hd.iho.int/en/index.php/tableland (accessed April 17, 2015).

Third United Nations Conference on the Law of the Sea. "A/CONF.62/29 Organization of the second session of the Conference and allocation of items: decisions taken by the Conference at its 15th meeting on 21 June 1974." *Third United Nations Conference on the Law of the Sea Volume III Documents of the Conference, First (New York, 3-15 December 1973) and Second (Caracas, 20 June to 29 August 1974) Sessions.* United Nations. 2 July 1974. http://legal.un.org/diplomaticconferences/lawofthesea-1982/docs/vol_III/a_conf-62_29.pdf (accessed September 19, 2014).

Truman, Harry S. "150 - Proclamation 2667 - Policy of the United States With Respect to the Natural Resources of the Subsoil and Sea Bed of the Continental Shelf." *The American Presidency Project.* Edited by John T. Woolley Gerhard Peters. 28 September 1945. http://www.presidency.ucsb.edu/ws/?pid=12332 (accessed September 8., 2014).

United Nations General Assembly. "2750 (XXV). Reservation exclusively for peaceful purposes of the sea-bed and the ocean floor, and the subsoil thereof, underlying the high seas beyond the limits of present national jurisdiction and use of their resources in the interests of mankind, and convening of a conference on the law of the sea." United Nations. 17 December 1970. http://legal.un.org/diplomaticconferences/lawofthesea-1982/docs/res/a_res_2750_xxv.pdf (accessed September 19, 2014).

—. "3067 (XXVIII) Reservation exclusively for peaceful purposes of the sea-bed and the ocean floor, and the subsoil thereof, underlying the high seas beyond the limits of present national jurisdiction and use of their resources in the interests of mankind, and convening of the Third United Nations Conference on the Law of the Sea." United Nations. 16 November 1973. http://legal.un.org/diplomaticconferences/lawofthesea-1982/docs/res/a_res_3067_xxviii.pdf (accessed September 19, 2014).

—. "A/57/57/Add.1 Oceans and the law of the sea Report of the Secretary-General*." *Oceans and the Law of the Sea in the General Assembly of the United Nations Reports of the Secretary-General.* United Nations. 8 October 2002. http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N02/629/28/PDF/N0262928.pdf?OpenElement (accessed October 5, 2014).

Wallace, Rebecca M. M., and Olga Martin-Ortega. *International Law.* Sixth edition. London: Sweet & Maxwell, 2009.

Weber, Mel. “Defining the Outer Limits of the Continental Shelf across the Arctic Basin: The Russian Submission, States' Rights, Boundary Delimitation and Arctic Regional Cooperation.” *The International Journal of Marine and Coastal Law Volume 24, Issue 4*, 2009: 653-681.

Wikipedia. *Arctic Ocean.* 8 March 2015. http://en.wikipedia.org/wiki/Arctic_Ocean#Underwater_features (accessed April 8, 2015).

—. *North Pole.* 2015. http://en.wikipedia.org/wiki/North_Pole.

—. *Physical geography.* 19 March 2015. http://en.wikipedia.org/wiki/Physical_geography#Sub-branches (accessed April 17, 2015).

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