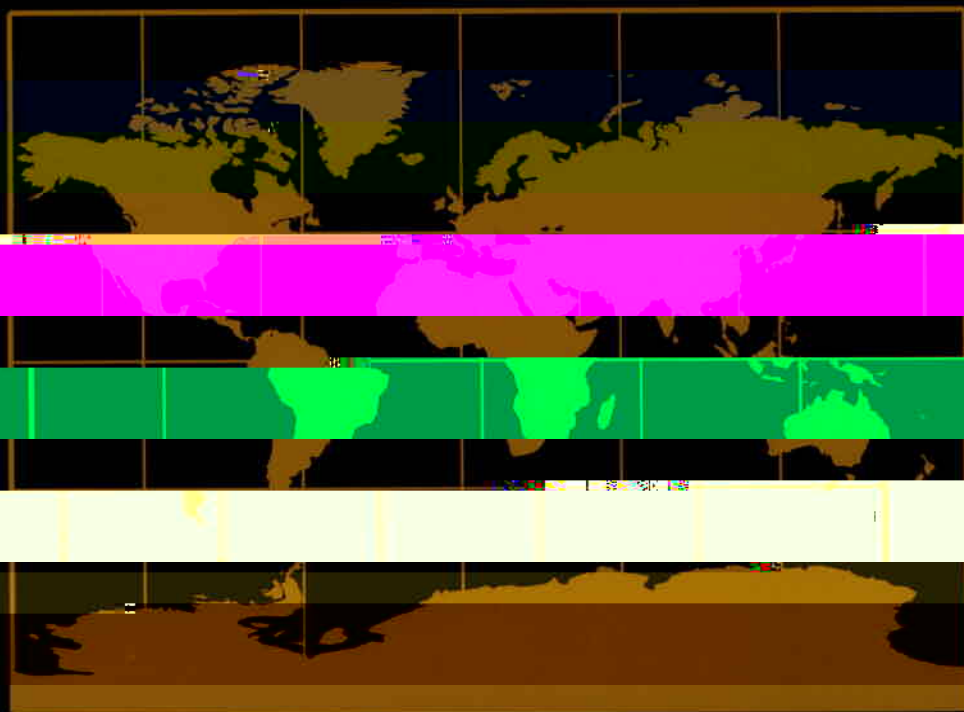


# The Law of the Sea

## Delimitation of Continental Shelf

An Examination of the Relevant Provisions  
of the United Nations Convention  
on the Law of the Sea



Division for Ocean Affairs and the Law of the Sea

Office of Legal Affairs

United Nations

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United Nations · New York, 1993

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## INTRODUCTION

The United Nations Office of Legal Affairs through its Division for

the development of State practice in a manner consistent with the relevant provisions of the 1982 United Nations Convention on the Law of the Sea. To this end, and to provide assistance to States in their examination of some of the highly technical provisions of the Convention, the Office has been conducting a series of studies on certain specific subjects and has published them in concise booklets. The studies are undertaken with the assistance of a representative group of experts on the specific subject-matter under consid-

It is hoped that this study will be of use in clarifying some of the highly technical aspects of the relevant provisions of the Convention and also serve as a guide for coastal States when establishing the outer limits of their continental shelves. It is further hoped that the future Commission on the Limits of the Continental Shelf will also benefit from its findings, which have been produced with the participation of experts in the same disciplines as those required of Commission members, i.e., geology, geophysics or hydrography.

## I. HISTORICAL BACKGROUND

1. On 28 September 1945, President Harry S. Truman of the United States of America issued a proclamation declaring that the United States Government "regards the natural resources of the subsoil and seabed of the



5. The first negotiating text of the Conference circulated in 1975, i.e., the Informal Single Negotiating Text, contained the following new definition of the continental shelf:

“The continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance.”<sup>3</sup>

This provision, which eventually became article 76, paragraph 1, of the United Nations Convention on the Law of the Sea without change, contains three important features: First, it reaffirms the legal concept of the continental shelf and its link with the physical fact of the natural prolongation, enunciated in 1969 by the International Court of Justice in the *North Sea Continental Shelf* cases.<sup>4</sup> Secondly, it establishes a link between the continental shelf as a legal concept and the continental margin as a geomorphological concept. Thirdly, it introduces the criterion of distance enabling a coastal State, regardless of whether there is a natural prolongation in the physical sense, to claim a continental shelf up to 200 miles from the baselines from which the breadth of the territorial sea is measured. In 1985, the International Court of Justice in the *Libyan Arab Jamahiriya/Malta* case stated that “[t]he concepts of natural prolongation and distance are therefore not opposed but complementary . . .”<sup>5</sup>

6. This definition, however, was still considered by many delegations as incomplete in the sense that it did not define “continental margin”, nor specify a way of locating its outer limit. Moreover, there was no specific

8. While recognizing the merits of the Hedberg formula, Gardiner

13. With respect to ridges, there was a concern that submarine ridges might be used by some States to extend their continental shelf jurisdiction to the middle of the ocean. A compromise was found on this issue by making distinctions between "oceanic ridges" on the deep ocean floor, "submarine ridges" and "submarine elevations", and by excluding oceanic ridges from the definition of the continental margin, but agreeing that on submarine ridges the outer limits of the shelf shall not exceed 350 miles from the baselines and that this limitation would not apply to "submarine elevations which are the natural components of the continental margin, such as its plateaux, rises, caps, banks and spurs",<sup>16</sup> in which case the criterion of 100 miles from the 2 500 meter isobath would determine the limit.

## II. AN OVERVIEW OF THE MAIN PROVISIONS ON THE CONTINENTAL SHELF

15. The provisions of Part VI of the Convention, consisting of articles 76 to 85, are devoted to the definition of the continental shelf and the establishment of the basic rights and duties of the coastal States with respect to the continental shelf and its resources. With regard to the legal regime governing the continental shelf resources, the Convention virtually reproduces the provisions of the 1958 Convention. (The text of Part VI is reproduced in annex I.)

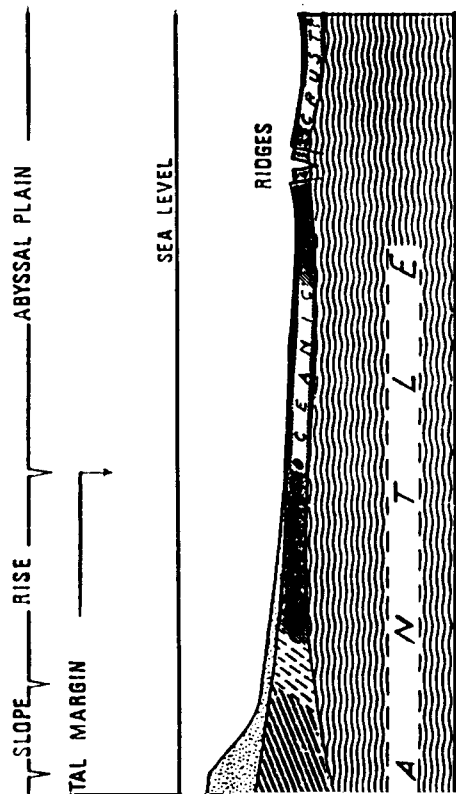
16. According to article 77 the coastal State has sovereign rights over

20. In cases where the continental margin extends beyond 200 miles, the coastal State may delineate its continental shelf to a breadth greater than 200 miles, in accordance with the criteria specified in article 76. From the map illustrating the various formulae for the definition of the continental shelf that was prepared at the request of the Third United Nations Conference on the Law of the Sea,<sup>20</sup> about 30 States<sup>21</sup> have been identified as possibly having continental shelves extending beyond 200 nautical miles. It should be noted that the scale of this map is very small, at 1:30 million, and that the available bathymetric data are of poor quality in certain parts of the world. Consequently, the list of these States should not be considered definitive.

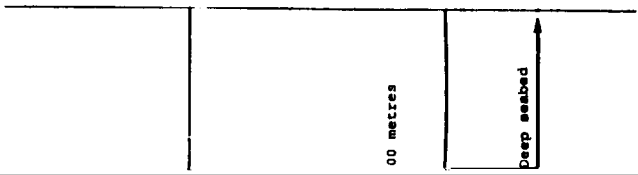
21. In establishing the limits of the continental margin, a number of highly complicated technical questions may arise. These questions relate, among others, to such notions as natural prolongation of the land territory, sedimentary rock thickness, foot of the continental slope and submarine ridges. In addition, the determination of the limits of the continental shelf will depend on the use of technological means, the accuracy of which may have to be assessed.

22. Before discussing in detail the contents of article 76, two figures are reproduced below for ease of understanding scientific terms and concepts. Figure 1 gives a schematic profile of the continental margin and the abyssal plain; figure 2 is an illustrative diagram of the continental margin, with an indication of the average widths and depths of its geomorphological components.

Figure 1



Article 76 of the United Nations Convention on the Law of the Sea, in International Law, in the *Technical Aspects of the Law of the Sea*, Monaco, 15 May 1990 (IHO Special



phnston and N.G. Letalik, eds., *The Law*  
of the Law of the Sea Institute, Halifax,

### III. ARTICLE 76 OF THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

23. The United Nations Convention on the Law of the Sea, in article 76, gives the *legal* definition of the continental shelf. The article consists of 10 paragraphs which could be generally grouped as follows:

- (1) Definitions and terminology—paragraphs 1, 2 and 3;
- (2) Application of terms and methods for establishing the outer limits of the legal continental shelf (margin) beyond 200 miles from the baselines—paragraphs 4, 5, 6 and 7;
- (3) Role of the Commission on the Limits of the Continental Shelf—paragraph 8;
- (4) Depositary functions of the Secretary-General of the United Nations in respect of charts and other information on the outer limits of the continental shelf—paragraph 9;
- (5) A saving clause concerning delimitation of the continental shelf between States—paragraph 10.

Each of these groups of provisions will be discussed below, except for the role

of the Commission on the Limits of the Continental Shelf, which will be taken up in a separate section.

24. *Paragraphs 1 to 3* of article 76 read:

“1. The continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea through-



“cap”, “bank” and “spur”. Although these terms could be more or less clearly defined *per se*, the technical nature of article 76 makes it more appropriate to discuss their meaning within the context of their practical application, i.e., in the analysis of these paragraphs under Subsection B.

not a geomorphological—term which applies to the area of the seabed, beyond the territorial sea, falling under the sovereign rights of the coastal State for the purpose of exploring it and exploiting its natural resources.

28. *Paragraph 1* states that a coastal State’s “continental shelf” is the “natural prolongation of its land territory to the outer edge of the continental margin . . .” Thus “margin” becomes the key word. It extends to the continental rise and does not include the deep ocean floor with its oceanic ridges (para. 3).

29. The term “continental shelf” is used by geologists generally to mean that part of the continental margin which is between the shoreline and the shelf break or, where there is no noticeable slope, between the shoreline and the point where the depth of the superjacent water is approximately between 100 and 200 metres. However, this term is used in article 76 as a juridical term. The concept was adopted by the 1958 United Nations Conference on the Law of the Sea where there was no recognition to cover situ-

continental slope, the junction with the continental rise, is identified on a typical margin by a marked decrease in slope. The continental rise is under-

lain by a succession of sediments, primarily derived from the land.

34. The foot of the slope commonly lies close to the outer edge of the continent, that is, near the place where the crust changes from continental to oceanic. Although continental crust is compositionally distinct from oceanic crust, the boundary between the two crustal types is often not clearly defined, sometimes lying under a thick layer of sedimentary rocks and sometimes being gradational, or with one type of crust underlying the other.

35. This simple categorization of margin morphology into shelf, slope

“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.

“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.

“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.”

39. The following steps may be required for a coastal State to determine the outer limit of its continental shelf under paragraphs 4 to 6:<sup>23</sup>

1. Determine:

- the baselines from which the territorial sea is measured (in accordance with Part II of the Convention);<sup>24</sup>
- 200 miles from the baselines;
- foot of slope: the point of maximum change in gradient at its base;
- the points where the ratio  $x =$

4. However, in the case of submarine ridges, only the 350-mile limit applies unless they are submarine elevations that are natural components of the continental margin

40-77 A submarine ridge is a natural component of the continental margin for the determination of the

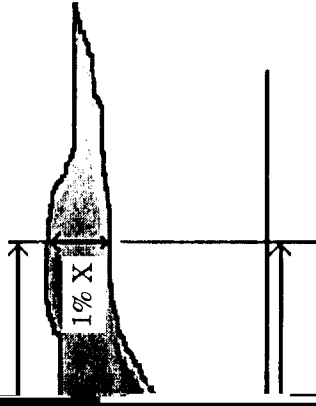
closer to the continent.

46. On "convergent" margins, such as those which are found around the Pacific Ocean, tectonic processes increase the likelihood of local changes

'6, paragraph 4 (a) (i)

MILES

SEA LEVEL





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Such features are known to occur on the outer edges of continental margins. Also, when better seismic technology is applied, and the resolution and penetration of the technique improve, "basement" may be seen to be deeper than previously interpreted.<sup>25</sup> This has implications for the type of seismic system that countries may need to use to be able to best analyze the sediment thickness



h 4 (a) (ii)

SEA LEVEL

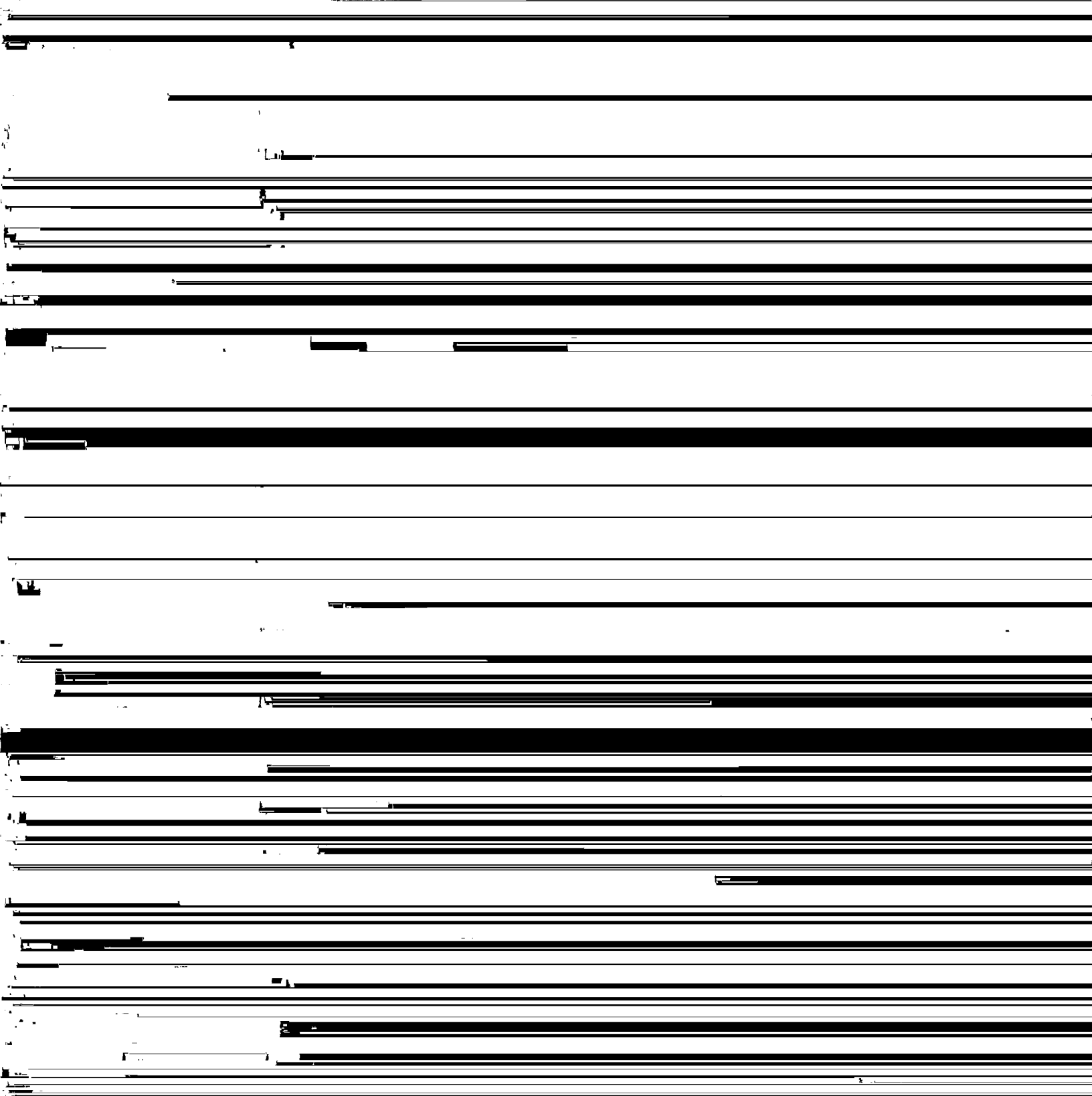
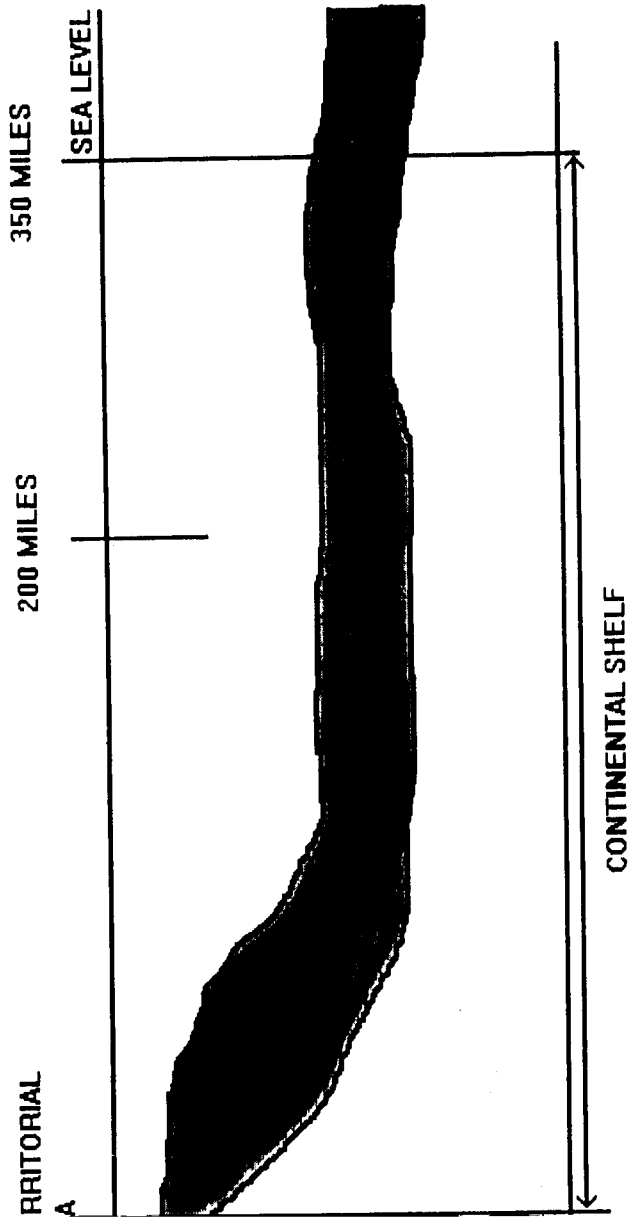
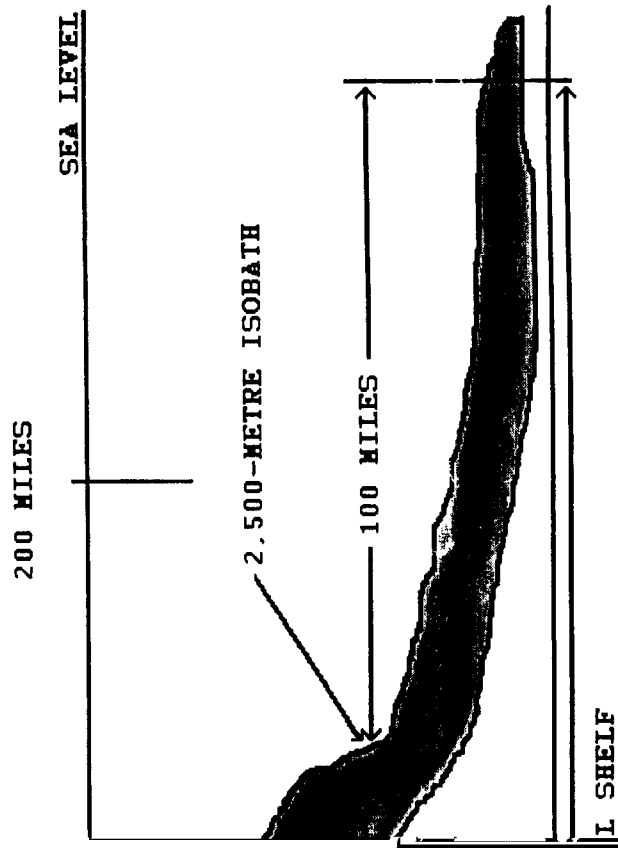


Figure 6. Maximum limit of continental shelf as permitted under article 76, paragraph 5



limit of continental shelf as permitted under article 76, paragraph 5



refinement using modern computational methods and satellite positioning systems, respectively. The measurement of depths of 2,500 metres is a much more difficult matter as acoustical science has moved more slowly. Hydrog-

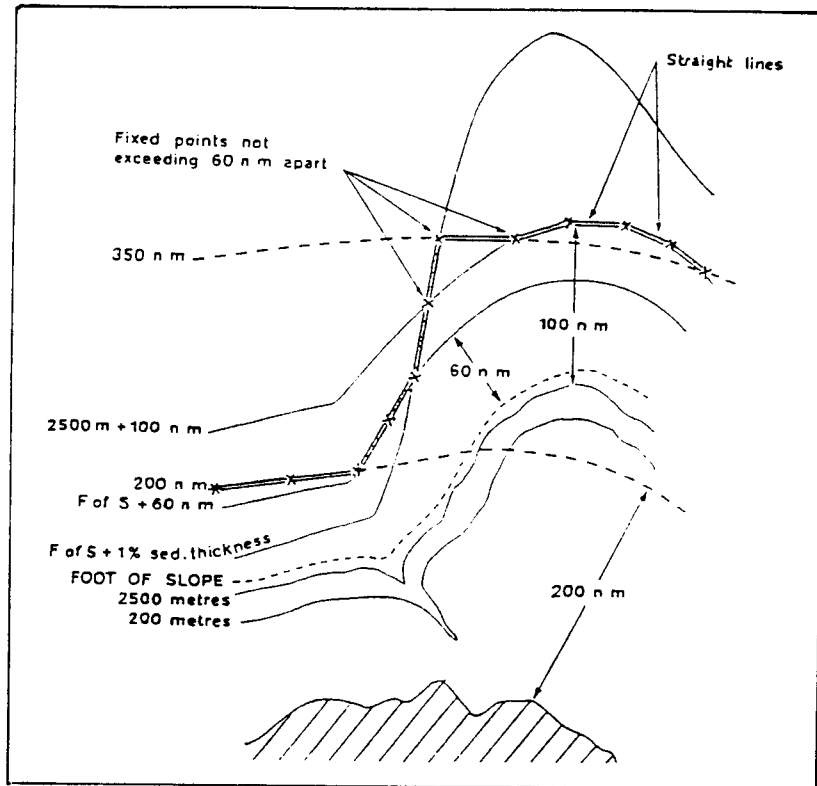
on oceanic crust. They usually cut across the trends of various

63. The problem then becomes one of determining whether a submarine ridge is an oceanic ridge in the deep ocean floor. If it is such a ridge, then according to paragraph 3 the terms of article 76 do not apply.

6. *Straight lines not exceeding 60 miles*

64. *Paragraph 7* somewhat simplifies the task of defining the outer limits of the continental shelf by allowing the use of straight lines as long as 60 miles. This may help some coastal States by permitting them to bridge

Figure 8



Source: From the Royal Society Publication, *A Guide to the Provisions of the 1982 United Nations Convention on the Law of the Sea*

D. SAVING CLAUSE REGARDING DELIMITATION

71. Paragraph 10 of article 76 reads:

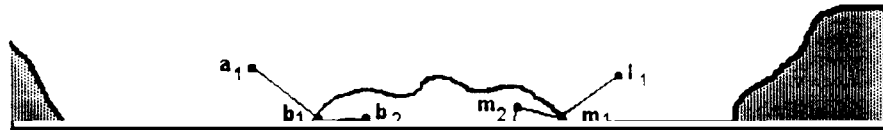
...in accordance to the



#### IV. SPECIFIC METHOD TO BE USED IN ESTABLISHING THE OUTER EDGE OF THE CONTINENTAL MARGIN

73. During the Third United Nations Conference on the Law of the Sea, Sri Lanka suggested an exception to the application of the provisions of article 76 in the southern part of the Bay of Bengal because of the unique geomorphological features of the seabed, and the Conference decided to incorporate the suggestion in a "Statement of Understanding Concerning a Specific Method to be Used in Establishing the Outer Edge of the Continental Margin".

Figure 9



## V. COMMISSION ON THE LIMITS OF

79. *Paragraph 8 of article 76 reads:*

“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

lishment 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 text of Annex II is reproduced in annex III to the present study.)

80. The Convention provides for the establishment of the Commission on the Limits of the Continental Shelf consisting of 21 experts in the field of

geology, geophysics or hydrography, “as soon as possible but in any case within 18 months after the date of [its] entry into force”. The members, serving in their personal capacities, will be elected by States Parties to the Convention from among their nationals, “having due regard to the need to

84. The Commission may also have to establish rules of procedure, where appropriate, to guarantee the confidentiality of the data submitted by the coastal State.

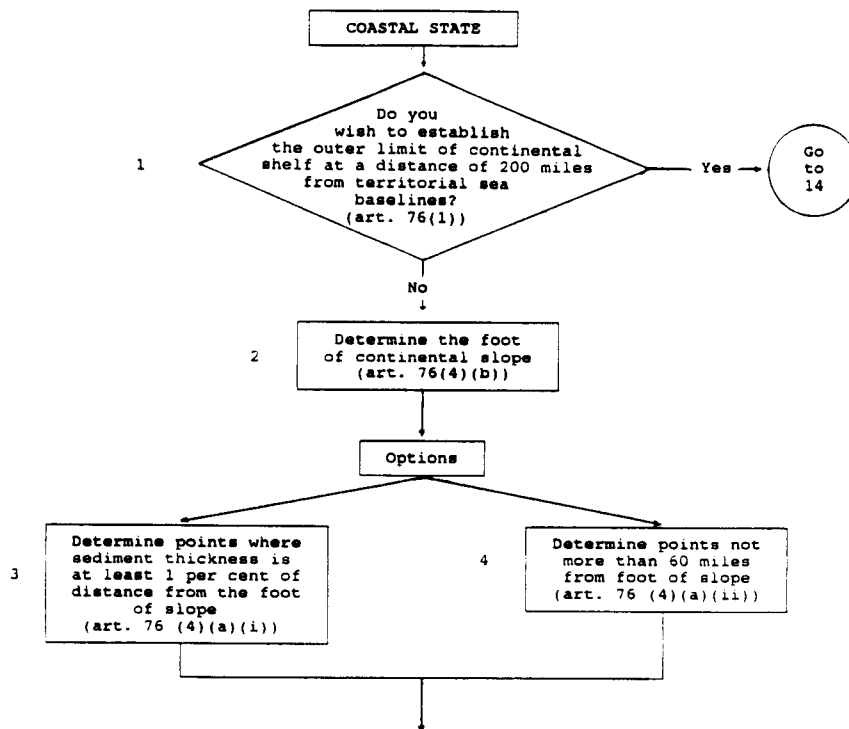
85. Another function of the Commission is to provide scientific and technical advice if requested by the coastal State concerned during the preparation of such data (Annex II, article 3). This function, for which the request-

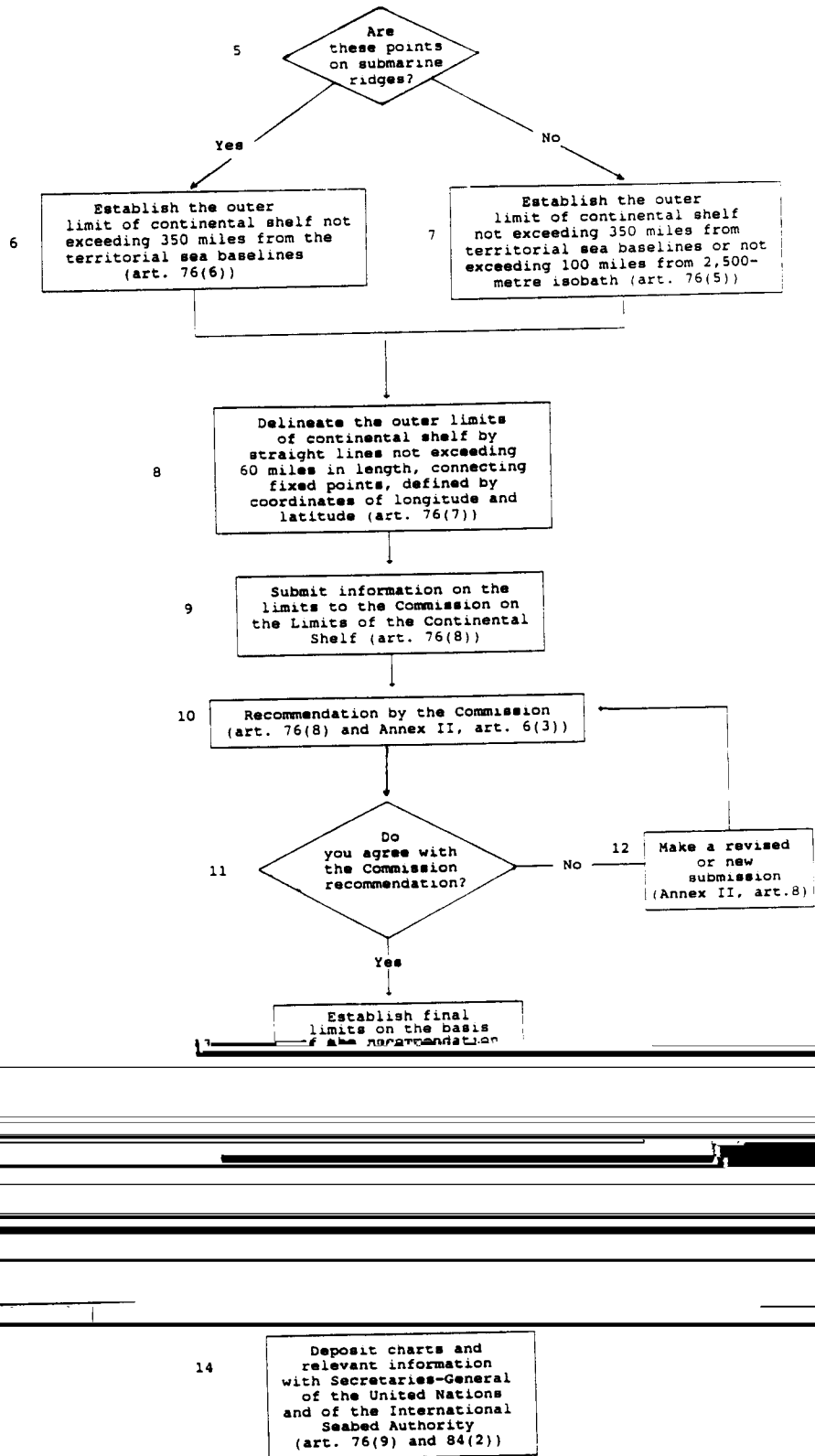
**VI. SUMMARY OF THE PROCEDURE FOR ESTABLISHING THE OUTER LIMITS OF THE CONTINENTAL SHELF**

**CONTINENTAL SHELF**

89. The entire procedure for a coastal State to establish the outer limits of its continental shelf under article 76 of the Convention may be shown schematically in the following flow chart:

Flow chart for establishing the outer limit of the continental shelf under articles 76 and 84





NOTES

<sup>1</sup>*Department of State Bulletin*, vol. 13 (1945), p. 485. Reproduced in United Nations Legislative Series, *Laws and Regulations on the Regime of the High Seas* (ST/LEG/SER.B/1) (United Nations publication, Sales No. 1951.V.2), p. 39.

<sup>2</sup>*Ibid.*

<sup>3</sup>*Official Records of the Third United Nations Conference on the Law of the Sea*, vol. IV (United Nations publication, Sales No. E.75.V.10), document A/CONF.62/WP.8/Part II, article 62.

<sup>4</sup>*I.C.J. Reports 1969*, p. 3.

<sup>5</sup>*I.C.J. Reports 1985*, p. 33, para. 34.

<sup>6</sup>P.R. Gardiner, "Reasons and methods for fixing the outer limit of the legal continental shelf beyond 200 nautical miles", *Revue iranienne des relations internationales*, Nos. 11-12 (1978), p. 152.

<sup>7</sup>For a description of these proposals, see *ibid.*, pp. 153-162.

<sup>8</sup>See Hollis D. Hedberg, "The national-international jurisdictional boundary on the ocean floor," *Ocean management*, vol. 1 (1973), pp. 83-118. See also his "Relation of

political boundaries on the ocean floor to the continental margin", *Virginia journal of international law*, vol. 17, No. 4 (1977), pp. 57-75.

<sup>9</sup>*Ibid.*, p. 72.

<sup>10</sup>Gardiner, *op.cit.*, p. 156.

<sup>11</sup>*Ibid.*, p. 158.

<sup>12</sup>*Ibid.*, pp. 158-159.

<sup>13</sup>The text of the combined Gardiner and Hedberg formula, not published as a United Nations document, is reproduced in Gardiner, *op. cit.*, p. 168, figure 4. The Irish delegation submitted the essence of the Gardiner formula in a "blue paper" circulated informally at the summer session of the Conference in 1976. The text of this "blue paper" was subsequently reproduced in the *Official Records of the Third United Nations Conference on the Law of the Sea*, vol. IX (United Nations publication, Sales No. E.79.V.3), document A/CONF.62/C.2/L.98, note 11. See also R. Platzöder, *Third United Nations Conference on the Law of the Sea: Documents* (Dobbs Ferry, N.Y.: Oceana, 1983), vol. IV, p. 465.

<sup>14</sup>S.P. Jagota, *Maritime Boundary* (Dordrecht, Boston, Lancaster: M. Nijhoff, 1985), p. 39.

<sup>15</sup>A/CONF.62/WP.10/Rev.1 (28 April 1979), article 76.

<sup>16</sup>Jagota, *op. cit.*, p. 40. See also Ted J. McDorman "The new definition of 'Canada

convened by the United Nations Office for Ocean Affairs and the Law of the Sea in September 1987), p. 143.

<sup>23</sup>Adapted from A.J. Kerr and M.J. Keen, "Hydrographic and geologic concerns of implementing article 76", *International Hydrographic Review*, vol. LXII, No. 1, January 1985, p. 144.

<sup>24</sup>See *The Law of the Sea: Baselines. An Examination of the Relevant Provisions of the United Nations Convention on the Law of the Sea*, op. cit.

<sup>25</sup>P.A. Symonds and J.B. Willcox, "Definition of the continental margin using United Nations Convention on the Law of the Sea (article 76) and its application to Australia".

*Bureau of Mineral Resources, Australia, Record*, 1988/38, (1988), p. 9.

<sup>26</sup>See, e.g., Hollis D. Hedberg, "Ocean boundaries for the law of the sea", *Marine Technology Society Journal*, June 1976, p. 6; Hedberg, op. cit., note 6.

<sup>27</sup>Kerr and Keen, op. cit., p. 146.

<sup>28</sup>Ibid., p. 143.

<sup>29</sup>Jagota, op. cit., p. 39.

<sup>30</sup>Robert D. Hodgson and Robert W. Smith, "The informal single negotiating text (Committee II): A geographical perspective", *Ocean Development and International Law*, vol. 3 (1976), p. 256.

<sup>31</sup>... .. "Sri Lanka's shelf and the



ANNEX I

United Nations Convention on the Law of the Sea

PART VI

CONTINENTAL SHELF

*Article 76*

*Definition of the continental shelf*

1. The continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance.
2. The continental shelf of a coastal State shall not extend beyond the limits provided for in paragraphs 4 to 6.
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.
4. (a) For the purposes of this Convention, the coastal State shall establish the outer edge of the continental margin wherever the margin extends beyond 200 nautical miles from the baselines from which the breadth of the territo-

8. Information on the limits of the continental shelf beyond 200 nautical miles from the coast, in 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

5. When laying submarine cables or pipelines, States shall have due regard to cables or pipelines already in position. In particular, possibilities of repairing existing cables or pipelines shall not be prejudiced.

*Article 80*

*Artificial islands, installations and structures on the continental shelf*

Article 60 applies *mutatis mutandis* to artificial islands, installations and structures on

*Article 81*

*Drilling on the continental shelf*

The coastal State shall have the exclusive right to authorize and regulate drilling on the continental shelf for all purposes.

*Article 82*

*Payments and contributions with respect to the exploitation of the continental shelf beyond 200 nautical miles*

The coastal State shall make arrangements with other States concerning the payments and contributions to be made by the State in question in respect of the continental shelf beyond 200 nautical miles.

*Article 84*

*Charts and lists of geographical coordinates*

1. Subject to this Part, the outer limit lines of the continental shelf and the lines of delimitation drawn in accordance with article 83 shall be shown on charts of a scale or scales adequate for ascertaining their position. Where appropriate, lists of geographical coordinates of points, specifying the geodetic datum, may be substituted for such outer limit lines or lines of delimitation.

2. The coastal State shall give due publicity to such charts or lists of geographical coordinates and shall deposit a copy of each such chart or list with the Secretary-General of the United Nations and, in the case of those showing the outer limit lines of the continental shelf, with the Secretary-General of the Authority.

*Article 85*

*Tunnelling*

This Part does not prejudice the right of the coastal State to exploit the subsoil by means of tunnelling, irrespective of the depth of water above the subsoil.

ANNEX II

Final act of the Third United Nations Conference on the Law of the Sea

ANNEX II. STATEMENT OF UNDERSTANDING CONCERNING A SPECIFIC METHOD TO BE  
USED IN ESTABLISHING THE OUTER EDGE OF THE CONTINENTAL MARGIN

*Considering* the special characteristics of a State's continental margin where: (1) the average distance at which the 200 metre isobath occurs is not more than 20 nautical miles; (2) the greater proportion of the sedimentary rock of the continental margin lies beneath the rise; and

*Taking into account* the inequity that would result to that State from the application to its continental margin of article 76 of the Convention, in that, the mathematical average of the thickness of sedimentary rock along a line established at the maximum distance permissible in accordance with the provisions of paragraph 4 (a) (i) and (ii) of that article as representing the entire outer edge of the continental margin would not be less than 3.5 kilometres, and that more than half of the margin would be excluded thereby.

ANNEX III

United Nations Convention on the Law of the Sea

ANNEX II. COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF

In accordance with the provisions of article 76, a Commission on the Limits of the Continental Shelf beyond 200 nautical miles shall be established in conformity with the following articles.

*Article 2*

1. The Commission shall consist of 21 members who shall be experts in the field of geology, geophysics or hydrography, elected by States Parties to this Convention from among their nationals, having due regard to the need to ensure equitable geographical representation, who shall serve in their personal capacities.

2. The initial election shall be held as soon as possible but in any case within 18 months after the date of entry into force of this Convention. At least three months before the date of each election, the Secretary-General of the United Nations shall address a letter

*Article 4*

Where a coastal State intends to establish, in accordance with article 76, the outer

*APPENDIX I*  
*Glossary of technical terms\**

*Atoll*

\* This term is defined as the top of a submerged volcano by coral palms



Archipelagic baselines are straight lines joining the outermost points of the outermost

forms all or part of an archipelagic State (art. 47).

***Basement***

The crystalline component of the Earth's crust beneath the sedimentary rocks, extending downward to the Mohorovicic discontinuity. In many places the rocks of the complex are igneous and metamorphic and of Precambrian age, but in some places they are Palaeozoic, Mesozoic or even Cenozoic. Also termed: basement rock; basal complex; fundamental complex; basement complex.

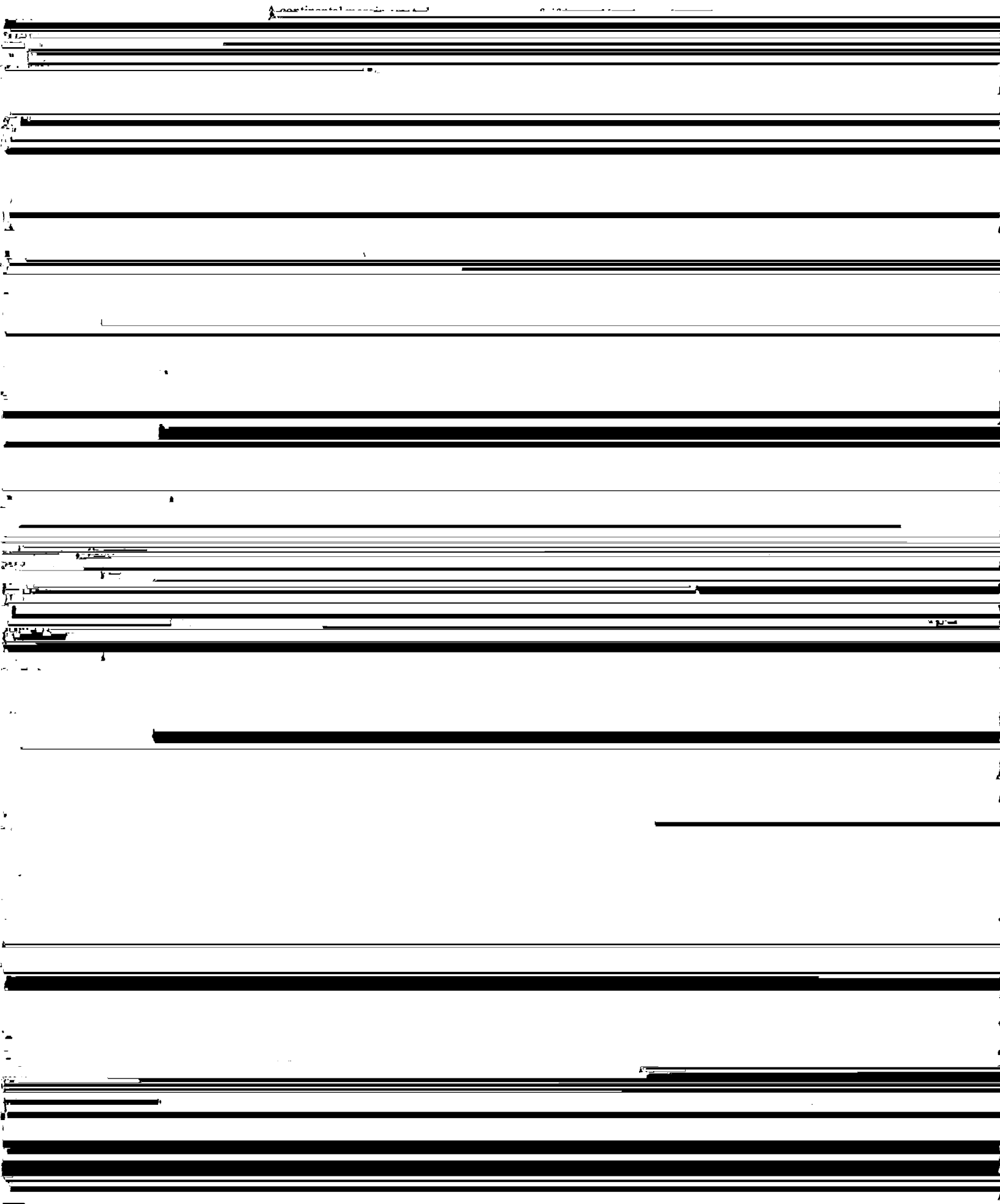
***Basepoint***

*Foot of the continental slope*

"In the absence of evidence to the contrary, the foot of the continental slope shall be

the point at which the gradient of its base" (art. 76 (4) (b))

*Rifted margin*



***Submarine ridge***

An elongated elevation of the sea floor, with either irregular or relatively smooth topography and steep sides.

On submarine ridges the outer limit of the continental shelf shall not exceed 350 nautical miles from the territorial sea baselines. This does not apply in the case of submarine elevations that are natural components of the continental margin of a coastal State (art. 76 (6)).

***Subsoil***

The subsoil includes residual deposits and minerals as well as the bedrock below.

The Area and a coastal State's territorial sea, archipelagic waters, exclusive economic zone and continental shelf all include the subsoil (arts. 1 (1), 2 (2), 49 (2), 56 (1) (a) and 76 (1)).

***Superjacent waters***

The waters overlying the seabed or deep ocean floor.

The Convention refers to the superjacent waters over the continental shelf and those superjacent to the Area in articles 78 and 135 respectively. Article 56 also refers to the

***Transform fault***

A strike-slip fault-like feature characteristic of mid-oceanic ridges and along which

*APPENDIX II*

*List of participants in the Meeting of the Group of Technical Experts  
on the Definition of the Continental Shelf*

*United Nations Headquarters  
10-12 March 1993*

Mr. Osvaldo Pedro Astiz  
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### APPENDIX III

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