

**SPECIAL PUBLICATION OF THE INSTITUTE OF MARINE LAW  
UNIVERSITY OF CAPE TOWN**

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**THE  
LATERAL AND VERTICAL LIMITS  
OF A HYPOTHETICAL REPUBLIC OF  
SOUTH AFRICA CONTINENTAL SHELF  
ACCORDING WITH INTERNATIONAL LAW  
AND  
IN PARTICULAR ARTICLES 76, 83 AND 84  
OF THE  
UNITED NATIONS  
LAW OF THE SEA CONVENTION  
(1982)**

**N.R. GUY  
1990**

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- Gulf of Maine case (1984) ICI Rep 246
- Denmark-German Democratic Republic Case Royal Danish Administration of Hydrography. Case No 8532-0006/88
- Guinea-Guinea Bissau Maritime Boundary Arbitration (1985) ILM Vol25 p251
- Libya-Malta Continental Shelf Case (1985) ICI Rep 13
- North Sea Continental Shelf Cases (1969) ICI Rep 1
- Petroleum Development (Trucial Coast) Ltd v Sheikh of Abu Dhabi (1951) ILR Vol18 Case No 37
- Post Office v Estuary Radio [1968] 2QB 740
- Tunisia-Libya [1982] ICI Rep 18
- US v California (1947) 332 US 19 84

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<b>Namibia</b>	<b>Constitution of the Republic of Namibia 1990</b>
<b>RSA</b>	<b>Marine Traffic Act 1981 (No 2 of 1981)</b> <b>(Amended by Act No 5 of 1983)</b>
<b>RSA</b>	<b>Territorial Waters Act 1963 (No 87 of 1963)</b> <b>(Amended by Act No 98 of 1977)</b>

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## FOREWORD

Coastal States have laid claim, progressively, to the sea areas adjoining them and until recent times these claims have been, ostensibly, to ensure the security of the State and the right to harvest the potential of the sea. It is obvious that foreign vessels, close to the coast of a State, could constitute a threat and in the past, as the dangers of improved weaponry became apparent, some coastal States felt the need to extend their territory still further seawards. However, the most significant claims to extended sovereignty have been in recent times, as a result of the efforts of coastal States to control the newly discovered potential of the sea bed, and in particular, the continental shelf. As technology improves, the possibility of exploiting sea-bed resources will extend further and further seawards to the point where, in time, it will be possible to harvest and mine all of the sea-bed, regardless of depth. It should be noted that some States have extended their claims to a limit that the international community will not accept. An example of this is the 200 nautical mile (nm) territorial waters claims of Argentina in 1966 and Brazil in 1970. Argentina has subsequently adjusted its claim to conform with the articles of the Law of the Sea Convention of 1982 LOSC. (1)

Vast changes in the type and quantity of potentially hazardous substances, that are being transported by sea, such as crude oil, nuclear waste, chemicals, etc, have also brought with them an ever-increasing threat of pollution. To prevent the destruction of their resources, coastal States are also taking more stringent measures in the seas surrounding them. To illustrate this threat, during the period 1950 to 1975, the dead-weight tonnages of crude-oil tankers increased from an average of 30 000 to 500 000 tonnes and the draughts (depths) of these vessels increased from 10 metres to about 30 metres when loaded. This marked increase in size and draught of vessels could mean that the information on navigational hazards is inadequate for their safe passage. This has increased both the possibility of accidents and the gravity of the consequences of such accidents, thus making it urgent for coastal States to control their seaward territories and zones.

It is the intention to consider all aspects of international law and marine-geological factors that could affect continental shelf claims of the Republic of South Africa (RSA). To be able to do this satisfactorily it is necessary to consider international treaties, conventions, judgements in international disputes and the practice of States that could be regarded as customary law. As some of the criteria used in international law to claim continental shelf depend on the geological configuration of the continental shelf of a coastal State it is necessary to consider geological concepts in general and the history of the shelf of the RSA in particular. It is anticipated that in some areas insufficient data will be available to finalise a claim and it is the intention also, therefore, to identify these areas and the data required for a comprehensive and internationally acceptable claim to be made.

The deep-sea bed is being explored for possible exploitation but the ownership of deep-sea resources was not satisfactorily regulated in international customary law. LOSC, adopted in 1982, has not been ratified by the major and most powerful coastal States. This is in spite of attending States to the Conference endeavouring at great length to resolve the problems. This is most likely due to the Articles in the Convention dealing with exploration and exploitation of the deep-sea bed.

Of the resources found on the continental shelf, as defined in LOSC, extensive oil and gas reserves phosphorites, manganese nodules and diamonds make up more than 90% of the value of the total. Some of the lesser important resources include sand and gravel, titanium, tin, chromium and zirconium. Pools of brine contain concentrations of lead, zinc, gold and silver and it must be accepted that advancing technology will eventually make these resources economically viable propositions.

Continental shelf claims beyond any exclusive economic or fishing zones include sedentary species such as oysters, clams, lobsters and crabs, which could in some areas such as the Pacific Ocean become an important consideration for exploitation.

The requirements for acceptable international standards of delineation of the continental shelf have not evolved through international customary law, because there has been little if any reason for a coastal State to give serious thought to the exploitation of the land under the sea until the middle of the 20th century.

The Convention on the Continental Shelf adopted in Geneva in 1958 was the first real effort, on an international scale, to draw up Convention rules capable of resolving the overlapping claims of States. (This convention is usually known as CSC, but to avoid confusion, it will be referred to as CSC58). This convention did not clarify the complexities of continental shelf or margin claims and the problem was further considered during the drafting of LOSC. In spite of the fact that major coastal States have not ratified this Convention most have, nevertheless, laid claim to areas of the continental shelf and to the exploration of the potential of the resources of the deep-sea bed.

The criteria laid down in LOSC to delineate continental shelf claims include limits that could be determined from bathymetric records, from seismic reflection or refraction profiles of the margin and also from the ratio of sediment thickness to the distance of that sediment position to the foot of the slope.

Due to the fact that the RSA's legislation does not adequately, or in some instances correctly, specify the maximum maritime zones it is essential that consideration be given to maximizing these claims of the Republic.

Although the RSA has not ratified their initial signing of LOSC, this Convention is important to the RSA as some of the Articles of this Convention are considered to have become international customary law. While every possible relevant factor will be considered, the main area of interest will therefore be the consideration of these LOSC Articles and their effect on a possible claim.

The main objective is to establish precedence in international law for the RSA's right to certain areas of continental shelf. After the criteria to be used in a determination have been clarified it is the intention to use these criteria and the information available to determine as accurately as possible the extent of the RSA's claim and to indicate the areas where surveys are necessary and where new or amended legislation required.

There will be a relatively general introduction to marine-geological concepts in Chapter 1, followed by a marine-geological history of the development of the continental shelf off the RSA in Chapter 2.

It will be necessary to distinguish between marine geological and LOSC definitions of components of the continental margin, these will be compared in Chapter 3. In particular the continental shelf as defined in LOSC is considerably different from the geologically accepted definition and will referred to as the Convention Continental Shelf (ConvCS).

The main concern will be the internationally accepted criteria and precedents that will allow the RSA to claim the maximum continental shelf. As a result the history of the continental shelf in international law will be considered in Chapter 4. Treaties and conventions will be investigated in Chapter 5. Art 76 LOSC(2) details the criteria for a ConvCS claim and particular attention will be given to this Article. Finally, in Chapter 6, all aspects will be considered in respect of a possible RSA claim.

Profiles of the continental margin of the RSA mainland and its oceanic islands used to identify the foot of the slope will be attached and schedules of sediment thickness will also be attached. These schedules will indicate the provisional maximum outer limit of a claim with the sediment thickness that may be required at positions on this outer limit for the claim to comply with the accepted formulae.

These formulae are contained in Art 76.4(a) i, and ii, 5, 6 and 7. The method that achieves the greatest area of claim could be as a result of a combination of the criteria in this Article. It would be possible to make determinations from bathymetric data with the exception of paragraph 4(a)(i) of Art 76 which would require multi channel seismic profiles.

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<sup>2</sup> United Nations Convention on the Law of the Sea 1982 (hereafter LOSC)  
Art 76

- (4)(a) For the purpose 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 territorial sea is measured, by either
- (i) a line delineated in accordance with paragraph 7 by reference to the outermost fixed points at each of which the thickness of the sedimentary rocks is at least 1% 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 60nm from the foot of the continental slope.
- (b) In the absence to the contrary, the foot of the continental slope shall be determined as the point of maximum change in the gradient at its base.
- (5) The fixed points comprising the line of the outer limits of the continental shelf on the sea-bed, 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 2500 metre isobath, which is a line connecting the depth of 2500 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 co-ordinates of latitude and longitude.

# Chapter 1

## MARINE-GEOLOGICAL CONCEPTS

The physical configuration of the sea-bed is critical to any claim made in terms of LOSC, and it is, therefore, necessary to understand the geography and geology of the area of the earth's surface that is under consideration. The global situation will be considered before the Southern African position is dealt with in greater detail.

### 1) THE CONTINENTAL MARGIN

The portion of the sea-bed from the low-water-line to the border of the continental rise with the deep ocean floor (abyssal plain) is known as the continental margin. It comprises the continental shelf, continental slope and continental rise (Figure 1).

It is possible to make an assessment of the geographical configuration of a continental margin with bathymetric data obtained by hydrographic surveyors and other marine scientific researchers. A certain amount of information is also available from organisations involved in exploration or exploitation of marine resources. For a coastal State to be able to make any territorial claims based on sediment thickness, as allowed for in LOSC, seismic surveys and coring samples are vital.

This information could be obtained from surveys carried out during oil exploration, sea-bed mining, general marine-geological research or the surveys could be specifically conducted to establish a coastal State's claim. It must be stressed that most of these data was obtained using navigational aids that were not always capable of ensuring accurate position fixing. In addition, single-channel seismic equipment has only been able to penetrate the upper 1 000m of the oceanic sediment and multi-channel seismics have been unable to distinguish deeper sediment with interbedded, highly reflective, lava flows.

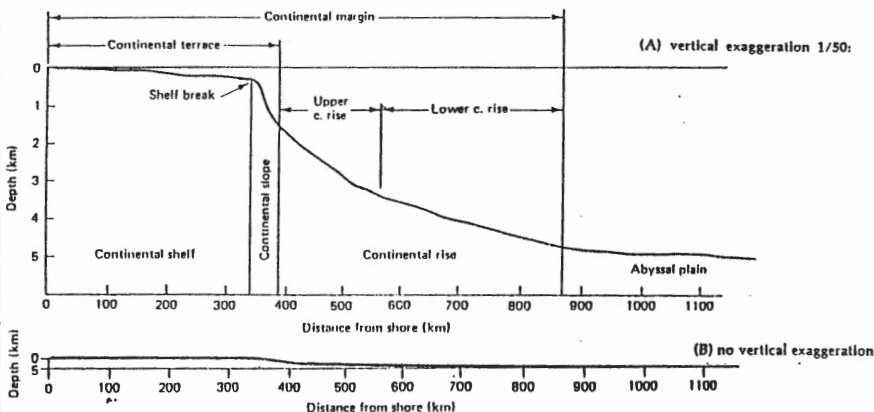


FIGURE 1  
CONTINENTAL MARGIN FEATURES

It is obvious that many theories regarding the origins of the continents, their margins and the deep-sea bed have existed through the centuries. Since 1965, when the theory of 'plate tectonics' was first propounded,<sup>(3)</sup> it has steadily gained in credence, until to-day it is generally accepted as the basis of marine-geological research.

3 P J Wyllie *The Dynamic Earth* (1976) p1



The earth's crust consists of two zones, known as the lithosphere (plate material) and the underlying asthenosphere (mantle) (Figure 3). New oceanic crust is created by the extrusion of material from the asthenosphere during ocean-floor spreading. Oceanic crust consists mainly of basalts, whereas older continental crusts are more complex and consist of a wide variety of rocks. The average density of continental crust is less than that of oceanic crust, which gave rise to the theory of Isostasy, of thick lighter continental crust amid thinner denser basaltic oceanic crust.

Eicher and McAlester state: (10)

"Continents are merely thick silic masses embedded in the lithospheric plate".

During the early-rifting phase of the continental break-up, the continental crust became much thinner before it rifted. Intense amounts of volcanic activity occurred and this was followed by rapid sedimentation. The ocean floor was rifted and was therefore very uneven with a very complex acoustic composition for later multi-channel seismic investigations.

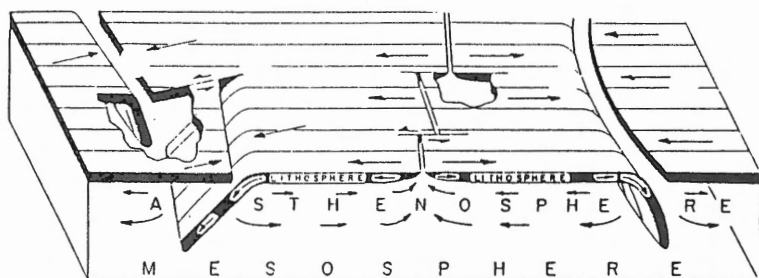


FIGURE 3  
LITHOSPHERIC PLATE MOTIONS  
[KENNETT n13 p135]

After formation, or reformation, the plates cool, become rigid, and are supported by the hot, near molten, asthenospheric material beneath them. As the oceanic crust cools, the sea-floor spreading, coupled with upward convections in the asthenosphere, causes rift valleys to be formed with, eventually, a mid-ocean ridge of oceanic crust. The oceanic crust is split at the ridge and, as it is transported away from the ridge, it becomes more dense and subsides. This means that the youngest oceanic crust is found closest to the mid-ocean ridge whereas the older oceanic crust is found farther away and deeper. Where thinned continental crust and the oldest oceanic crusts meet the boundary is known as the Continent-Ocean-Boundary (COB).

Oceanic crust is categorised into three major layers as follows.

#### Layer I

This layer consists of recently laid sediment, ranging from older consolidated sediment at the lower level of the layer to completely unconsolidated on the surface.

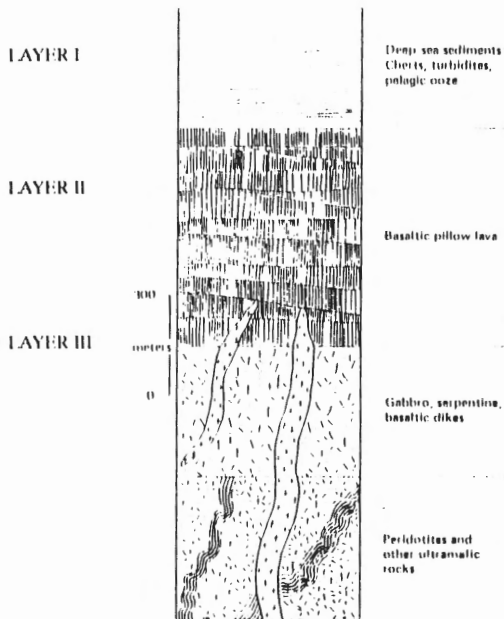
#### Layer II

This is composed predominantly of pillow lava in the upper portion of the layer, massive basalts and dikes with minor intercalation of biogenic sediment.

#### Layer III

This is the lowest and the main crustal layer. It is relatively uniform in thickness and seismic velocities, when compared with Layer II. The actual composition is still relatively unknown, but it is thought to consist mainly of gabbros, metagabbros, serpentinites and other ultramafics. (Figure 4)

FIGURE 4  
PROFILE OF OCEANIC  
CRUST LAYERS  
[Press & Slever n9 p649]



All of these layers are younger than the pre-rifting, stretched, continental crust (acoustic basement), which underlies the continental shelf, slope, and upper rise. The material underlying the shelf is composed of rifted and stretched continental crust and the oldest basalt in the oceanic crust. Like the oceanic crust, the continental crust also ranges upwards to almost unconsolidated sediment. The bulk of the continental crust under the shelf consists of shales and sandstones, but the lithology of the upper layer is often limestone. This limestone can become phosphatised to a hard crust, up to 2m thick, such as the surface of the outer Agulhas Bank.(11) It is known as 'a hard ground'.

Off major river mouths, the upper layer on the shelf often consists of completely unconsolidated mud. An example of this is the sediment at the mouth of the Mississippi River.(12)

The plates are in constant motion and, as they drift apart or towards each other, various types of margins develop. These margins vary greatly in composition and configuration and the determination of the type of margin is critical to the delineation of a continental shelf in international law.

### III) PLATE BOUNDARIES

The portions of the plates most affected by their movement are the boundaries or edges, and as the plates' surface movements can be divergent, convergent or translational, the effects are directly related to these movements. The plates are part of the spherical surface of the earth and rotation is about axes sited within the earth and at right angles to the earth's surface. They must move over this curved surface but plate motion need not always involve rotation (Figure 5).

#### 1) Divergent margins (passive and constructive)

A passive margin occurs where plates are moving away from one another. A major effect of divergent plates is the formation of the mid-oceanic ridges which are also the areas of the formation of new oceanic crust (Figure 6). The ridges are developed perpendicular to the direction of the divergence.

The Mid-Atlantic Ridge is caused by the sea-floor of the Atlantic Ocean spreading with the divergence of the continents of the Americas from Europe and Africa. It is the major area of rifting in this ocean and consists of two near-parallel ridges with a rift valley in between. As a result of the extrusion of volcanic material from under the ridge, the seismicity of the area is extremely high.

11 R J Parker & W G Slesser *Journal of Sedimentary Petrology* Vol 42 (1972) p434

12 M N Hill *The Sea* Vol 3 (1963) p500

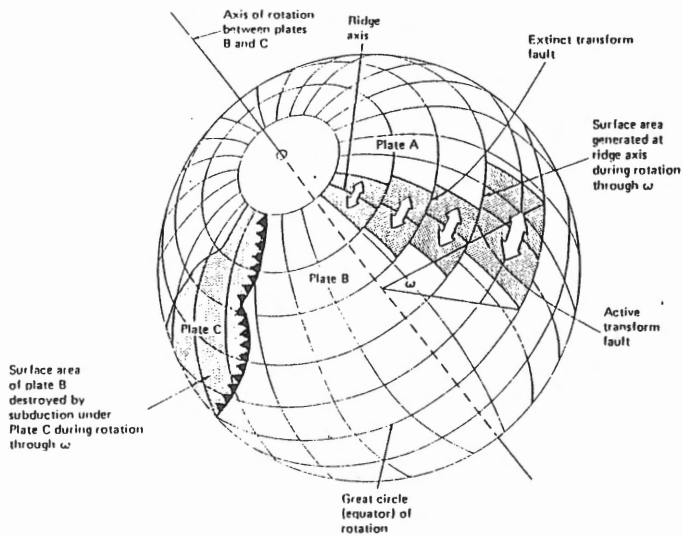


FIGURE 5  
 PLATE ROTATIONS  
 [Kennett n13 p137]

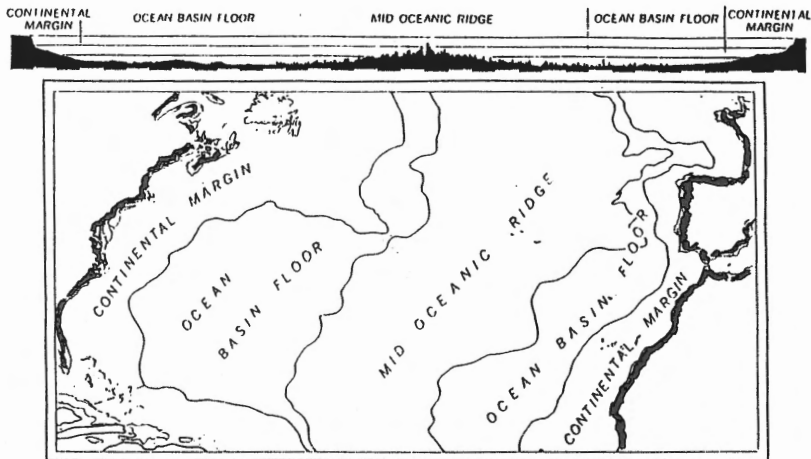


FIGURE 6  
 TYPICAL CROSS-SECTION THROUGH DIVERGENT PLATES  
 [C D Hollister & B C Heezen *The Face of the Deep* (1936) p9]

The South African seaboard is situated in passive margins on the west and east coasts and in a sheared margin on the south and south-east coasts.(Figure 7) (Kennett indicates the global types in broad principle in this small sketch). Both margin types allow the formation of a continental rise by the accumulation of sediment at the foot of the continental slope.

Passive margins usually have a smooth relief with large accumulations of sediment, which have been measured up to 15km thick in parts. The continental rise sediment has been found to be so thick that modern seismic systems have been, on occasions, unable to penetrate them.(13)

During rifting, submarine dams may be formed which may trap sediment. The structure of passive margins is relatively uncomplicated, but as a result of the tension and thinning before parting the crust has been known to fragment leaving portions of the continental crust behind to form oceanic plateaux.

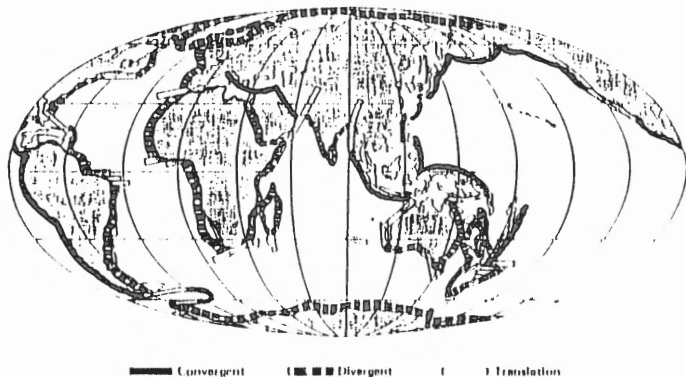


FIGURE 7  
WORLD-WIDE DIVERGENT AND CONVERGENT MARGIN DISTRIBUTION  
[Kennett n13 p322]

The stages in the development of a passive margin are usually categorized as follows.

**a) Rifting**

This is associated with plate deformation prior to the actual splitting. Hot underlying material is uplifted during the rifting

**b) Spreading (youth)**

This phase is when the actual separation of the continents takes place with the accretion of oceanic crust in the gap. Local subsidence takes place in the area of the slope, due to the initially high rate of sedimentation that builds the margin.

**c) Maturity**

This is the last phase where the thermal intrusions have ceased. The sediment is extensive and it has been moulded by erosion and deposition.(14)(Figure 8)

**2) Convergent margins (active and destructive)(Figure 9)**

Convergent margins are called 'active' and in an active margin the plates collide with one another. Oceanic crust normally underthrusts continental crust, but on occasions oceanic crust will underthrust oceanic crust. The Tibetan Plateau is reputed to consist of two plates of continental crust, one on top of the other.(15)

Many boundaries of convergent plates coincide with the continental margins and in an area of convergence one of the plates is forced down under the other (subducted). Where this occurs, it is always the oceanic plate that is subducted.

13 J P Kennett *Marine Geology* (1982) p325

14 *ibid* p327-329

15 *ibid* p323

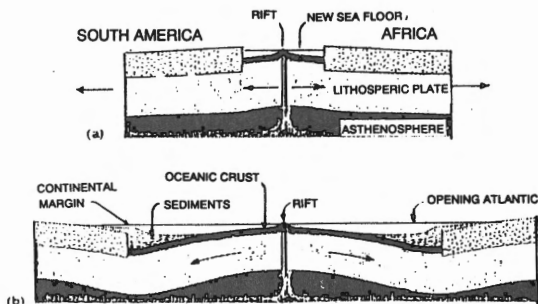


FIGURE 8  
PASSIVE PLATE BOUNDARIES  
[Press & Siever n9 p19]

The angle of inclination of a thrust varies considerably, and the resulting trenches that are formed do not lie perpendicular to the direction of the movement of the plates. It is obvious that one of the plates suffers most of the destruction at the convergence, although there is no reason why the other should not also suffer some destruction in the subduction zone found beneath the trench (Figure 9). This is not relevant in a Southern African context, as a convergent margin is not located in the area (Figure 7) and it is therefore not considered further.

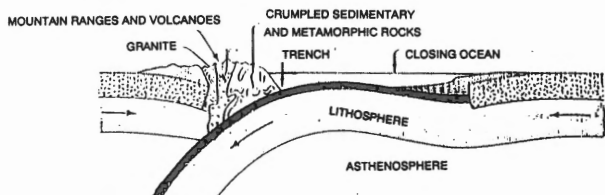


FIGURE 9  
ACTIVE MARGIN  
[Press & Siever n9 p19]

### 3) Fracture zones

Fractures occur in the plate material as a result of the divergence of the continents. These fracture zones (Figure 10) are formed in small-circle trajectories about the plate rotation. Deformation as the result of the formation of a sheared margin causes a fracture zone adjoining the boundary of the plates. An excellent example is the Agulhas-Falkland Fracture Zone, which is responsible for the classic case of a sheared margin off the south and south-east coast of the RSA. (Figures 7 & 10). Fracture Zones situate on the ocean bottom are constantly being formed as the spreading of oceanic crust continues. The oceanic crust on either side of a fracture zone would be of different ages. An examination of these zones will indicate the history of the movements of the plates. (Figure 10). Most of the earth's surface (70%) is covered by water and the floor of the oceans is usually found at a depth of about 5 000 metres. The floor is scarred by these fracture zones.

Where the plates move parallel to one another, either in the same or the opposite direction, very little lithospheric material is created or destroyed. Most of the oceanic fracture zones fall into this category. The relative direction of the movement of the plates can be determined from the direction of the fault formed.

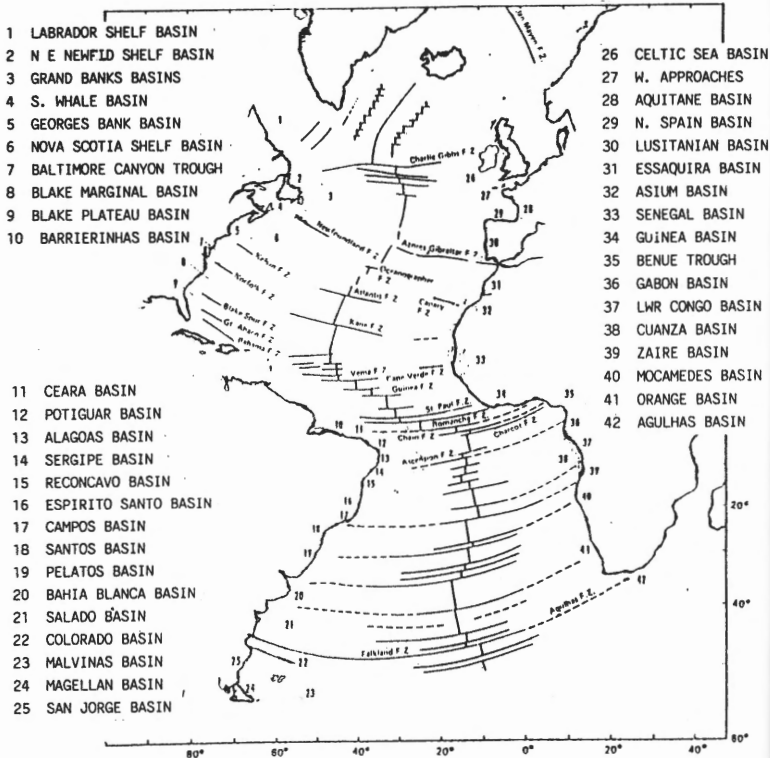


FIGURE 10  
 ATLANTIC OCEAN FRACTURE ZONES, BASINS AND TROUGHS  
 [E S W Simpson 'Evolution of the South Atlantic' *The Geological Society of South Africa* (1972)  
 p 9-10]

#### 4) Transform faults

Transform faults form where plates move parallel to each other in opposite directions between offset sections of the mid-ocean ridge, and fracture zones tend to lie along small circles on the earth's surface (Figure 5). It is generally considered that little significant addition or subtraction to the plates occur in these margins, but if the fault does not coincide exactly with its small circle of rotation, it will travel on a circle that is either larger or smaller than that of the adjoining plate, causing a small amount of subduction or spreading to occur. It is possible that a small amount of material will leak upwards into the crust from the asthenosphere. The famous San Andreas Fault of California is a part of a system of transform faults.

#### IV) SEISMICITY

Evidence obtained indicates that earthquakes fit very precisely into the theory of plate tectonics and associated sea-floor spreading. Earthquake activity has been found to relate to very specific areas of the crust and basic patterns of global earthquake activity were determined by the seismologists, Gutenberg and Richter in the 1950's. (16) A Worldwide Standardized Seismograph Network was established, and the evidence obtained, coupled with the work undertaken by Isacks, Oliver and Sykes of Lamont, indicated that this activity was confined to narrow zones along some plate boundaries. (17) The belts of seismicity are continuous, and group the plates into blocks. Passive plate margins, where the new lithospheric material is formed along the mid-oceanic ridge, are regarded as being very active seismic zones causing shallow-focus earthquakes. More powerful deep-focus earthquakes are formed along convergent margins, as in the Pacific Ocean.

16 ibid p139

17 ibid

## Chapter 2

### SOUTHERN AFRICAN MARGINS.

The plate-tectonic history of the Southern Indian Ocean, shows that the margin that developed on the east coast of Southern Africa, was as a result of the rifting of East Gondwana from West Gondwana. The western and southern margins of the Southern African continent are as a result of the separation of the continents of South America and Africa (Figure 11). Kennett (18) holds that this took place uninhibited by the Antarctic continent, which he feels had already moved sufficiently far south by the time this occurred.

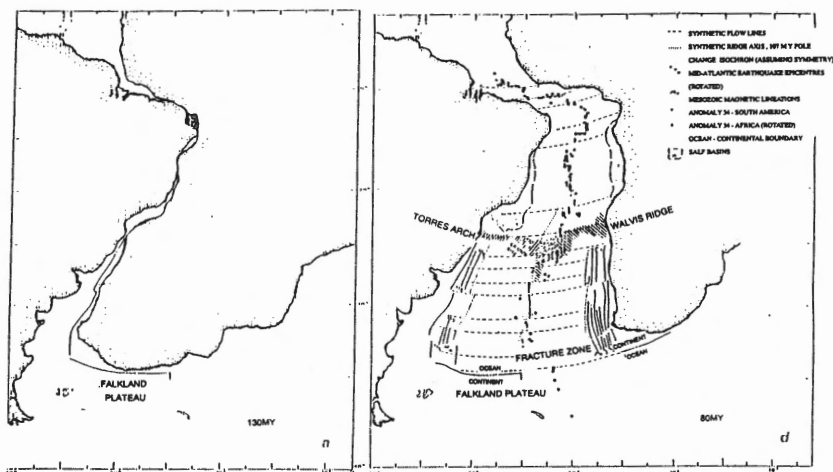


FIGURE 11  
THE SEPARATION OF THE CONTINENTS OF SOUTH AMERICA AND AFRICA  
[Simpson Fig 10 p 10-11]

#### D) THE SOUTH WEST INDIAN OCEAN PASSIVE MARGIN

The development of this margin is thought to predate that of the South Atlantic by up to 50 million years, when East and West Gondwana separated. (19) The separation caused the formation of a passive margin with tensional rifting in a north-south direction in the area of northern Zululand and southern Mozambique (Figure 12). Various other theories indicate that it is not a divergent margin, but that it is a sheared margin related to the Agulhas-Falkland Fracture Zone. It appears however that recent, as yet unpublished, work by S Raillard supports the divergent margin concept. (Dingle pers comm 1990).

Basaltic and rhyolitic lavas were extruded prior and during the breakup. The faulted part of the margin off Zululand coincides with the extension of the line of the Lebombo range. (20)

The sedimentary basins of this margin were divided by an extension of the Mozambique Ridge and the sediment from the main rivers, the Zambezi and the Limpopo, was channelled into different basins (Late Jurassic Period) (Figure 13). The sediment was deposited in a southerly direction in the basins.

18 *ibid* p294

19 R V Dingle & R A Scrutton 'Continental Breakup and the Development of the Post Paleozoic Sedimentary Basins Around Southern Africa' *Geological Society of America* Vol 85 (1974) p1468

20 *ibid* p1468

**FIGURE 12**  
**SEPERATION OF EAST**  
**FROM WEST GONDWANA**  
 [Eicher & McAlester n8 p270]

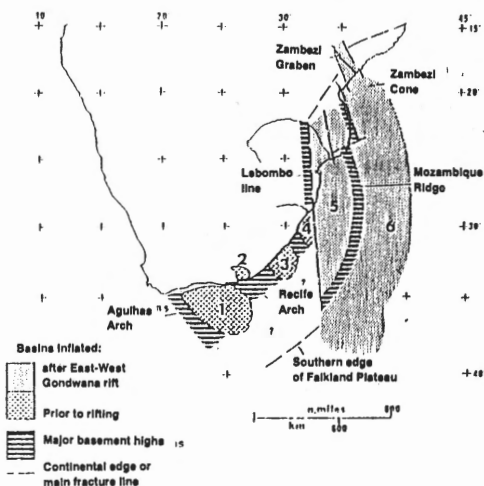


In the area of the Zambezi Cone, Dingle and Scrutton (21) estimate that:

"...here more than 4km of Maestrichtian, and younger sediment, occur, plus an unknown thickness of older material: the isobaths indicate a southerly bulge of the continental shelf."

The sediment is dispersed through channels connected to the Zambezi Cone, and it is estimated to be about 1.5km thick in this area.

More important to the RSA is the second sediment area, the Natal Valley (Figure 14). It was initially



**FIGURE 13**  
**MAIN SEDIMENT BASINS: SOUTH WEST INDIAN OCEAN (LATE JURASSIC PERIOD)**  
 [Dingle & Scrutton n19 p1469]

(125-130 m.y. B.P.) formed as result of shearing along the Agulhas-Falkland Fracture Zone and the consequent westward movement of the Falkland Plateau as rifting occurred east of the Plateau tip. It is bounded on all sides by the Mozambique Ridge (east and south), Falkland Plateau (west) and Mozambique continent (north). The sediment from the Limpopo and the Tugela Rivers was dammed and the sediment thickness in this area is estimated to be in excess of 3km thick. (22)

21 *ibid* p1467

22 *ibid* p1469

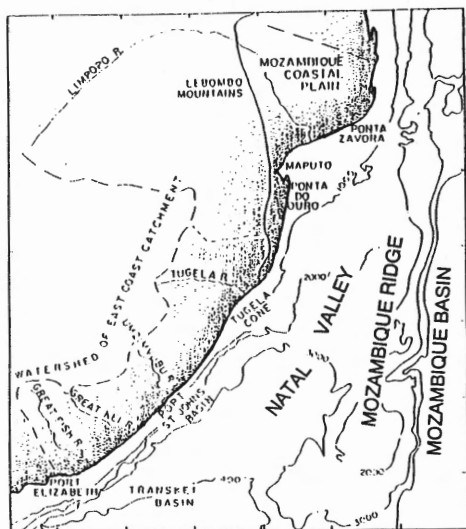


FIGURE 14  
NATAL VALLEY AND MOZAMBIQUE BASIN

[A K Martin 'Comparison of sedimentation rates in the Natal Valley, South West Indian Ocean, with modern sediment yields in east coast rivers of Southern Africa' *South African Journal of Science* 83 (1987) p717

The composition and structure of the Mozambique Ridge is not clearly known, but it is thought to be associated with the Falkland Plateau, in which case it is of continental origin.

A further aspect noted by Dingle *et al* (23) is that:

"complex sea-bed morphology in the south-west Indian Ocean has its origins in a more complicated plate tectonic history than the less cluttered south-east Atlantic Ocean. This, coupled with a high sediment accumulation rate results in physiographic differences between the two basins that lead to the partitioning, at about 34,5 S in the Natal Valley, of the deep current regimes that effect the dispersal and/or erosion of bottom sediment in the area (Atlantic Bottom Water, AABW; and North Atlantic Deep Water, NADW ....

Dingle *et al* (24) feel that the single most significant factor is the amount of terrigenous sediment received in the Natal Valley and off the Transkei coast as opposed to other areas off South Africa. The percentages given of the amount of material supplied by rivers to the continental shelves of these areas are

west coast - 4.1%  
south coast - 17.9%  
east coast - 78.0%.

These rates reflect the arid catchment areas on the west coast as compared to the humid hinterland on the south and east coasts.

## II) SOUTHERN AFRICAN SHEARED MARGIN

After the Antarctic continent moved south and with the separation of the South American continent from Africa, the Agulhas-Falkland Fracture Zone formed south of the passive margin that had been created. This fracture zone extends from a position just south of Durban, across the South Atlantic, to the Falkland Islands (Figure 11).

23 R V Dingle *et al* 'Deep-Sea Sedimentation Environments Around Southern Africa (South East Atlantic and South West Indian Oceans)' *Annals of the South African Museum* Vol 98 Part 1 (1987)p4

24 *ibid* p4-8

The Agulhas-Falkland Fracture Zone resulted in continental sedimentation passing into the basins formed on the Agulhas Bank landward of the Agulhas Marginal Fracture Ridge. The pre-shearing sediment is thought to extend onto the Falkland Plateau as the fracture zone cut across the basins that had already been formed prior to the separation (Figure 15).

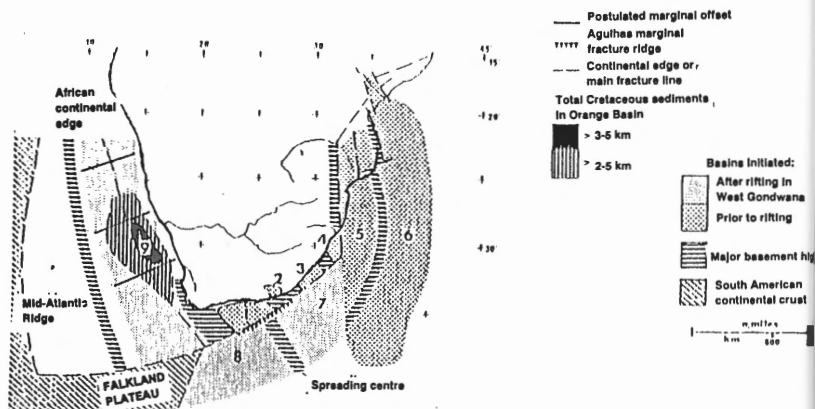


FIGURE 15  
SOUTHERN AFRICAN SHEARED MARGIN (MID-CRETACEOUS PERIOD)  
[Dingle & Scrutton n19 p1469]

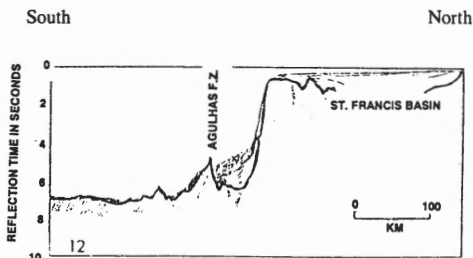
The terrigenous deposition from the Mozambique side has covered a large portion of the area and extended the otherwise narrow shelf. The Natal Valley grew as the rifting continued and the sediment is relatively young and only approximately 2,5km thick.

The Marginal Fracture Ridge, that was created by the transform motions, caused the sediment to be dammed up, or ponded, forming a basin of sediment on the Agulhas Bank. (Figure 16)

The main basins prior to breakup were the Outeniqua Basin and the smaller Algoa and St John's Basins. All appear to have been seriously affected by the faulting. (Figure 15)

Dingle and Scrutton (25) hold that the deposition in the Outeniqua Basin was onto continental crust, (which is important in later considerations), with later sedimentation being onto both continental and oceanic crust. The fault motion along the edge of the Agulhas Bank assisted the formation of the Agulhas Fracture Ridge, which caused sediment to be dammed up behind it. (Figure 16)

FIGURE 16  
AGULHAS-FALKLAND  
FRACTURE ZONE  
[Emery et al n171 p9]



They also feel that the south and east coast basins were formed along a fundamental line of weakness in the continental crust, that was to become the margin in that area. With the spreading of the plates to form the Atlantic basins, it was found that the transform motions involved functioned as intra-continental plate boundaries and the sedimentary basins formed became known as 'sheared-margin boundaries'.

They hold that in the south and south-east margins:

"this sequence of events has resulted in a shallow, flat topped continental shelf, capped with relatively thin Tertiary sediment which is flanked by a steep, irregular continental slope. The marginal fracture ridge crops out at the base of the slope, and small outcrops of Cretaceous strata locally occur higher up. This is in marked contrast to the northeast and west coast margins, which are prograded features on which all older strata are progressively buried."(26)

Both the southern and the south-eastern sheared margins have very steep slopes. Sedimentation has been heavy on the deep ocean floor off the east coast where the sediment passed over the narrow continental shelf. This resulted in thick continental rises being formed.

### III) SOUTH EASTERN ATLANTIC OCEAN PASSIVE MARGIN

The whole of this margin, south of the Gulf of Guinea is a tensional rifted feature. (27) It consists of downfaulted continental blocks overlain by sediment, which has encroached onto the oceanic crust. The Orange River is the main sediment contributor, followed by the Berg and Olifants Rivers. The thickest sediment wedge is that of the Orange River. The area between 32°05'S and the Agulhas Bank has a relatively thin sediment deposit, due largely to minimal terrigenous runoff.

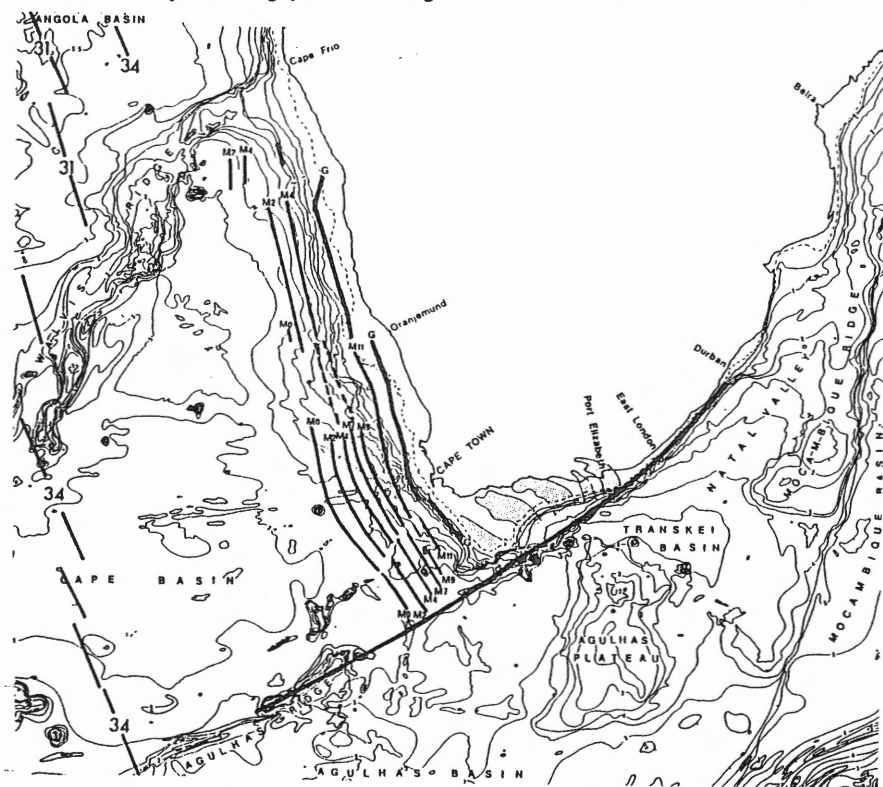


FIGURE 17  
SOUTH-EAST ATLANTIC PASSIVE MARGIN  
(Emery et al n171 p5)

26 *ibid* p1470

27 *ibid*

The margin is south of the Walvis Ridge, which, during the period of rifting, is considered to have formed a barrier separating the Cape and Angola Basins. The rapid erosion of the western Great Escarpment, and the large catchment area of the Orange River and its tributaries are largely responsible for the major role that this river has played in the sedimentation process of this area.(28) The continental margin of Namibia, and the west coast of South Africa consists of a rocky inner shelf, less than 10km wide, and a smoother outer shelf up to 100km wide (Figure 17).

#### 1V) SEDIMENTATION

Sedimentation is an integral part of the development of a margin. At least a brief understanding of the processes resulting in deposition is necessary.

Climate and ocean basin physiography determine the nature and style of sediment resulting in marked differences between the sediment of the South East Atlantic and the South West Indian. According to Dingle et al:(29)

"... climate dictates the quantity and relative proportions of terrigenous, biogenic, and authigenic material potentially available for injection into the deep basins, and is controlled by the two quasi-resident high-pressure atmospheric circulation cells (anticyclones) that lie on either side of southern Africa. One over the south-west Indian Ocean and the south-eastern seaboard of Africa supports a high-energy, relatively low-productivity western boundary surface current (Agulhas) adjacent to the humid hinterland of south-east Africa, while the other over the south-east Atlantic is associated with a low-velocity, high-productivity eastern boundary surface current (Benguela) adjacent to the arid hinterland of south-west Africa."

#### Sediment types

##### 1) Terrigenous sediments

Physical sedimentation is the final stage of a process that starts with erosion and continues with various forms of transportation of the eroded material to the lowest points that the transportation vehicles of air and water can reach. Physical sedimentation starts when transportation stops.

This form of sedimentation results in the transported material being deposited in rivers, deltas, estuaries, tidal flats, beaches, offshore bars, continental shelves, slopes, rises and deep water basins.

Terrigenous sediment consists of shales, sandstone and conglomerates and comprises more than 75% of the total mass of sediment. This type of sediment is often extremely rich in oil and gas and it is possible to exploit these resources if located in this type of sediment.

##### 2) Biogenic sedimentation

This process occurs when sea-water compensates for the chemical imbalance introduced into the oceans by the introduction of land-derived (terrigenous) material in solution. It is made up of siliceous oozes which are deposited on the death of diatoms, radiolarians and calcareous oozes formed from foraminifera, coccoliths, molluscs etc. (30) Oozes of this nature are located on the Namibian and RSA west coast margins. This is found to be a considerable factor where currents, temperatures, an adequate supply of nutrients and other conditions make it favourable for the growth of plankton.

#### V) NEARSHORE AND CONTINENTAL SHELF PROCESSES

Because the water depth is much shallower on the continental shelf, this area is subject to the influence of tides, currents, and waves. Larger quantities and more active species of marine life also occur in these zones with a corresponding effect on the structure of the sea-bed.

Enormous amounts of terrigenous sediment are deposited on or pass through the continental margin. Kennett claims that:

"80 per cent of all sediment of the earth is trapped in vast piles on certain continental margins." (31)

Rivers are the carriers of a large proportion of the terrigenous sediment deposited - some authors put it as high as 85 per cent of the total.

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28 *ibid* p1471

29 Dingle *et al* n23 p3.

30 K O Emery & E Uchupi *The Geology of the Atlantic* (with maps)(1984) p694

31 Kennett n13 p287

Kennett states that;

" .....twenty five per cent of sediment transport is by four major rivers: Huang Ho, Ganges, Brahmaputra and the Yangtze. Of the 12 major river systems, all but the Amazon, Indus and Ganges-Brahmaputra systems deposit their sediment loads in marginal seas. Almost all of the sediment is deposited near the shore in estuaries, deltas, or offshore basins. Little sediment is deposited beyond the continental shelf. The Congo River is one of the few rivers in which sediment completely bypasses the shelf by way of a submarine canyon." (32)

The areas of deposition of the terrigenous sediment are dependent on the type of material being transported, the configuration of the coast and sea-bed, the volume and velocity of the river, and all the nearshore activities such as tides, waves, currents and the weather.

An additional factor that has had a marked effect on the deposition of terrigenous sediment in the continental margin has been the level of the sea. For a number of reasons, the level of the sea has varied through geological history. Various glacial periods have caused a reduction in the level of the sea by the retention of water on the land in the form of ice and by the reduction in the temperature of the sea water, which caused its contraction.

During the periods of reduced sea level, the rates and quantities of sediment transported by rivers were increased considerably. This resulted in marked changes in the type and amount of sedimentation. In addition, the areas of deposition were considerably different as the rivers had to transport the sediment across the exposed continental shelf to the slope and in some instances through canyons to the deep-ocean floor beyond.

'Relict sediment' is sediment that is a result of previous events and conditions even though they may be on the surface of the slope. Some may even have been laid down on land before subsidence. Emery estimates that 70% of sediment on the surface of the continental shelf is relict.(33) Where relict sediment is dominant, it indicates that the younger sediment is not reaching the shelf and is being trapped in the estuaries. Much of the younger sediment will not reach the shelf until the estuaries have been filled up.

An estuary at the mouth of a river, makes it unlikely that a cone or a fan of sediment will be found in the margin, as the sediment will be trapped in the estuary or lagoon.

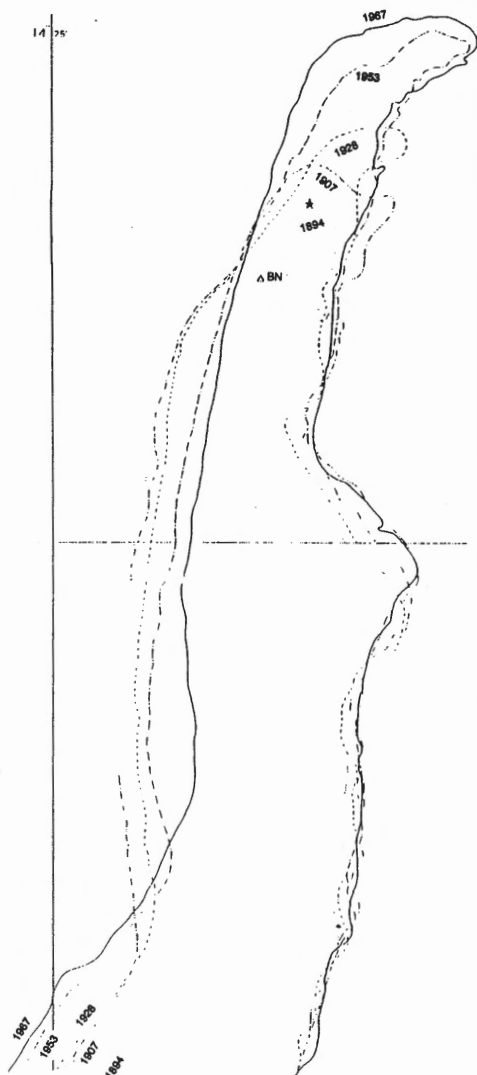


FIGURE 18  
SAND-SPIT ACCRETION, PELICAN POINT  
(WALVIS BAY), 1894-1967  
[South African Navy Hydrographic Office Records]

32 *ibid* p289

33 *ibid* p289

## VI) SHELF TOPOGRAPHY

Many factors are responsible for the development of the shelf. They include:

"shelf width, rate and type of sediment supply, character of energy input, history of sea-level change, climatic regime both past and present, animal-sediment interactions and chemical factors." (34)

Shelf morphology includes relief features such as banks, linear ridges, submarine canyons, marginal basins and linear depressions, which in turn include U-shaped channels, swales, shelf valleys and reef channels. They also vary in gradient, which will result in terraces, escarpments and multiple shelf boundaries. Other features are not considered as relevant in a Southern African context.

Where the low-water mark occurs on a beach, nearshore activities are important in the consideration of claims to the continental shelf. Beaches are regarded as the most dynamic areas in the marine environment. They are created and constantly changed by the actions of wave, wind, tide and currents. These actions also vary with the seasons and the years. The most important influence in this zone is wave action. The turbulence, resulting from the waves bottoming in the shallows and then breaking, causes the beach sediment to be stirred up, transported and redeposited in other areas. This is a constant action, and where it takes place in a beach area with a gently sloping profile, the determination of a nebulous factor, such as a low-water-line, is seriously affected. Possibly the most striking effect produced in the nearshore zone which could affect claims to maritime zones, occurs where a spit of land accrues onto a headland by the deposition of sediment. A striking example is Pelican Point (Walvis Bay). This eventually reduces the distance between the natural entrance points of a bay to allow it to fall within the criteria of Art10 LOSC and for the bay to be closed with a straight baseline between these entry points (Figure 18).

As with the nearshore zone, ocean conditions are responsible for changes to the shelf. In particular, currents and river outflows are responsible for erosion and the transport, deposition or redeposition of sediment.

Carbonate sediment, includes coral which is responsible for the formation of reefs as well as contributing as sediment in other areas. The reefs not only form a feature of the shelf themselves, but they are also responsible for the entrapment of large quantities of sediment. They reduce the effect of weather and oceanic and climatic conditions on sediment deposits and as a result the sediment formation is usually more stable and more restricted. Coral reefs are fringing, barrier or they form an atoll but are not relevant in the Southern African context, with the possible exception of northern Zululand where isolated reefs are found.

As indicated on page 13 the highest percentage of terrigenous sediment deposit occurs on the east margin with a considerably lesser percentage on the southern margin and a low amount on the west margin. The east coast has, therefore, a wide variety of types of primary accretionary mechanisms such as slumps, slides, debris flows and turbidity currents whereas the west coast basins are mainly dependent on major slumps and slides to move sediment from the slope to the rise.

In the delimitation of a coastal State's continental shelf, once the foot of the continental slope has been established and the fact has been ascertained that a substantial rise exists, the sediment thickness of the rise becomes of cardinal importance. As the coastline of the RSA is situated in passive or sheared-margin zones, it can be expected therefore that the sediment on the rise could be substantial.

Continental rises vary considerably in width and can be as wide as 1 000 km. The rise may consist of a series of separate, older, rises on top of each other.(Figure 19)

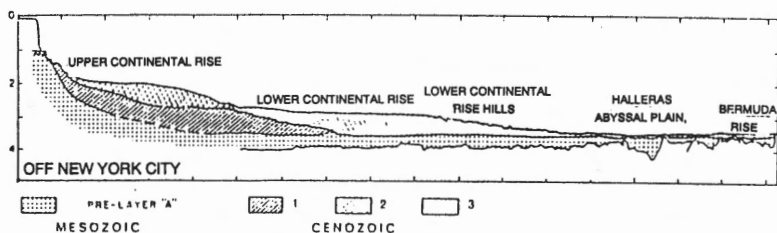


FIGURE 19  
CONTINENTAL RISE FEATURES  
[Kennett n13 p342]

# Chapter 3

## DEFINITIONS

The term continental shelf is defined in LOSC and other conventions, but this definition is at variance with the accepted marine-geological definition. Discrepancies also exist between other definitions used in the Convention and with those used by hydrographers and marine geologists. As marine geologists and hydrographers are required to determine the extent of a claim allowable in terms of the Convention, it is the intention, therefore, to highlight these differences. Due to the apparent ambiguity of some of the terms used, the International Hydrographic Organisation was requested by its member States to produce a glossary of terms (35) to facilitate claims by coastal States.

The lateral limits of a ConvCS claim are those boundaries established between adjoining States. Vertical limits are those boundaries of maritime zones determined between a coastal State and the deep-sea bed.

### 1) DEFINITIONS

#### 1) Continental margin

The continental margin comprises three categories of provinces:

- (a) "The relatively flat portions of the submerged continental platform form the continental shelf--"
- (b) "the continental slope which commences abruptly at the edge of the continental shelf"
- (c) "continental rise, marginal trenches and outer ridge which are at the base of the continental slope" (36) (Figure 20).

This is also defined in Art 76.3. LOSC.

"The continental margin comprises the submerged prolongation of the land mass of the coastal State and consists of the sea-bed and sub-soil of the shelf, the slope and the rise. It does not include the deep-ocean floor with its oceanic ridges or the sub-soil thereof." (Figure 20).

#### 2) Continental shelf

This is the main geological feature to be considered and attention is drawn to the fact that it is defined by geologists as follows:

"The continental shelf forms the seaward extension of the adjacent continent from the shoreline to a line called the shelf break or shelf edge." (37)

Art 76.1 LOSC, however, defines the continental shelf as follows:

"...comprises the sea-bed and subsoil of the submarine areas that extend beyond its territorial sea through the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance."

The geological concept of the continental shelf is therefore only that portion of the sea-bed that extends to the point where the continental slope begins, (Figure 20), whereas the LOSC definition could include the continental shelf, the continental slope and the continental rise. Where the continental rise does not extend to a distance of 200nm from the coast the LOSC allows for the ConvCS to extend beyond the continental rise, onto the deep ocean floor, to a minimum distance of 200nm from the baselines. (Figure 20)

Provision is made in LOSC for continental shelf claims to be made in respect of islands, regardless of their size. Islands are not clearly defined in LOSC. Rocks are classified as islands with the proviso that if they are unable to sustain human habitation or economic life, they are not entitled to either a EEZ or a continental shelf. (38) It is exceedingly difficult to interpret LOSC, as marine-geological terms have been used in the Convention in a manner that leaves the definition of these terms open to interpretations other than marine-geological.

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35 International Hydrographic Organisation *A Manual of Technical Aspects of UNCLOS 82* Part 1 (1990)

36 R W Fairbridge *The Encyclopaedia of Oceanography* Vol 1 (1966) p100

37 Kennett n13 p29

38 LOSC Art 121 Regime of Islands.

1. An island is a naturally formed area of land, surrounded by water, which is above water at high tide.
2. Except as provided for in paragraph 3, the territorial sea, the contiguous zone, the exclusive economic zone and the continental shelf of an island are determined in accordance with the provisions of this Convention applicable to other land territory.
3. Rocks which cannot sustain human habitation or economic life of their own, shall have no exclusive economic zone or continental shelf.

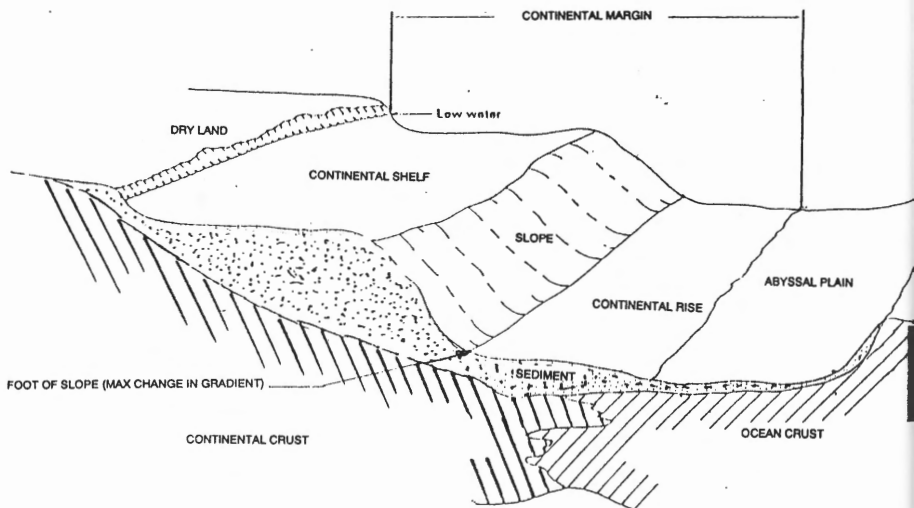


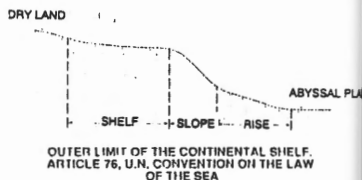
FIGURE 20  
THE CONTINENTAL MARGIN AS DEFINED BY MARINE GEOLOGISTS AND  
HYDROGRAPHIC SURVEYORS

The possible continental shelf claims of island groups in terms of LOSC, such as the Penguin Islands and Prince Edward Islands, will be considered later and the interpretation of features such as continental shelf, mid-oceanic ridge, oceanic plateau, and natural prolongation will be critical.

It is a simple matter, in geological terms, to understand the relationship between the shelf, the slope, the rise and the margin but a closer look at the LOSC definition shows that in one instance the shelf is an integral part of the margin, but in the definition of the ConvCS it may extend beyond the margin to a minimum distance of 200nm. It could extend to 350nm and even further if the criteria of Art 76 are met.

### 3) Continental slope

Marine geologists hold that the slope starts at the edge of the shelf as defined by them and the slope has a far steeper gradient than other portions of the margin. It falls from approximately 100 to 200 metres to a depth of between 1 500 to 3 500 metres. The slope is a narrow zone, usually less than 120nm in width, but it is regarded as being one of the most conspicuous boundaries on the earth's surface.(39)



OUTER LIMIT OF THE CONTINENTAL SHELF.  
ARTICLE 76, U.N. CONVENTION ON THE LAW  
OF THE SEA

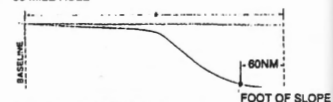
FIGURE 21  
THE CONTINENTAL  
SHELF AS DEFINED IN  
THE 1982 CONVENTION  
ON THE LAW OF THE  
SEA

[R Macnab & D J W Piper  
'Ocean Mapping at the  
Atlantic Geoscience  
Centre'  
Science Review  
(Canada)(1987) p36

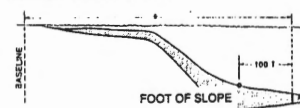
NARROW CONTINENTAL MARGIN  
200 MILE RULE



WIDE CONTINENTAL MARGIN  
80 MILE RULE



SEDIMENT THICKNESS RULE



\* MAXIMUM 350 NM FROM BASELINE, OR 100 NM FROM  
2500 m ISOBATH

The following is the definition that is given in the Glossary:

"That part of the continental margin that lies between the shelf and the rise. It is simply called the slope in Art 76.3" (40)

As will be seen from Art 76.4(a)(ii) and (b) the exact determination of the foot of the continental slope is essential, as it is one of the starting points from which the extent of any ConvCS claim may be made.

#### 4) Continental rise

This is also an essential feature for a determination, as the thickness of the sediment making up the rise at a particular point in relation to the distance of that point to the foot of slope, is a criterion that may be used in a claim.(41)

The geological definition of the rise is:

"--the physiological province between the slope and ocean basins and is formed by the accumulation of sediment transported from the continents and deposited at the base of the slope."(42)

The Glossary definition is:

" a submarine feature which is part of the continental margin lying between the continental slope and the deep ocean floor; simply called the Rise in the Convention."

This is acceptable in marine-geological terms.

#### 5) Abyssal plain (deep-ocean floor)

The abyssal floor includes abyssal plains and abyssal hills. Abyssal plains are those areas of the abyssal floor with gradients of less than 1:1 000.(43) This feature is not defined in either LOSC or in the IHO Glossary as the abyssal plain but as the deep ocean floor. The latter is defined in the Glossary as:

"the surface lying at the bottom of the deep ocean with its oceanic ridges, beyond the continental margin."

It is therefore the same as the abyssal floor of which the abyssal plain is a feature.(44)

#### 6) Mid-oceanic ridge

This ridge is a continuous median ridge which runs the length of the North Atlantic, South Atlantic, Indian and South Pacific oceans for more than 40 000 nm. (45) The Glossary defines an oceanic ridge as:

" a long elevation of the ocean floor with either irregular or smooth topography and steep sides."(46)

#### 7) Foot of the continental slope

The continental slope and its foot are the main geological features to be considered. They are critical when ConvCS claims are determined. The continental shelf could be a complicated feature, as it is possible to have various forms of shelf which will be discussed later. The Glossary definition is:

"In the absence of evidence to the contrary, the foot of the continental slope shall be determined as the point of maximum change of gradient at its base."(47)

Most geological references agree with this but as it is possible to have upper and lower continental rises which could confuse the situation, the point where the gradient changes sharply as the continent is approached from the outer limit of the margin, should be considered to be the foot of the slope. Where there is no rise, the foot of the slope borders on the abyssal plain and the chances of there being substantial sediment is unlikely. If 60 nm from the foot of the slope is within 200 nm from baselines the maximum ConvCS that may be claimed by the coastal State in that area is 200 nm.

#### 8) Sedimentary rocks

As sedimentary rock is one of the criteria used for a delimitation, it has been defined in the Glossary as

" rock formed by the consolidation of loose sediment that has been accumulated in layers. (The term sedimentary rock is used in Art. 76.4(a)(d)"(48)

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40 IHO Manual n35 p13

41 LOSC Art.76 4(a)i

42 Kennett n13 p30

43 Fairbridge n36 p110

44 IHO Manual n35 p13

45 Fairbridge n36 p110

46 IHO Manual n35 p23

47 Ibid p16

48 Ibid p27

Little argument would be advanced that this is not geologically correct. A problem arises however in that a continental rise could consist of unconsolidated, partially consolidated and consolidated sediment and at what point these stages may be classified as sedimentary rock will be difficult to determine (Figure 22). Modern seismic equipment is unable to determine this with any degree of certainty. Coring, which can establish this, would prove extremely difficult and expensive at the depths envisaged.

To summarize, Art 76 of LOSC makes provision for ConvCS claims by coastal States. A State may claim a minimum ConvCS of 200nm from the baselines from which the breadth of the territorial sea is measured, providing a delimitation with another State is not required. Claims to a maximum of 350nm from the same baselines or to 100nm from the 2500m isobath may be made. The maximum limit for ConvCS claims beyond 200nm is determined from the greater of either of the above two provisions. The actual claim will depend on the determination of positions 60nm from the foot of the continental slope or positions where the sediment thickness is 1% of the distance of that position to the foot of the slope. The greater of these two determinations may be adopted, providing it does not exceed the maximum limits mentioned at the beginning of this paragraph.(49)

## II) COMMENT

It is critical for any coastal State embarking on an investigation to establish a claim, that every available survey seawards from the low-water-line should be evaluated and supplemented by additional survey where necessary. These surveys should then be used for extensive profiling to establish the main geological features such as the foot of the continental slope, the continental rise, the start of the abyssal plain and sediment thickness where it could extend a claim to the maximum allowed.

Most coastal States appreciate the significance of Article 76. While they regard it as less than perfect, those that are able, such as Japan, are embarking on extensive new surveys to facilitate their delineations. The seriousness of the Japanese attitude to their possible ConvCS claims may be evaluated from the extent and expense of their Continental Shelf Survey.(50)

The Japanese are also spending 28.5 billion Yen ( $\pm$  500 million Rand), on building artificial protecting reefs around the last two small portions of the island of Okinotori which are being eroded by the sea. These two small portions are only 20 to 30 cm above sea level at high tide but this still qualifies Okinotori as an island, in terms of LOSC, and accordingly allows the Japanese Government to lay claim to over 400 000 sq km of the surrounding ocean.(51)

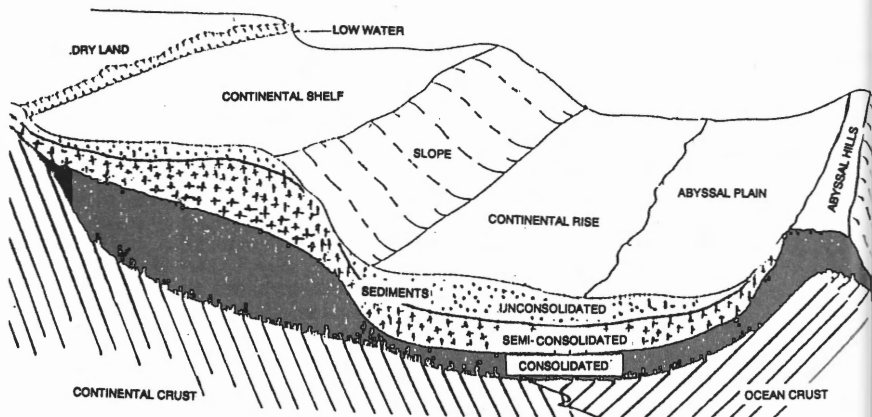


FIGURE 22  
DIAGRAM INDICATING POSSIBLE SEDIMENT TYPES

49 LOSC Art 84

50 T Sato and S Oshima 'The Continental Shelf Survey of Japan' *IHQ Review* 65(f) (January 1988)

51 *Mainichi Daily News* (Tokyo) (29 October 1989) p1

# Chapter 4

## THE CONTINENTAL SHELF IN INTERNATIONAL LAW

### I) BACKGROUND

As indicated in the introduction coastal States had become increasingly aware of the threat posed by foreign vessels in waters adjacent to them, and later of the monetary value of the sea and the sea bed adjoining their coast. History indicates that very few attempts were made in the years prior to 1600 to introduce control in these areas, other than by military force on an arbitrary basis. The concept of international law and freedom of the seas was only given real attention by Grotius who published anonymously his Mare Liberum (Free Seas) in 1608. This was subsequently found to be Chapter XII of his De Jure Praedae and this with his De Jure Belli ac Pacis resulted in his being regarded by later generations as the father of international law.(52)

Hueg von Groot, who became known as Grotius, was a renowned Dutch jurist who it is believed delivered his De Jure Praedae as a brief to the Dutch East India Company as a justification for that Companies 'taking' of a Portuguese vessel as a prize. It must be accepted that Grotius' interest in the freedom of the seas was initially purely selfish in that the Dutch East India Company, whom he had represented on at least one occasion, was experiencing extreme trade restrictions on account of Spanish and, in particular, Portuguese exclusive trade claims to various hemispheres of the world as a result of the Treaty of Tordesillas. These restrictions were also applied to the high seas which was regarded as being totally unreasonable even at that time.(53) His Chapter XII, which propounded the concept that the seas or High Seas should be open to all for the free passage of vessels, was published separately with slight modifications as Mare Liberum at the request of the Company.

This concept was to a certain extent justified, for at that time free travel leading to free trade would have been an important consideration for any State. Most of the vessels, the navigational equipment and the charts of Grotius' period were of a elementary nature and the navigators would have had sufficient concern for the safe passage of their vessels, without the additional concern of infringing the sovereignty of territorial waters claimed by hostile States. It would have been extremely difficult to define or demarcate maritime zones in such a manner as to be able to exercise control over them.

The weaponry of that period was also such that a coastal bombardment, except where it was directed at a particular installation at relatively close range, would have had little effect, if it were not followed by an actual physical incursion, such as a landing. So the concept of freedom of navigation should have found favour with most sea-trading States. However, the interests of a State determine its attitude to the acceptance or otherwise of laws and treaties. It is understandable, therefore, that with such varying interests and circumstances, Grotius' Mare Liberum was not generally accepted at that time. In England, Selden even went as far as to propose a diametrically opposite view in his Mare Clausum (Closed Seas).

The first major development in defining territorial seas was the "Cannon Shot Rule" as proposed by Van Bijnkershoek (54), which is well known to historians and jurists and is really the first attempt to place a defined distance on claims to territorial waters by coastal States. It should be noted that this zone was determined by the capabilities of the weaponry of the time and, as this distance was generally regarded as being of the order of three nautical miles, this distance later became the breadth of the territorial sea. The practice of States in implementing this rule and later in extending their claims seawards became gradually accepted in international customary law. Such claims were either tacitly or positively accepted by other States.

### II) INTERNATIONAL CUSTOMARY LAW, TREATIES AND CONVENTIONS

International Law is dependent on

- 1) laws that derive from conventions and are binding on the signatories to those conventions, and
- 2) the practice of States that has become accepted as international customary law.

In addition States that resolve disputes by

- 3) arbitration are bound by the decisions of the arbiters and
- 4) treaties bind the signatories to the treaty to the terms of the treaty.

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52 TMC Asser Institute International Law and the Grotian Heritage (1983) p274

53 *ibid* p55

54 A L Shalowitz Shore and Sea Boundaries Vol 1 (1962) p25

International customary law, evoked by States as legal grounds for actions taken, must meet a number of standard requirements. Slouka, (55) lists them as:

- 1) "concordant practice by a number of States with reference to a type of situation falling within the domain of international relations,
- 2) the continuation or repetition of the practice over a considerable period of time,
- 3) the conception that the practice is required by, or consistent with, prevailing international law; and
- 4) the general acquiescence in the practice of other States."

Slouka states further that conventions usually codify practices that have become acceptable to States and as a result are considered to be customary law.

Treaties are really only necessary where no acceptable legal practice of States can be referred to or where localised conditions require special consideration.

One of the major problems associated with customary law is the requirement that the practice must have been in existence for a reasonable period of time (see requirement 2 above), which means that the period is quantitative. It cannot obviously mean that whereas one period of usage is unacceptable that the same period plus one year is. Slouka contests this effort to introduce static elements into customary law which is essentially a dynamic process.(56)

He holds further that if a quantitative evaluation has to be made, it should not be in the number of States involved over a period of time, but how many instances of State to State relationships involving the aspect under consideration can be considered.

An illustration of the problem, where the period of time that a practice had been in existence was considered a factor, can be found in the findings of the International Court of Justice in the *Anglo-Norwegian Fisheries Case*.(57) Norway has a deeply indented coastline with a series of offshore islands. In 1935 and 1937 the Norwegian Government issued Royal Decrees, based on a record of previously issued claims and decrees, which laid down a series of straight baselines connecting the rocks and islands around their coast and proclaimed an exclusive fishing zone of 4 miles determined from these straight baselines. When Norway in 1948 enforced these zones and arrested British vessels, the Government of the United Kingdom (UK) challenged the legality of the zones at the International Court of Justice.

The Court by a majority of 10-2 held that Norway was entitled to draw the straight baselines as it had been regarded internationally as uncontested Norwegian practice to do this. Their first proclamation of this nature was in 1812, without objections being raised by other States concerned. The Court also brought attention to the fact that, in 1869, a similar decree by the Norwegians evoked an immediate reaction from the French Government for further particulars.

The reply from the Norwegian Government satisfied the French, but no action was forthcoming from the UK. This was a major factor that was held against the arguments put forward by the UK.(58) With this ruling the "Doctrine of Persistent Opposition" can be seen to have a bearing. While it is possible to rebut the rule that general practice on the part of States is binding on all States, to do this, a dissenting State must show that it had persistently objected to the practice in question. In the *Anglo-Norwegian Fisheries Case* the UK did not do this.

Where a State has adopted a self-restrictive practice, not generally followed by other States, then this would fall within the "Relatively Binding Rule". An example of this is the attitude of the United States to the practice of most other States who, by 1980, had adopted 12 nm territorial seas. The US persisted in its non-recognition of claims exceeding 3 nm but eventually, in 1983, it accepted that while it would continue to claim only 3 nm itself it would recognize the right of other States to claim 12 nm.(59)

A last aspect of international customary law to consider is *opinio juris* (accepted as law), which is briefly described in Art 38 of the Statute of the International Court of Justice, where international custom is described as evidence of a practice accepted as law. Further, a statement on *opinio juris sive necessitatis* is given by Basdevant (60) as customary norms that

"are born spontaneously, out of the requirements of international law, acquire a positive character by being recognised by those with the power to have them applied in international life."

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55 Z J Slouka *International Custom and the Continental Shelf* (1968) p2

56 *ibid* p5

57 ICJ Rep (18 December 1951)

58 *ibid* p116

59 *ibid* p132

60 Slouka n55 p15

## Comment

LOSC has not as yet come into effect. Even if it should, the chances are that the majority of the major industrial States will not ratify this Convention. They will not be bound by its Articles, but it is still highly likely that these same States will have put into practice most of the less contentious Articles. This will mean, in effect, that regardless of the number and identity of the States who will have ratified LOSC the less contentious Articles could have become accepted as international customary law by the time that the Convention comes into force.

Coastal States are able, in terms of international customary law, treaties and conventions, to claim internal waters, territorial waters, economic or fishing zones and portions of the continental shelf. The only time that a claim could become contentious is where

- (1) the claim is within the above accepted norms, but a conflict arises with one or more other States as a result of overlapping claims,
- or
- (2) the claim is not in accordance with the above norms and is not recognised, or it is actively contested by other States.

### III) EARLY CONTINENTAL SHELF CLAIMS

The first claims to a ConvCS are regarded as being the Truman Proclamations of 28 September 1945. President Harry S Truman of the United States of America issued two proclamations

"Proclamation by the President with Respect to the Natural Resources of the Sub-Soil and Sea Bed of the Continental Shelf" and

"Proclamation by the President with Respect to Coastal Fisheries in Certain Areas of the High Seas."(61)

The United States Department of State pointed out that no claim had been made, in these Proclamations, to sovereignty, title or ownership of the continental shelf or the conservation zones and the waters above had not lost their character of high seas and freedom of navigation. The Proclamations did not state the width of the sea over which the claim was made but the shelf area to the 100 fathom line extended, in places, to approximately 250 nautical miles from the coast

As a result of these Proclamations, the International Law Commission held its first session on the ConvCS in 1949. As some thirty States felt that the proclamations did intend some additional claim over the continental shelf and the zones, Professor J.P.A. Francois was appointed as a 'rapporteur' to investigate the matter further and to report back before the second session in 1950. After protracted discussions, the 1950 session held that a coastal State was entitled to exercise control and jurisdiction over the submarine areas off its coast and Francois was requested to investigate further and report back to the next session of the Commission. In addition the matter was discussed at the London Conference of the International Bar Association in 1950. Using the two conferences as a basis, Francois submitted a second report in the form of nine articles to the third session of the Commission in 1951. The Commission adopted seven draft Articles on the Continental Shelf and related matters and member States of the United Nations were requested to comment. After a period of time comments were solicited from a reasonable number of member States. The Union of South Africa submitted its comments in May 1953 after a second request from the UN.

Before this, however, and about the time of the Truman Proclamations, the Bahamas Legislature passed the Petroleum Act 1945, which required all recipients of leases and licences to exploit undersea oil resources, to acquire Bahamas nationality. This allowed the Government of the Bahamas to exercise jurisdiction over them as nationals and to maintain control of that States offshore resources. This Act was followed on the 20 November 1945 by an Order in Council,(62) which extended the boundaries of the Colony of the Bahamas to include the area of the ConvCS lying beneath the sea contiguous to the coasts of the Colony and its dependencies.

Further action by the United States followed with the Submerged Lands Act of 22 May 1953 and the Outer Continental Shelf Lands Act of 7 August 1953. The first Act recognised the rights of each riparian State to the natural resources on the submerged lands to the edge of the territorial sea. The Federal Government retained overriding constitutional powers in the areas of commerce, navigation, defence, and international affairs. The definition of 'natural resources', included oil, gas, minerals, fish, shrimp, oysters, clams, lobsters, sponges, and other marine and plant life. Water power or the use of water for power was excluded.(63) This is not relevant in international law due to the fact that a federal system applies in the United States of America. It should be noted, however, that, if there should ever be a Federation of Southern African States, a federal government could be responsible for aspects of general interest and concern to the federation or union with responsibilities of a parochial nature attributed or 'leased-back' to member States of the federation.

61 K L Koh The Continental Shelf (1980) p1

62 C J Colombos International Law of the Sea (1959) p64

63 US vs California(1947) 332 US 19 79

The claims and proclamations of the USA resulted in many other countries following the same course of action. At a meeting of the United Nations Law Commission in 1950 J.M.Yepes of Bogota even asserted that these Proclamations:

"constituted a veritable customary law to which the Commission should give recognition."(64)

The UN Secretariat, however, issued a memorandum to the Commission stating that:

"the texts of the previous unilateral declarations, had no support from the rules of general international law,"

but that the Proclamations:

"may constitute a new law."(65)

There appears to be little general consensus on the matter, up to the Conference in Geneva in 1958. In 1950 the Committee of the International Law Association on 'Rights to the Sea Bed and its Subsoil' recognised that States following this practice

"evidently satisfied a need for the development of international law on this subject."

#### IV) CONTINENTAL SHELF CASES

A number of cases and arbitration decisions on ConvCS claims have been decided. Some of the more relevant ones are dealt with briefly in this Chapter.

##### 1) Petroleum Development (Trucial Coast) Ltd vs Sheikh of Abu Dhabi (1951) (66)

In 1939 the Sheikh of Abu Dhabi entered into an agreement with Petroleum Development Ltd, whereby the oil company was permitted the exclusive right to drill for and to win mineral oil within a certain area of Abu Dhabi. The agreement included an arbitration clause in the event of a dispute arising.

Commencing with the United Kingdom of Bahrain, in June 1949, eight Gulf States, including Abu Dhabi, issued proclamations, extending their sovereignty over land that extended beneath the sea beyond territorial waters onto the continental shelf. Petroleum Development Ltd argued that this had been accepted generally as practice in international customary law, in terms of their agreement, therefore, that land was subject to their right to exploit. Abu Dhabi had already entered into an agreement with another oil company to develop any resources found on this extended claim and a dispute arose.

The Umpire, Lord Asquith of Bishopstone, found in this ConvCS dispute that:

"there are in this dispute so many ragged ends and unfilled blanks, so much that is merely tentative and exploratory, that in no form can the doctrine claim as yet to have assumed hitherto the hard lineaments or the definitive status of an established rule of international law."

He concluded that the claimants succeeded as far as the sea-bed and subsoil of the territorial waters was concerned, but he found in favour of the defendants as far as the sea-bed and subsoil of the ConvCS was concerned.

##### Comment

This ruling is only of interest in that the Umpire held that there was no evidence that claims to the ConvCS were acceptable in international customary law prior to the Truman Proclamations of 1945. This clearly indicates that in 1939, at the time of the signing of the agreement between the oil company and the Sheikh of Abu Dhabi, it was not the common practice of States to claim rights to ConvCS.

##### 2) North Sea Continental Shelf Cases (67)

Due to the concave configuration of the coastline in the area where ConvCS claims of the Federal Republic of Germany (FRG), Denmark and the Netherlands were made by use of the 'equidistance' method, the FRG was allotted a disproportionate amount of the continental shelf adjoining it.

Art 6(1) and 6(2) of the CSC 58 require that where a maritime boundary between opposite or adjacent States has not been agreed upon, then the 'equidistance' method (68) is to be utilised. Unfortunately, as this method requires that any point on a lateral maritime boundary between adjacent States should be equidistant from points on the low water line of the coastline, it can be seen that States with concave-shaped coastlines generate far smaller maritime zones when compared with States that have either straight or convex coastlines. (Figure 23) These North Sea States had no historically agreed upon seaward boundaries and, as the delimitation using the approved method of calculation was totally unacceptable to one of the parties concerned, it was inevitable that a dispute would arise. A further complication existed in that the FRG had not ratified CSC58 and its Articles were therefore not binding on them.

64 Slouka n55 p21

65 Ibid p27

66 18 ILR Case No 37

67 ICJ Rep 18 (1982) and ICJ Rep 3 (1969)

68 E van der Spuy Survey Journal 11 No 67 (1968) p3-10

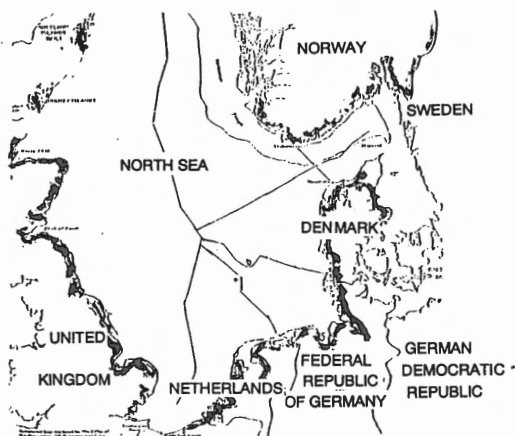


FIGURE 23  
INTERNATIONAL COURT OF JUSTICE DECISION IN THE NORTH SEA SHELF CASE  
[ILM 8 (1969) p351]

The International Court of Justice ruled that while upholding the principles of the Articles of the CSC 58.

" Delimitation is to be effected by agreement in accordance with equitable principles and taking into account of all the relevant circumstances, in such a way as to leave as much as possible to each Party all those parts of the continental shelf that constitute a natural prolongation of its land territory into and under the sea, without encroachment on the natural prolongation of the land territory of the other."(69)

The disputes were settled by individual treaties being entered into by the littoral States which resulted in a more equitable solution, with the FDR gaining a greater share of the continental shelf adjoining it.

#### Comment

The main aspect of these treaties is the fact that, while the Convention has specified a method for delimitation, it does not obviously solve all delimitation problems. Depending on the shape of their coastlines the 'equidistance' method of determining lateral boundaries could favour some States over others, thus leading to disputes and litigation. As indicated, the FDR, with a concave coast, was obliged to contest the Convention methods and to seek an equitable solution by judicial means and thereafter by negotiation.

#### 3) Rockall Dispute

Rockall is a virtually uninhabitable rock lying approximately 210 nm to the west of Scotland. It had little strategic importance prior to the value of hydro-carbon and other deposits on the continental shelf surrounding it becoming a factor.

Although two of the parties involved in this dispute, the United Kingdom and Ireland, have signed a treaty,(70) the other two, Iceland and Denmark, still contest overlapping rights with the other States involved. Prior to 1984, the dispute involved mainly the UK and Ireland with Denmark offering occasional protests to establish the status of the Faroes, islands claimed by Denmark.

69 ICJ Rep 3 (1969) p54

70 See *Changes* 9 (1989) p23; *Journal of Energy and Natural Resources Law* Vol 3 (1985) p266 and Vol 7 (1989) p173-4

The dispute was precipitated by the UK designating an enormous area of the continental shelf surrounding Rockall. Denmark joined Ireland in contesting the UK Rockall ConvCS claims after the designation of 1974, and it is interesting to note that Denmark did not dispute any median line position as the northernmost position of the UK ConvCS claim was well south of this line. (Figure 24) Denmark's main contention is still that Rockall is a geological extension of the Faroes plateau. Denmark's definition of this geological feature is a 'microcontinent' and although this argument was not pursued until the middle 1980's, and although it has not been established in international law, it will be of interest when the submerged Natal Valley, the Mozambique Ridge and the Agulhas Plateau are considered.(71)

The UK then went a step further by imposing a 200 nm fishing zone from established baselines, including some based on the island of Rockall. This evoked further protests from Denmark, contesting that, as Rockall is uninhabitable, it falls within Art 121(3) of LOSC,(72) which precludes rocks from generating EEZ and ConvCS claims. This means that, no matter how insignificant a rock is, if it can fulfil the criteria to sustain human habitation or economic life it may generate an EEZ and a ConvCS. Rockall was not the only uninhabited rock or island that the UK used and so when Denmark countered with a 200 nm fishing zone, overlapping claims and disputes were inevitable.

An interesting aspect of these claims is that, they all exceed both the geological and legal definitions of ConvCS. In the case of both the UK and Ireland their claims extended beyond the area where the Rockall Trough was located. This trough reaches a depth of over 3 000 m at its southern end and forms a geological barrier. This means therefore that in normal marine geological circumstances the sea-bed beyond the trough can never be considered as a part of the continental shelf and the trough forms, in effect, the boundary of the continental shelf. The UK has countered with an argument which will be dealt with in greater detail in Chapter 6. In addition, the Irish ConvCS claim extended to a distance of 520 nm from their coast and the UK claim still further. It is appreciated that these designations took place prior to LOSC, but it must be noted that for nearly ten years prior to 1982, the Convention had been in its elementary stages, it was being thoroughly discussed, and its influences had already been felt in the international community. There appears to be little direct reaction by other States to these claims.

Iceland initially gave the impression that they had little interest in the matter although they later claimed that they had objected officially to the UK's actions. At a late stage Iceland reacted to the situation by extending its fishing zone in such a manner that it implicitly denied the right of Rockall to have baselines.(Figure 25)

The Icelandic claim to the ConvCS was based on the premise that it was a natural prolongation of the land.

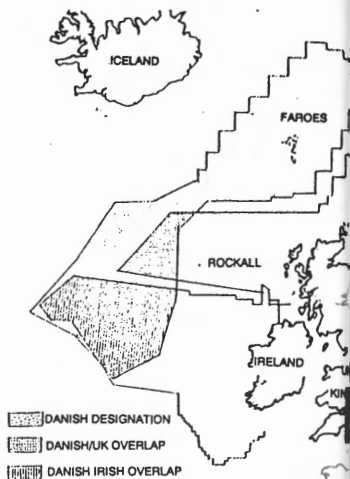


FIGURE 24  
OVERLAPPING CONTINENTAL SHELF  
CLAIMS

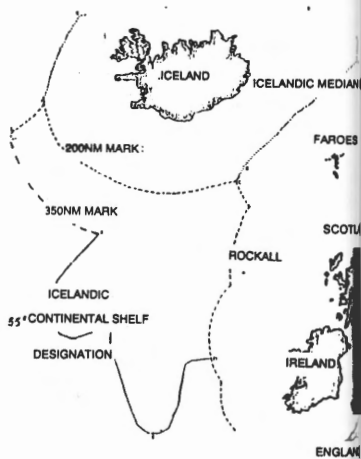


FIGURE 25  
ICELANDIC CONTINENTAL SHELF  
DESIGNATION (1985)  
[ICLQ 35 1986] p371]

71 C R Symmons 'The Rockall Dispute Deepens' ICLQ Vol 35 (1986) p345.

72 LOSC Art 121(3) 'Rocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone or continental shelf.'

Unfortunately, in this context, it is difficult to accept. It is arguable that the area is geologically connected to the Iceland-Faroes Ridge or the Reykjanes Ridge for it to be an extension of the shelf.

### Comment

It could be that States will initially make claims and designations that maximise their territory but while it is imperative that a State should present its best case, unrealistic claims could destroy the credibility of their arguments. (Figure 26)

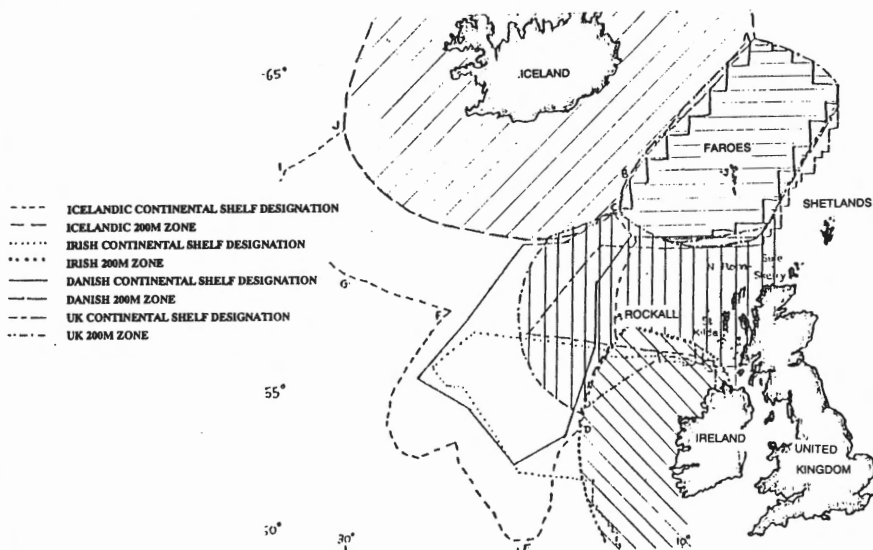


FIGURE 26  
MARITIME ZONES AND CONTINENTAL SHELF DESIGNATIONS OF DENMARK, ICELAND  
AND THE UNITED KINGDOM  
[ICLQ 35 (1986) P371]

Factors relevant to the RSA situation are as follows.

1) Geological definitions of the continental shelf were ignored by the States concerned. It is important that in the area of international law, where general acceptance is a criterion, a claim should have credence both in the technical and the legal fields. The justification used by both the UK and Ireland for their ConvCS claims to the Rockall Plateau, are that the crust under the Rockall Trough is continental crust and not oceanic. Their argument is that the Plateau is, therefore, an extension of the continental shelf of the UK and Ireland, and that their claims to the Plateau are in accordance with State practice. The Agulhas Plateau, south of the RSA, has an area of similar depth between it and the continent of the RSA. The argument could therefore be put that, if in the unlikely event of 'continental crust' being found beneath this deeper portion, then the Agulhas Plateau is also a natural prolongation of the RSA and may be included in its ConvCS claim. (Figure 27)

2) Rockall's ability to have established baselines was only contested relatively late in the dispute. The protests of some of the States were such that no publicity was given to them. As a result the international community was unaware of them until many years later. This is a failing on the part of contesting States. Sufficient care must be taken to register promptly and openly opposition to claims by other States.

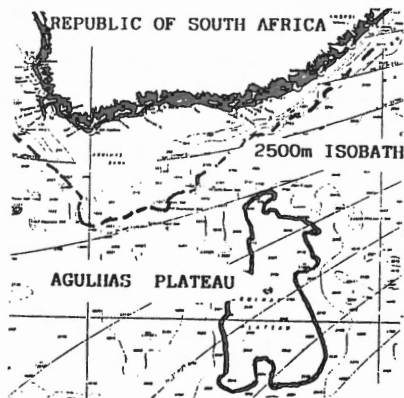


FIGURE 27  
THE RELATIONSHIP OF THE AGULHAS  
PLATEAU TO THE RSA  
[Chart SAN 3]

#### 4) Tunisia/Libya

Tunisia and Libya adjoin each other on the North African side of the Mediterranean Sea. (Figure 28) The coastline of Tunisia, close to the land boundary of the two States, changes to a north-easterly direction and forms the Gulf of Gabes. In addition the Tunisian island Jazirat Jarbah and the group of islands, Juzur Qarqannah, are situated off the Tunisia coast. The land boundary meets the coast at the town of Ras Aider and if the 'equidistance' method was used to extend it seawards, the islands and the direction of the coastline after the Gulf of Gabes would cause the equidistant line to veer to the east and favour Tunisia. This line would then determine the lateral extent of the ConvCS, of each State and in what direction ConvCS claims could be extended.

Tunisia precipitated the dispute by granting oil-exploration leases progressively in an easterly direction and when Libya did the same in a westerly direction the dispute was submitted to the International Court of Justice. (73) Unfortunately the parties disagreed on what issue the Court should decide. Tunisia wanted a finite delimitation and Libya wanted the Court to establish the criteria that should be used by both parties when negotiating.

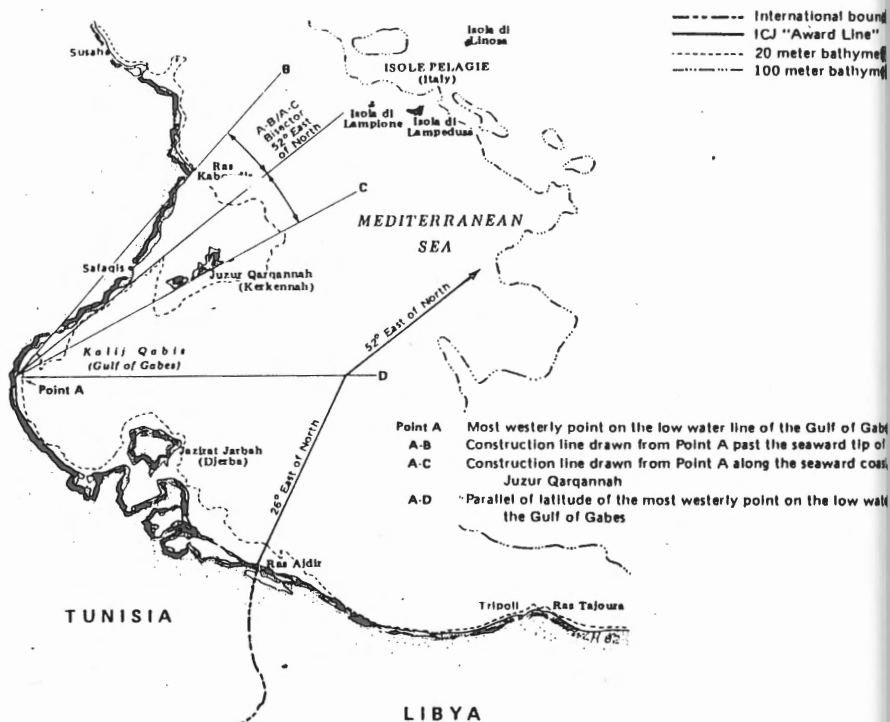


FIGURE 28  
INTERNATIONAL COURT OF JUSTICE AWARD LIBYA-TUNISIA MARITIME BOUNDARY  
DISPUTE  
[AJIL 77 (1983) p221]

As in the Anglo/French Arbitration Agreement (74), the Court determined the effect of delimitation, with and without, the influence of the islands and then applied a 'half-effect' solution where applicable. The intention was that the States should use this as a basis for agreement but unfortunately neither of them were completely satisfied with the finding.

73 ICJ Rep 18 (1982) and ICJ Rep 3 (1969)

It is also interesting to note that Tunisia's argument was based on geomorphological and historic factors and not on the acceptance of approved methods of delimitation that would have favoured them. Libya relied on the 'prolongation of the landmass' concept, which held that the continental shelf was a natural extension of the continent and its demarcation should be determined with this in mind. Libya, unlike Tunisia, raised the principle of 'equidistance', but their reason was to show how inequitable a solution using this method would be.

By attempting a mathematical solution, based on the 'equidistance' method, the Court disregarded Libya's assertion that 'natural prolongation' should be the main factor for consideration.

The Court held that the :

"...idea of the natural prolongation of the land territory... would not necessarily be sufficient, or even appropriate, in itself to determine the precise extent of the rights of one State in relation to those of a neighbouring State."(75)

The Court also dismissed the scientific arguments put forward on the geomorphology of the shelf. It held that the history of the shelf had little bearing on the considerations. In the light of current customary law this is regarded as unrealistic. The whole structure of the shelf must be taken into account when considering Art 76 of LOSC. The geological history of the continental shelf is therefore vital in the evaluation of structures of a continental shelf.

The Court took into consideration prior State activities in the area. It felt that these activities could locate the boundaries of States and could even impose legally binding obligations.

The Court stated:

" clearly each continental shelf in dispute should be considered and judged on its own merits, having regard to its peculiar circumstances; therefore, no attempt should be made here to overconceptualize the application of the principles and rules relating to the continental shelf."(76)

It is difficult to accept this statement entirely. While it is appreciated that each case must be treated on its own merits there must surely be a development in each judgement towards principles that can be considered generally.

Charney(77), in considering the Judgement, states:

" ..in that Judgement the Court faltered on a crucial step in its analysis. One expects a judicial analysis generally to have three parts

- 1) identification of the relevant FACTS
- 2) identification of the applicable LAW
- 3) APPLICATION of the law to the facts in order to produce an ultimate conclusion on the merits."

He states further:

"...the Court did set out the abstract legal rule of equitable principles that multiple facts are relevant to the boundary delimitation and that all relevant facts must be considered to bring about an equitable result. It also devoted considerable time to reviewing the evidence in order to determine which facts would not. But the third aspect of the analysis is not complete. ...What is missing, however is an articulate statement of how the Court took the law and applied it to all the facts it found relevant in order to reach that particular boundary line."

He feels that the decision was an *ad hoc* one and that the Court's stated views that the result and not the means should dominate the decision and that the rules should not be overconceptualized, are unacceptable as reasons for the decision or as a basis for future international law.

#### Comment

The Judgement in this case is regarded as having limited influence in international law as both States had requested that the Judgement be considered *ex aequo et bono*. The opportunity to set precedents for future judgements was largely lost. There is one important fact to come out of the Judgement however and that is the manner in which the influence of the Tunisian islands was determined. This is in agreement with the finding in the *Anglo/French Arbitration Agreement*.(Figure 29)

#### 5)The Aegean Sea Dispute

The Turkish vessel SISMIK 1 conducted surveys and research on portions of the Aegean continental shelf that had previously been claimed by Greece. This resulted in the Greek Government instituting proceedings against the Turkish Government in 1976, and they requested that the International Court order interim protection measures.(78)

74 *ILM* Vol 16 (1977) p397 and *ILM* Vol 20 (1981) p797

75 *ibid* para 61

76 *ibid* p583

77 J Charney 'Ocean Boundaries Between Nations' *AJIL* Vol 78 (1984) p582

78 *ICJ Rep* 3 (1976)

The Court held that as the research undertaken by the Turkish had not compromised any claims that Greece may have to the ConvCS they could not order interim protection measures.(79) They did infer two possible qualifications.

- 1) The ruling might have been different had the Turkish erected structures on the shelf, and
- 2) "... seismic exploration of the natural resources of the continental shelf without the consent of the coastal State might, no doubt, raise a question of infringement of the latter's exclusive right of exploitation."(80)

Art 241 of LOSC (81) has been drafted to uphold the Court's negative view that

"... it is clear that neither concession unilaterally granted nor exploration activity unilaterally undertaken by either of the parties can be creative of new rights or deprive the other State of any rights to which in law it may be entitled."(82)

Although mobile marine resources, such as fish, are major economic factors in the gross national product of some States, research undertaken in a State's maritime zones by vessels of another State, even if it is on their behalf, could be for marine geological, oceanographic or hydrographic reasons or a combination of the reasons. Research vessels are usually capable of undertaking most, if not all, of these types of research to some degree and it would be extremely difficult to monitor the activities of one of these vessels to ensure that only one type of research was undertaken. This dispute raises a number of possible contradictions in LOSC relating to exploration of the ConvCS and of the EEZ where the exploration could be said to be of either.(83)

State practice on foreign vessels conducting research on the ConvCS has not generally followed the spirit of the Articles of LOSC. Libya was prepared to resort to force when Malta attempted to commence drilling activities in the area having previously conducted seismic surveys on the disputed ConvCS.

It is difficult to understand why States would allow foreign vessels to conduct research, in areas claimed by them, unless they had a long history of co-operation and trust. In the present political climate in Southern Africa, it would be extremely unlikely for any of the States to ignore the presence of research vessels of adjoining States or of major powers, which attempted to carry out research projects on their ConvCS or in their EEZ's.

Since 1976, numerous States have claimed the exclusive right to explore and to the jurisdiction over scientific research in their EEZ. Some of the major States that have done so include Cuba (84), Guatemala (85), India (86), and Pakistan.(87)

#### 6) Anglo/French Arbitration Case (88)

The Governments of The United Kingdom and France conducted unsuccessful negotiations on the delimitation of the continental shelf between the two countries. In 1977 both States agreed to submit the dispute to an *ad hoc* Court of Arbitration.

The Court handed down a unanimous decision and established boundary lines. The determination gave full effect to all islands in the English Channel, including Eddystone Rock, but with the exception of the Scilly Islands to which they attributed 'half-effect'. The Channel Islands were given a 12 nm enclave and the boundaries of these enclaves were determined to the north and the north-west of these islands. No delimitation was given for the boundaries between these islands and the French mainland (Figure 29).

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79 *ibid* p10

80 *ibid*

81 LOSC Art 241 "Marine scientific research activities shall not constitute the legal basis for any claim to any part of the marine environment or its resources."

82 ICJ Rep 3 (1976) p10

83 LOSC Art 56.1 'In the exclusive economic zone, the coastal State has a) "...sovereign rights for the purpose of exploring and exploiting..."

Art 58.3 "The rights set out in this article with respect to the sea-bed and the sub-soil shall be exercised in accordance with Part IV."

Art 60.1 "...the coastal State shall have exclusive rights to construct and to authorise..."

c) installations and structures that may interfere with the exercise of the rights of the coastal State in the zone  
Art 77.1 "The coastal State exercises over the continental shelf sovereign rights for the purpose of exploring and exploiting its natural resources."

84 EEZ Act 1977 Art 2(IV)b

85 Legal Decree No 20-78 (1978) Art 3(c)(II)

86 Maritime Zones Act 1976 S 7(4)(c)

87 Maritime Zones Act 1976 S 6(2)(c)

88 *ILM* 16 (1977) p397 and *ILM* 20 (1981) p797

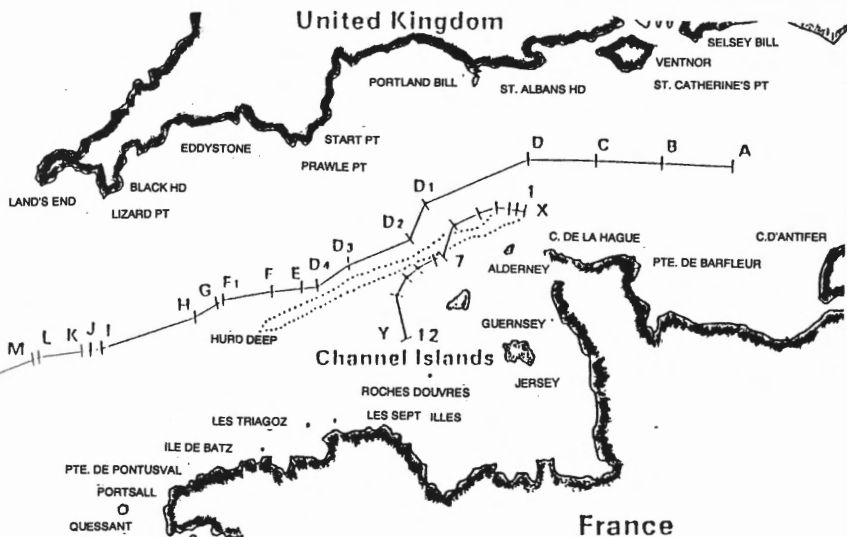


FIGURE 29  
 ANGL0/FRENCH ARBITRATION AGREEMENT  
 [ILM 18 (1979) p494]

Provision was made in the Arbitration Agreement for either of the parties to appeal to the Court and the Government of the UK applied to the Court for a reconsideration of the decision, where it affected the South Western Approaches of the Channel and also the Channel Islands. Oral argument was heard by the Court. The matters under dispute were purely of a technical nature and in the case of the Channel Islands, the Court adjusted the delimitation, so that it agreed with the written findings of the Court and rejected the UK's claims for a re-adjustment in the South Western Approaches.

The two most interesting aspects of this case are

- 1) the use of 'half-effect' in the case of the Scilly Isles and more importantly,
- 2) the awarding of the 12 nm enclave to the Channel Islands.

The award of 'half-effect' to the Scilly Isles is in agreement with the Judgement of the Court in the *Tunisia/Libya* case, but what is very relevant in the Southern African context, is the maximum award of 12 nm to the Channel Islands.

The Penguin Islands of the RSA will be dealt with in detail later, but as the Judgement in the *Anglo/French Arbitration* is often quoted in connection with these islands it is interesting to note that in that case the States were opposite each other whereas, in the instance of the RSA's Penguin Islands, these islands belong to a State that adjoins another. In addition these islands were annexed by the United Kingdom prior to the mainland being annexed by Germany. This has given rise to a situation in Luderitz Harbour in Namibia where two islands belonging to the RSA are situated within the harbour, in what would normally have been closed as internal waters.

Subsequent recalculation, by geodetic methods, of equidistance positions between France and the United Kingdom determined in this agreement by graphical methods, has shown that some of the co-ordinates are grossly distorted. It is obvious that graphical methods should be used only to depict positions calculated by geodetic means.

#### 7) *Libya/Malta Continental Shelf Case*. (89)

On the 3rd June, 1985, the International Court of Justice handed down a Judgement on a ConvCS dispute between Libya and Malta. The Court was requested to decide on the principles, rules and their application in international law when applied to this dispute. (90)

89 ICJ Gen List 68 (3 June 1985)

90 *ibid* p16

The intention was for the parties to thereafter enter into an agreement to give effect to the Judgement. Malta consists of a number of relatively small islands situated between Sicily to the north and Libya on the North African continent to the south. The dispute must be seen against the background of the settlements of maritime boundaries reached by Libya and Tunisia and between Greece and Italy (Figure 30). In addition, in 1970, Malta entered into an agreement with Italy with regard to provisional exploration of a small portion of the channel between Malta and Sicily

Italy submitted to the Court, that as they had been unable to reach agreement with regard to additional Italian claims to the east of Malta, they should be a party to these particular proceedings. (Figure 30) The Court however ruled that, while Italy could not be a party to the proceedings, the Court would only consider those portions of the shelf referred to in the case that were not subject to claims by Italy. (91) The Court referred to this as being unusual in that a party, whose participation in the proceedings had been denied, should be able to achieve what it had intended anyway. The Court felt that it could only consider those areas that were specific to the two States litigating.

It held that:

- 1) the delimitation should be in accordance with equitable principles,
- 2) criteria for delimitation based on the principle of natural prolongation would be considered and no claim should exceed 200 nm from the baselines,
- 3) the general configuration of the coasts of the Parties, the fact that they were located opposite each other, their general geographical position, and the distance between the two States should be considered,
- 4) excessive disproportion between the delimitation and apportionment of ConvSC in relation to the coastline length of a coastal State should be avoided. (92)

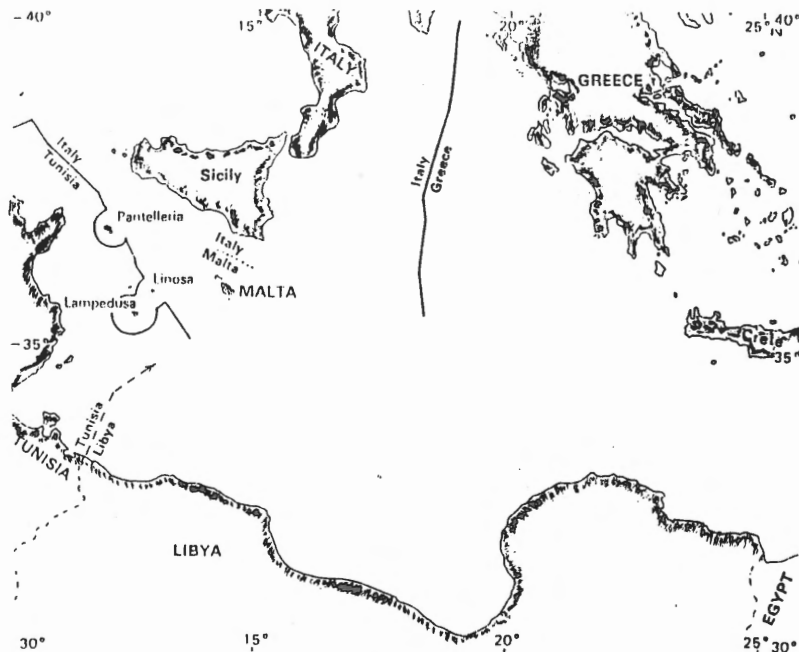


FIGURE 30  
 AGREED BOUNDARIES PRIOR TO LIBYA/MALTA DISPUTE  
 [AJIL 79 (1985) p542]

91 *ibid* p16/*ibid* p25

92 *ibid* p57

The Court drew a boundary line as follows.

- 1) An initial line was drawn between the two States, based on the equidistance principle, between the lines of longitude  $13^{\circ} 50'E$  and  $15^{\circ} 10'E$ . (This was done to avoid possible claims by Italy).
- 2) This line was adjusted in a northerly direction until its eastern end intersected the  $34^{\circ} 30'N$  parallel of latitude. (This was to take into consideration the disparity in the lengths of the respective coastlines (93)(Figure 31).

A number of Separate Opinions and Dissenting Judgements were given.

- 1) Judge El-Khani.

"However, I should have thought that a reasonable degree of proportionality, taking into account the lengths of the coasts of the two Parties would have produced a line lying further north."(94)

- 2) Vice-President Sette-Camara.

"I cannot subscribe to the way in which the northern extreme parameter for the establishment of the corrected equidistance line is arrived at..... to come to the conclusion... that it is at the same time a delimitation between a portion of the southern littoral and a portion of the northern littoral of the Central Mediterranean, seems to me a far-fetched exercise."(95)

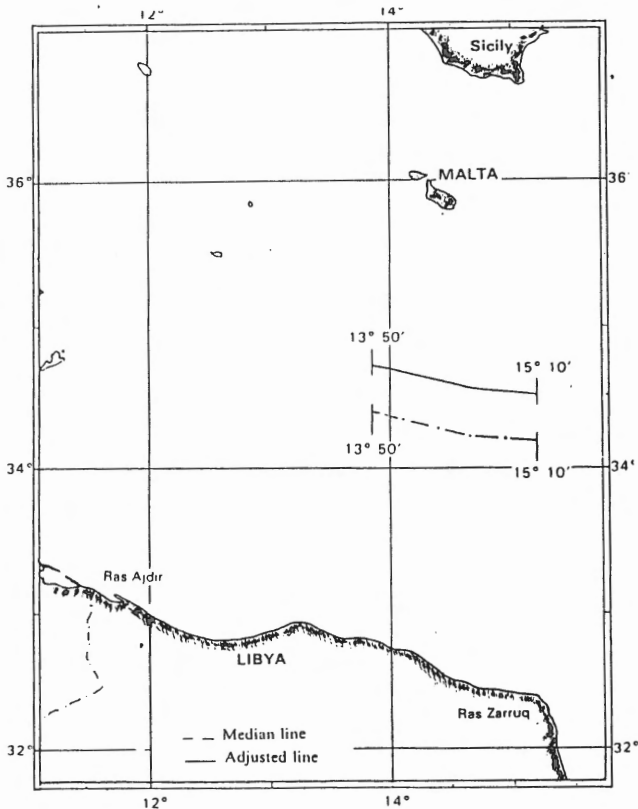


FIGURE 31  
LIBYA/MALTA BOUNDARY JUDGEMENT  
[AJIL 79 (1985) p547]

93 ibid p57

94 ibid p59

95 ibid p60

### 8) The Gulf of Maine Case

The land boundary between the United States of America and Canada meets the eastern coastline of the North American continent in the Gulf of Maine (Figure 32). A large submerged bank, the Georges Bank, is situated in the mouth of the Gulf and it is rich in marine resources. The exploitation of these resources has been in dispute between the two States since the Revolutionary War. (96) As a result of the Truman Proclamations, which extended US claims onto the continental shelf, these early disputes were exacerbated.

During 1977, both States declared 200 nm fishing zones and in the vicinity of the Georges Bank these claims overlapped. At that time it created an unusual situation where two States were attempting to claim portions of the same off-shore area, which was sited relatively far from the coast and in a position where delimitation must be contentious.

The United States laid claim to the whole of the bank and by so doing they rejected the 'equidistance' method of delimitation. Their claim also dispelled the determination, initially stated, to delimit using equitable principles. Instead they introduced two geographical criteria namely

- a) that the boundary should delimit an area in proportion to the lengths of the respective coastlines and
- b) that the boundary should reflect the direction of the 'primary' North American coast namely the coast of Maine.

This effectively denied the influence of the so-called 'secondary' coastline, that of Nova Scotia. As will be seen, this deviated from any possible consideration of an equitable position and the Canadian opposition to them was totally expected. The main difference, in the two State's concept of equity, was that the Canadians regarded the problem as a local one, whereas the US looked on it as a part of the total delimitation of the North American continent and that local influences such as the direction of the Nova Scotian coast should be disregarded.

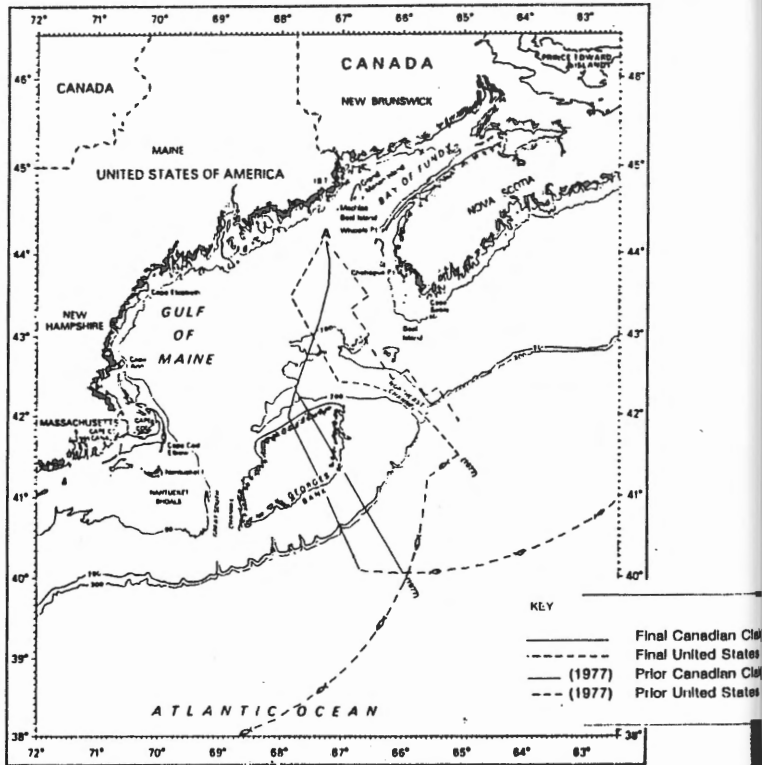


FIGURE 32  
THE GULF OF MAINE CASE: THE CLAIMS OF THE PARTIES  
[ICJ Rep 246 (1984)]

Canada relied on non-geographical factors in their argument, such as the dependence of local Canadians on the traditional right to fish a larger area than allocated to them by the US. The US also argued that conservation programmes undertaken in the area by them should be considered and both States indicated strongly that any decision should be such that it was as acceptable to both States as was possible.

The Court stated as follows:(97).

"(1) No maritime delimitation between States with opposite or adjacent coasts may be effected unilaterally by one of those States. Such delimitation must be sought and effected by means of an agreement following negotiations conducted in good faith and with genuine intention of achieving a positive result. Where, however such agreement cannot be achieved, delimitation should be effected by recourse to a third party possessing the necessary competence.

2) In either case, delimitation is to be effected by the application of equitable criteria and by the use of practical methods capable of ensuring, with regard to the geographic configuration of the area and other relevant circumstances, an equitable result."

These are very obvious statements and the only reason for quoting them is the fact that they are an emphasis of the internationally reflected norm regarding an equitable result. They do however introduce the aspect of 'geological configuration'.

A very relevant conclusion of the Court (98) was that while CSC58 was binding on both Canada and the United States, Art 6 dealing with the application of the 'equidistance' principle was not binding on the States, as the implications of the case were wider than just a consideration of the ConvCS. It should be borne in mind that most States have ratified CSC58 and it is unlikely that the major coastal States will ratify LOSC. This could indicate that if this Judgement is closely followed, the 'equidistance' principle will not be acceptable as a method for the delimitation of boundaries that are not exclusively of the ConvCS.

Two principles had emerged at this stage, 'distance' and 'equidistance' and the Court held that the natural prolongation of the land (distance) was clearly established in the *Tunisia/Libya* case. As a result the Court set aside the Canadian arguments based on 'equidistance' as:

"...just one more, still unconvincing, endeavour to instil the idea that 'equidistance' - rather than 'distance' - is a concept endorsed by customary international law."(99)

The Court's rejection of geological considerations was made 'case specific' and as a result these factors could be considered germane to other delimitation problems.

The US argued that ecological factors were relevant and that:

"...the Northeast Channel separating the Georges Bank and Scotian Shelf provinces, formed a 'natural boundary.'

The Court in reply held that it:

"...doubted the possibility of discerning any genuine, sure and stable 'natural boundary.'"(100)

It also rejected a natural boundary serving a double purpose of delimiting the sea-bed and the water column based on:

1)"... a geomorphological accident which influences superadjacent waters but which is clearly inadequate to be seen as a natural boundary in respect of the sea-bed itself"

and it held that:

2)"...the great mass of water belonging to the delimitation area .. essentially possesses the same character of unity and uniformity already apparent from the sea-bed."(101)

The essence of the opinion of the Court on the argument of 'natural boundaries' was, that as the Court was considering a legal-political problem, it could not necessarily equate natural phenomena to the type of solution required.

Another factor considered by the Court was that of the effect of a delimitation on the human environment and in particular the socio-economic life of the area. The Court held that this could not be a factor to influence a decision and that fortunately for that particular case it did not arise.(102) There are four aspects that should be considered in the *Gulf of Maine* case.

- 1) The Judgement of the Court.
- 2) The Separate Opinion of Judge Schwebel.
- 3) The Dissenting Opinion of Judge Gros.
- 4) The principles that could have a bearing in the Southern African context.

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97 ICJ Rep 246 (1984) p299-300 para 112

98 *ibid* 303 para 124

99 *ibid* 297 para 106

100 *ibid* 277 para 54

101 *ibid*

102 *ibid* para 236

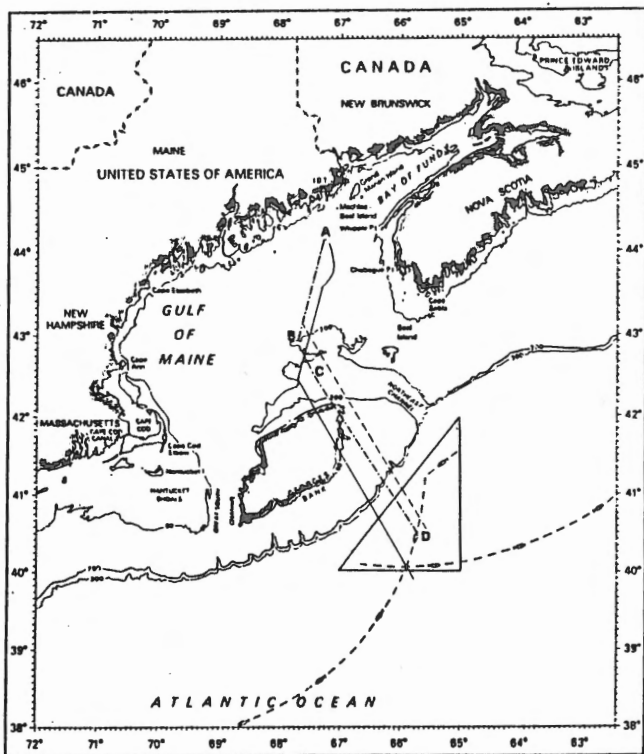
**a) Judgement of the Court.**

The Court felt that it was called upon to 'draw a line'. This is what it proceeded to do. Prior agreement by the two States, as to a starting point for this line was accepted by the Court and then three portions of the line were dealt with.(103)

a) The lengths of the coastlines of the two States in that area were determined as 284 nm for the US and 206 nm for Canada, giving a ratio of 1.38 : 1.

b) 'Half-effect' was given to Seal Island.

c) The line was to be parallel to the lines drawn by the States (which were identical) in their submissions. It had to be perpendicular to the closing line of the Gulf, it must intersect the median line of the second segment on the inboard end and it must terminate at the intersection of the 200 nm claims of the two States.(Figure 33)



**KEY**

- Boundary Drawn by the Chamber
- - - - - Judge Schwebel's Line
- ..... Judge Gros's Line
- IBT International Boundary Ternthus
- 200-mile Limit

**FIGURE 33**  
**THE GULF OF MAINE CASE: THE ICJ CHAMBERS BOUNDARY LINE**  
**[AJIL 79 (1985) P543]**

#### b) Separate Opinion of Judge Schwebel.(104)

Judge Schwebel supported the Judgement, except that he felt that too much influence with respect to the Bay of Fundy had been allowed. He argued that a geological feature should border on the area being delimited to be considered (Figure 33).

It is difficult to appreciate this argument, as the Bay of Fundy does not qualify in terms of Art 10(2) of LOSC to be closed as internal waters, which could have given some credence to this argument. It is felt that if geographical features, such as coastline length, are to be used to determine ratios for delimitation then the entire coastline that qualifies should be considered.

#### c) Dissenting Opinion of Judge Gros.(105)

Judge Gros held that the law applicable to ConvCS claims had been substantially changed since the North Sea Cases, the Anglo/French Arbitration and the ConvCS 58. He held that the Judgement in the Tunisia/Libya Case supported later by Art 15 of LOSC, upheld the principle of 'equidistance' and that the Court erred by not using this as the method for delimitation. He drew a similar boundary line to that drawn by both the Court and Justice Schwebel, but whereas the latter favoured the US, his delimitation favoured Canada.

#### d) Legal Principles that could affect Southern Africa.

Schneider (106) comments that this Judgement is most significant for clarifying non-relevant aspects. He declines to comment on Judge Gros's Opinion. This is unfortunate as the principle of 'equidistance' is again becoming accepted with the rider that 'equity' should be the major factor striven for. Schneider makes another telling point in stating, that while the Court strove for 'equity' and the States concerned have accepted the Judgement as being in this spirit, it can only be implemented by their ability to co-operate in the future.(107)

The efforts of the Court to distinguish between boundaries for maritime zones and for ConvCS claims must lead to confusion where these are considered separately.

In the Southern African context the lateral boundaries between the RSA and Namibia, Ciskei, Transkei and Mozambique should pose few problems, if the 'equidistance' principle is used. Where ConvCS claims are accepted between the RSA and Mozambique and between the RSA's Penguin Islands, the Walvis Bay enclave and Namibia, however, separate delimitation lines for zones and Shelf could lead to serious complications and disputes.

Should the RSA retain sovereignty over the Penguin Islands and the Walvis Bay Enclave, then portions of the ConvCS beyond the 200 nm distance from the Namibian mainland baselines could be claimed by the RSA, regardless of what other maritime zones are awarded to the islands.

The distance between the most eastern baseline on the Prince Edward Islands and France's Crozet Islands is approximately 520 nm. This would mean that, while other zones would not require delimitation between the two States, should ConvCS claims be possible to the maximum limit allowed by LOSC, then overlapping claims would occur. Both of these cases will be considered in Chapter 6.

#### 9)Guinea/Guinea Bissau Case. (108)

This case arose out of the fact that in 1985, two States, Guinea and Guinea-Bissau intended claiming EEZ's. Had the 'equidistance' method been used to delimitate their lateral boundary Guinea would have suffered encroachment. This is due to the concavity of the coastline (Figure 34).

Guinea sought arbitration in an effort to improve its maritime zones. Guinea-Bissau and the Arbitration Tribunal accepted the principle of equitable delimitation. The Arbitration Tribunal was requested to define a single boundary for both the EEZ and the ConvCS of the States.

The Court was negative when it regarded some relevant factors.

It held as follows:

- 1) Natural prolongation had no weight in the argument. This is unlike the Judgement in the North Sea Continental Shelf Case.
- 2) Proportionality also had no weight. This is unlike the Judgement in the Tunisia/Libya Case.
- 3) Economic factors could be considered in a case but it would depend on the circumstances particular to the case.
- 4) Each party should control the maritime areas adjacent to its coast and in their vicinity.
- 5) The 'equidistance' method of determining lateral boundaries enjoyed no priority, nor was it obligatory. It was only one of a number of methods that could be used.

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104 *ibid* p542

105 *ibid* para 3

106 J Schneider 'Gulf of Maine: An Equitable Result' *AJIL*, Vol 79 (1985) p576

107 *ibid* p577

108 *ILM* Vol 25 (1985) p252

In this case one coast was concave and the adjoining one convex, but a situation exists in the bight of Africa, where a whole series of adjoining States have concave coastlines. In these circumstances it is imperative that arbitration should take place to ensure equitable delimitations (Figure 35).



FIGURE 34  
LATERAL BOUNDARY-GUINEA/GUINEA-BISSAU

The Court discounted an early colonial Convention of 1886, agreed to by France (Guinea) and Portugal (Guinea-Bissau), as applying only to the land boundaries, but it also held that while the 'southern limit', as appearing in Art 1 of the 1886 Convention, did not indicate a maritime boundary, it was not totally irrelevant and should be regarded as a starting point.

The Court held that if the configuration of the coast was considered close to either side of the proposed boundary (short coast) it would result in the enclavement of Guinea as described, but that if the entire coastline of West Africa were considered (long coast) then a far more equitable result was obtainable. The Court determined a boundary line to the north of the equidistance line (Figure 34).

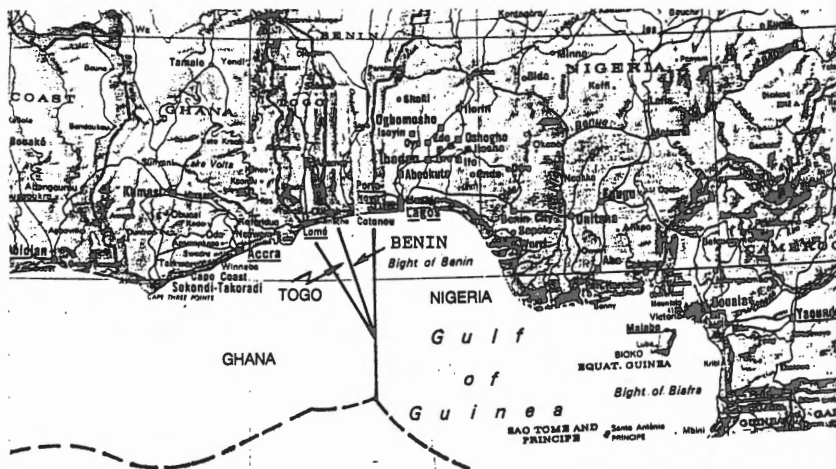


FIGURE 35  
COASTAL STATES: BIGHT OF WEST AFRICA

## V) GENERAL COMMENT

Although most cases considered by the International Court of Justice have included copious references to previous cases, these cases appear to have been considered almost entirely within the terms of reference requested by the States and in the context of the very particular circumstances of each case. Little precedent appears to have developed in the cases. Earlier cases would appear to have had less influence on later decisions than State practice in the form of delimitation agreements concluded between States.

A number of general factors seemed to have established themselves however and the most important of these, referred to as the basis in all cases is 'equity'.

### 1) Equity.

This runs like a golden thread through all the judgements and awards. The international customary law of delimitation and convention law (in so far as it exists) would appear to incorporate this requirement. It must be accepted that any claims made by the RSA to a ConvCS, if they are to be upheld by a court or tribunal, should have this major characteristic.

With this as a basis other considerations include the following.

### 2) Equidistant method.

This is regarded as the primary method of establishing boundaries between opposite States, or the lateral boundaries between adjacent States, but where inequitable results are achieved by using this method, it should then only be used as a basis for negotiations.

### 3) Enclavement.

While the 'equidistant method' of delimitation is recommended as the initial approach to a boundary problem any inequitable solution, caused by a concave coast for instance, would not be upheld in arbitration proceedings. This is well illustrated in the Guinea/Guinea Bissau Case and the North Sea Continental Shelf Case.

### 4) Islands.

The effect of islands may cause the distortion of delimitation solutions, based on median lines, beyond acceptable limits. This has resulted, in many instances, in reduced effect being attributed to the islands concerned.

The effect of the Scilly Isles in the Anglo/French Arbitration Case and the effect of the islands of Juzur Qarqannah and Jazirat Jarbah in the Libya/Tunisia Case are examples. A case similar to that of the islands off the Namibian coast has not been considered in international law before and care should be taken in attempting to apply judgements concerning other disputes involving islands to this particular situation. The effect of the Channel Islands in the Anglo/French Arbitration Case should not be considered as the definitive judgement. The islands were considered in circumstances where the main factor was that the two States were opposite and not adjacent to each other.

In addition in cases where the claims of an island are weighed against those of a continental State with a long coastline, the judgements have favoured the continental State.

An important factor in relation to islands is the definition of an island in LOSC. In terms of Art 121, a rock is an island and if it can sustain human habitation it is entitled to generate the same maritime zones that would normally apply to a continent. The definitions and the geological terminology used in LOSC are confusing and open to wide interpretation when applied to islands. This will be dealt with in greater detail in Chapters 5&6.

### 5) Exploration.

The fact that exploration has been undertaken by a State in a disputed area does not strengthen any claim that that State may make to that area.

### 6) Natural boundaries.

In the Gulf of Maine Case, clarity was obtained on a number of factors. One of these was natural boundaries. A natural boundary should be a clearly identifiable feature that is relevant to the maritime zone that is being delimited.

### 7) Single boundary.

Courts were obliged to consider requests to delimit more than one zone with a single boundary as in the Guinea/Guinea-Bissau Case. This was also a factor in the Gulf of Maine Case. It should be possible to delimit laterally for a number of zones, but as different criteria are applicable to the delineation of the ConvCS as opposed to the other zones the outer limits of the ConvCS must be considered independently.

### 8) Technical experts.

It may be noted here that in any dispute concerning the outer limit of the ConvCS it would probably be necessary to present technical evidence. Care should be taken in the selection of the experts.

In the UK case Post Office vs Estuary Radio (109), the evidence of experts who had been involved in the study or the application of aspects of the law of the sea was considered acceptable by the Court whereas highly proficient experts, such as hydrographers, cartographers and other members of professions related to the physical sciences who had had little or no experience in the field of delimitation had their evidence disregarded.

#### 9) Natural prolongation.

In some of the cases the principle of 'natural prolongation' has been advocated or accepted. It is reasonable to accept that, a continental shelf is a natural prolongation of the continent unless other criteria are relevant.

#### 10) Historical factors.

As can be seen from the Libya/Tunisia Case and the Gulf of Maine Case, in particular, little or no influence has been credited to historical factors. In a Southern African context no historical factors exist in maritime zones which will appreciably affect delimitation. As the coastal terminals of land boundaries are the starting positions for maritime boundaries, historical disputes regarding land boundaries could affect the delimitation of some RSA maritime zones. A particular instance is the boundary between the RSA and Namibia which is the northern bank of the Orange River. This is not the customary solution where rivers feature as boundaries. The new Government of Namibia has already declared that it regards the middle of this river as being the boundary.<sup>(110)</sup> However, although the land boundaries were established during colonial times, it is unlikely that these boundaries will alter. It can be accepted, therefore, while it is always a possibility it is unlikely, that the inshore terminal of the lateral boundaries of the RSA will change.

#### 11) Economic factors.

The only cases, where these factors were raised but not accepted as relevant, were the Gulf of Maine Case and the Guinea/Guinea-Bassau Case. Such factors are unlikely to occur in the delimitation of the normal RSA boundary. Where delimitation of the Penguin Islands and the Walvis Bay enclave is considered, it is highly possible that economic factors could be raised by both parties.

Some commentators claim that modern delimitation requires tailoring to the specific case. They also say that decisions should be sufficiently general so as not to be *ex aequo et bono*.<sup>(111)</sup>

It is inevitable that States will resort to the International Court and Arbitration Tribunals to achieve a greater share of the spoils of the sea and the sea bed. They will obviously also present their best case. Charney feels however that some States will resort to the Courts in the hope that some obscure fact will swing a judgement in their favour. <sup>(112)</sup>

He states further:

"... Perhaps the persuasiveness of ocean boundaries decisions would be strengthened if each factor to be balanced were tied directly into potential boundary lines and the alternatives considered in that context. For example, the analysis might be divided into five separate tasks.

(1) The functions served by coastal state jurisdiction in the specific ocean zone to be delimited should be identified.

(2) All the facts concerning the instant boundary area that reflect the functions to be served by the zone should be identified.

(3) To the extent possible, each piece of information identified in the prior paragraph should be used to construct a line or range of lines that best suits the function to which it relates.

(4) These alternative lines and previously identified factors should be studied and weighed according to their importance. In a process that might even approach vector analysis, a line that best reflects all the relevant factors in light of their importance to the zone should be sought.

(5) A cartographical method should be selected to describe the line accurately and reliably.

"... Through this process a court should be able to produce a line that would take optimal account of the relevant factors and would be recognized as legitimate by the disputants."<sup>(113)</sup>

Co-ordinates for the lateral boundaries between the RSA and the independent States of Ciskei and Transkei have been determined by the RSA, but they have not been ratified by the States concerned. In addition with the recent *coup d'états* occurring in both of these States and with the political reforms being initiated in the RSA, it is possible that a reintegration of these States with the RSA could occur. It is the intention to determine the outer limits of the ConvCS and to indicate only the lateral boundaries with Namibia and Mozambique.

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109 Post Office vs Estuary Radio 2QB (1968) p740

110 Die Burger (Cape Town) (10 January 1990)

111 Charney n77 p595

112 *ibid* p597

113 *ibid* p597-8

# Chapter 5

## TREATIES AND CONVENTIONS

### I) TREATIES

#### 1) Introduction

Most of the early treaties dealing with maritime areas are related to factors that could be considered as part of delimitation of the exclusive economic zones. This was due mainly to the fact that the potential of the resources of the sea-bed had not been realised. Also some early treaties unknowingly included, by implication, the sea-bed or accepted that maritime boundaries should co-incide. The methods used in these treaties or the factors considered for delimiting the lateral boundaries between States are similar to those that are used subsequently to delimit Continental Shelves.

For this reason a number of the early treaties have been included in this chapter where it is considered that they have a bearing on subsequent State practice relating to ConvCS claims.

It should be noted that in most treaties there is an introductory paragraph that states that the treaty is in accordance with the mutual desire of the States concerned to strengthen the bonds between the countries. Theoretically this means that there should be advantages in negotiating as opposed to lengthy and acrimonious court actions based on disputed and usually unrealistic claims by one or more of the States concerned. This is however not always the case.

#### 2) 1494 Tordesillas (114)

Although it could hardly be considered as a delimitation treaty in the true sense, the 1494 Treaty of Tordesillas which divided the sphere of trade between Spain and the Portugal is the first treaty which deals with the rights of States in geographical sectors of the world. As stated earlier it was also largely responsible for Grotius developing his *Mare Liberum* concept.

#### 3) 1661 Denmark-Sweden (115)

The treaty between Denmark and Sweden in 1661 was a settlement of a boundary dispute and the fact that a perpendicular to the general direction of the coastline was used in this treaty, and that this has been cited in a number of subsequent cases, indicates that it does have some relevance in international law.

#### 4) 1927 Great Britain (United Kingdom)-Johore (116)

An interesting application of delimitation occurred in the 1927/8 Treaty between the British Government and the Sultan of Johore over the Strait of Johore. In this case the 'equidistance' concept was initially used but later the centre-line of the deep water channel, wherever it was sited, was adopted. This is a very practical solution for delimitation. Any other solution would have been nonsensical.

#### 5) 1932 Denmark-Sweden (117)

In 1932 Denmark and Sweden entered into a treaty delimiting the Sound between them. Like the treaty involving the Sultan of Johore this treaty divided the Sound equally between opposite States. It will be seen in the previous chapter that this is not always possible.

As this treaty preceded the CSC58, it would have been interesting to see what the outcome would have been had a dispute arisen.

#### 6) 1942 Great Britain (UK)-Venezuela (118)

What appears to be the first treaty dealing with the continental shelf was entered into between the British Government and the Government of Venezuela. The British were acting on behalf of the Government of Trinidad which was at the time a British Colony. The area covered by the treaty was referred to as the submerged areas in the Gulf of Paria beyond the territorial waters of the two States. The Gulf was effectively divided into two sectors with the States undertaking not to claim sovereignty in the sector allocated to the other. This was a negative way of acknowledging the unstated or unclaimed sovereignty of the other State.

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114 Churchill & Lowe n1 p62

115 Consolidated Treaty Series (CTS) 6 p495

116 Churchill & Lowe n1 p62

117 League of Nations Treaty Series (LNTS) 127 p62

118 *ibid* p205

## 7) Gulf State Agreements 1958-1974 (Figure 36)

### a) 1958 Bahrain-Saudi Arabia (119)

This agreement delimiting the ConvCS between these two States is notable for two reasons.

- 1) The Fasht bu Saafa hexagon is an area under Saudi jurisdiction but the Saudis agreed to allow the Bahrainians to exploit the resources found there and to share in the profits made.
- 2) The 'equidistance' method was used but straight lines were drawn between agreed positions on the coast and these lines were used to generate the equidistance lines. The configuration of the coast had thus no bearing on this delimitation.

### b) 1966 Kuwait-Saudi Arabia (120)

A limit of 6 miles from the respective coastlines was allocated exclusively to the two States and any development beyond this would have to be a joint development unless the two States agreed otherwise.

### c) 1968 Abu Dhabi-Dubai (121)

A provisional agreement existed demarcating areas for development. The boundary passed to the west of, and close to, the Fatah oil wells belonging to the Amirate of Dubai and this agreement was to move the boundary further to the west of these wells and to confirm the balance of the previous Agreement as it had been accepted.

### d) 1969 Iran-Saudi Arabia (122)

This agreement resolved two problems that existed in the ConvCS area between the two States.

- 1) The sovereignty of two islands and the submarine area resources were in dispute. The differences were settled by the island of Farsi falling under the jurisdiction of Iran and the second island of Al-'Arabiyah under Saudi Arabia.
- 2) The second aspect dealt with was a reassessment of the boundary line between their submarine areas. Both of these aspects were satisfactorily covered in the treaty.

### e) 1969 Abu Dhabi-Qatar (123)

In a similar fashion to the 1969 Treaty between Iran and Saudi Arabia the sovereignty of two islands was resolved and a line of delimitation of the ConvCS between the two States was agreed upon.

### f) 1969 Iran-Qatar (124)

This is a straightforward agreement using the 'equidistance' method but disregarding the effects of the islands in the zone.

### g) 1971 Iran-Bahrain (125)

This is again a straightforward agreement using the 'equidistance' method but in this case it was modified by the parameters of agreements already in existence.

### h) 1971 Iran-Oman (126)

Accepted positions were recorded in the Agreement and could be based on 'equidistance' but this is not stated. In principle this is no different from most of the other Gulf Agreements.

### i) 1974 Iran-United Arab Emirates (127)

This agreement states that the positions referred to are not calculated by the 'equidistance' method and it must be assumed that they were determined from other criteria such as historical and equity factors.

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119 *New Directions in The Law of the Sea* (ND) Vol 5 (1973-1990) p207

120 *ibid* p212

121 *ibid* p214

122 *ibid* p216

123 *ibid* p223

124 *ibid* p226

125 *ibid* p230

126 *ibid* p235

127 *ibid* p242

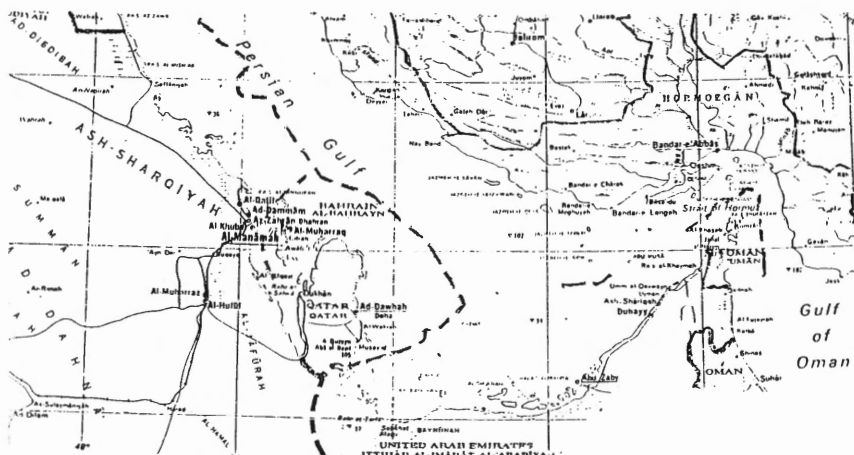


FIGURE 36  
GULF STATE AGREEMENTS ON THE CONTINENTAL SHELF

8) 1961 Argentina-Uruguay (128)

This is essentially an agreement on the outer limit of the River Plate but because these unrealistic claims extend so far from the coastline they include portions of the continental shelf in that area (Figure 37).

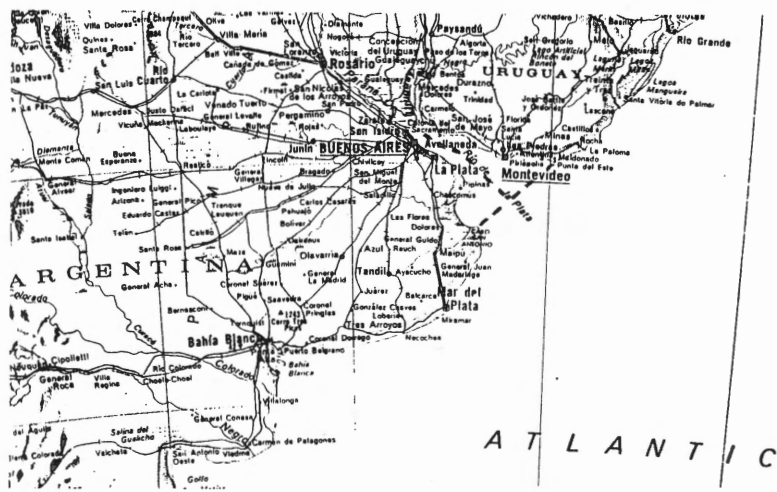


FIGURE 37  
ARGENTINA AND URUGUAY: RIVER PLATE AGREEMENT

128 *Limits in the Seas* No44 (1972)

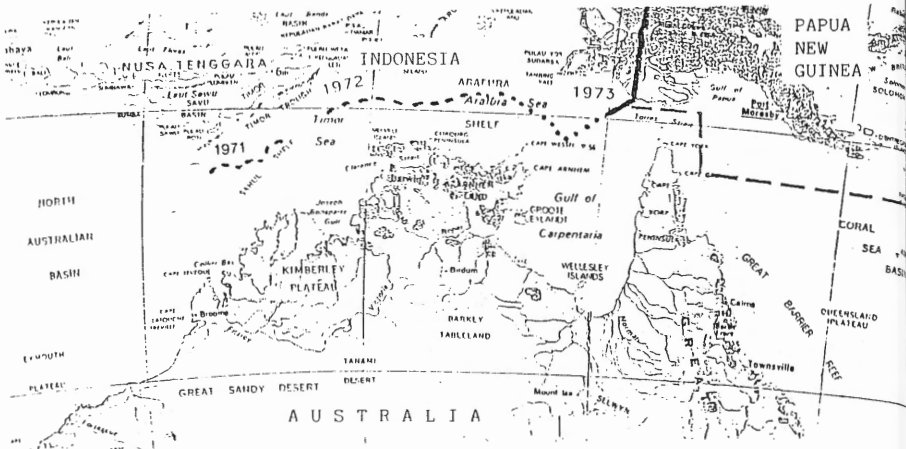


FIGURE 38  
MARITIME BOUNDARY TREATIES BETWEEN AUSTRALIA AND INDONESIA

9) 1971/2/3 Australia-Indonesia (129)

The three treaties entered into by Australia and Indonesia delimited various portions of the sea-bed between them. The agreements cover separate areas in each treaty and these treaties were followed by yet another in 1978 to further complete the line of delimitation. They do not follow a geographical sequence and it appears that areas where agreement has been found to be possible have been considered first (Figure 38).

10) 1971 Italy-Tunisia (130)

This Treaty is based on the 'equidistance' principle but the interesting aspect of the Treaty is the treatment of the four Italian islands situate between the two States. In the case of the islands of Pantelleria, Lampedusa and Linosa a radius of 13 nm was allocated as ConvCS but the island of Lampione was allocated 12 nm possibly as a result of the fact that it is the island closest to the Tunisian mainland (Figure 39).

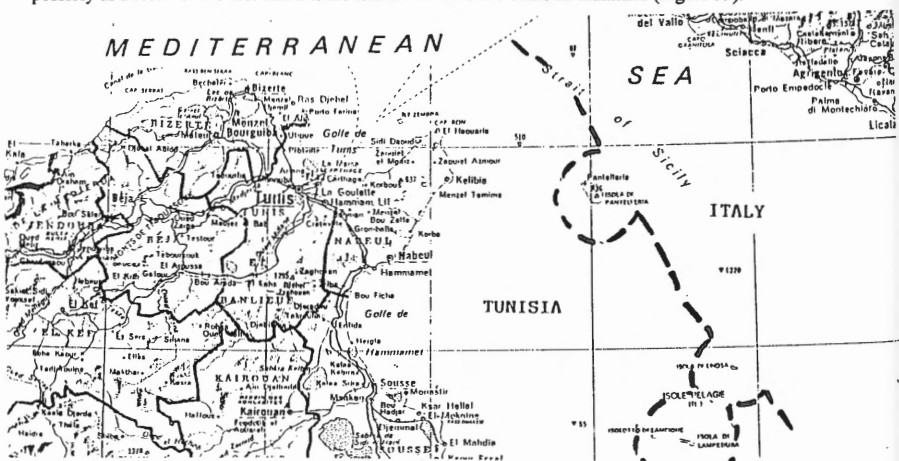


FIGURE 39  
ITALIAN-TUNISIAN DELIMITATION

129 New Directions in the Law of the Sea Vol 4 (1973-1990) p91

130 ND Vol 5 n119 p247

11) 1974 France-Spain (Bay of Biscay) (131)

Equidistance was the basis of the delimitation but only up to an agreed position "R" from which a straight line was drawn to the outer limit "T" (Figure 40).



FIGURE 40  
CONTINENTAL SHELF TREATY BETWEEN FRANCE AND  
SPAIN (BAY OF BISCAY)

12) 1974 Italy-Spain (132)

This is an agreement based on the 'equidistance' principal with no other characteristics of note.

13) 1974 India-Indonesia (133)

The boundaries of this agreement were drawn between four points whose co-ordinates are listed in the agreement. An unusual requirement is found in Art I (3) where the States must agree on a method to be able to determine these positions at sea. Most modern methods of survey and navigation are such that it is possible to obtain extremely accurate positioning at sea. While it is important for the exploitation of the ConvCS to be able to know precisely where a boundary is situated it is difficult to understand the necessity for a clause of this nature.

14) 1974 Denmark-Canada (134)

This treaty was an attempt to delimit the ConvCS between Greenland and Canada which proved to be long and complicated with 127 changes of direction in the boundary (Figure 41).

Due to the vagueness of the charts of the area or the lack of recent surveys both parties realized that a number of special clauses would be necessary to compensate for this. Article III of the Treaty makes provision for this but interesting aspects are covered in Article IV.

"1) The parties undertake to co-operate and to exchange all relevant data and measurements with a view to obtaining and improving hydrographic and geodetic knowledge necessary for a more precise charting and mapping of the region covered by the Agreement. When knowledge is obtained enabling the Parties to estimate the datum shift between the 1927 North American Datum and the Qornoq Datum, the geographic co-ordinates of points listed in Article II shall be adjusted and re-listed in relation to both the 1927 North American and Qornoq Datum.

2) If new surveys or resulting charts or maps should indicate that the dividing line requires adjustment, the Parties agree that an adjustment will be carried out on the basis of the same principles as those used in determining the dividing line, and such adjustment shall be provided for in a Protocol to this Agreement."

The line drawn is a median line but the above clause appears to leave open, indefinitely, the possibility of the recomputation of this line as new information becomes available. (Figure 41) This clearly indicates that the Parties to the Treaty have actually agreed to the method of delimitation and that they are prepared to accept any adjustment to the boundaries as and when geographical information becomes available. This must be regarded as unusual and success will depend on the continued goodwill of the States involved.

In the light of the serious discrepancies that have been found in the Anglo-French Arbitration Agreement in a comparison of the values of positions calculated initially by graphical and later by geodetic methods this type of clause could prove valuable in an agreement.

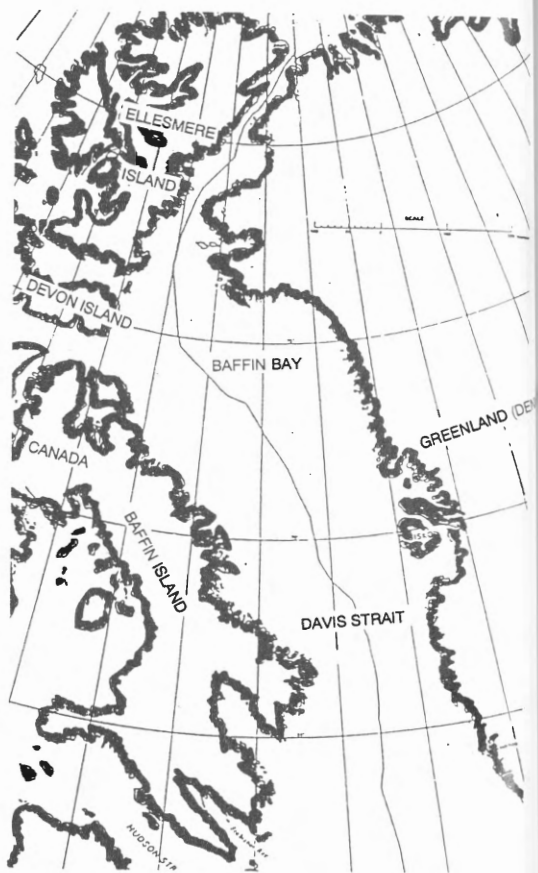
131 *ibid* p251

132 *ibid* p261

133 *ibid* p265

134 ND Vol 4 n129 p105

FIGURE 41  
DENMARK  
(GREENLAND)-CANADA:  
DELIMITATION OF THE DAVIS  
STRAIT



15) 1974 Japan-Korea (135)

Similar to the 1976 Agreement between the United Kingdom and Norway, described later, this agreement is unusual in that the two States agreed that a single concessionaire would exploit the resources of the ConvCS between them. (Figure 42)

Since these agreements were made other States have realised the advantages of this type of agreement, for which no precise rules have been made in international law. It requires a high degree of co-operation between the States both during the drafting of the agreement and during the period of exploitation of the resources. Article X (3) of the Agreement states that the term of exploitation for concessionaires is 30 years from the time of appointment. Provision is made for an extension with approval of the States concerned.

Interesting aspects that had to be covered by the Agreement appear in Articles XVIII, XXI and XXVI where the subjects of import or export into the joint zone, contractual or damages litigation and disputes are dealt with. Everything being brought into the zone from either of the two States by the concessionaire would be free from duty.

Damages to the zone as a result of the activities of the concessionaire could be sought in the courts of either of the two States or of the State of the concessionaire. Settlement of disputes between the States would first be attempted by diplomatic efforts and should this fail, then by an Arbitration Board of three appointed jointly by the States concerned and if necessary, if agreement is still not achieved, then the third arbiter would be replaced by one appointed by the President of the International Court of Justice.

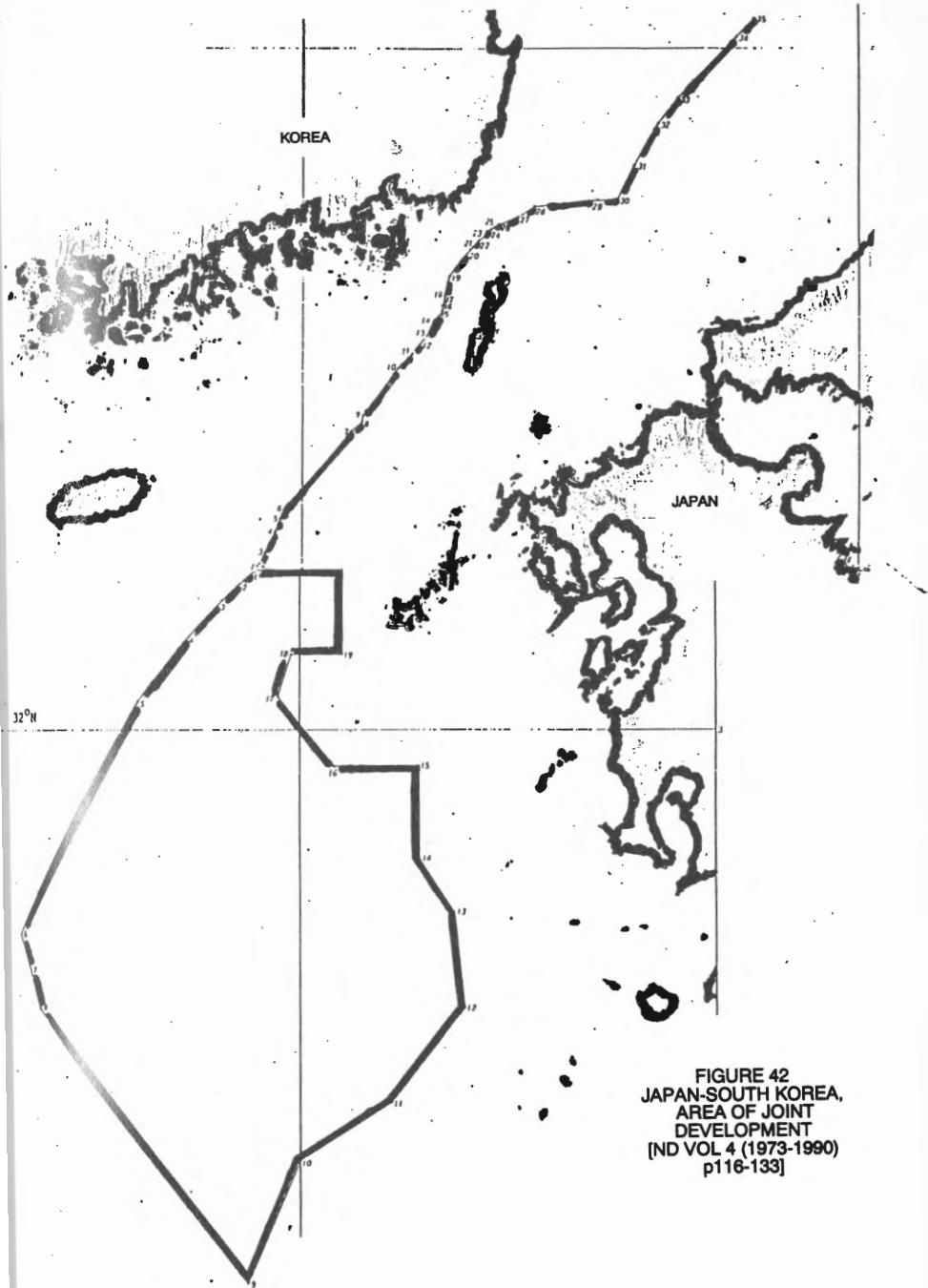


FIGURE 42  
JAPAN-SOUTH KOREA,  
AREA OF JOINT  
DEVELOPMENT  
[ND VOL 4 (1973-1990)  
p116-133]

The boundaries of geological zones rarely follow geographical boundaries and to complicate the situation still further political boundaries seldom follow the geographical ones. Where resources are the reasons for a delimitation, it is extremely unlikely that the limits of these resources will coincide with any of the existing or envisaged political boundaries. This therefore makes an agreement imperative.

**16) 1975 Gambia-Senegal (136) and 1975 Columbia-Ecuador (137)**

These two treaties are delimitations where parallels of latitude have been adopted as boundaries for simplicity. The ramifications of this may only be realised later if resources are discovered by a State in areas that could have been under the sovereignty of the other State had conventional methods of delimitation been used.

**17) 1976 Norway-United Kingdom (138)**

The agreement relates to the Frigg Fields reservoir and the transfer of the gas from this reservoir, which lies across the ConvCS boundary of these two States. The reservoir is situated 120 nm from both the coast of Norway and the United Kingdom.

It was fortunate that domestic legislation of both States made provision for just such a case and so it was relatively easy for the basis of an agreement of this type to be formulated.

The initial moves towards joint development were made by the concession holders of both States. These consortia entered into a number of agreements that effectively unified the exploitation of the gas field with a monitor who would assess the percentages thought to have originated on each side of the boundary.

The governments of Norway and the United Kingdom confirmed the arrangements and entered into the what is known as the Frigg Field Agreement 1976. The treaty confirms the principle of shared development by a single operator acting on behalf of the States concerned. The costs and profits are shared in relation to the deposits assessed on each side of the boundary. This type of agreement has been duplicated in other areas that span the Shelf boundaries of these two States such as the Strafford and Murchison oil fields.

While 'unitization' has not as yet become a requirement in international law it is gaining support and respect.

**18) 1977 Columbia-Panama (139) 1977 Columbia-Costa Rica (140) and 1978 Columbia-Haiti (141)**

These three treaties are of little significance because the 'equidistance' method with slight modifications was used in all of them.

**19) 1978 Australia-Papua New Guinea (142)**

As discussed earlier in this chapter, Australia and Indonesia have been delimiting ConvCS. This Agreement must be seen as an effort on the part of the Australian Government to resolve maritime zones with countries to the north.

In this instance the traditional interests of Australian fishermen on islands close to Papua New Guinea would not have been provided for had the delimitation of the EEZ coincided with the ConvCS. Nor would the interests of Papua New Guinea have been served had the ConvCS delimitation coincided with the areas of interest to the Australian fishermen. The Australian Government was loath to have pockets of EEZ divorced from their main maritime zones and for this reason it was mutually agreed that the two zones would be delimited separately. This is rare as most States prefer to have a common boundary for all their maritime zones if it is at all possible.

The islands are situated in the Torres Strait off Cape York Peninsula in Northern Australia. The Treaty gives recognition to the sovereignty of the two States, to the islands in the Strait, and in a lengthy Agreement (32 Articles) delimits the territorial seas, the sea-bed, fishing rights and the very special and traditional rights of people living in what is referred to as the Protected Zone.

370 co-ordinated points have been defined in the Agreement to delimitate the zones and great care has been taken to prevent any form of development in the Protected Zone for at least 10 years after ratification of the Treaty. It is unusual that a treaty will endeavour to define firstly more than one zone or aspect of maritime delimitation and at the same time include articles on fishing, flora and fauna and aspects of a social nature (Figure 43).

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136 *Limits in the Seas* No85 (1979)

137 ND Vol 5 n119 p12

138 *Ibid* p398

139 *New Directions in the Law of the Sea* Vol 8 (1973-1990) p88

140 *Ibid* p93

141 *Ibid* p76

142 ND Vol 8 n139 p215

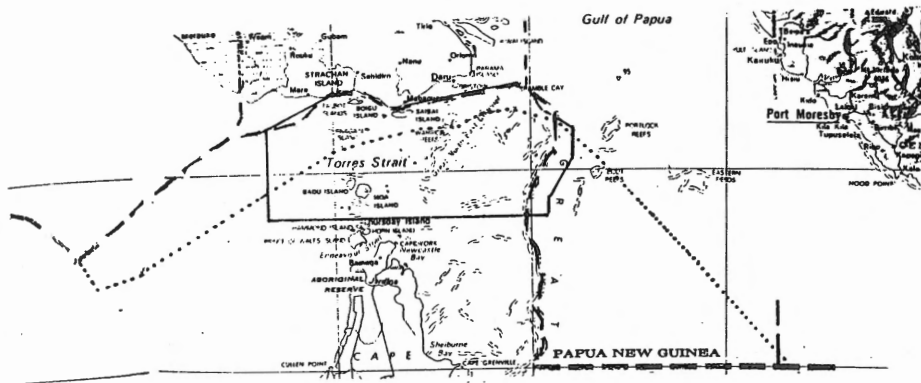


FIGURE 43  
AUSTRALIAN ISLANDS OFF THE PAPUA NEW GUINEA COAST

#### 1988 Denmark-German Democratic Republic (143)

The two States agreed to delimit both their ConvCS and their fishing zones with one boundary in this Agreement. The boundary is of necessity in two areas as the Island, belonging to Denmark, is situated substantially east of the Danish mainland.

Churchill and Lowe cite the fact that as of 1983, of the more than 30 decisions relating to maritime zonal boundaries, in only one does the EEZ not coincide with the ConvCS boundary. (144)

### II) RECENT UNILATERAL ACTIONS IN CONTINENTAL SHELF DELIMITATION

#### 1) 1985 Chile (145)

On 23 May 1988 Chile gave notice of their claim to 350 nm of ConvCS. This claim will be difficult to justify in international law. In terms of LOSC an outer limit of 350 nm from baselines or 100 nm from the 2 500 m isobath is allowed. The greater of either 60 nm from the foot of the slope or sediment thickness equivalent to 1% of the distance to the foot of the slope are the criteria to be met to be able to extend a ConvCS claim to the limits listed above

The coast of Chile is situated in a convergent margin which results in a sea-bed that usually includes a very significant submarine trench close to the continent. This means that the existence of a continental rise of any significance is unlikely, and the foot of the slope will be found relatively close to the continent. The chances of substantial sediment being found beyond the foot of the slope are low and the possibility of the geology or the configuration of the sea-bed conforming to Art 76 of LOSC to be able to extend a ConvCS claim to 350 nm are negligible.

#### 2) 1986 Ecuador (146)

On 19 September 1985 Ecuador claimed the ConvCS between the coast of Ecuador and the Galapagos Islands. On 12 February 1986 the United States of America contested the claim as it extended beyond 200 nm from the baselines.

#### 3) 1986 Mexico (147)

Mexico passed a Federal law creating maritime zones. The outer limit of the ConvCS was stated as being the 'natural prolongation' of the land territory to the outer limit of the continental terrace. No determination of this limit was given.

143 Royal Danish Administration of Hydrography Case No 8532-0006/88

144 Churchill and Lowe n1 p127-8

146 See Changes No 3 (1986) p18

148 *ibid*

147 See Changes No 4 (1986) p19

#### 4) 1986 United Kingdom (148)

The UK declared a fishing zone of 150nm around the Falkland Islands with effect from 1 February 1987. It also stated that it intended to claim ConvCS to the limit of international law.

#### 5) 1987 Burma/India (149)

These two States agreed to maritime zones in the Andama Sea, the Coco Channel and the Bay of Bengal using the principle of 'equidistance'.

#### 6) 1987 Canada/France (150)

Canada and France have referred the delimitation dispute of the maritime zones between Canada and the French Island of St Pierre to the International Justice Tribunal for settlement. On 30 March 1989 five judges were appointed.

#### 7) 1987 Sweden/Union of Socialist Soviet Republics (151)

Delimitation negotiations between Sweden and the USSR commenced on the maritime zones in the Baltic Sea. A main issue is whether the Swedish island, Gotland, should influence the delimitation.

#### 8) 1988 Australia/Solomon Islands (152)

An agreement on the exploitation of the sea and the sea-bed between these two States was forwarded to the United Nations in October 1988.

#### 9) 1989 Denmark/Norway (153)

Denmark has submitted its dispute with Norway over the delimitation of the maritime zones between Greenland and Jan Mayen Island to the International Court of Justice.

### III) CONVENTIONS

The essential difference between treaties and conventions is that a treaty reflects the rights and privileges that the States will have as a result of being a party to the agreement which may or may not be in accordance with international law. A convention however is usually the clearest statement of international law. It will usually reflect conclusively the rights of States party to the Convention. The articles contained in a convention are only binding on the States that are party to that convention but over a period of time those articles, that did not reflect international law at the time of the signing of the convention, could become international law as a result of subsequent State practice. LOSC is considered by some States to be purposefully vague to allow States to interpret the Articles to their best advantage.

The first convention that dealt specifically with the delimitation of the Continental Shelf is the United Nations Convention on the Continental Shelf of 1958 (CSC58). This convention is one of three which were signed in Geneva on 29 April 1958. They were drafted as a result of the 1958 United Nations Conference on the Law of the Sea (UNCLOS 1). The RSA is a party to this Convention.

By the time of the CSC58 Conference approximately twenty States had already made claims to the sea-bed. By 1969 the rights of coastal States over the continental shelf had become established in international customary law to the extent that the International Court of Justice stated in the Abu Dhabi Award that:

"The rights of the coastal State in respect of the area of continental shelf that constitutes a natural prolongation of its land territory into and under the sea exists 'ipso facto' and 'ab initio', by virtue of its sovereignty over the land, and as an extension of it in an exercise of sovereign rights for the purpose of exploring the sea-bed and exploiting its natural resources. In short there is here an inherent right."(154)

LOSC attempted to clarify the criteria for claiming continental shelf in Arts 76, 83 and 84. The RSA is a signatory to the Convention but has not ratified it. With the exception of one paragraph, Arts 76, 83 and 84 have to large extent become State practice and may be considered as international customary law.

The CSC58 has therefore been superceded by these articles of LOSC82 and it is now mainly of historical interest. It has been included for comparative purposes.

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148 Sea Changes No 5 (1987) p26-7

149 Sea Changes No 6 (1987) p21

150 *ibid*

151 *ibid* p27

152 Sea Changes No10 (1989) p16

153 Sea Changes No 9 (1989) p18

154 Churchill and Lowe n1 p110

The two limiting criteria to the outer limits of ConvCS claims appear in Art 76 (5). No outer limit of a ConvCS may extend beyond points 350 nm from the baselines from which the breadth of the territorial sea is measured or 100 nm from the 2 500 m isobath, whichever is the greater.

While Art 76 (5) allows for a maximum claim as indicated, the two factors in Art 76 (4)(a)(i) (ratio 1% of sediment thickness to distance of sediment to foot of the slope) and (ii) (60 nm from the of the slope) are the criteria to be used to maximize a ConvCS claim. Art 76 (4)(a) allows for a minimum claim of 200 nm from the same baselines.

**TABLE 1**

CSC 58	LOSC
Article 1	Article 76 :Definition of the continental shelf
<p>For the purpose of these articles, the term 'continental shelf' is used as 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 metres 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.</p>	<ol style="list-style-type: none"> <li>1. The continental shelf of a coastal State comprises the sea-bed 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.</li> <li>2. The continental shelf of a coastal State shall not extend beyond the limits provided for in paragraph 4 to 6.</li> <li>3. The continental margin comprises the submerged prolongation of the land mass of the coastal State, and consists of the sea-bed 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.</li> <li>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 territorial sea is measured, by either:             <ul style="list-style-type: none"> <li>(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;</li> <li>(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.</li> </ul> </li> <li>(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.</li> <li>5. The fixed points comprising the line of the outer limits of the continental shelf on the sea-bed, 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.</li> <li>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.</li> <li>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 area is measured, by straight lines not exceeding 60 nautical miles in length, connecting fixed points, defined by co-ordinates of latitude and longitude.</li> <li>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.</li> <li>9. The coastal State shall deposit with the Secretary-General of the United Nations charts and relevant information, including geodetic data, permanently describing the outer limits of its continental shelf. The Secretary-General shall give due publicity thereto.</li> <li>10. The provisions of this article are without prejudice to the question of delimitation of the continental shelf between States with opposite or adjacent coasts.</li> </ol>

Article 2 (CSC58) is reproduced exactly as Art 77 LOSC and provides for the rights of a State to ConvCS and the exploitation of its resources (Table 2).

<b>TABLE 2</b>	
<b>CSC 58</b>	<b>LOSC</b>
<b>Article 2</b>	<b>Article 77 : Rights of the coastal State over the Continental Shelf</b>
1.The coastal state exercises over the continental shelf sovereign rights for the purpose of exploring it and exploiting its natural resources. 2.The rights referred to in paragraph 1 of this article are exclusive in the sense that if the coastal state does not explore the continental shelf or exploit its natural resources, no one may undertake these activities, or make a claim to the continental shelf, without the express consent of the coastal state. 3.The rights of the coastal state over the continental shelf do not depend on occupation, effective or national, or on any express proclamation. 4.The natural resources referred to in these articles consist of the mineral and other non-living resources of the sea-bed and subsoil together with living organisms belonging to sedentary species, that is to say, organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil.	

Arts 3 and 5(1) (CSC58) are incorporated in Art 78 LOSC to provide for the freedom of other States in zones claimed by a coastal State (Table 3).

<b>TABLE 3</b>	
<b>CSC 58</b>	<b>LOSC</b>
<b>Article 3</b>	<b>Article 78: Legal status of the superjacent waters and air space and the rights and freedom of other States</b>
The rights of the coastal state over the continental shelf do not affect the legal status of the superjacent waters as high seas, or that of the airspace above those waters.	
1.The rights of the coastal state over the continental shelf do not affect the legal status of the superjacent waters as high seas, or that of the airspace above those waters. 2.The exercise of the rights of the coastal State over the continental shelf must not infringe or result in any unjustifiable interference with navigation and other rights and freedoms of other States as provided for in this Convention.	

Art 4 (CSC58) deals with rights and obligations connected with the laying and the maintenance of submarine pipelines and cables. This Article only requires that a coastal State should take reasonable measures to explore and exploit the ConvCS. The Articles of LOSC are more specific (Table 4).

<b>TABLE 4</b>	
<b>CSC 58</b>	<b>LOSC</b>
<b>Article 4</b>	<b>Article 79:Submarine cables and pipelines on the continental shelf</b>
Subject to its right to take reasonable measures for the exploration of the continental shelf and the exploitation of its natural resources, the coastal state may not impede the laying or maintenance of submarine cables or pipelines on the continental shelf.	
1. All States are entitled to lay submarine cables and pipelines on the continental shelf, in accordance with the provisions of this article. 2. Subject to its right to take reasonable measures for the exploration of the continental shelf, the exploitation of its natural resources and the prevention, reduction and control of pollution from pipelines, the coastal State may not impede the laying or maintenance of such cables or pipelines. 3. The delineation of the course for the laying of such pipelines on the continental shelf is subject to the consent of the coastal state. 4. Nothing in this Part affects the right of the coastal State to establish conditions for cables or pipelines entering its territory or territorial sea, or its jurisdiction over cables and pipelines constructed or used in connection with the exploration of its continental shelf or exploitation of its resources or the operations of artificial islands, installations and structures under its jurisdiction. 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.	

Articles 77, 78, and 79 may be considered as international customary law.

Art 5 (CSC58) is expanded as Arts 80, 81, and 82 LOSC (Table 5) but the provisions of Art 60, which deals with the effect of artificial islands, installations and structures on the EEZ, also applies.

The main difference between the two conventions on the subject of the exploitation of the ConvCS is the requirement in Art 82 for a payment of 1% of the value of the product exploited beyond the 200nm limit to be made by the producing State. For the first five years no payment is required thereafter the amount will increase by 1% per annum to a maximum of 12%.

TABLE 5

CSC 58	LOSC 82
Article 5	Article 80: Artificial islands, installations and structures on the continental shelf
<p>1. The exploration of the continental shelf and the exploitation of its natural resources must not result in any unjustifiable interference with navigation, fishing or the conservation of the living resources of the sea, nor result in any interference with fundamental oceanographic or other scientific research carried out with the intention of open publication.</p> <p>2. Subject to the provision of paragraphs 1 and 6 of this article, the coastal state is entitled to construct and maintain or operate on the continental shelf installations and other devices necessary for its exploration and the exploitation of its natural resources, and to establish safety zones around such installations and devices and to take in those zones measures necessary for their protection.</p> <p>3. The safety zones referred to in paragraph 2 of this article may extend to a distance of 500 metres around the installations and other devices which have been erected, measured from each point of their outer edge. Ships of all nationalities must respect these safety zones.</p> <p>4. Such installations and devices, though under the jurisdiction of the coastal state, do not possess the status of islands. They have no territorial sea of their own, and their presence does not affect the delimitation of the territorial sea of the coastal state.</p> <p>5. Due notice must be given of the construction of any such installations, and permanent means for giving warning of their presence must be maintained. Any installations which are abandoned or disused must be entirely removed.</p> <p>6. Neither the installations or devices, nor the safety zones around them, may be established where interference may be caused to the use of recognized sea lanes essential to international navigation.</p> <p>7. The coastal state is obliged to undertake, in the safety zones, all appropriate measures for the protection of the living resources of the sea from harmful agents.</p> <p>8. The consent of the coastal state shall be obtained in respect of any research concerning the continental shelf and undertaken there. Nevertheless, the coastal state shall not normally withhold its consent if the request is submitted by a qualified institution with a view to purely scientific research into the physical or biological characteristics of the continental shelf, subject to the proviso that the coastal state shall have the right, if it so desires, to participate or to be represented in the research, and that in any event the results shall be published.</p>	<p>Article 60 applies <i>mutatis mutandis</i> to artificial islands, installations and structures on the continental shelf.</p> <p>Article 60: Artificial islands, installations and structures in the exclusive economic zone</p> <p>1. In the exclusive economic zone, the coastal State shall have the exclusive right to construct and to authorize and regulate the construction, operation and use of:</p> <p>(a) artificial islands;</p> <p>(b) installations and structures for the purposes provided for in article 56 and other economic purposes;</p> <p>(c) installations and structures which may interfere with the exercise of the rights of the coastal State in the zone.</p> <p>2. The coastal State shall have exclusive jurisdiction over such artificial islands, installations and structures, including jurisdiction with regard to customs, fiscal, health, safety and immigration laws and regulations.</p> <p>3. Due notice must be given of the construction of such artificial islands, installations or structures, and permanent means for giving warning of their presence must be maintained. Any installations or structures which are abandoned or disused shall be removed to ensure safety of navigation, taking into account any generally accepted international standards established in this regard by the competent international organization.</p> <p>Such removal shall also have due regard to fishing, the protection of the marine environment and the rights and duties of other States. Appropriate publicity shall be given to the depth, position and dimensions of any installations or structures not entirely removed.</p> <p>4. The coastal State may, where necessary, establish reasonable safety zones around such artificial islands, installations and structures in which it may take appropriate measures to ensure the safety both of navigation and of the artificial islands, installations and structures.</p> <p>5. The breadth of the safety zones shall be determined by the coastal State, taking into account applicable international standards. Such zones shall be designed to ensure that they are reasonably related to the nature and function of the artificial islands, installations or structures, and shall not exceed a distance of 500 metres around them, measured from each point of their outer edge, except as authorized by generally accepted international standards or as recommended by the competent international organization. Due notice shall be given of the extent of safety zones.</p> <p>6. All ships must respect these safety zones and shall comply with generally accepted international standards regarding navigation in the vicinity of artificial islands, installations, structures and safety zones.</p> <p>7. Artificial islands, installations and structures and the safety zones around them may not be established where interference may be caused to the use of recognized sea lanes essential to international navigation.</p> <p>8. Artificial islands, installations and structures do not possess the status of islands. They have no territorial sea of their own, and their presence does not affect the delimitation of the territorial sea, the exclusive economic zone or the continental shelf.</p> <p>Article 81: Drilling on the continental shelf</p> <p>The coastal State shall have the exclusive right to authorize and regulate drilling on the continental shelf for all purposes.</p> <p>Article 82: Payments and contributions with respect to the exploitation of the continental shelf beyond 200 nautical miles</p> <p>1. The coastal State shall make payments or contributions in kind in respect of the exploitation of the non-living resources of the continental shelf beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured.</p> <p>2. The payments and contributions shall be made annually with respect to all production at a site after the first five years of production at that site. For the sixth year, the rate of payment or contribution shall be 1 per cent of the value or volumes of production at the site, the rate shall increase by 1 per cent for each subsequent year until the twelfth year and shall remain at 7 per cent thereafter. Production does not include resources used in connection with exploitation.</p> <p>3. A developing State which is a net importer of a mineral resource produced from its continental shelf is exempt from making such payments or contributions in respect of that mineral resource.</p>

The payment would be made to the "Authority" constituted in Section 4 of LOSC. The Authority would distribute the payment amongst the States party to the Convention. The Authority does not exist but provision is made for its creation in Part XI of LOSC which deals with mining the deep sea-bed. The reaction of States to this Part makes it unlikely that this Authority will be recognised by major industrial States that do not ratify the LOSC. Concessions are made within these Articles to the producing State in circumstances where that State is obliged to import the product in spite of the exploitation.

CSC58 is not generally specific when compared with LOSC and Art 5 (ConvCS 58) refers to exploration, exploitation structures and installations but no reference is made to particular aspects of these, such as drilling. This appears in Art 81 LOSC.

A major difference is found in a comparison of Art 6 (CSC58) and Art 83 LOSC (Table 6). These Articles refer to delimitations of the ConvCS of opposite or adjacent States. In Art 6 (CSC58) the delimitation principle of 'equidistance' is prescribed. In Art 83 LOSC the principle of 'equity' is stressed. It may be noted that while 'equity' has become the prominent delimitation factor in international customary law the 'equidistance' method is still regarded as being the starting point for any delimitation.

<b>TABLE 6</b>	
<b>CSC 48</b>	<b>LOSC</b>
<b>Article 6</b>	<b>Article 83: Delimitation of the continental shelf between States with opposite or adjacent coasts</b>
<p>1. Where the same continental shelf is adjacent to the territories of two shore states whose coasts are opposite each other, the boundary of the continental shelf appertaining to such states shall be determined by agreement between them. In the absence of agreement, and unless another boundary line is justified by special circumstances, the boundary is the median line, every point of which is equidistant from the nearest point of the baselines from which the breadth of the territorial sea of each state is measured.</p> <p>2. Where the same continental shelf is adjacent to the territories of two adjacent states, the boundary of the continental shelf shall be determined by agreement between them. In the absence of agreement, and unless another boundary line is justified by special circumstances, the boundary shall be determined by application of the principle of equidistance from the nearest points of the baselines from which the breadth of the territorial sea of each state is measured.</p> <p>3. In delimiting the boundaries of the continental shelf, any lines which are drawn in accordance with the principles set out in paragraphs 1 and 2 of this article should be defined with reference to charts and geographical features as they exist at a particular date, and reference should be made to fixed permanent identifiable points on the land.</p>	<p>1. The delimitation of the continental shelf between States with opposite or adjacent coasts shall be effected by agreement on the basis of international law, as referred to in Article 38 of the Statute of the International Court of Justice, in order to achieve an equitable solution. If no agreement can be reached within a reasonable period of time, the States concerned shall resort to the procedures provided for in Part XV.</p> <p>3. Pending agreement as provided for in paragraph 1, the States concerned, in a spirit of understanding and co-operation, shall make every effort to enter into provisional arrangements of a practical nature and, during this transitional period, not to jeopardize or hamper the reaching of the final agreement. Such arrangements shall be without prejudice to the final delimitation.</p> <p>4. Where there is an agreement in force between the States concerned, questions relating to the delimitation of the continental shelf shall be determined in accordance with the provisions of that agreement.</p>

As there is no requirement in (CSC58) to determine the outer limits of the ConvCS there is no necessity to prescribe how this must be done and where this information must be registered. Art 84 LOSC lists the requirements for a claim to be recognised in terms of LOSC (Table 7).

<b>TABLE 7</b>	
<b>LOSC</b>	
<b>Article 84: Charts and lists of geographical co-ordinates</b>	
<p>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 co-ordinates of points, specifying the geodetic datum, may be substituted for such outer limit lines or lines of delimitation.</p> <p>2. The coastal State shall give due publicity to such charts or lists of geographical co-ordinates 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.</p>	

Art 7 (CSC58) (Tunnelling) is repeated as Art 85 LOSC (Table 8).

<b>TABLE 8</b>	
<b>CSC 58</b>	<b>LOSC</b>
<b>Article 7</b>	<b>Article 85: Tunnelling</b>
The provisions of these articles shall 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.	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.

## Chapter 6

# CONVENTION CONTINENTAL SHELF CLAIMS OF THE REPUBLIC OF SOUTH AFRICA

### I) GENERAL CONVENTIONS

The RSA is party to CSC58 and a signatory to LOSC but the latter Convention has not as yet been ratified by the RSA. South African national legislation reflects, however, that many of the Articles of LOSC dealing with maritime zones have been adopted as State practice by the RSA.(155)

The Marine Traffic Act No 2 of 1981 (as amended by Act No 5 of 1983) refers to baselines, but this reference is incomplete in that no provision is made for straight-baselines. Six bays and a lagoon are stated as being internal waters but no natural entrance points of the bays have been identified and therefore no co-ordinates of the terminals of the closing lines have been scheduled in the Act. No publicity could therefore be given to these closing baselines. Although some of the provisions of this legislation are incomplete they indicate the intention to take advantage of the maritime zones permitted by these Conventions.

It can be accepted that the provisions of LOSC on delimitation and delineation of ConvCS represent State practice.(156) It would be unlikely therefore that there would be any opposition to ConvCS claims made by the RSA providing they are in accordance with the Articles of LOSC.

### II) PARTICULAR TREATIES

The RSA is fortunate that it is situated on the southernmost portion of the African continent, with a convex coastline. There are no States opposite it except for those close to its offshore islands. The only boundary delimitation agreements that would have been necessary in the past would, therefore, have been with the two adjoining State, Mozambique and Namibia over land and territorial water boundaries. Some of these boundaries are now contested by the newly independent Namibia.(157) They now claim that the middle of the Orange River and not the north bank, as at present, is the boundary and that the enclave of Walvis Bay and the Penguin Islands are Namibian.(158) As the seaward terminals of the land boundaries form the starting points from which maritime lateral boundaries are determined, any changes to this particular land boundary could have an affect on a maritime delimitation agreement or treaty between the RSA and Namibia.

If the sovereignty of Walvis Bay and the Penguin Islands remains South African, the delimitation of maritime zones generated by them will have to be the subject of agreement or arbitration. Also the outer limits of ConvCS claims between the Prince Edward Islands and the French Crozet Islands will have to subject to agreement or arbitration. These will be dealt with in this chapter under the heading 'Special Delimitation Areas'.

### III) SPECIAL DELIMITATION AREAS

The 200 nm EFZ of the RSA, as well as other features that are necessary for the delineation of a ConvCS have been shown on the attached Annexures 1-15. They are lines indicating the foot of the various continental slopes, the 2 500 m isobath and other isobaths that could indicate the foot of a continental slope.

It must be stressed that these lines and the positions subsequently generated by them have been determined with the limited bathymetric data available. In addition graphical methods have been used in the calculations as it is not possible at this stage, with the data available, to use geodetic methods.

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155 Territorial Waters Act No 87 of 1963 (as amended by Territorial Waters Act No 98 of 1977)

Section 2. Territorial Waters of the Republic.-The sea within a distance of twelve nautical miles from low-water-mark shall be territorial waters of the Republic

Section 3. Fishing Zone.-The sea outside the territorial waters of the Republic, but within a distance of two hundred nautical miles from low-water mark, shall constitute a fishing zone in respect of which the Republic shall in relation to fish and the catching of fish have and exercise the same rights and powers as in respect of its territorial waters as defined in section 2

Marine Traffic Act No 2 of 1981 (as amended by the Marine Traffic Amendment Act No 5 of 1983)

Section 1(f) "internal waters" means the waters on the landward side of the normal baseline from which the territorial waters are determined, and includes

a) any harbour;  
b) any fishing harbour; and  
c) Walvis Bay, Saldanha Bay, Hout Bay, False Bay, the Kraysna Lagoon, the Bay of Natal and Richards Bay;

156 Churchill and Lowe n1 p111

157 Constitution of Namibia 1990 Art 1(4).

158 G Erasmus & D Hammen 'Where is the Orange River Mouth? The Demarcation of the South African/Namibian Boundary' SAYIL Vol 13 (1987-8) p49-50

In a final determination of the co-ordinates of the boundaries it is essential that geodetic methods are used. Longitudinal sections and cross-sections of the continental shelf and other submarine features have been drawn to determine, as best as possible, the position of the foot of the slopes. (159) Using the criteria listed in Art 76 LOSC additional lines indicate the possible area of sea-bed that the RSA could claim.

#### IV) CONTINENTAL SHELF CLAIMS GENERATED BY CONTINENTAL RSA

In terms of Art 76 (1) LOSC the RSA may claim ConvCS to a minimum distance of 200 nm from the baselines from which the breadth of the territorial sea is measured. Providing lateral boundaries are agreed upon, the outer limits of this minimum ConvCS, off continental RSA are relatively easily determined.

In the area beyond 200 nm from the baselines, there are two limiting criteria, 350 nm from the baselines from which the breadth of the territorial sea is measured or 100 nm from the 2 500 m isobath. Such outer limit is also indicated on the annexures. Within these limits a coastal State may extend its ConvCS to a position 60 nm from the foot of the slope or to one where the sediment thickness at a point is 1% of the distance of that point from the foot of the slope. A thick line indicates the maximum claim that is allowed using the criterion of 60 nm from the foot of the slope. Few seismic surveys have been undertaken beyond 200 nm from the coast and as a result only an indication can be given as to the areas where sediment thickness could extend a ConvCS claim. Schedule A indicates the areas where it would be in the interest of the RSA to establish sediment thickness in order to claim the maximum ConvCS.

The Rockall Plateau is situated to the west of both the UK and Ireland. Between the Plateau and these States is the deep Rockall Trough. In normal marine-geological considerations the Plateau would not have been regarded as part of the continental margin of either State. Considerable seismic-reflection data were obtained and it was established that the crust under the Trough was of continental and not oceanic origin. The argument advanced by these States is that, as the crust of the margin, both Trough and the Plateau is continental, the Plateau should be regarded as an integral part of the continental margin of the two States (160) (Figure 44).

Rockall is an uninhabited rock, situated on the Rockall Plateau. LOSC provides for rocks to be classified as islands, (161) but the UK has not advanced any arguments to claim that Rockall should be classified as an island capable of generating EEZ and ConvCS. (162)

The argument advanced that the Rockall Plateau should be considered as an integral part of the continental margin of the UK and Ireland has not been contested by other States. This is important to the RSA because the Agulhas Plateau is separated from continental RSA by a similar trough, known as the Agulhas Passage (163) (Figure 45). Although evidence indicates that this crust will be oceanic, it is important that seismic reflection or refraction surveys should be undertaken in the area to confirm the nature of the crust under the trough. If it can be shown that this crust is continental then a similar argument could be made by the RSA to include the Agulhas Plateau in the continental margin of the RSA (Figure 46). This area is indicated on Annexures as area "A". The Agulhas Plateau has been included in the continental margin of the RSA and indicated on the Annexures.

The Walvis Bay enclave on the coast of Namibia is sovereign RSA territory but it is also claimed by Namibia. (164) The coastline on either side of the enclave is concave and as a result the lateral boundaries lines between the enclave and Namibia, that are generated by the 'equidistance' method, converge before reaching the 200 nm distance from the baselines. If the RSA succeeds in retaining sovereignty of the enclave and less converging lateral boundaries are agreed upon, it is unlikely that a claim for Walvis Bay, to ConvCS beyond 200 nm, could be justified (Figure 47).

#### V) CONVENTION CONTINENTAL SHELF CLAIMS FOR THE ISLANDS OF THE RSA

LOSC defines islands as:

"...a naturally formed area of land, surrounded by water, which is above water at high tide." (165)

In terms of Art 121(1), therefore, rocks are classified as islands and this is also considered to represent international customary law. Rocks that are unable to sustain either human habitation or economic life may not however generate EEZ's or ConvCS. (166) This Art 121(3) is not considered to be representative of customary law.

159 Annexures 20-26.

160 Emery and Uchupi n30 p239-240

161 LOSC Art 121(1)

162 *ibid* Art 121(3)

163 Dingle and Scrutton n19 p1471

164 Constitution of Namibia 1990 Art 1(4)

165 LOSC Art 121(1)

166 *ibid* Art 121(3)

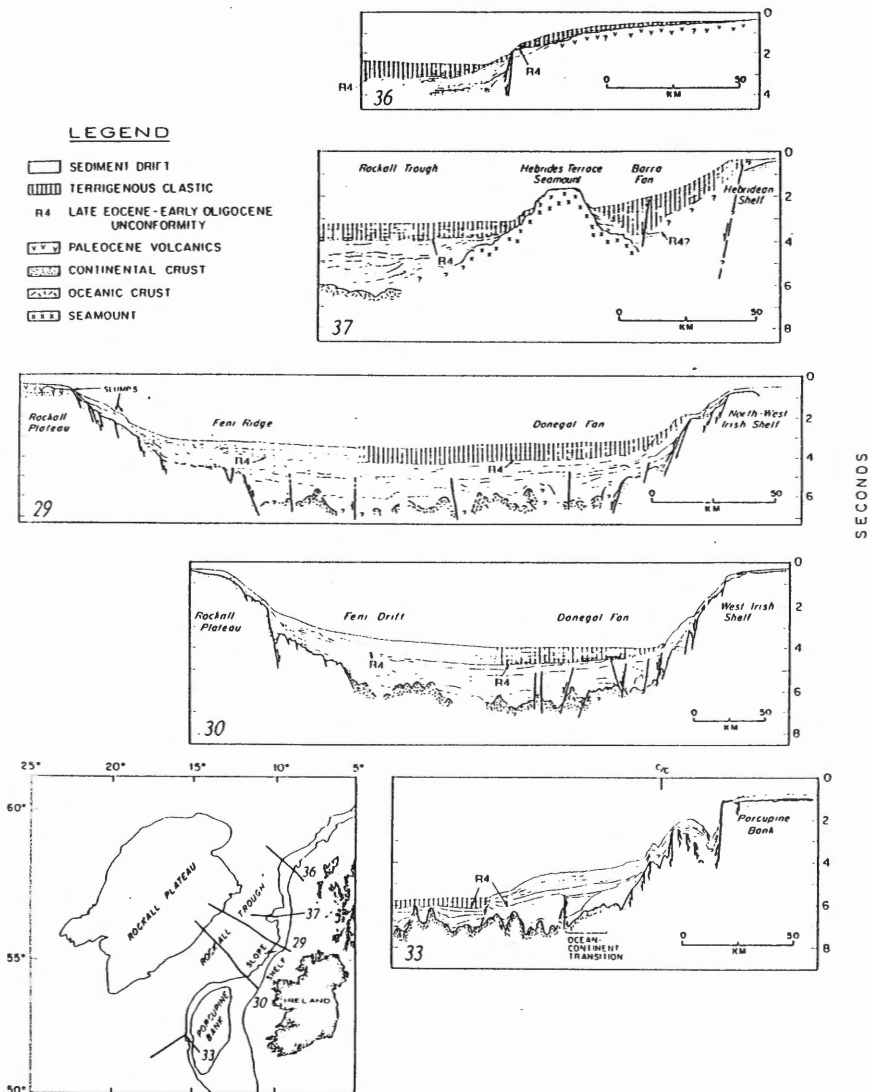


FIGURE 44  
 INTERPRETATION OF SEISMIC-REFLECTION PROFILES ACROSS ROCKALL TROUGH  
 SHOWING  
 NATURE OF TRANSITION FROM CONTINENTAL TO OCEANIC CRUST.  
 [Emery and Uchupi n30 p294]



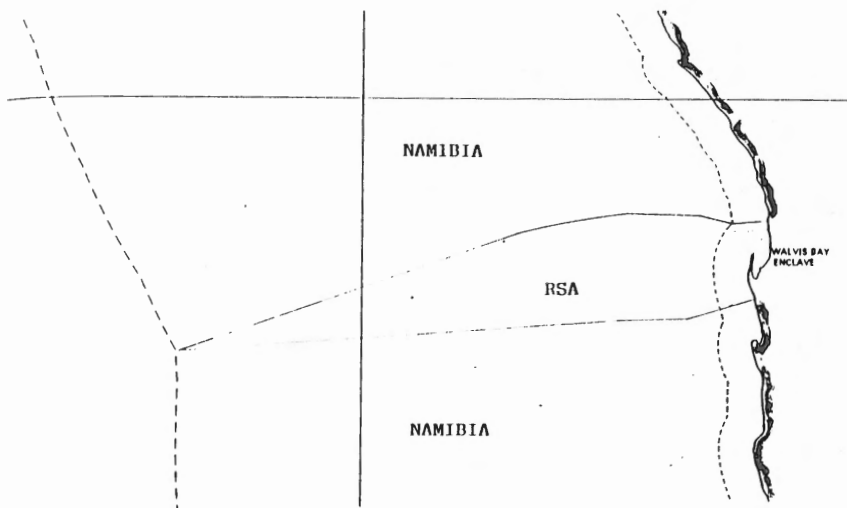


FIGURE 47  
LATERAL BOUNDARIES OF WALVIS BAY GENERATED BY THE 'EQUIDISTANT METHOD'.

A major difference exists in the comparison of the Convention and marine-geological concepts of where continental margins are found. In marine-geological terms an island is not a continent and, therefore, it does not have a continental margin. An island, in marine-geological terms, could be a part of a continental margin, part of a sea-mount, an exposed portion of an oceanic ridge, an exposed portion of an oceanic plateau or a coral atoll or ridge. In terms of Art 76(6) submarine ridges are excluded from ConvCS claims if they are not a part of a continental margin. If an island may have a continental margin and is situated on a submarine oceanic ridge, that ridge must be an integral part of that island's continental margin.

#### 1) Prince Edward Islands

The fact that an island may have a continental margin in terms of LOSC is important to the RSA because the Prince Edward Islands are situated on a submerged ridge. This ridge extends at a relatively shallow depth for some considerable distance from the islands. There appears to be no reason why the ridge should not be considered as a 'natural prolongation' of the continental margin of the islands.

The Prince Edward islands are also situated on the Crozet Plateau. The distance between them and the Crozet Islands is approximately 510 nm. This means that while there would be no delimitation problems with regard to other maritime zones a delimitation problem arises for the ConvCS of the two groups of islands. This has been graphically calculated using the 'equidistance' method.<sup>(167)</sup>

The various options for ConvCS generated from the mainland, shown coded on the Annexures 1-11 and 16-17, have also been determined for the Prince Edward Islands and shown on Annexures 8-15 and 18-19.

#### 2) The Penguin Islands

It is extremely difficult to delineate ConvCs for the Penguin Islands that are situated within possible Namibian maritime zones. The status and sovereignty of islands are now being contested by Namibia.<sup>(168)</sup> Two of the twelve islands are situated in Luderitz Bay in what could possibly be Namibian internal waters. The remaining islands are all very close to the Namibian coast. They were annexed by the British Government on 27 February 1867 by Royal Letter of Patent as being a source of bird guano.<sup>(169)</sup> They have been used for this purpose ever since.<sup>(170)</sup> By using the 'equidistant method' of delimitation, some of the islands, situated in the open sea, are able to generate relatively large maritime zones. Others generate very small areas. This is due to the coastline being convex or concave in different parts of Namibia.

<sup>167</sup> Annexures 11 12 14 15 18 and 19

<sup>168</sup> Constitution of Namibia (1990); *Die Burger* (Cape Town) (10 January 1990)

<sup>169</sup> British Foreign State Papers Vol 87 p544

<sup>170</sup> A J Hoffman *Die Regime van Eilande in die Internasionale Reg met Spesiale Verwysing na die Suid-Afrikaanse Eilande aan die Kust van Suidwes-Afrika/Namibia* (1987) p141-157

As the islands are at varying distances from the coast, a distance of 200 nm from the islands would obviously extend farther seawards than the 200 nm from the mainland. This means that, regardless of delimitation within 200 nm of the Namibian coast, there would be a small area, beyond 200 nm from the coast, that could be claimed only by an island (Figure 48). This is not practical and in addition claims to continental shelf beyond these 200 nm zones would be extremely difficult to delimit. It is obvious that there is no straight-forward solution to potential ConvCS claims for this group of islands. An agreement between the RSA and Namibia and arbitration, which need not necessarily be based on the Articles of LOSC, are the only possible solution. No ConvCS claims for these islands have, therefore, been indicated on the Annexures.

As required by Art 84 LOSC, a schedule of provisional co-ordinates for the outer limit of the maximum possible ConvCS, including the Agulhas Plateau, appear as Schedules 1-2. These co-ordinates have been calculated graphically at a maximum distance of 60nm apart. In the event that the Agulhas Plateau may not be included a list of co-ordinates for the abbreviated ConvCS are shown on the same Schedules.

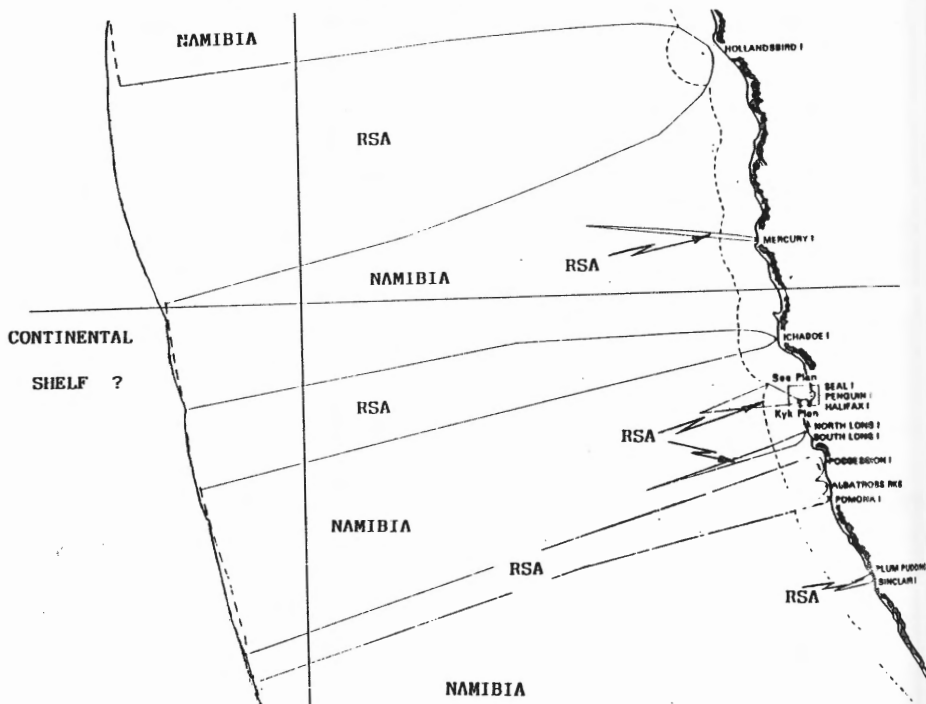


FIGURE 48  
POSSIBLE CONTINENTAL SHELF CLAIMS OF THE PENGUIN ISLANDS

## VI) CONCLUSIONS

### 1) Geological Considerations

#### a) West Coast

The west coast of the RSA has a relatively uncomplicated continental margin. Emery *et al* (171) have indicated that the continental rise is reasonably substantial on the west coast and that it extends to approximately 350 nm from the coast (Figure 49). It is in the interests of the RSA to determine sediment thickness at the maximum limit allowed by the Articles of LOSC. Where a claim, determined 60 nm from the foot of the slope, does not extend to the maximum allowed, sediment thickness that complies with Art 76(4)(i) could extend the claim to that maximum.

171 KO Emery *et al* 'Continental Margin off Western Africa: Cape St Francis (South Africa) to Walvis Ridge (South West Africa)' *The American Association of Petroleum Geologists Bulletin* Vol 59 No 1 (January 1975) p3-5

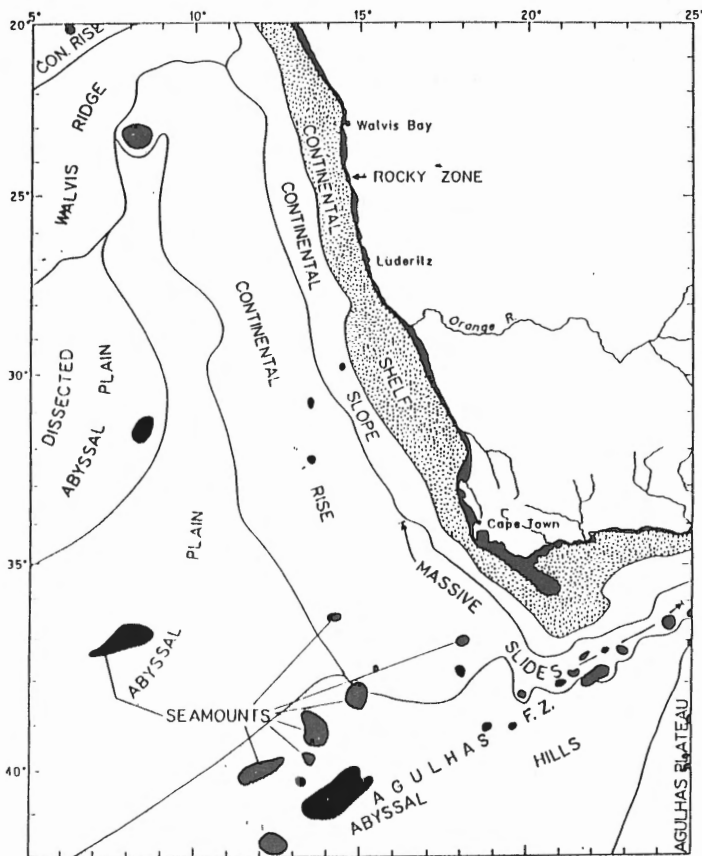


FIGURE 49  
 POSSIBLE CONTINENTAL RISE OF THE WEST COAST OF SOUTH AFRICA.  
 [Emery et al n171 p5]

**b) South Coast**

The sheared margin of the south-east coast effectively curtails the establishment of a broad continental margin on this coast. It is important to establish, conclusively, the origin of the crust beneath the Agulhas Passage which is between the Agulhas Plateau and the RSA mainland. If it is continental crust and the Agulhas Plateau is included in a ConvCS claim then the thickness of the sediment on the eastern, southern and western sides of the Plateau could extend the ConvCS still further (Figure 49).

**c) East Coast**

Between the Agulhas Plateau and the Natal Valley the continental margin is very narrow and it is unlikely that sediment of the required thickness will be located beyond 200 nm from the baselines in this area.

The Mozambique Ridge is however an integral part of the continental margin of the RSA in that area of the east coast. The Mozambique Basin is one of the main sediment basins on the east coast and thick deposits of sediment in this basin could extend the ConvCS very considerably (Figure 50).

**d) Prince Edward Islands**

It is unlikely that any significant sediment will be encountered on either side of the South West Indian Ridge on which the Prince Edward Islands are situated and it is anticipated that little extension of the ConvCS could be achieved by further attempts to determine sediment thickness at the foot of the Ridge.

The Crozet Plateau extends to the east of the Prince Edward Islands and as the South West Indian Ridge is situated to the north of the Plateau the only area where sediment thickness could be used to extend ConvCS claims is to the south of the Plateau. For similar reasons to those explained above it is unlikely that thick sedimentation would have taken place in this area. Although the priority to establish this by additional research is low the sediment thickness required to extend the claim to the maximum allowed appears in Schedule A.

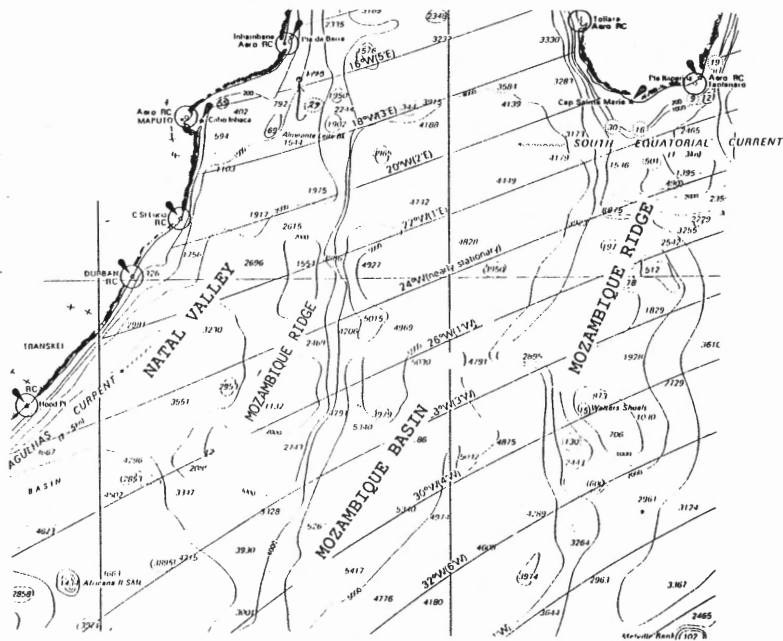


FIGURE 50  
MOZAMBIQUE RIDGE AND BASIN.  
[Chart SAN 3]

## 2) RSA Delimitation Problems

The international law cases, discussed in Chapter 4, that could have a bearing on the delimitation of the maritime zones are now mentioned briefly.

### a) North Sea Continental Shelf Case (172)

This case has some bearing on the ConvCs claims of the RSA as it was essentially to correct inequitable delimitations as a result of a concave coast. The Court held that coastline concavity should not preclude a coastal State from ConvCS to which it would be entitled as a result of the 'natural prolongation' of its land territory. Should the RSA retain sovereignty over Walvis Bay then these factors could have a bearing as the lateral boundaries of Walvis Bay and Namibia, calculated by the 'equidistance' method, converge within 200 nm of the coast.

### b) Tunisia/Libya (173)

In this case 'natural prolongation' was discounted as a factor that in itself could determine the rights of one State as opposed to those of another State. This is only of consideration in a RSA context when considering a delimitation between the Prince Edward Islands and the Crozet Islands. It is difficult to accept that the Crozet Islands could have any claim to portions of the South West Indian Ridge as there is no connection between the Crozet Islands and the Ridge. 'Natural prolongation' on this Ridge is exclusively restricted to the Prince Edward Islands. The Crozet Plateau is a 'natural prolongation' of both groups of islands in opposite directions.

### c) Anglo/French Arbitration Case (174)

This case is often quoted as relevant to the zones that could possibly be generated by the Penguin Islands. This is not a similar case as in addition to the delimitation of the maritime zones around the Channel Islands, the entire boundary between the UK and France in the English Channel was arbitrated. The States are opposite each other. The Channel Islands, which are close to the French coast, would have had a disproportionate effect on the delimitation had they been given full effect.

172ICJ Rep 3 (1969)

173ICJ Rep 18 (1982)

In the case of the Penguin Islands they are entitled to generate maritime zones but the result of a delimitation of the lateral boundaries by the 'equidistance' method could hardly be considered as practical. The logical solution to a delimitation of the zones of these islands would be for an agreement to be negotiated between the States, disregarding LOSC.

**d) Libya/Malta Case (175)**

The main factors considered favourably by the Court were

- i) 'natural prolongation',
- ii) the general configuration of the coasts,
- iii) the general geographical position,
- iv) the distance between the States, and
- v) disproportion in a delimitation by the 'equidistance' method when compared with the lengths of the coasts of the States.

**e) Gulf of Maine Case (176)**

The Court held in this case that 'natural prolongation was clearly established in the *Tunisia/Libya Case*. In addition the Court stressed the principle of equity as opposed to equidistance. The lengths of the coasts of the States were calculated as a ratio and applied to the position line as a correcting factor, and where disproportionate effect was caused by an island, 'half-effect' was attributed to the island.

The findings of the Court are pertinent to delimitations of both the groups of RSA islands. In the case of the Prince Edward Islands the acceptance by the Court of 'natural prolongation' adds confirmation to the decision to include the South West Indian Ridge. In the case of the Penguin Islands it adds to the argument that 'equity' should prevail over 'equidistance'.

**3) Concepts**

The majority of treaties and agreements examined in Chapter 5 are case specific but a number of concepts emerge that could be germane to the situation in the RSA.

**a) 1974 Japan-Korea Treaty (177)**

In this Agreement a single concessionaire was appointed to exploit the resources of the joint ConvCS on behalf of both States. It is unlikely that this will occur in a South African situation but consideration could be given to an agreement whereby the maritime resources of Namibia and the Penguin Islands are exploited by one State with the other State receiving pro-rata compensation.

**b) 1978 Australia-Papua New Guinea (178)**

This Agreement made provision for the various zones common to the two States to be considered and delimited separately. Factors of historical, cultural and economic importance were considered and a complex delimitation with many co-ordinated positions listed. This method could prove helpful in the negotiating of an agreement with Namibia over the maritime zones of both Walvis Bay and the Penguin Islands.

**c) 1988 United Kingdom-Ireland (Rockall)(179)**

The recent treaty entered into between the UK and Ireland to delimit lateral ConvCS boundaries has important considerations for the RSA. Although the dispute between these States and Iceland and Denmark has not been resolved, the method by which the UK and Ireland extended their ConvCS claim over the Rockall Trough is important to the RSA.

A similar situation could exist in the RSA's treatment of its ConvCS claim over the Agulhas Passage. The fact that continental crust has been located under the Rockall Trough has been cited as the justification for claiming that the Rockall Plateau is an integral part of continental margin of the two States. Other States have expressed reservations over this principle but no official objection has been made. It is in the interests of the RSA to consider a similar investigation.

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174 *ILM* Vol 16 (1977) p397 and *ILM* Vol 20 (1981) p797

175 ICJ Gen List 68 (3 June 1985)

176 ICJ Rep 246 (1984)

177 ND Vol 4 n129 p117

178 ND Vol 8 n139 p125

179 *Journal of Energy and Natural Resources Law* Vol 3 (1985) p266; *ibid* Vol 7 (1989) p173-4

It is not anticipated that The ConvCS claims of the RSA mainland will prove contentious. The islands either create maritime zones that could be disputed, as in the case of the Penguin Islands, or generate an unusually large area in proportion to the size of the islands, as in the case of the Prince Edward Islands. It is imperative that programmes of research and survey are undertaken to verify existing data that must be used in a ConvCS claim or to obtain data that is necessary for such a claim.

The resources of the submarine areas are generally not well known and by tardiness or lack of interest vast amounts of natural submarine resources could be overlooked. Although the Japanese margins are 'active' margins it is interesting to note the comments of the Leader of their Continental Shelf Project. (180)

"In active margins like the Pacific Rim, including Japan, the outer limits of the continental shelf should be determined based on the detailed bathymetric, geological and geophysical surveys, controlled by very precise positioning.

It is very difficult to have a clear grasp of complicated topographic features of the active margins solely on the basis of ordinary single-beam echo sounder, so that it is advisable to use a narrow multi-beam system to enable efficient high resolution of bathymetry. Since the 2 500 m contour lines have an important meaning it is also advisable to do precise depth sounding at the same time, even if a side scan sonar would be used to cover topography of the survey. Single and multi-channel seismic, magnetic and gravity measurements and dredging are effective as geophysical and geological methods. Generally the single-channel seismic profiler's records can reveal the structure of sedimentary layers. Since multi-channel seismic profiling must be done on a survey vessel running at less than 5 knots and analysis of the collected data costs a great deal, it is possible to use this method in a vast sea area. For this reason it should be permitted to use the depth of the acoustic basement of the thickness of sedimentary rocks as stipulated in the Convention on the Law of the Sea, Article 76, paragraph 4. It will also be necessary to prepare information on the continental shelf with supporting scientific and technological data in which such previous scientific results as DSDP(181) results are incorporated."

The co-ordinates of positions listed in the Schedules serve as an indication of the potential of RSA ConvCS claims on the basis of available data. It is essential that a co-ordinated project to determine precisely all the aspects required to maximize the ConvCS claims of the RSA be established.

The project team should:

1) determine, by geodetic means, the positions of the lines, 200 nm and 350 nm from the baselines from which the territorial sea is measured.

2) undertake bathymetric surveys along the lines marked 'foot of the slope' on Annexures 1-19. Sufficient soundings should be taken to confirm that that is the foot of the slope in that area. It is important that the precise position of this feature be established to enable the initial and simplest criterion for a ConvCS claim to be met.

3) not consider sediment in the areas indicated on Schedule C as the claim based on 60 nm from the foot of the slope has reached the maximum allowed in terms of LOSC.

4) determine the type of crust that exists beneath the Agulhas Passage marked 'A' on Annexure 4. Proof of the existence of continental crust, as opposed to oceanic crust, in the area would allow the RSA's ConvCS to extend onto the Agulhas Plateau. This would be in line with UK and Irish claims to the Rockall Plateau.

5) determine sediment thickness at all positions listed in Schedule A except those that are repeated in Schedule C. Should the thickness be equal to the that listed for a position in Schedule A then it would be possible to extend the ConvCs claim to the maximum allowed. If the thickness is less than required it would be necessary to determine sediment thickness closer to the foot of the slope in that area until the thickness equals 1% of the distance from the position to the foot of the slope.

In conclusion the lateral boundaries between the RSA and its neighbours, Mozambique and Namibia, including Walvis Bay and the Penguin Islands, will have to be resolved. Delimitation will have to take place between the RSA and France over the ConvCS claims of the Prince Edward and Crozet Islands and between the RSA and the Malagasy Republic should it be possible to extend the RSA's ConvCS claims generated from the Prince Edward Islands that far. While it is possible, by State practice, to take steps to claim these zones, before final notice can be given to the Secretary of the United Nations of the extent of the RSA's maritime zone claims (182) finality will have to be obtained on any delimitations involving the RSA. Annexure 27 indicates the areas that would require attention should a RSA Continental Shelf project be undertaken.

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180 Sato and Oshima n50 p62,

181 Ibid p55 (Deep Sea Drilling Project)

182 LOSC Arts 16(2) 75(2) and 84(2)

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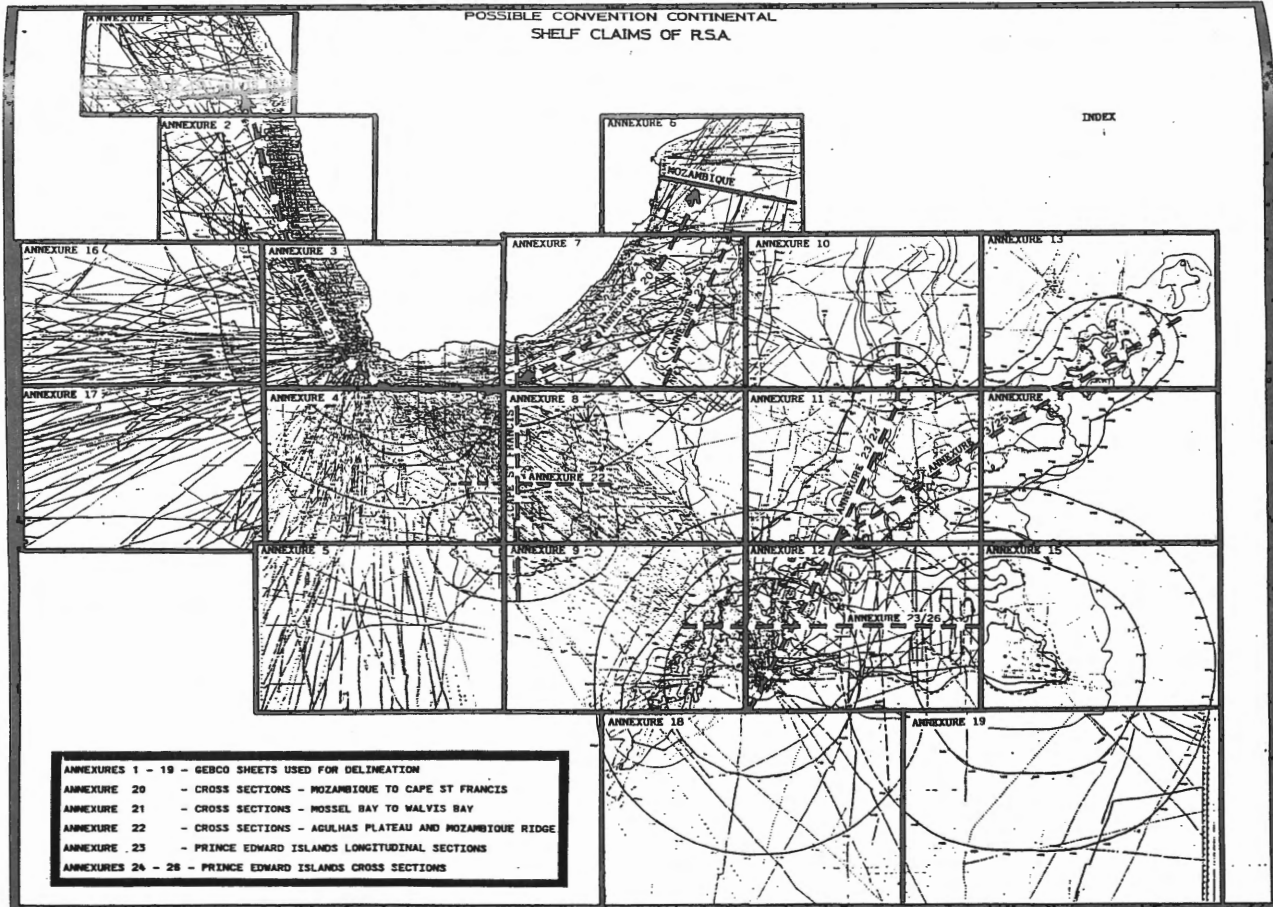
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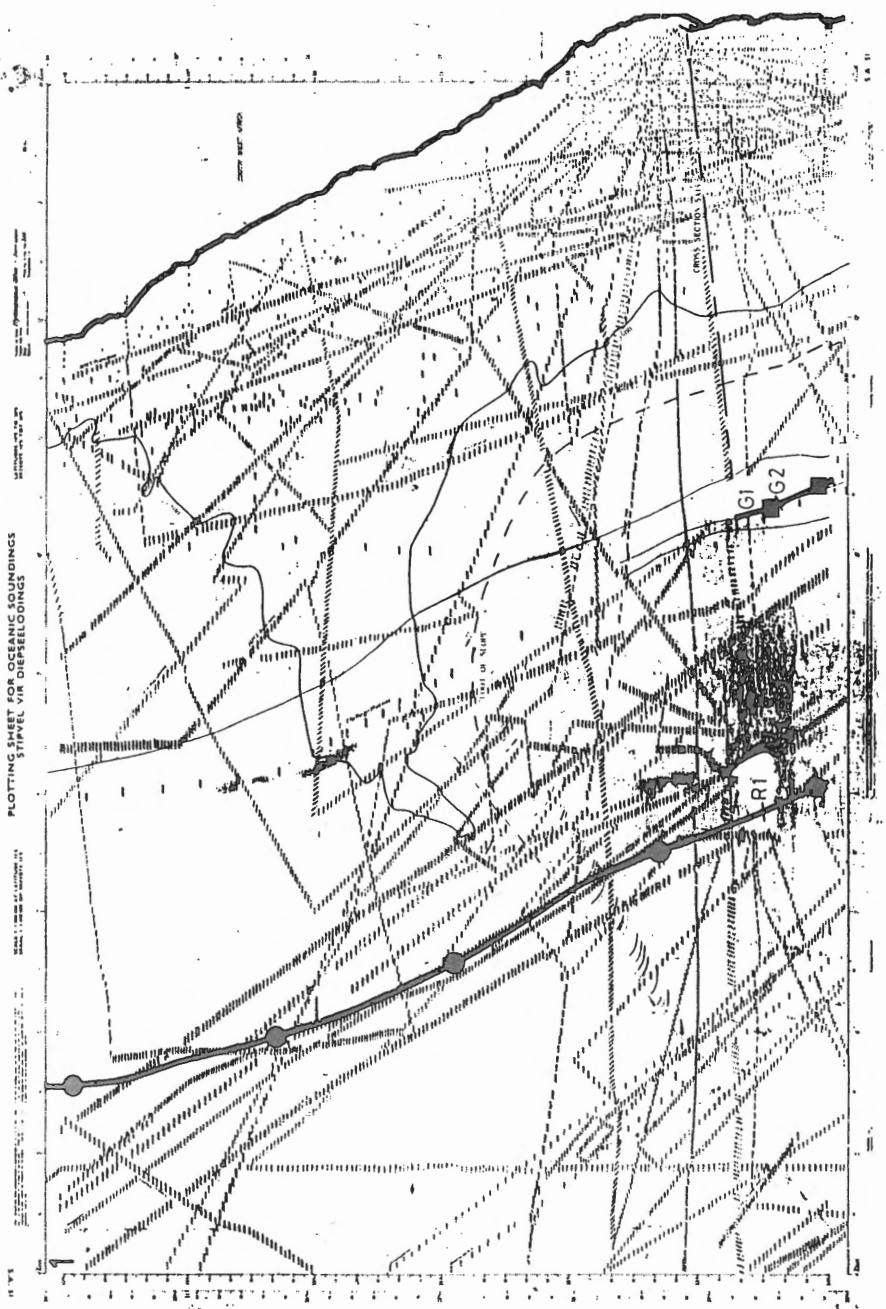
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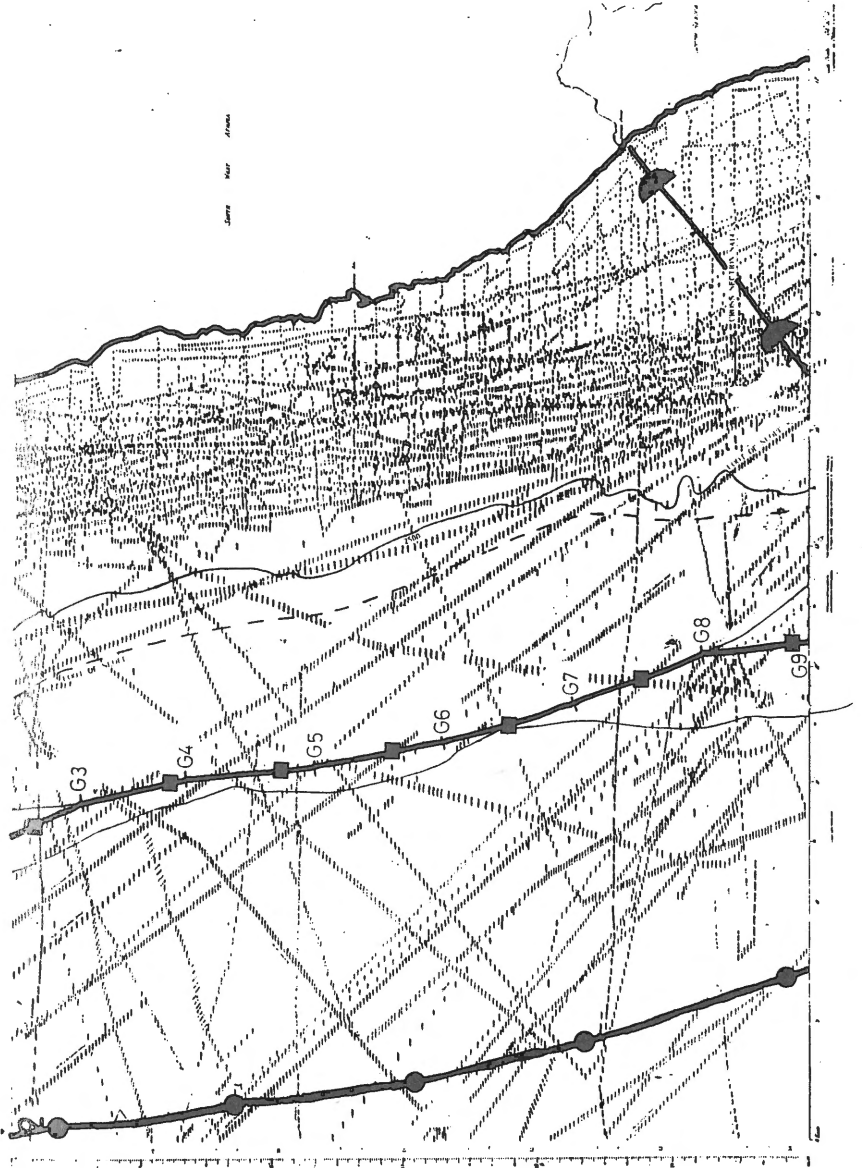
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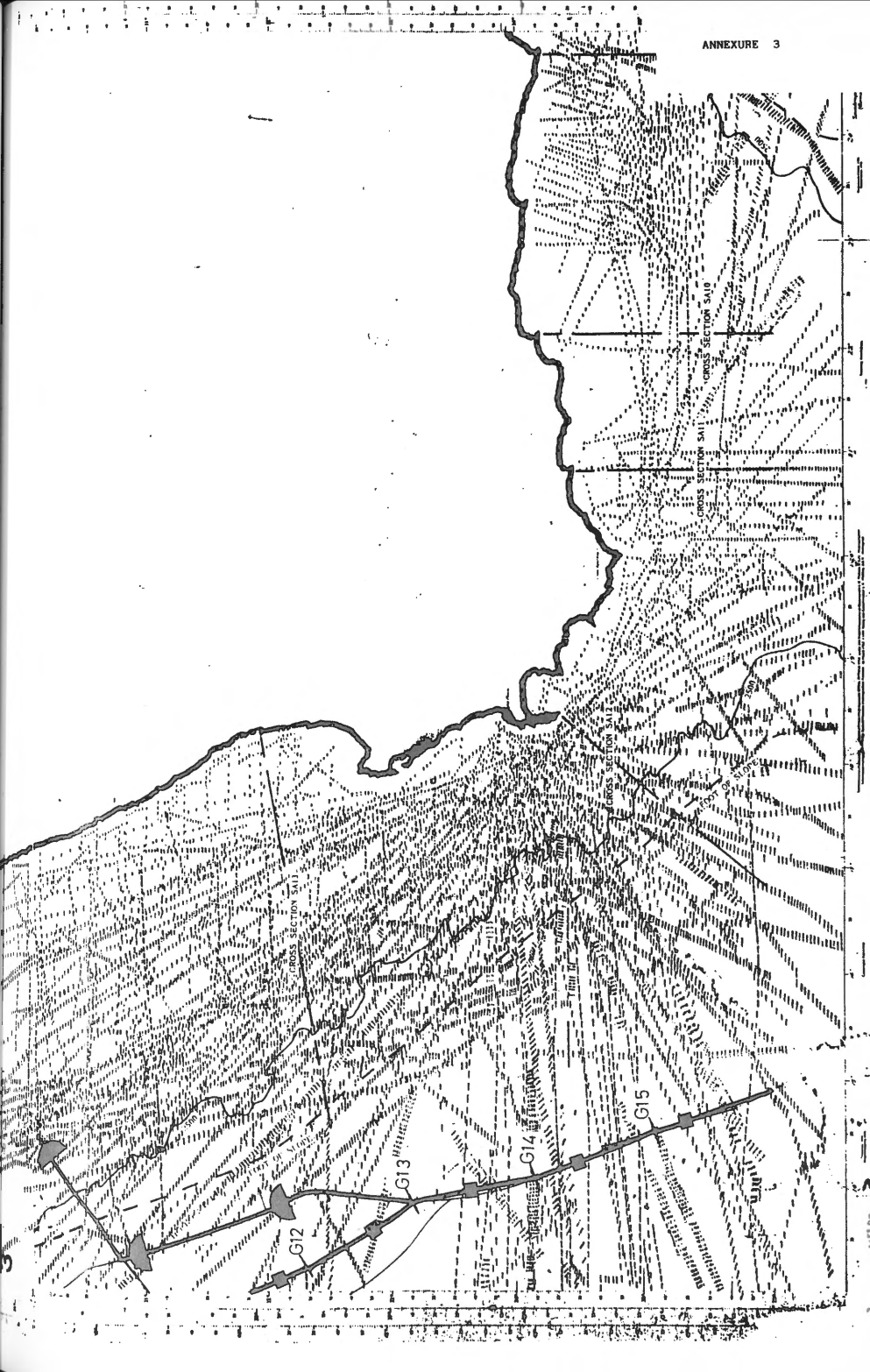
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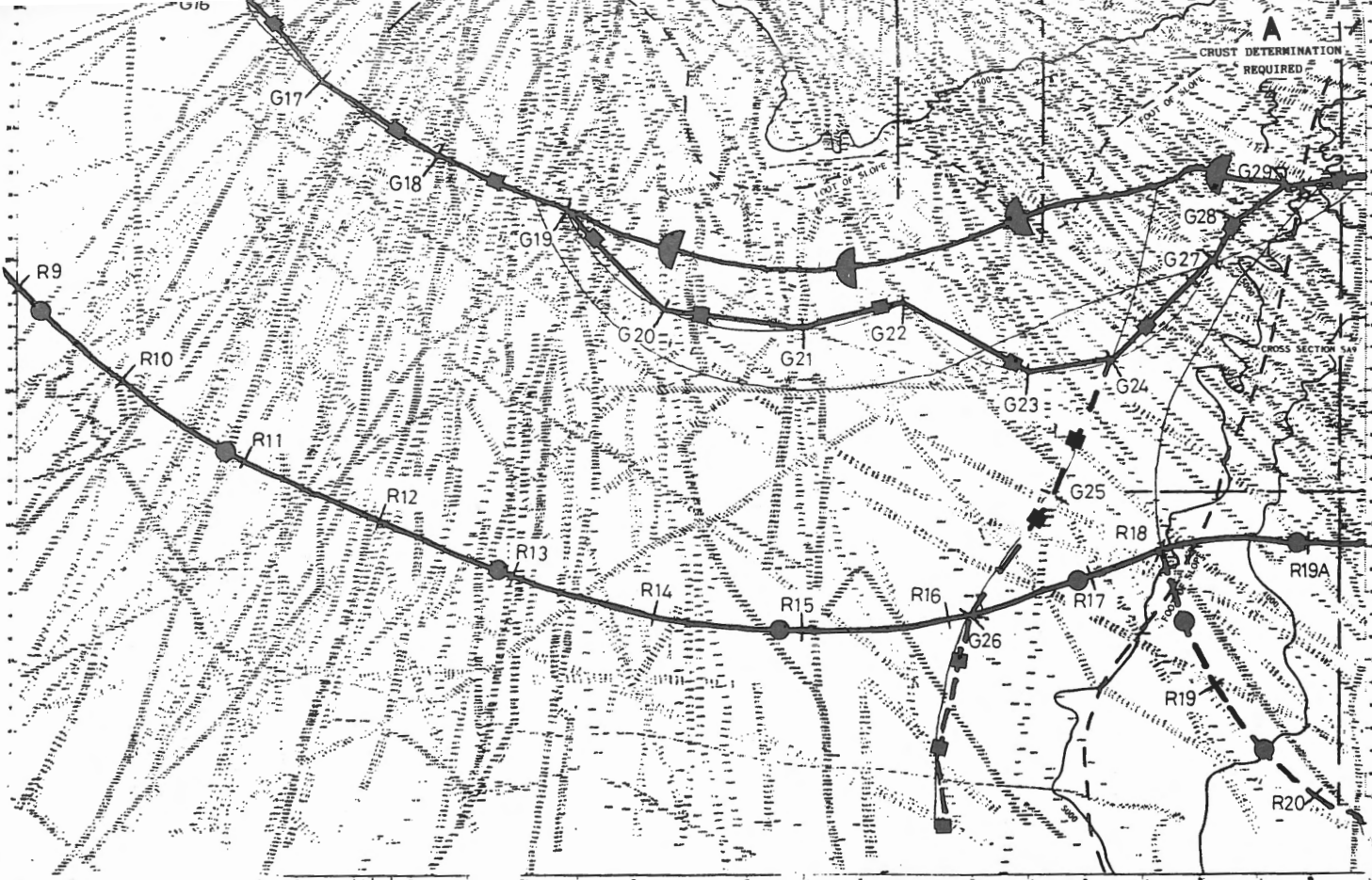




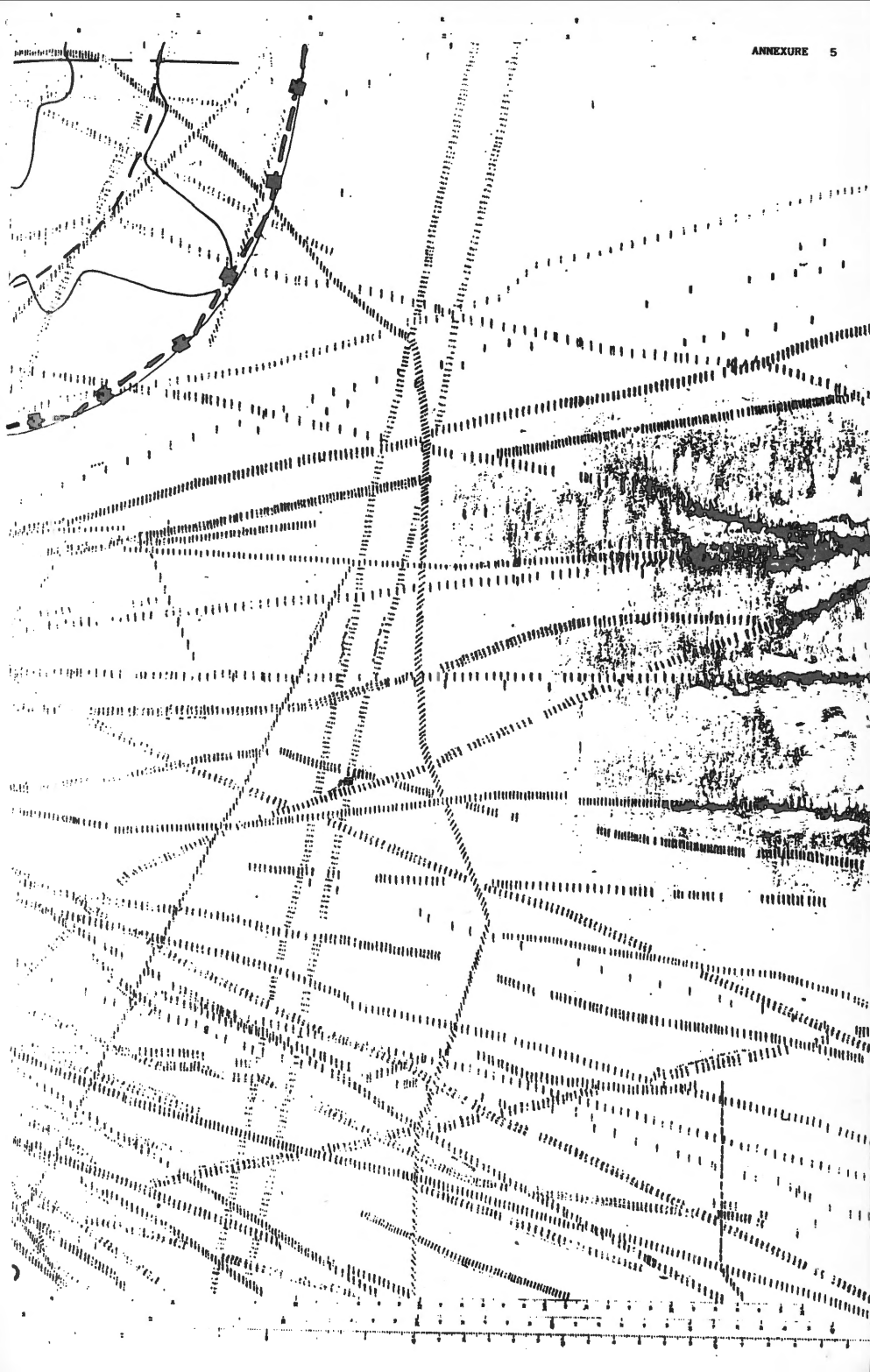




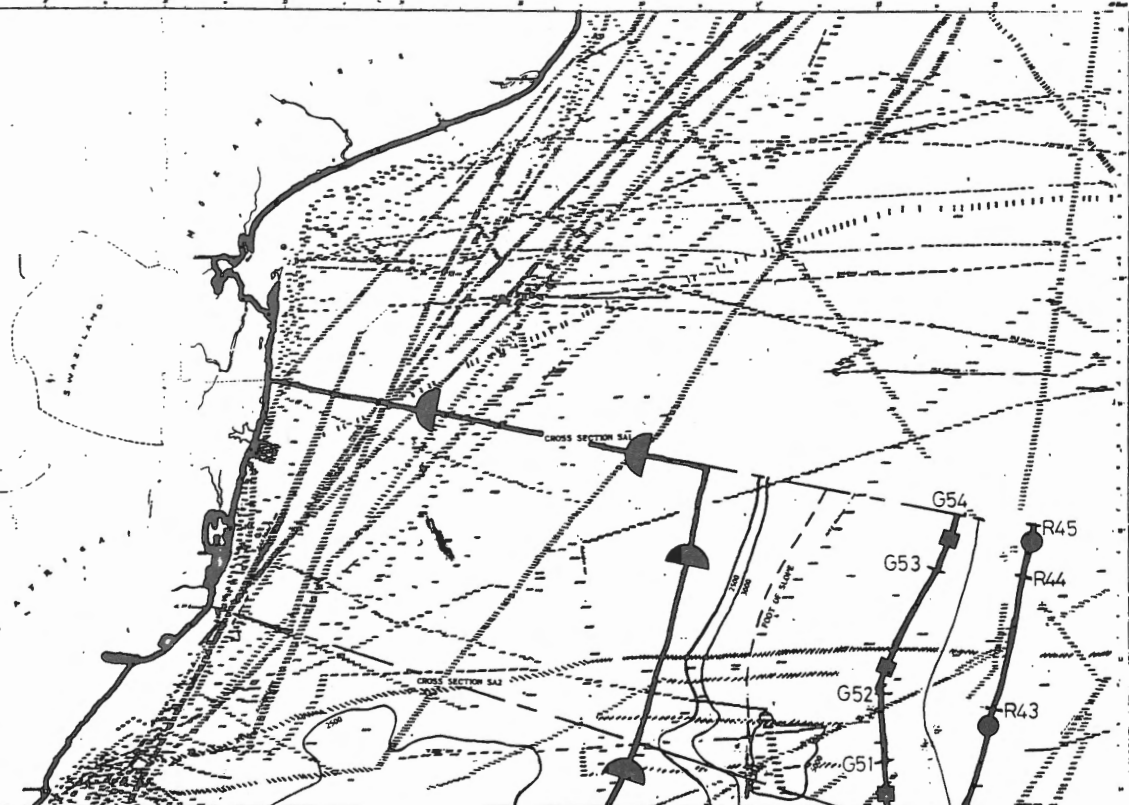
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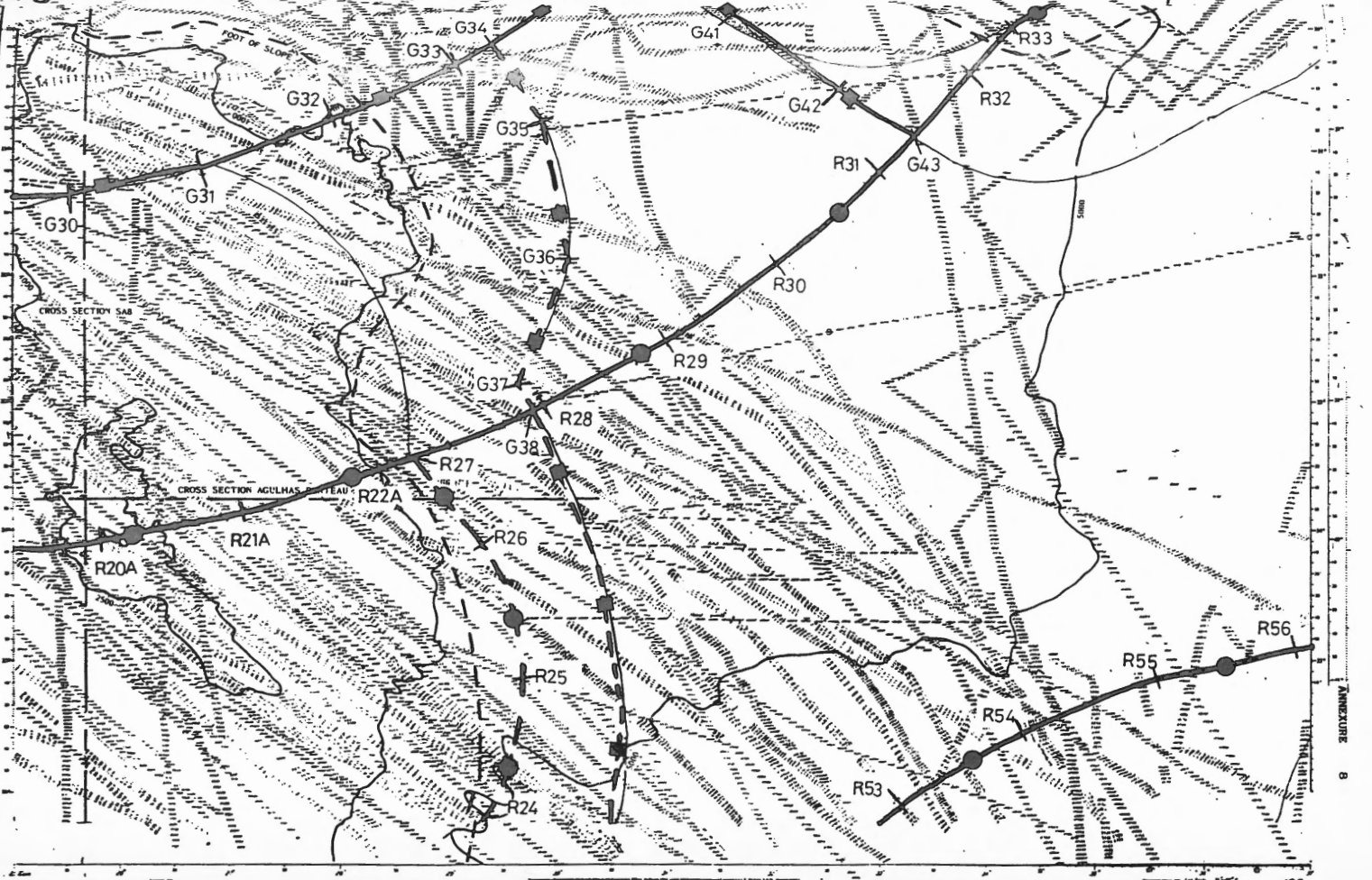


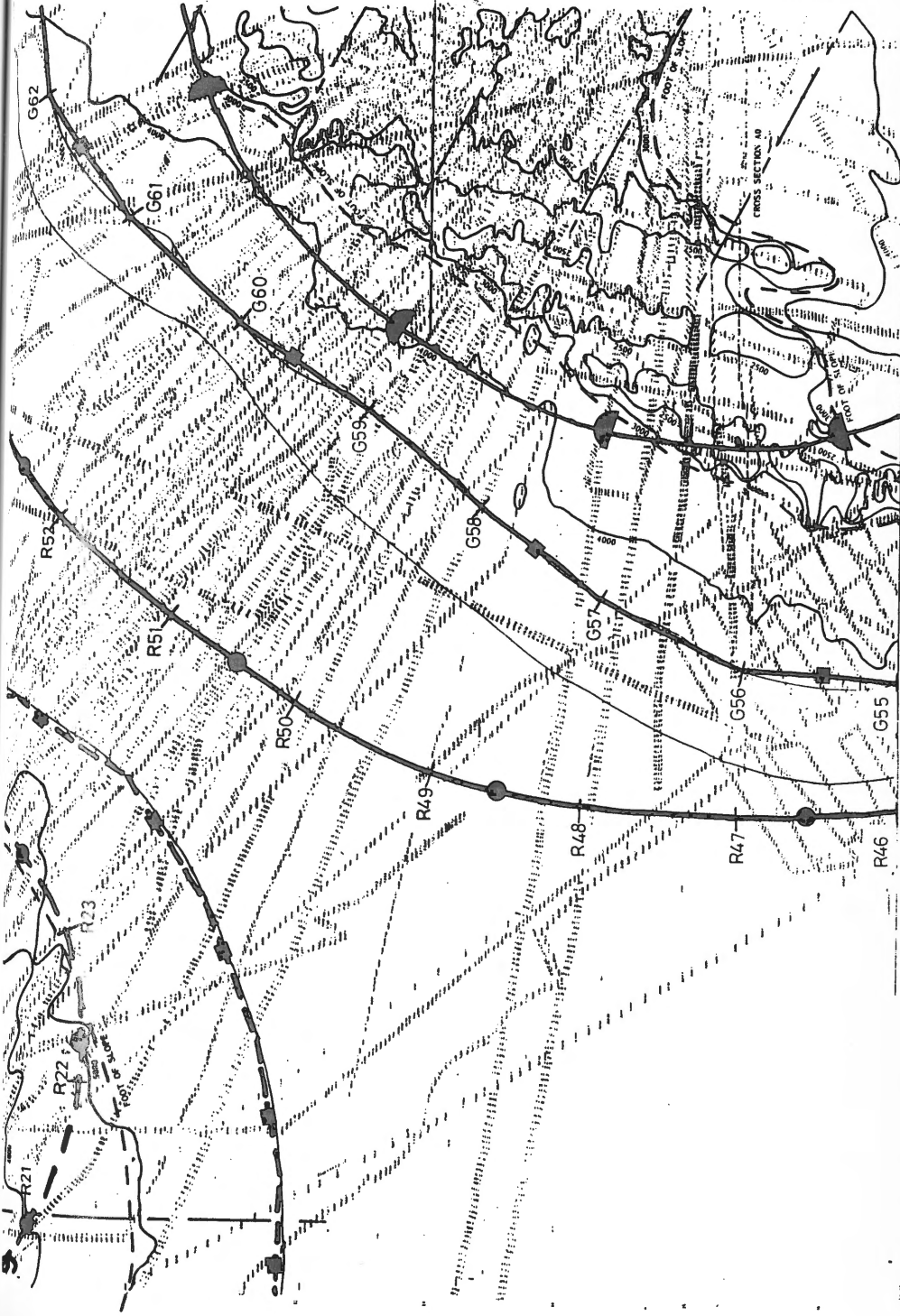
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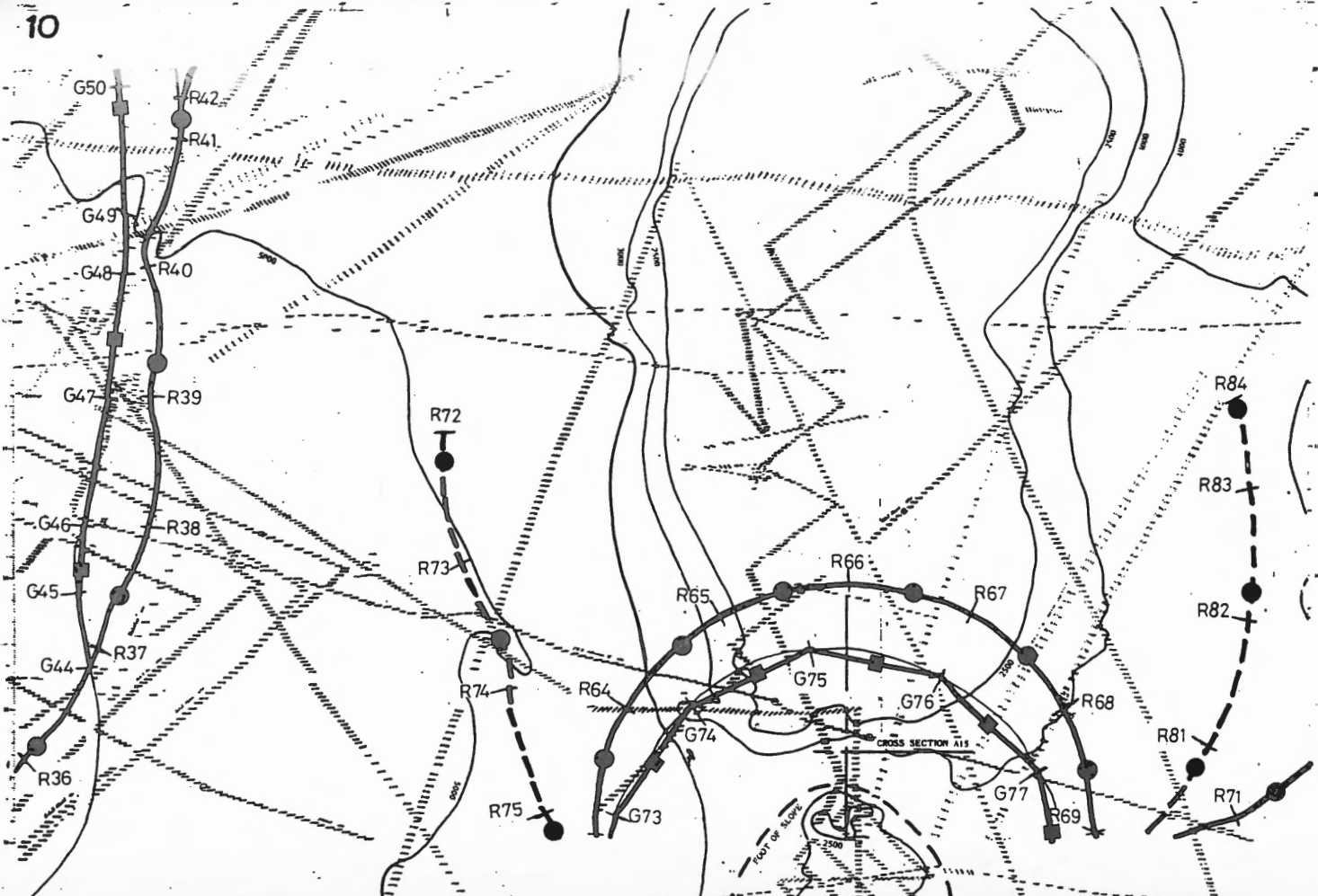


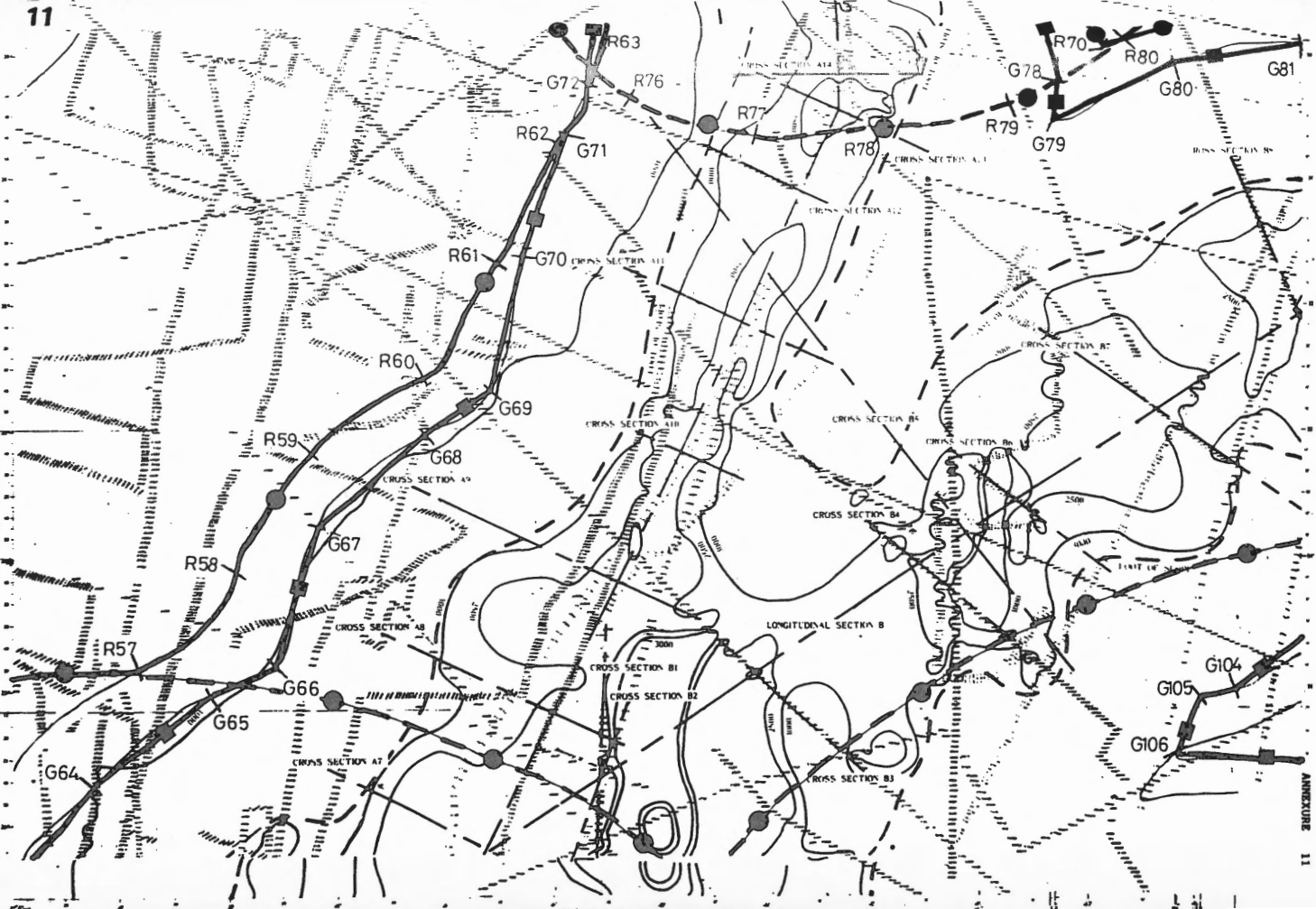
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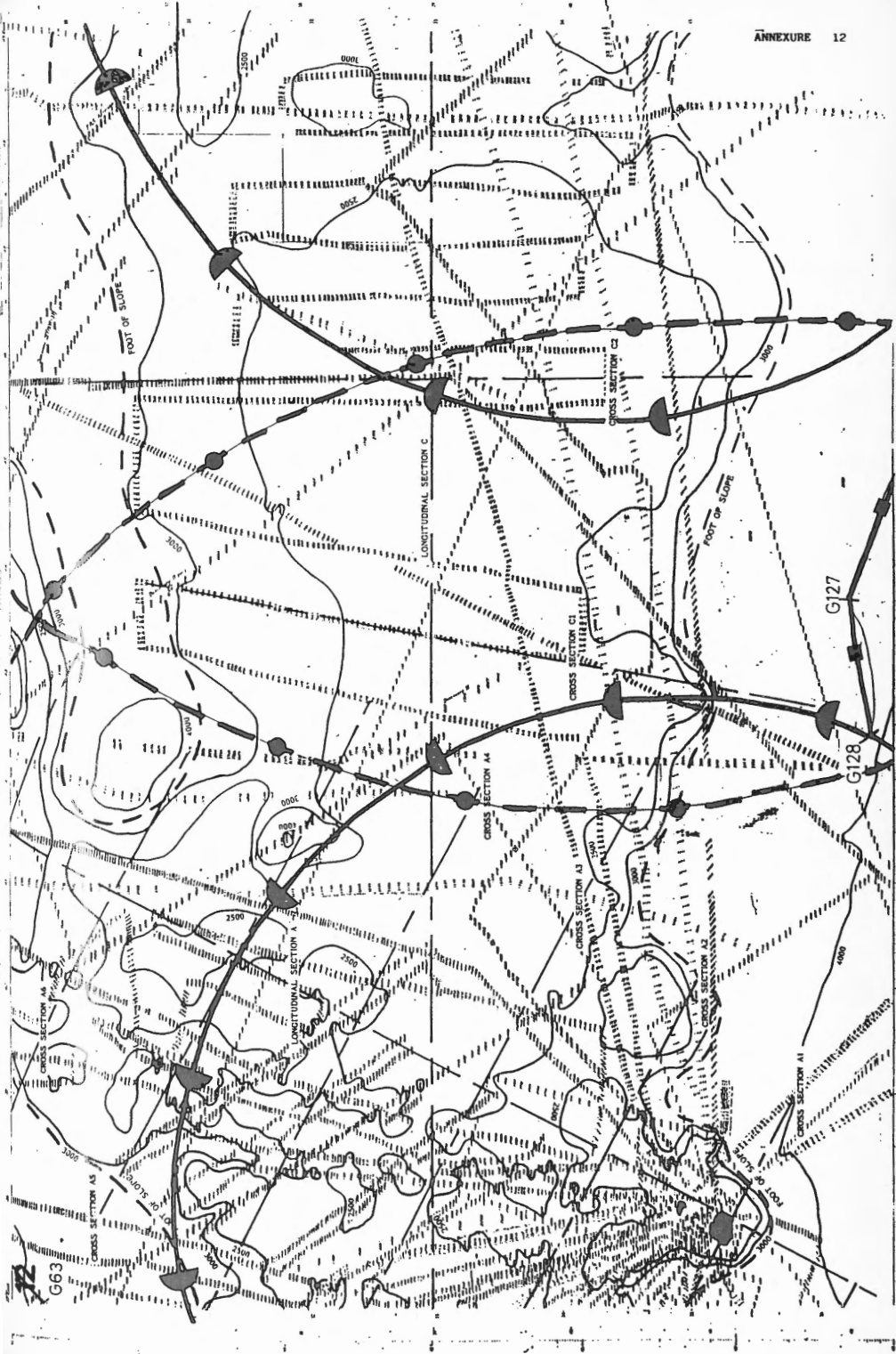










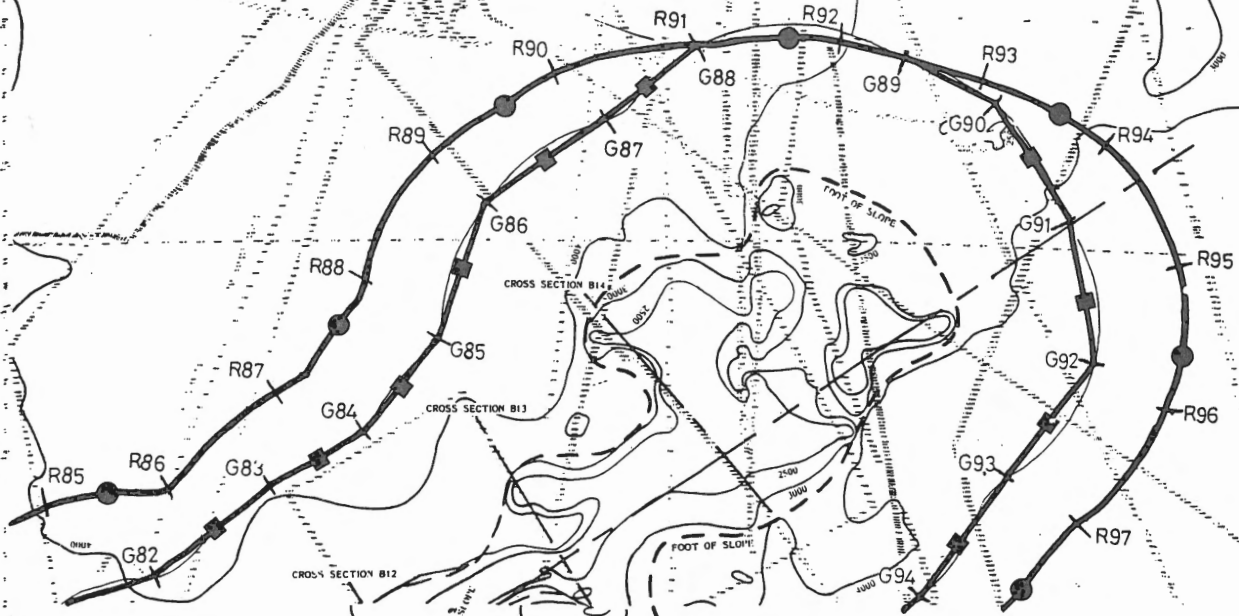


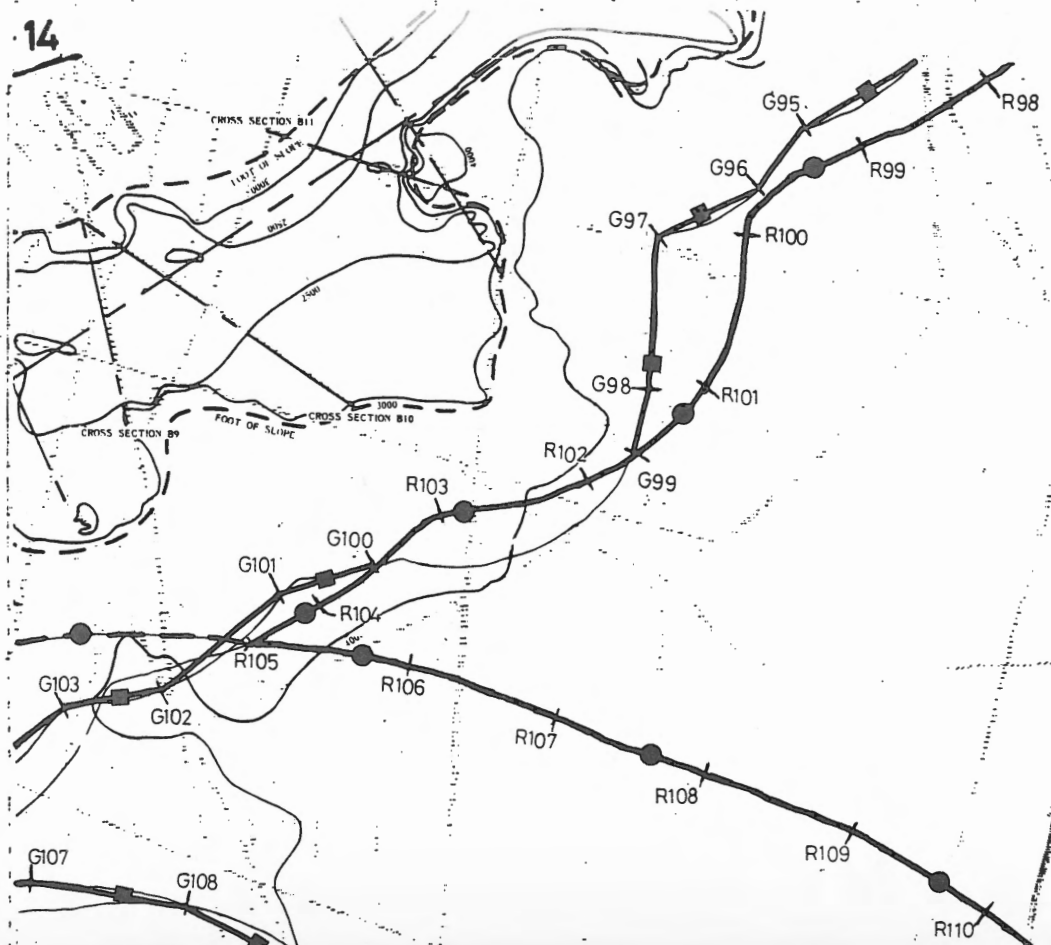
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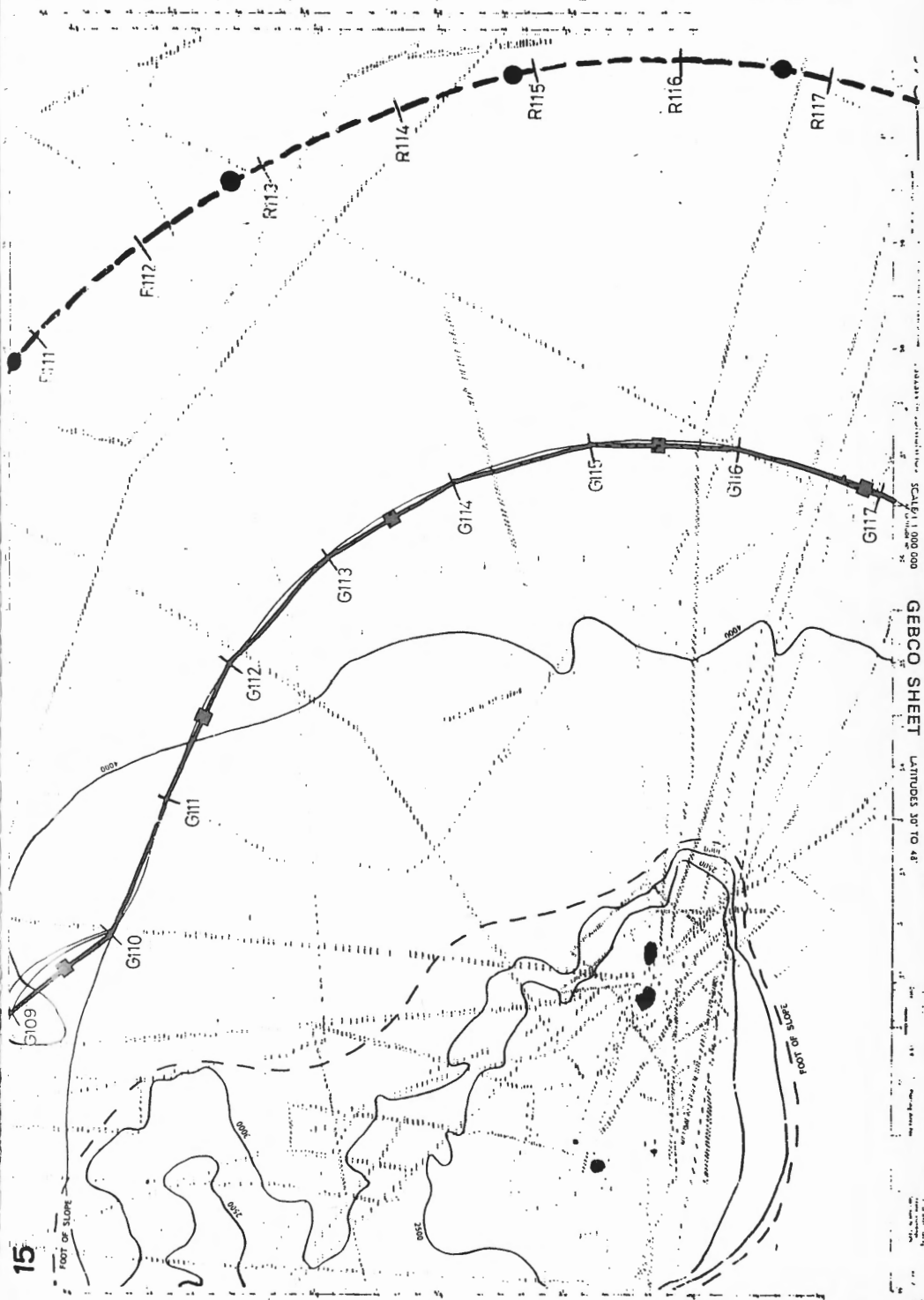
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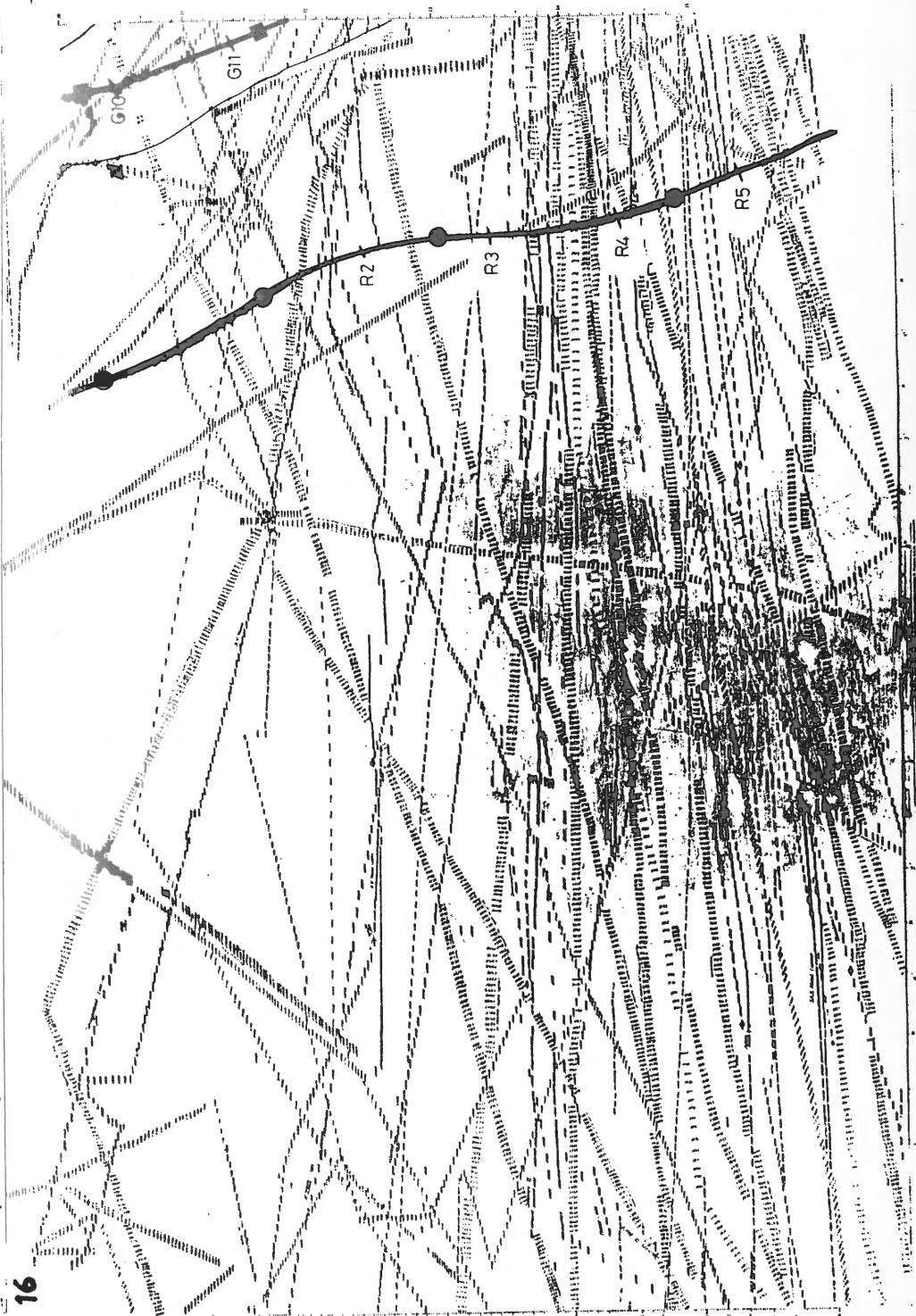
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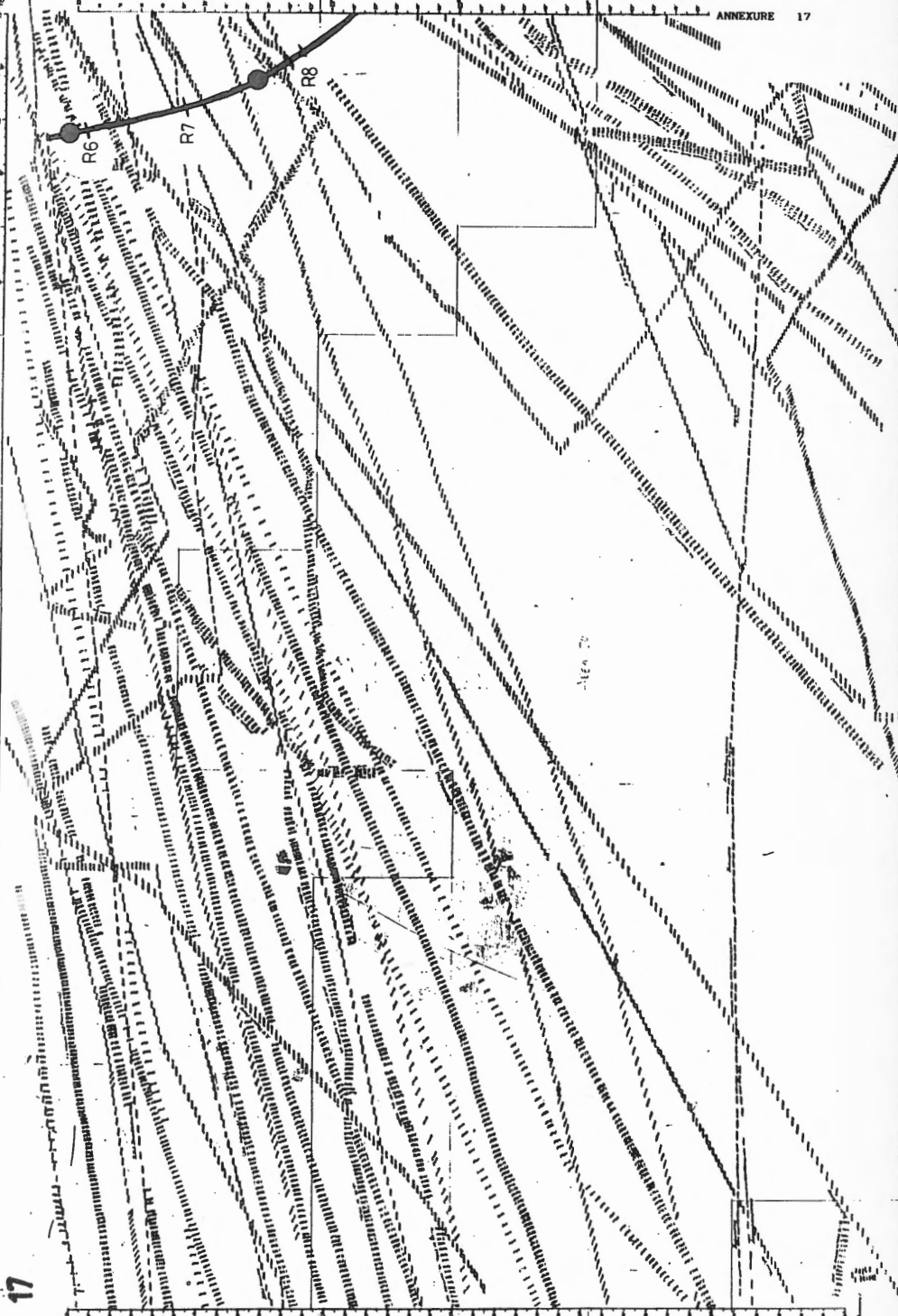


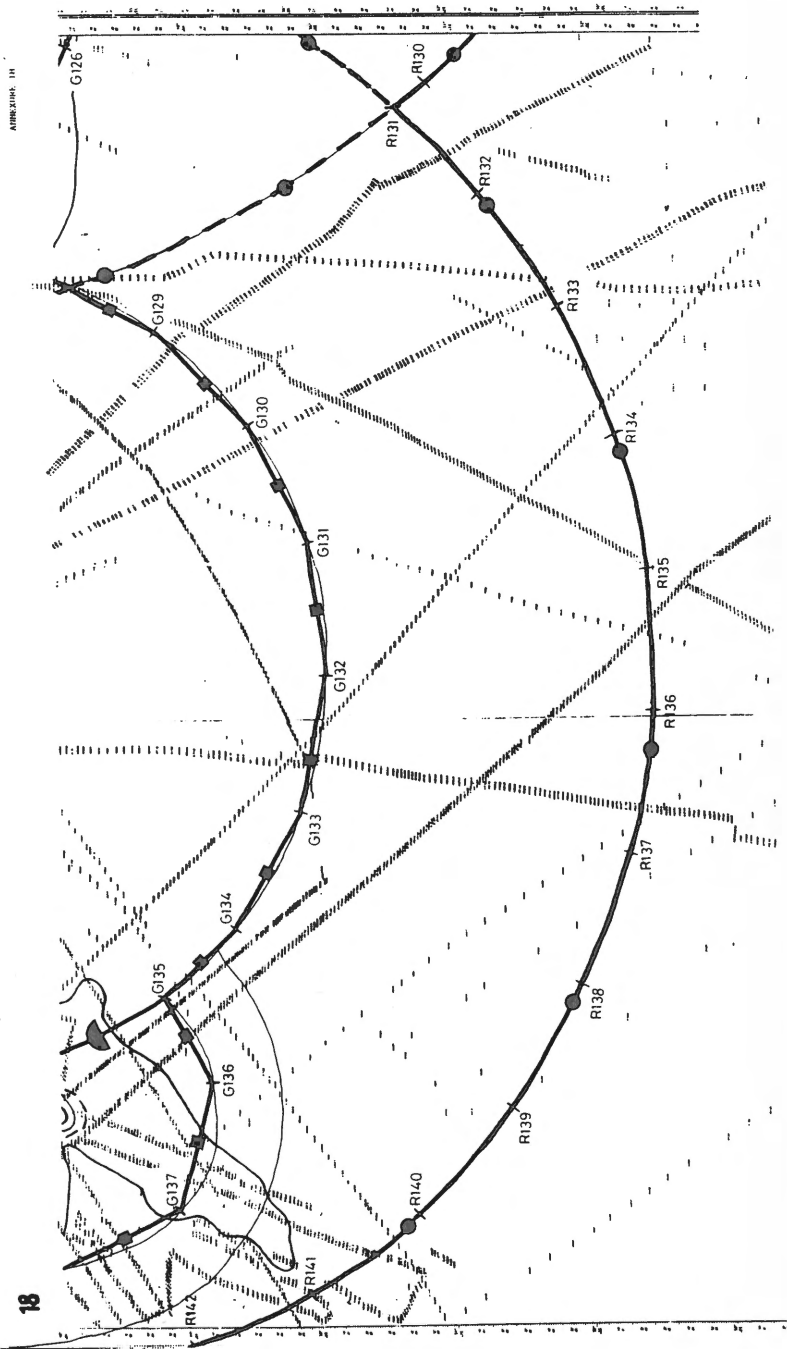


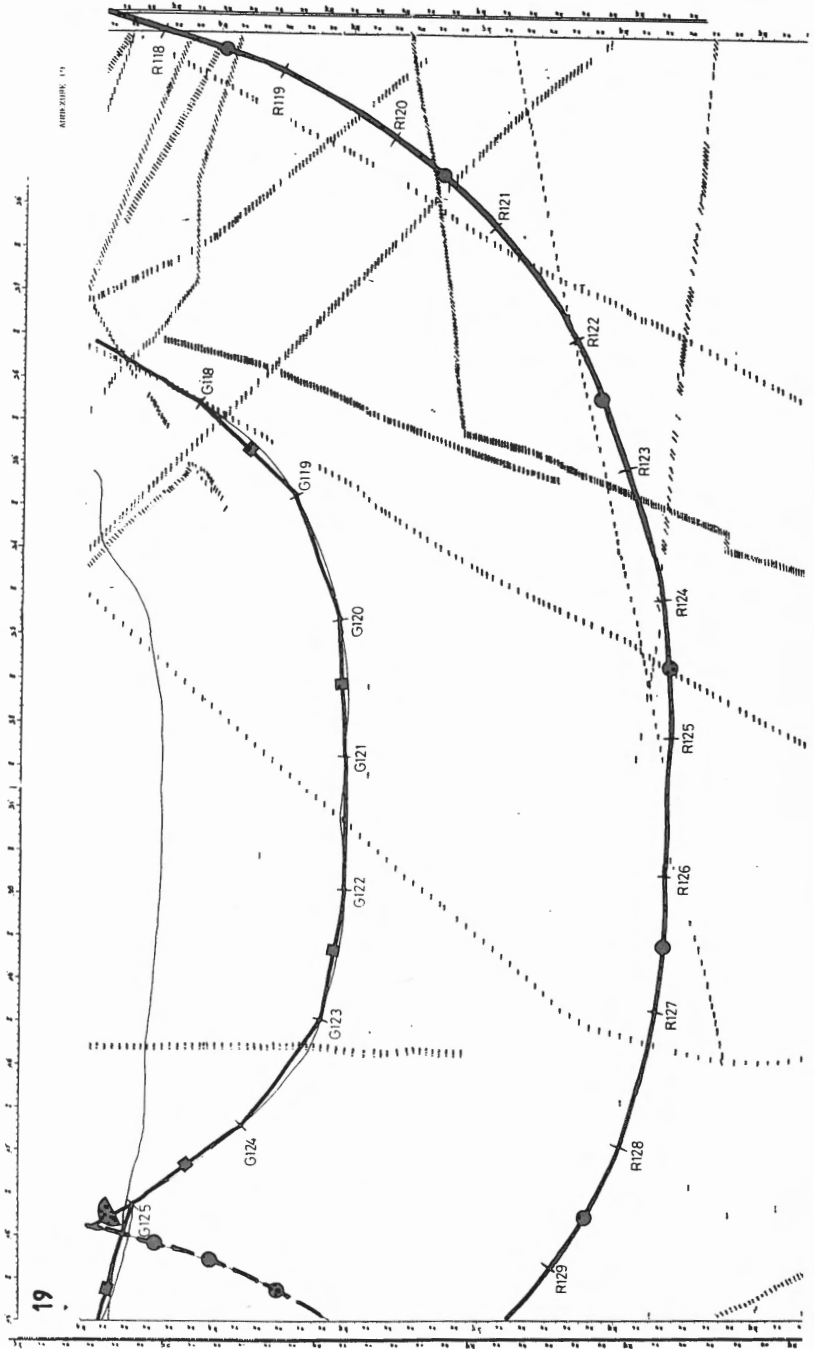


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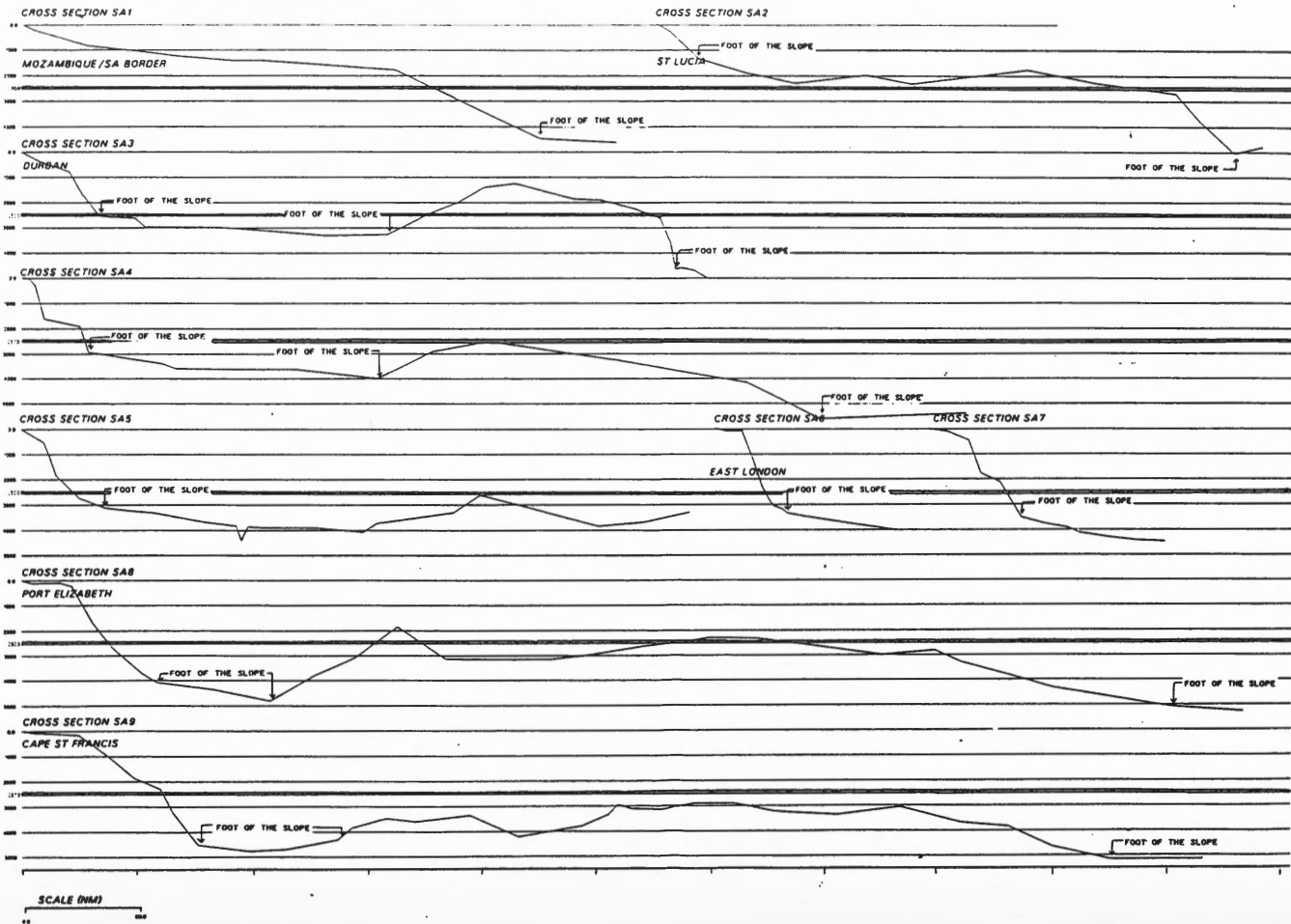
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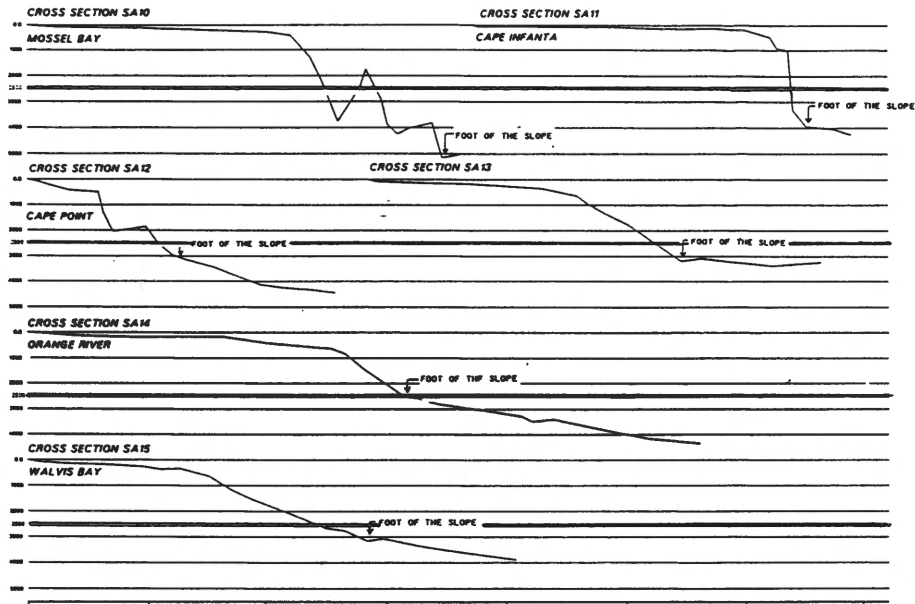




CROSS SECTIONS OF SOUTH AFRICAN COASTLINE



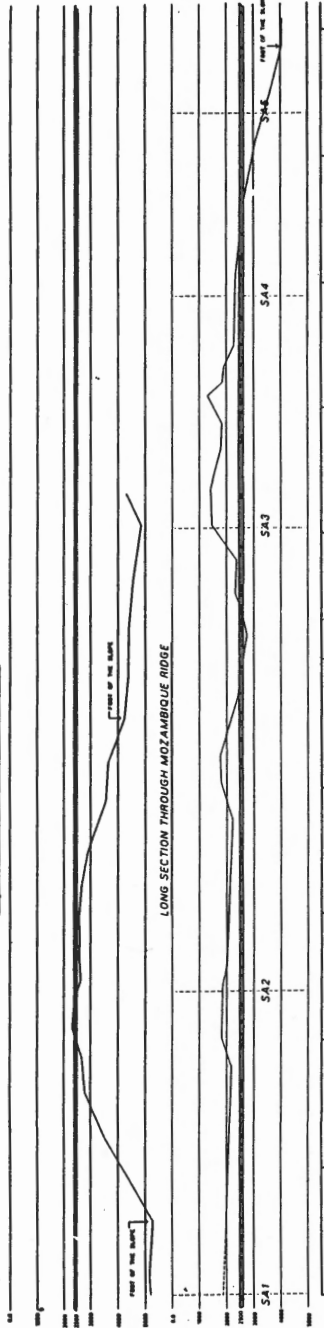
CROSS SECTIONS OF SOUTH AFRICAN COASTLINE



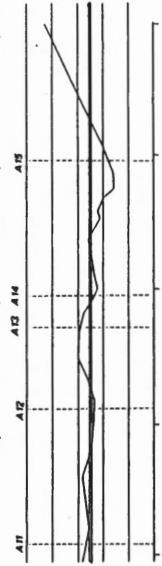
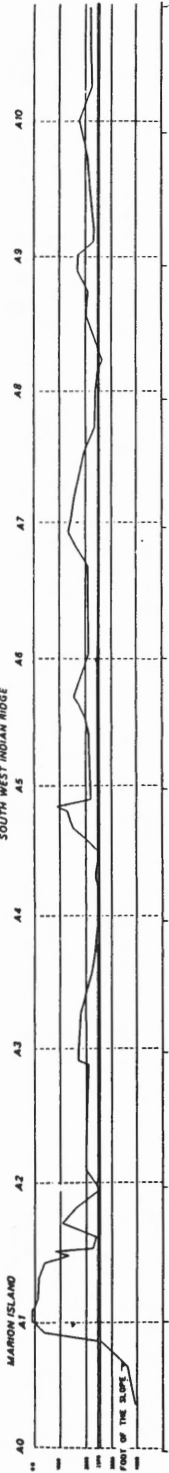
SCALE (MM)

A horizontal scale bar with a bracket underneath, indicating a length of 500 mm. The number '500' is written at both ends of the bar.

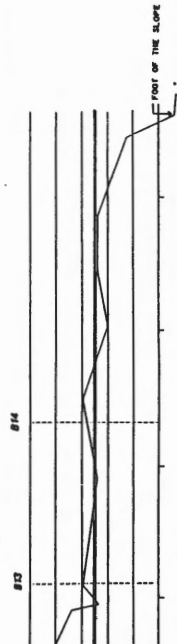
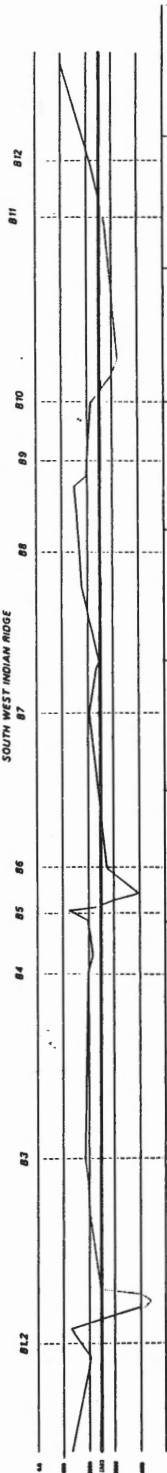
CROSS SECTION THROUGH AGULHAS BANK



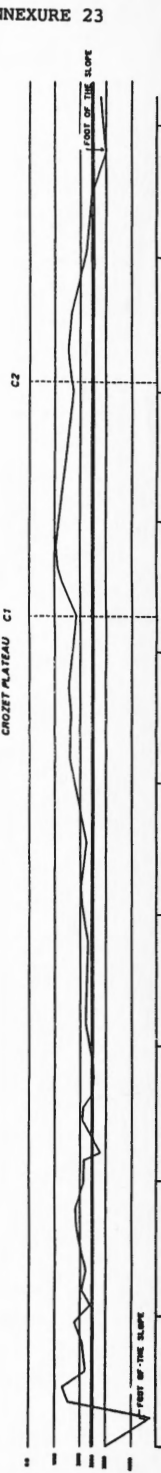
LONGITUDINAL SECTION A  
SOUTH WEST INDIAN RIDGE

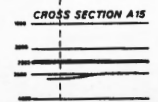
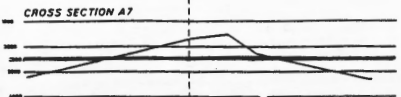
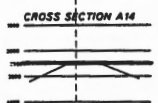
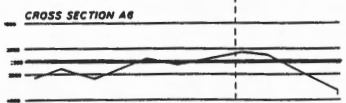
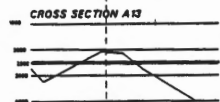
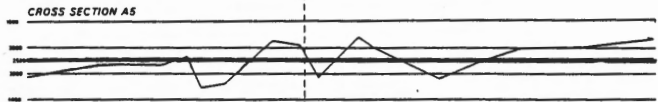
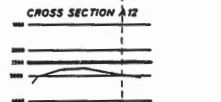
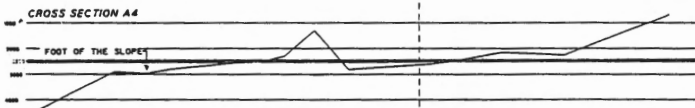
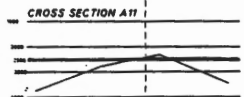
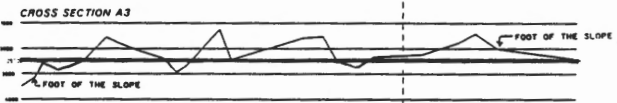
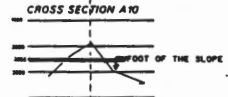
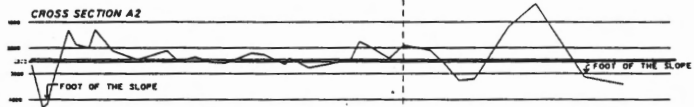
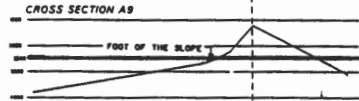
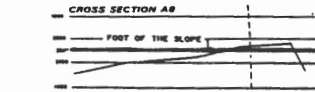
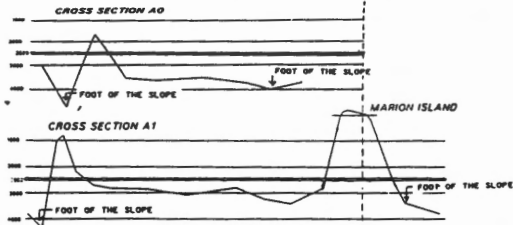


LONGITUDINAL SECTION B  
SOUTH WEST INDIAN RIDGE

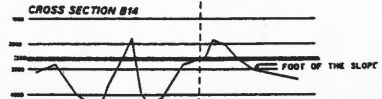
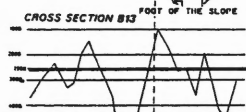
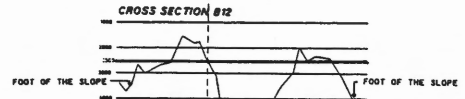
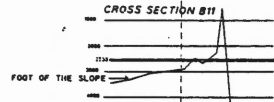
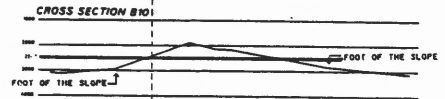
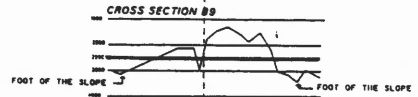
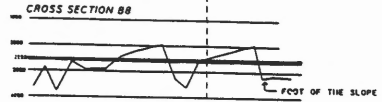
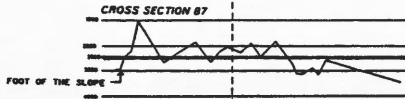
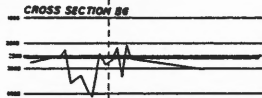
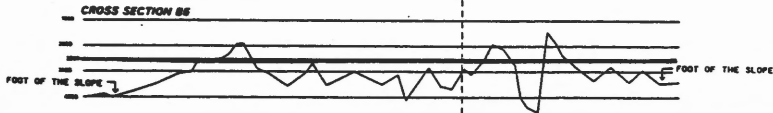
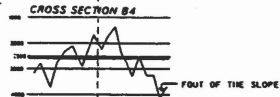
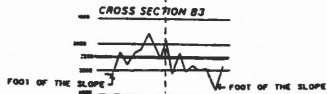
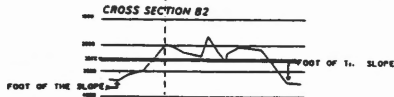
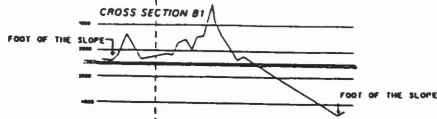


LONGITUDINAL SECTION C  
CROZET PLATEAU C1

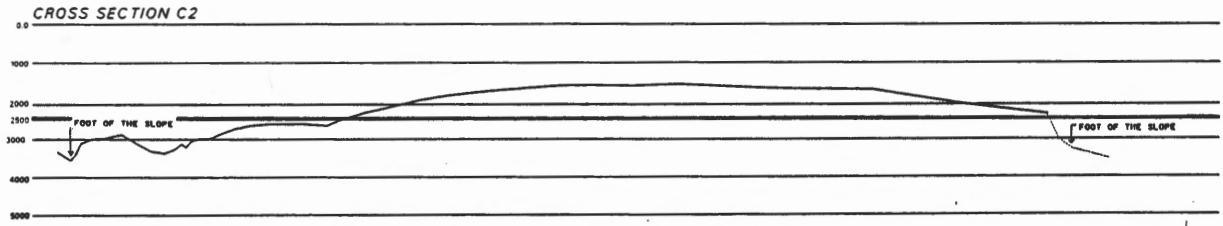
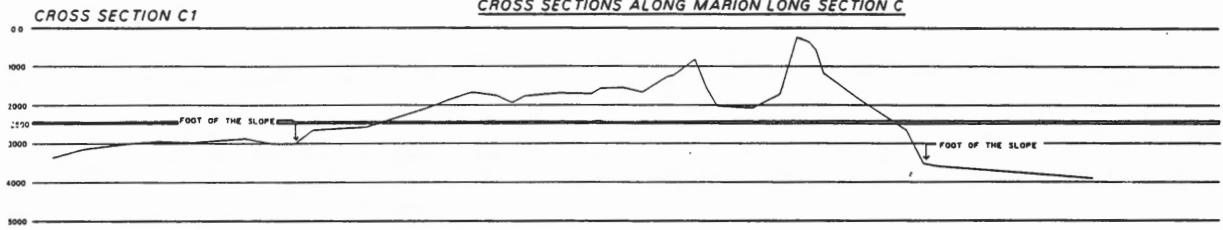




CROSS SECTIONS ALONG MARION LONG SECTION B

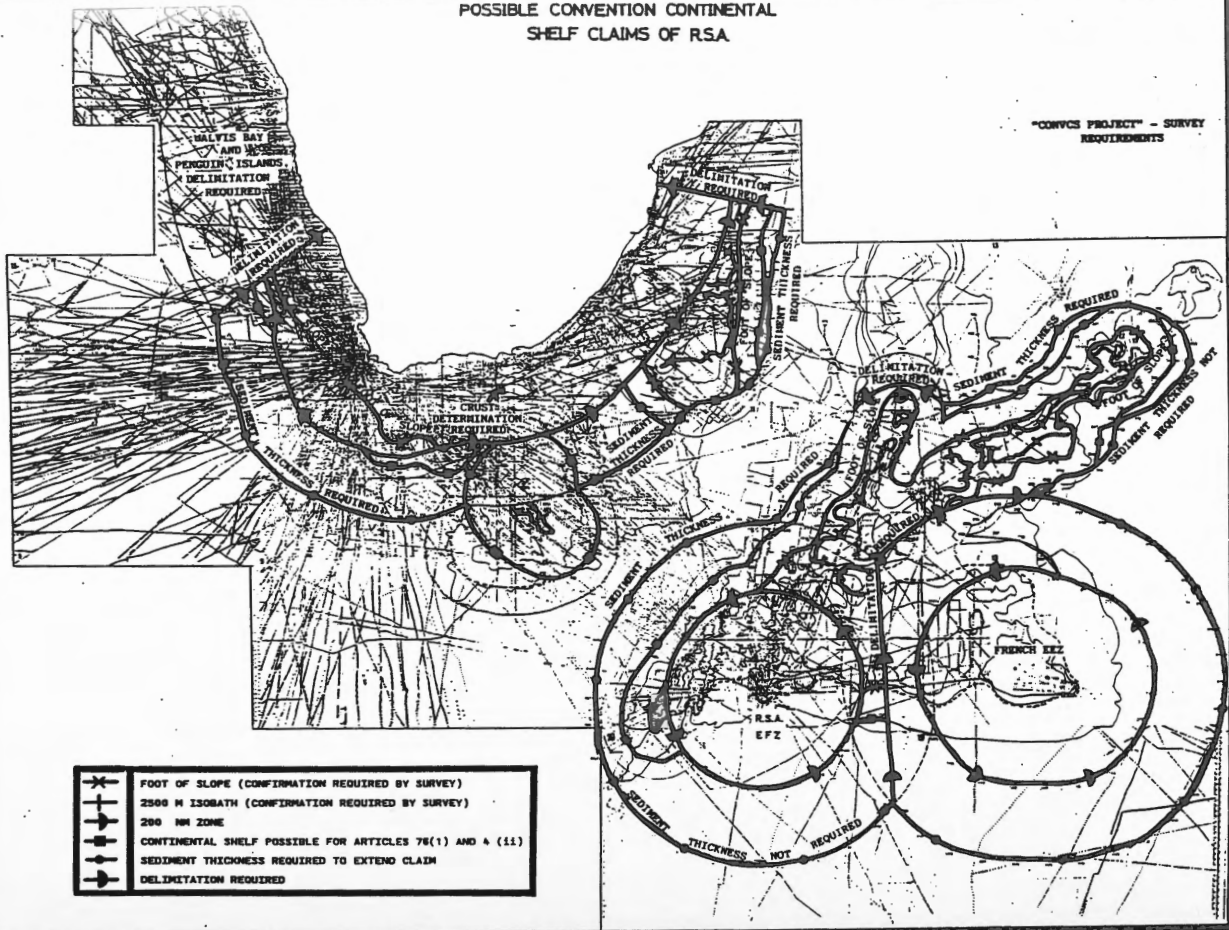


CROSS SECTIONS ALONG MARION LONG SECTION C



POSSIBLE CONVENTION CONTINENTAL  
SHELF CLAIMS OF R.S.A.

"CONVCS PROJECT" - SURVEY  
REQUIREMENTS



- |  |  |
|--|--|
|  | FOOT OF SLOPE (CONFIRMATION REQUIRED BY SURVEY)          |
|  | 2500 M ISOBATH (CONFIRMATION REQUIRED BY SURVEY)         |
|  | 200 NM ZONE  |
|  | CONTINENTAL SHELF POSSIBLE FOR ARTICLES 76(1) AND 4 (11) |
|  | SEDIMENT THICKNESS REQUIRED TO EXTEND CLAIM              |
|  | DELIMITATION REQUIRED                                    |

## SCHEDULE A

## CO-ORDINATE LIST

MAXIMUM CONVENTION CONTINENTAL SHELF ATTAINABLE (RED LINE)

NO	LAT SOUTH	LONG EAST		(NM)	REQUIRED (NM)	(X1.852)
				DISTANCE TO FOOT OF SLOPE	SEDIMENT THICKNESS	KM
R1	23° 30"	7° 50"	Malvin Bay - West	204	2.04	3.78
R2	32° 26"	10° 50"	Coast (RSA)	175	1.75	3.24
R3	33° 27"	10° 59"	"	193	1.93	3.57
R4	34° 26"	11° 07"	"	220	2.20	4.07
R5	35° 23"	11° 29"	"	241	2.41	4.46
R6	36° 18"	11° 53"	"	264	2.64	4.89
R7	37° 01"	12° 07"	"	273	2.73	5.06
R8	38° 53"	12° 30"	"	277	2.77	5.13
R9	38° 17"	13° 00"	"	281	2.81	5.20
R10	38° 55"	13° 57"	"	259	2.59	4.65
R11	39° 30"	15° 02"	"	230	2.30	4.26
R12	39° 54"	16° 14"	"	201	2.01	3.72
R13	40° 17"	17° 26"	"	189	1.89	3.50
R14	40° 33"	18° 42"	"	185	1.85	3.43
R15	40° 40"	19° 58"	"	185 (123 TO AGULHAS PLAT)	1.85 (1.23)	3.43 (2.28)
R16	40° 34"	21° 17"	"	167 (69 TO AGULHAS PLAT)	1.67 (0.69)	3.09 (1.28)
R17	40° 17"	22° 33"	Agulhas Plateau (RSA)	147 (37 TO AGULHAS PLAT)	1.47 (0.37)	2.72 (0.69)

## IF AGULHAS PLATEAU INCLUDED:

R18	40° 07"	23° 10"	Agulhas Plateau (RSA)	11 (TO AGULHAS PLAT)	0.11	0.20
R29	41° 02"	23° 39"	"	37 (TO AGULHAS PLAT)	0.37	0.69
R20	41° 46"	24° 33"	"	74 (TO AGULHAS PLAT)	0.74	1.37
R21	42° 22"	26° 30"	"	43 (TO AGULHAS PLAT)	0.43	0.80
R22	42° 37"	26° 57"	"	11 (TO AGULHAS PLAT)	0.11	0.20
R23	42° 39"	28° 10"	"	4 (TO AGULHAS PLAT)	0.04	0.07
R24	41° 57"	29° 20"	"	8 (TO AGULHAS PLAT)	0.08	0.15
R25	41° 00"	29° 40"	"	19 (TO AGULHAS PLAT)	0.19	0.35
R26	40° 03"	29° 17"	"	14 (TO AGULHAS PLAT)	0.14	0.26

## IF AGULHAS PLATEAU EXCLUDED:

R19A	40° 04"	24° 20"	Agulhas Plateau (RSA)	169	1.69	3.13
R20A	34° 05"	25° 50"	"	210	2.10	3.89
R21A	33° 52"	27° 00"	"	248	2.48	4.59
R22A	33° 32"	20° 20"	"	276	2.76	5.11

SCHEDULE A  
(Continued)

NO	LAT SOUTH	LONG EAST		(NM)	REQUIRED (NM)	(X1.052)
				DISTANCE TO FOOT OF SLOPE	SEDIMENT THICKNESS	KM
R27	39° 26"	20° 41"	Agulhas Plateau (RSA)	202 (8 TO AGULHAS PLAT)	2.02 (0.00)	0.15 (5.22)
R28	39° 04"	29° 52"	"	240 (65 TO AGULHAS PLAT)	2.40 (0.65)	4.45 (1.20)
R29	30° 34"	31° 00"	SE Coast (RSA)	107 (109 TO AGULHAS PLAT)	1.07 (1.09)	3.46 (2.02)
R30	30° 00"	32° 01"	"	133	1.33	2.46
R31	37° 20"	32° 50"	"	75	0.75	1.39
R32	36° 37"	35° 51"	"	10	0.10	0.33
R33	36° 15"	34° 16"	"	11	0.11	0.20
R34	36° 00"	34° 47"	East Coast (RSA)	22	0.22	0.41
R35	35° 50"	36° 50"	"	4	0.04	0.07
R36	35° 23"	37° 05"	"	25	0.25	0.46
R37	34° 32"	37° 36"	"	66	0.66	1.22
R38	35° 36"	30° 15"	"	90	0.90	1.67
R39	32° 36"	30° 17"	"	00	0.00	1.40
R40	31° 35"	30° 16"	"	70	0.70	1.30
R41	30° 35"	30° 33"	"	86	0.86	1.59
R42	29° 37"	30° 29"	"	03	0.03	1.54
R43	29° 17"	39° 00"	"	111	1.11	2.07
R44	20° 19"	39° 15"	"	90	0.90	1.05
R45	27° 55"	39° 22"	"	96	0.96	1.02
R46	40° 00"	29° 30"	Prince Edward Islands	110	1.10	2.04
R47	47° 00"	29° 27"	(RSA)	117	1.17	2.17
R48	46° 01"	29° 31"	"	142	1.42	2.63
R49	45° 02"	29° 50"	"	157	1.57	2.91
R50	44° 00"	30° 20"	"	160	1.60	3.11
R51	43° 10"	31° 16"	"	169	1.69	3.13
R52	42° 31"	32° 09"	"	164	1.64	3.04
R53	41° 53"	33° 12"	"	167	1.67	3.09
R54	41° 23"	34° 20"	"	153	1.53	2.03
R55	41° 00"	35° 33"	"	156	1.56	2.09
R56	40° 47"	36° 52"	"	120	1.20	2.22
R57	40° 42"	30° 11"	"	02	0.02	1.52
R58	40° 02"	39° 04"	"	90	0.90	1.67
R59	39° 11"	39° 36"	"	03	0.03	1.54
R60	30° 30"	40° 40"	"	03	0.03	1.54
R61	37° 40"	41° 20"	"	71	0.71	1.32
R62	36° 55"	42° 03"	"	61	0.61	1.13
R63	35° 57"	42° 21"	"	72	0.72	1.33
R64	35° 01"	42° 30"	"	05	0.05	1.57
R65	34° 19"	43° 30"	"	90	0.90	1.67
R66	34° 05"	44° 42"	"	92	0.92	1.70
R67	34° 19"	45° 51"	"	94	0.94	1.74
R68	35° 01"	46° 42"	"	07	0.07	1.61
R69	35° 50"	47° 00"	"	70	0.70	1.30
R70	36° 10"	47° 00"	"	00	0.00	1.40
R71	35° 52"	40° 10"	"	00	0.00	1.40
R72	32° 53"	40° 57"	Malagosy Republic			
R73	35° 54"	41° 00"	"			
R74	34° 52"	41° 34"	"			
R75	35° 40"	41° 53"	"			
R76	36° 34"	42° 42"	"			

SCHEDULE A  
(Continued)

NO	LAT SOUTH	LONG EAST		(NM) DISTANCE TO FOOT OF SLOPE	REQUIRED (NM) SEDIMENT THICKNESS	(X1.052) KM
R77	36° 51"	43° 53"	Malagasy Republic			
R78	36° 47"	45° 05"	"			
R79	36° 36"	46° 16"	"			
R80	36° 06"	47° 19"	"			
R81	35° 17"	48° 02"	"			
R82	34° 21"	48° 28"	"			
R83	33° 28"	48° 26"	"			
R84	32° 48"	48° 18"	"			
R85	32° 22"	49° 18"	Prince Edward Islands	98	0.98	1.02
R86	35° 13"	50° 16"	(RSA)	98	0.98	1.67
R87	34° 34"	51° 18"	"	94	0.94	1.74
R88	33° 47"	51° 55"	"	100	1.00	1.85
R89	32° 55"	52° 38"	"	95	0.95	1.76
R90	32° 28"	53° 33"	"	98	0.98	1.67
R91	32° 08"	53° 43"	"	64	0.64	1.19
R92	32° 07"	55° 56"	"	57	0.57	1.06
R93	32° 23"	57° 08"	"	68	0.68	1.26
R94	32° 49"	58° 11"	"	89	0.89	1.65
R95	33° 39"	58° 47"	"	97	0.97	1.80
R96	34° 39"	58° 48"	"	95	0.95	1.76
R97	35° 26"	57° 57"	"	93	0.93	1.72
R98	36° 07"	57° 06"	"	84	0.84	1.56
R99	36° 34"	56° 04"	"	76	0.76	1.41
R100	37° 05"	55° 07"	"	73	0.73	1.35
R101	38° 08"	54° 46"	"	81	0.81	1.50
R102	38° 45"	53° 48"	"	58	0.58	1.95
R103	38° 59"	52° 34"	"	48	0.48	0.74
R104	39° 35"	51° 31"	"	68	0.68	1.26
R105	39° 58"	51° 08"	Crozet Islands			
R106	39° 59"	52° 17"	(French)			
R107	40° 27"	53° 31"	"			
R108	40° 38"	55° 43"	"			
R109	41° 08"	55° 57"	"			
R110	41° 38"	57° 04"	"			
R111	42° 14"	58° 18"	"			
R112	42° 58"	59° 02"	"			
R113	43° 49"	59° 45"	"			
R114	44° 44"	60° 17"	"			
R115	45° 36"	60° 39"	"			
R116	46° 48"	60° 45"	"			
R117	47° 38"	60° 33"	"			
R118	48° 34"	60° 08"	"			
R119	49° 28"	59° 33"	"			
R120	50° 19"	58° 47"	"			
R121	51° 06"	57° 46"	"			
R122	51° 42"	56° 29"	"			
R123	52° 05"	54° 59"	"			
R124	52° 19"	53° 25"	"			
R125	52° 24"	51° 58"	"			

SCHEDULE A  
(Continued)

NO	LAT SOUTH	LONG EAST		(NM)	REQUIRED (NM)	(X1.852)
				DISTANCE TO FOOT OF SLOPE	SEDIMENT THICKNESS	KM
R126	52° 22"	50° 14"	Crozet Islands			
R127	52° 17"	48° 35"	(French)			
R128	52° 02"	47° 01"	"			
R129	51° 32"	45° 37"	"			
R130	50° 49"	44° 25"	"			
R131	50° 35"	44° 08"	"			
R132	51° 13"	43° 06"	Prince Edward Islands	250	2.50	4.63
R133	51° 47"	41° 49"	(RSA)	290	2.90	5.37
R134	52° 11"	40° 17"	"	309	3.09	5.72
R135	52° 24"	38° 42"	"	309	3.09	5.72
R136	52° 26"	37° 04"	"	306	3.06	5.67
R137	52° 16"	35° 28"	"	269	2.69	4.98
R138	51° 55"	33° 53"	"	230	2.30	4.26
R139	51° 24"	32° 30"	"	193	1.93	3.57
R140	50° 43"	31° 17"	"	157	1.57	2.91
R141	49° 55"	30° 22"	"	129	1.29	2.39
R142	49° 08"	29° 50"	"	111	1.11	2.07

SCHEDULE B  
CO-ORDINATE LIST  
MAXIMUM CONVENTION CONTINENTAL SHELF ATTAINABLE IN TERMS OF  
ARTICLE 76 (4)(ii)

NO	LAT SOUTH	LONG EAST	
G1	23°17"	10°18"	WALVIS BAY (RSA)
G2	23°36"	10°25"	"
G3	24°28"	10°51"	PENGUIN ISLANDS (RSA)
G4	25°21"	11°03"	"
G5	26°20"	11°08"	"
G6	27°18"	11°22"	"
G7	28°17"	11°41"	"
G8	29°13"	12°06"	"
G9	30°00"	12°12"	"
G10	30°27"	12°23"	"
G11	31°23"	12°49"	CONTINENTAL RSA
G12	32°19"	13°13"	"
G13	33°10"	13°51"	"
G14	34°09"	14°05"	"
G15	35°05"	14°32"	"
G16	36°03"	14°55"	"
G17	36°49"	15°42"	"
G18	37°22"	16°43"	"
G19	37°44"	17°53"	"
G20	38°26"	18°46"	"
G21	38°34"	20°00"	"
G22	38°24"	20°53"	"
G23	38°53"	22°01"	"
G24	38°47"	22°44"	"
G25	39°44"	22°14"	"
G26	40°33"	21°28"	"
G27	38°05"	23°37"	"
G28	37°48"	23°50"	"
G29	37°33"	24°16"	"
G30	37°30"	25°32"	"
G31	37°18"	26°40"	"
G32	36°58"	27°56"	"
G33	36°33"	29°03"	"
G34	36°22"	29°22"	AGULHAS PLATEAU (RSA)
G35	36°58"	29°52"	"
G36	37°59"	29°36"	"
G37	38°55"	29°38"	"
G38	39°05"	29°47"	"
G39	35°43"	30°21"	CONTINENTAL RSA
G40	35°14"	30°56"	"
G41	36°10"	31°39"	"
G42	36°43"	32°36"	"
G43	37°04"	33°19"	"
G44	34°42"	37°43"	"
G45	34°07"	37°36"	"
G46	33°36"	37°55"	"
G47	32°36"	37°53"	"
G48	31°38"	38°04"	"
G49	31°08"	38°04"	"
G50	30°09"	37°59"	"
G51	29°40"	38°04"	"

SCHEDULE B  
CO-ORDINATE LIST  
MAXIMUM CONVENTION CONTINENTAL SHELF ATTAINABLE IN TERMS OF  
ARTICLE 76 (4)(11)

NO	LAT SOUTH	LONG EAST	
G52	29°11"	38°02"	"
G53	28°16"	38°31"	"
G54	27°51"	38°42"	"
G55	48°00"	30°41"	PRINCE EDWARD ISLANDS (RSA)
G56	47°02"	30°38"	"
G57	46°08"	31°27"	"
G58	45°22"	32°19"	"
G59	44°37"	33°15"	"
G60	43°44"	34°02"	"
G61	42°59"	35°01"	"
G62	42°24"	36°10"	"
G63	42°18"	37°00"	"
G64	41°32"	37°45"	"
G65	40°58"	38°42"	"
G66	40°42"	39°55"	"
G67	39°43"	39°48"	"
G68	39°03"	40°47"	"
G69	38°04"	41°23"	"
G70	37°45"	41°42"	"
G71	36°52"	42°06"	"
G72	36°29"	42°19"	"
G73	35°49"	42°31"	"
G74	34°59"	43°14"	"
G75	34°34"	44°21"	"
G76	34°46"	45°34"	"
G77	35°28"	46°28"	"
G78	36°26"	46°42"	"
G79	36°43"	46°39"	"
G80	36°19"	47°48"	"
G81	36°09"	49°00"	"
G82	35°51"	50°10"	"
G83	35°12"	51°08"	"
G84	34°49"	51°55"	"
G85	34°12"	52°32"	"
G86	33°15"	52°58"	"
G87	32°38"	54°00"	"
G88	32°07"	54°44"	"
G89	32°12"	56°29"	"
G90	32°31"	57°15"	"
G91	33°21"	57°53"	"
G92	34°21"	58°06"	"
G93	35°08"	57°21"	"
G94	35°56"	56°37"	"
G95	36°27"	55°34"	"
G96	36°52"	55°10"	"
G97	37°11"	54°21"	"
G98	38°14"	54°15"	"
G99	38°40"	54°09"	"
G100	39°22"	51°59"	"
G101	39°34"	51°12"	"
G102	40°11"	50°13"	"
G103	40°17"	49°24"	"
G104	40°53"	48°23"	"
G105	40°58"	48°04"	"
G106	41°20"	47°49"	"

SCHEDULE B  
 CO-ORDINATE LIST  
 MAXIMUM CONVENTION CONTINENTAL SHELF ATTAINABLE IN TERMS OF  
 ARTICLE 76 (4)(11)

SCHEDULE B CONTINUED

NO	LAT SOUTH	LONG EAST	
G107	41°24"	49°08"	CROZET ISLANDS (FRENCH)
G108	41°31"	50°25"	"
G109	42°02"	51°35"	"
G110	42°47"	52°23"	"
G111	43°10"	53°40"	"
G112	43°36"	54°57"	"
G113	44°17"	56°00"	"
G114	45°09"	56°42"	"
G115	46°06"	57°07"	"
G116	47°01"	57°02"	"
G117	47°56"	56°37"	"
G118	55°42"	48°52"	"
G119	54°37"	49°35"	"
G120	53°10"	49°55"	"
G121	51°36"	49°59"	"
G122	50°04"	49°59"	"
G123	49°49"	48°30"	"
G124	49°13"	47°16"	"
G125	48°24"	46°22"	"
G126	48°06"	45°03"	"
G127	47°43"	43°40"	PRINCE EDWARD ISLANDS (RSA)
G128	47°51"	42°24"	"
G129	48°47"	41°32"	"
G130	49°30"	40°26"	"
G131	49°52"	39°02"	"
G132	50°04"	37°30"	"
G133	49°53"	35°58"	"
G134	49°22"	34°36"	"
G135	48°48"	33°48"	"
G136	49°11"	32°50"	"
G137	48°05"	31°20"	"

## SCHEDULE C

SEDIMENT THICKNESS NOT REQUIRED AT THESE POSITIONS  
TO INCREASE CONVENTION CONTINENTAL SHELF CLAIM

R19A IF THE AGULHAS PLATEAU IS INCLUDED IN THE  
R20A RSA MARGIN, SEDIMENT THICKNESS NEED NOT  
R21A BE MEASURED AT THESE POSITIONS  
R22A

R19  
R20  
R21  
R22 IF AGULHAS PLATEAU IS EXCLUDED FROM THE  
R23 RSA MARGIN, SEDIMENT THICKNESS NEED NOT BE  
R24 MEASURED AT THESE POSITIONS  
R25  
R26

R91 POSITIONS ADJOINING THE SOUTH WEST INDIAN  
R92 RIDGE WHICH ARE WITHIN 60 NM OF THE FOOT  
R102 OF THE SLOPE. SEDIMENT THICKNESS NOT  
R103 REQUIRED.

R72 - R84 THESE POSITIONS WOULD BE PART OF A MALAGASY  
REPUBLIC CLAIM - NO FURTHER ACTION REQUIRED

R105 - R 131 THESE POSITIONS WOULD BE PART OF A CROZET  
ISLANDS CLAIM - NO FURTHER ACTION REQUIRED

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