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President José Luís Jesus presiding

DISPUTE CONCERNING DELIMITATION OF THE MARITIME BOUNDARY BETWEEN BANGLADESH AND MYANMAR IN THE BAY OF BENGAL

(Bangladesh/Myanmar)

Verbatim Record

Present:	President	José Luís Jesus
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CLERK OF THE TRIBUNAL: All rise.

THE PRESIDENT: Please be seated.

THE PRESIDENT: Good morning. To continue the hearing, I give the floor to the first speaker today, Mr Lindsay Parson.

MR PARSON: Mr President, distinguished Members of the Tribunal, good morning. It is an honour and a privilege to appear before you in these proceedings.

My presentation will be the first of three for this final session, all addressed to the outer continental shelf. As a geologist, I will concentrate on the geology and geomorphology of the seabed in the Bay of Bengal and its relationships to the landmasses of Bangladesh and Myanmar, a subject that Mr Reichler introduced in his opening speech last Thursday.[1] My presentation will be followed by that of Rear Admiral Khurshed Alam, who will present the results of the work and analyses, of the last twelve years, undertaken to establish the location of the outer limit of the continental shelf of Bangladesh in the Bay of Bengal. Admiral Alam will explain the technical basis for Bangladesh's claim in the outer continental shelf, as submitted to the Commission on the Outer Limits of the Continental Shelf on 25 February 2011. Finally, Professor Alan Boyle will apply the law to the scientific and technical facts set out in the presentations of Admiral Alam and myself, and present to the Tribunal the basis on which the outer continental shelf of Bangladesh beyond 200 M should be delimited.

Before I start with the substance, I need to make one point clear. In making these presentations today, Bangladesh does not suggest that you are called on to determine the outer limits of the continental shelf as defined in article 76 of the 1982 Convention. That is of course a matter for the Commission on the Limits of the Continental Shelf. Our purpose is altogether more limited. Bangladesh asks this Tribunal to delimit the disputed part of the outer continental shelf as between itself and Myanmar. It is helpful to the Tribunal for it to appreciate that there is an outer continental shelf beyond 200 M in the Bay of Bengal, and further to appreciate that Bangladesh has acted credibly and consistently with its legal responsibilities in this case in making a properly researched and sustainable submission to the Commission on the Limits of the Continental Shelf. The first of these matters I will demonstrate; the second is for Rear Admiral Alam.

This presentation is in four parts:

First, I will describe the geological evolution of the region in terms of plate tectonics; Second, I will provide a description of the Bengal Depositional System and how its pervasive sedimentary effects have shaped the seafloor of the Bay of Bengal; Third, I will summarize the elements of geological prolongation from the Bangladesh land mass into the Bay of Bengal; and finally, I will introduce the technical provisions of article 76 of the 1982 Law of the Sea Convention, addressing how they are used

[1] ITLOS/PV.11/2/Rev.1 (Reichler), p. 12.

in the determination of the outer limits of the continental shelf where it extends beyond 200 M.

Mr President, Members of the Tribunal, it is impossible to understand the arrangement of the land and the seafloor in and around the Bay of Bengal without appreciating its geological origin, and in particular its evolution over time. I will present in the following slide sequence the geological development of the Bay of Bengal over the past 130 million years. The sequence, which you will find in your Judges' folders at tab 5.1, will highlight the relevant interactions between the most fundamental components of the earth's geological system – the crustal plates which cloak our planet – and will describe their birth, their development and their movement over time. You will witness their collisions with one another, and in some cases their ultimate death and disappearance.

On your screens you can see an image, the first of the images at tab 5.1, depicting a reconstruction of the earth's surface as it would have looked some 130 million years ago[2]. It is this which we use as the starting point for the first phase of geological history relevant to our presentation today. The ancient supercontinent of Pangaea is starting to break up, giving rise to two supercontinents, one in the north and one in the south. Enclosed within the latter, which you can see in purple and highlighted in red, is that part of this supercontinent which will eventually become the continental land mass of India. I invite you to keep your eyes on this piece of the jigsaw as we follow its passage from south to north across the surface of the earth over time. With the next few slides, we will pass through the millennia, step by step, and observe the development of the present day geology and geography of the region.

During the first phases of plate motion, between 130 and 90 million years ago, you can see how India first breaks off from the ancient land mass and then starts its journey drifting northward from its former position south of the Equator. Between 90 and 60 million years ago, the movement of the Indian continental mass is at a rate of over 17 cm per year. If you look at your screens, you will see that as it moves northwards it leaves behind newly-formed oceanic crust; this is generated in a process known as seafloor spreading. This oceanic crust is attached to the Indian continental land mass and, with it, forms the India tectonic plate – or India Plate, for short. As the plate moves northwards, it grows in size as that oceanic crust continues to be added to its southern edge. As you will see, this new part of the plate will eventually underlie the seafloor of the Bay of Bengal.

At this time, along the other side of the India Plate to the north, an area of much older oceanic crust underlying an ancient ocean basin was being compressed against another land mass, part of which was eventually to become the Asian tectonic plate. This collision, indicated by the red arrow, rather than arresting the progress of the India Plate northwards, resulted in the bending down, or subduction, of part of the sea floor of the India Plate beneath the Asian Plate. As the ocean basin there finally began to close, sea floor deposits were carried along in the uplift and

[2] Tung-Yi Lee & Lawrence A. Lawver, "Cenozoic Plate Reconstruction of Southeast Asia", Tectonophysics, Vol. 251 (1995). MB, Vol. IV, Annex 39. *See also* J.R. Curray and Ruth Allen, "Evolution, paleogeography and sediment provenance, Bay of Bengal region, Indian Ocean", in *Golden Jubilee Memoir of the Geological Society of India* (Gupta, Harsh and Fareeduddin eds.) No. 66 (2008), pp. 487-520.

deformation of the former sea bed, to initiate the formation of the Himalayas. This is why, Mr President, fossilized sea creatures are found on Mount Everest.

During the next phase, starting around 44 million years ago, the thick, continental crustal masses of the converging India and Asia Plates finally met, in what was to become one of the most significant tectonic events in the region. This collision was of such scale that it resulted in significant uplift at the edge of the Asia Plate, an intense deformation of the region; and this began and continues the development of the Himalayas and the Tibetan Plateau. As the mountain chain was pushed up, the edge of the India Plate was deflected downwards, forming a shallow basin. This basin began to fill as sediment eroded from the rising mountain chain was delivered by forerunners of the great Ganges and Brahmaputra Rivers. It is this process of sedimentary deposition, which commenced more than 50 million years ago, that is responsible for creating the land territory of Bangladesh; and it is from this point in time, and continuously ever since, that, as we heard from Mr Reichler in his introductory speech, the same sedimentary processes have been active ever since as the Bengal Depositional System.[3] We shall return to a fuller discussion of this in a few moments, but there is more of a geological journey through time to complete before doing so.

While the rate of motion of the tectonic plates slowed, the effects of the collision were unabated – the Himalayas continued to uplift, leading to extensive erosion of the newly-formed mountains. Elsewhere in the frame, across to the east, the dense oceanic crust of the India Plate was colliding with the predominantly continental crust of the Burma Plate along a line now indicated by the red arrow. The India Plate was bent downwards; it began to sink, or subduct, beneath the Burma Plate. As subduction proceeded, sediments that had been accumulating on the down-going India Plate were scraped off by the overriding Burma Plate and became stuck onto the latter – the Burma Plate – in a tightly-folded series of mountains known as an "accretionary wedge". An analogy for this is that the edge of the Burma plate is acting here rather like a bulldozer, as though it is scraping mud off a hard surface. As the scrapings build up, they fold and they deform to eventually create what are now the mountain (and hill) ranges of western Myanmar. This process continues to the present day.

The final image of this sequence, and on your screens now, is of the present day arrangement of the earth's tectonic plates, the edges of which are highlighted in red. The plate boundary between the eastern edge of the India Plate and the western edge of the Burma Plate is clearly visible and is now being pointed out by the arrow. While difficult to display in this image, the passing (or subduction) of one tectonic plate beneath another generally produces a deep trench in the sea floor; this marks the surface line of many tectonic plates elsewhere on the surface of the earth. In this enlargement, you can see where the deep trench between the India and Burma plates exists, but which is visible in the sea floor only in its southern part. As its trace is followed northwards, the trench is at first filled, and then it is completely blanketed by sediments arriving into the region from the north, as the uplifted Himalayas are eroded. It is these sediments and their pathways that I will describe and discuss in the next part of my presentation.

[3] ITLOS/PV.11/2/Rev.1 (Reichler), p. 10.

Before that, Mr President, if you will allow me, I would like to take just a few moments to repeat the previous slide series in its entirety, but this time as an unbroken show and without my interruptions. I think that this will provide you and the Members of the Tribunal with a clearer sense of the continuous process of continental drift and plate motion at play during the development of the Bay of Bengal region over time.

On your screens now, and in your binders at tab 5.2, you will see a more familiar view of the Bay of Bengal, its coastlines and its sea floor bathymetry. This surface view of the planet conceals the three geological provinces in and around the Bay of Bengal resulting from the crustal processes that we have been describing. The next image, at tab 5.3 in your binders, shows these clearly.

First, to the left of our image we see the *continental* crust of the India Plate in purple, comprising almost all of India; second, in yellow, the *oceanic* crust of the India Plate, forming practically the entire sea floor of the Bay of Bengal and almost the entire land mass of Bangladesh; and, third, on the right, the Burma Plate, comprising all of Myanmar and only the extreme southeast Chittagong division in Bangladesh.

In summary, it can be seen that the land territory of Bangladesh lies almost entirely on the oceanic crust of the India Plate[4]. Bangladesh has been formed by the accumulation of sediments over more than 50 million years, and it is underlain by layers of sediment which have been estimated to be as much as 24 km thick. To put that in some sort of context, as Mr Reichler did last Thursday, Mount Everest is a mere 9 km high. It is also readily apparent that the entire sea floor of the Bay of Bengal beyond the land mass of Bangladesh, save for those areas within 50 M or so of the coast of Myanmar, lies on the oceanic crust of the India Plate.

I now turn to the second part of my presentation, which deals with the sedimentary processes and the features that they form in the Bay of Bengal; together, these are the Bengal Depositional System. This huge, single entity encompasses the transport and deposition of sediment particles – gravel, sand, mud and clay – which have been weathered and eroded from the Himalayas and the Tibetan Plateau, through Bangladesh to the Bay of Bengal. These particles are first transported by the main rivers – the Ganges and the Brahmaputra and their tributaries – into Bangladesh, and then southwards into the Bay. Here, and finally, submarine currents disperse the material into the deep sea.

As you will see on your screens and at tab 5.5 in your binders, the Bengal Depositional System[5] consists of a continuum of four linked depositional units: the onshore river system; the Bengal Delta; the continental shelf; and the Bengal Fan itself. It is clear from extensive scientific research carried out in the region that the component parts are linked and are the product of a single continuous process from

[4] M. Alam et al., "An Overview of the Sedimentary Geology of the Bengal Basin in Relation to the Regional Tectonic Framework and Basin-fill History", *Sedimentary Geology,* Vol. 155, No. 3-4 (2003). MB, Vol. IV, Annex 50.

[5] Joseph R. Curray, "The Bengal Depositional System: The Bengal Basin and the Bay of Bengal" (23 June 2010) (hereinafter "Curray Expert Report"). MB, Vol. IV, Annex 37.

the land territory of Bangladesh in the north to an area well south of the Equator, and beyond the limits of the Bay of Bengal itself.

These inextricably linked features are important to the Bangladesh land territory and form its prolongation into the Bay of Bengal. I will now describe them in more detail. First, the onshore river-deposited sediments and the Bengal Delta begin in northern Bangladesh. The riverbanks and the adjacent flood plains are characterized by complex processes of sediment transportation, deposition, remobilization and re-deposition. With this enormous sediment supply, the Bengal Delta has extended the shoreline more than 100 km out to sea since the end of the last ice age, some 20,000 years ago.

Second, the submarine part of the Bengal Delta comprises the area offshore of the current low water line, extending up to 80 M from the shore. Sedimentary processes of deposition and re-mobilization characterize this submarine area, as the sediments continue their journey towards the Bay of Bengal. This has been tirelessly researched by Professor Herman Kudrass, a distinguished expert in the field and who is here in the room today. According to his findings, more than one third of the sediment mass transported by the rivers is accumulating in the submarine delta, which is advancing seaward between 1 and 2 km per year.[6]

Third, the continental shelf, which lies beyond the submarine delta and extends at a very low gradient (less than one degree) out to about 150 M from the coast and down to about 150 m water depth.

And finally, we arrive at the Fan itself. Sediments from the Ganges-Brahmaputra River system have formed an enormous depositional feature[7]. This is generally recognized in the scientific community as one of the wonders of the world's oceans – the mighty Bengal Fan.

The Bengal Fan was first delineated and named by Professor Joe Curray, a distinguished academic who has devoted his career to unravelling and defining the geology of the region. He has studied the Bengal Fan more than any other marine scientist, and in 1971 it was he who gave the Fan the name with which it has been known ever since.[8] Professor Curray is also here in this room today. According to his research, the Bengal Fan is enormous, extending more than 1,500 M south from the slope in the Bay of Bengal (defined by the 1,400 metre isobath), to 8 degrees south of the Equator. It covers about 3 million square km – an area larger than the Bay itself – and comprises sedimentary rock ranging in layers from 16 km thick at the continental slope, to 1 km thick south of Sri Lanka[9].

[6] K. Michels, H.R. Kudrass, et al., "The submarine delta of the Ganges-Brahmaputra: cyclone-dominated sedimentation patterns", *Marine Geology,* Vol. 149 (1998).
[7] Joseph R. Curray et al., "The Bengal Fan: Morphology, Geometry, Stratigraphy, History and Processes", *Marine and Petroleum Geology*, Vol. 19, No. 10 (2002) (hereinafter "Curray et al. (2002)"). MB, Vol. IV, Annex 48.
[8] J.R. Curray and D.G. Moore, "Growth of the Bengal deep-sea fan and denudation in the Himalayas", *Geol. Soc. America Bull.* Vol. 82 (1971).
[9] Joseph R. Curray, "Sediment Volume and Mass beneath the Bay of Bengal", *Earth and Planetary Science Letters*, No. 125 (1994). MB, Vol. IV, Annex 38.

The volume of material in the Fan is equally difficult to comprehend in terms of its scope and size. The volume is estimated to be in excess of 12.5 *billion* cubic km. This statistic is difficult to appreciate with numbers alone. Imagine if you will that above this building there is a pile of sediment 1 km thick and that that sedimentary pile does not extend just to the edge of the building, does not extend just to the entire surface of Germany, but if you extend it to the entire surface of Europe, that 1km pile, you get some idea of how much material is in the Fan. It is also clear from recent data compilations and reliable estimations of sediment distribution across the Bay that the thickest sediments lie adjacent to, and beneath the Bangladesh continental margin.

I should add here a few words about the composition of the Fan, which has been built, as we know, over the last 40 to 50 million years. It is composed primarily of eroded Himalayan and Tibetan material – precisely the same material that makes up Bangladesh itself.[10] More than 90 per cent of the material in the Fan has been transported and deposited by the major river systems from Bangladesh, with those of peninsular India accounting for most of the rest. In contrast, Mr President, the contribution of Myanmar's rivers is negligible, because the great rivers of Myanmar drain only into the Andaman Sea, and not into the Bay of Bengal. Sediments from the Ganges and Brahmaputra Rivers enter the Bay from the mouth of the Meghna River. Two thirds of the sediment delivered builds onto the onshore delta and the continental shelf, and seafloor currents sweep the remaining one third of the sediment load via an elaborate system of underwater transportation, to distribute this remainder along the length and breadth of the Fan.[11]

I now turn to the third part of our presentation, which summarizes the elements of geological continuity between the Bangladesh land mass and the Bay of Bengal. Both geological and geomorphological characteristics of the sea floor are involved, which together establish and define the links and the continuity between the two. I will make these next observations with reference to a short movie sequence, a sample from which is provided in your binders at tab 5.5.

In fact, the land territory of Bangladesh exhibits multiple continuities with the Bengal Fan. They are each composed of the same material; they have each been formed by the same continual process of sedimentary deposition; the land territory of Bangladesh slopes gently towards the sea and continues in an unbroken fashion for hundreds of miles offshore; and the land territory of Bangladesh overlies, at depth, the same oceanic crust which forms the floor of the Bay of Bengal. The connection between the land territory of Bangladesh and that which lies below the sea floor, the floor of the Bay of Bengal, is thus as close as it is possible to be.

By contrast, the land territory of Myanmar is *discontinuous* with the Bengal Fan in a number of ways. In the first place, the two are not formed of the same material. The land territory of Myanmar was not formed by the same processes of sedimentary deposition as Bangladesh, but was in part derived from the effects of intense tectonic

[10] A. Pierson-Wickmann, L. Reisberg, C. France-Lanord, and H.R. Kudrass, "Os-Sr-Nd results from sediments in the Bay of Bengal: Implications for sediment transport and the marine Os record", *Paleoceanography*, vol. 16, no. 4 (2001).

[11] S. Kuehl, H. Kudrass et al., "The Ganges-Brahmaputra Delta", in *River Deltas – Concepts, Models, and Examples* (L. Giosan & J. Bhattacharya eds., 2005). MB, Vol. IV, Annex 53.

deformation caused by the collision between the Burma and India tectonic plates, and in part from older continental crust. Second, the passage from the Myanmar land mass to the sea floor is not characterized by a shelf and slope as it is in Bangladesh but, in contrast, is dominated by a narrow zone of tightly-folded rocks of the accretionary wedge which form the Arakan Hills and Indoburman Ranges, before passing rapidly seaward into the deep water.

Furthermore, no more than 50 M from the Myanmar shore there lies the active subduction boundary between the Burma and India Plates. It has been covered by sediments in its northern section, but the plate boundary is nonetheless there, as we have seen from our plate reconstruction earlier in this presentation. The significance of this geological setting cannot be overstated – plate boundaries are the single most fundamental divide on the surface of the earth.

In summary, it follows from this that Myanmar has no geological prolongation from its land mass into the Bay of Bengal. Any relation to the seabed or subsoil of Myanmar beyond the plate boundary can only be by reason of its adjacency to the Bengal Fan. In no sense can the Bengal Fan, or any part of it beyond the boundary between the Indian and Burma Plates, be considered a geological prolongation of the land territory of Myanmar.

This brings me to the last section of my presentation today, regarding the application of the technical aspects of article 76 of the 1982 Convention, and the implementation of the provisions therein to establish the outer limits of a coastal state's continental shelf beyond 200 M. I speak from the perspective of a scientist, not a lawyer. Professor Boyle will speak from that perspective. I will make reference to the first seven paragraphs of the article.

A straightforward reading of the first and third paragraphs of article 76, on your screens and in your binders at tab 5.6, provides information on key features to be identified or defined during the process of establishing the outer limit of the continental shelf. As well as "continental shelf", other terms such as "continental margin", "continental slope" and "rise" are referred to. There are also references to "natural prolongation" and "submarine prolongation".

A geologist reading article 76 might immediately feel that the terms I have just mentioned are very familiar.

On your screens, and at tab 5.7 in your binders is a cross-section drawing of a simple continental margin, labelled accordingly to highlight these seafloor features, with the names which have been used easily since the early twentieth century. They are now reflected in article 76. There is nothing in the text that is surprising to a scientist. Indeed, to a scientist, the continental shelf is very much a physical feature, which can be defined in geoscientific terms. It is normally a relatively shallow-water, platformal area, immediately adjacent to the shoreline, and exhibiting very low gradients – globally, these average only around one half of one degree. Depending on the geological processes pertinent to the area, the width of the shelf can be very limited, or it may continue for many hundreds of miles oceanwards.

Scientifically, the shelf edge marks the locus of rapid deepening water, where the depth commonly increases to several hundreds or even thousands of metres. This rapid increase in the bathymetry marks the start of the continental slope, which descends at a relatively steep gradient. Global average estimates for this value range from 2 to 7 degrees. It is this feature, the continental slope, that carries all the sedimentary material weathered from the land mass, transported by the rivers and currents across the shelf, and finally sheds them downslope into deeper water. At the base of the continental slope, a band of sedimentary material may locally accumulate at a very low angle of rest, this is normally much less than one degree; it forms a feature known as the continental rise. The continental rise is not always present at margins, and its characteristic subtle form often means it is difficult to identify at all, or map accurately.

Beyond the continental rise, if it exists, scientists would add a final ocean floor regime, the abyssal plain. This is not part of the continental margin: it receives negligible material from the land mass, and represents an area with extremely low rate of sedimentation. The abyssal plain is part of the deep sea floor and, as such, is separate from the margin. The Bengal Fan lies beyond the continental slope of Bangladesh, and landward of the deep ocean floor of the Indian Ocean. The Bengal Fan is most certainly not part of the deep ocean floor; it is, in effect, a continental rise of immense proportions.

“Continental margin” is defined in article 76 of the Convention as “consisting of the seabed and the subsoil of the shelf, the slope and the rise”. Two observations about this language can be made. First, the reference to the subsoil reinforces the importance of geology as a characteristic of the margin, since the subsoil is what geology is primarily concerned with. Second, the naming of the three geological components – the shelf, the slope, and the rise – as parts of the continental margin implies a scientific basis for the definition of the term “continental margin” in the article. “Shelf”, “slope” and “rise” are all well-known geological terms, used by marine geologists to identify parts of the continental margin. Paragraph 3 further alludes to the geological basis of article 76 by distinguishing what is not included in the continental margin: the “deep ocean floor with its oceanic ridges or the subsoil thereof”.

It is instructive at this point to consider the continental margins of the Bay of Bengal, in order to review how these real examples may be assessed in practical terms for the implementation of the technical requirements of article 76. What is immediately clear is that striking differences exist between the geomorphology and the geology of the continental margins of Myanmar, on the one hand, and of Bangladesh, on the other. We can summarise these observations using the following graphic, illustrating sketch cross-sections across the two margins.

Using the images on the screen, which are provided in your binders at tab 5.8, I can make a number of observations on the continental margin of Myanmar, in contrast to that of Bangladesh. First, and most importantly, there is an extreme differential between the extent of the two physical shelves. Myanmar’s accretionary wedge, as we described earlier, is plastered onto the leading edge of the Burma Plate, and is narrow and very sharply constrained by the plate tectonic boundary just offshore. Second, there is a complete absence of a continental rise derived from the Myanmar

continental landmass. The sedimentary feature lying beyond its slope is the eastern edge of the Bengal Fan, a product of the Bangladesh Depositional System and not of Myanmar's margin. Third, the crustal plate on which Myanmar sits is completely disconnected, in a most fundamental way, from that of the subducting India Plate, over which it rides.

I can conclude this final section of my presentation by following the steps used to determine Bangladesh's entitlement to a continental shelf beyond 200 M, and then, in application of article 76, paragraphs 4 through 7, to establish the outer edge of the continental margin and the limit of Bangladesh's continental shelf on that margin.

The physical extent of the Bengal Depositional System, including the Bengal Fan, defines the outer edge of the continental margin. Its boundary with the deep ocean floor confirms this. The distance of 1,500 M from the coastline of Bangladesh at which the Fan is observed in the Bay of Bengal clearly exceeds 200 M. This confirms an entitlement to a continental shelf beyond 200 M.

In a practical implementation of article 76, the outer limit of the continental shelf is established by the application of paragraphs 4 to 7. You will observe the stages of this process in a schematic form on your screens using an annotation of one of our previous graphics, which is also in your binders at tab 5.9.

The steps taken comprise: first, the establishment of points along the foot of the continental slope as defined in paragraph 4(b) of Article 76 as the point of maximum change of gradient at its base; second, the construction in accordance with paragraph 4(a) of the outer edge of the continental margin by either points at 60 M from the foot of slope, or points at which the thickness of sedimentary rocks is at least one per cent of the distance to the foot of the continental slope; third, the evaluation of whether any of these points delineating the outer edge of the continental margin lies beyond either 350 M from the baselines from which the breadth of the territorial sea is measured, or exceeds 100 M from the 2,500 metre isobath. Points lying inside these constraints define the outer limit of the continental shelf. Points lying beyond the constraints locate the outer edge of the continental margin, and the outer limits of the continental shelf in these cases will be defined by the constraint.

With these points, I conclude my presentation today. May I thank you, Mr President, and distinguished Members of the Tribunal, for your attention, and I invite you to call Rear Admiral Khurshed Alam, the Deputy Agent of Bangladesh, to the podium.

THE PRESIDENT: Thank you, Dr Parson. I invite the Deputy Agent of Bangladesh, Mr Khurshed Alam, to take the floor please.

MR ALAM: Mr President, members of the Tribunal, it is a great honour and privilege for me to appear before you today on behalf of my country.

My colleague, Dr Lindsay Parson, has just described to you the geological continuity of Bangladesh into the Bay of Bengal and beyond. I would now like to describe the approach that Bangladesh took to establish the outer limit of its continental shelf in

the Bay of Bengal, in accordance with article 76 of United Nations Convention on the Law of the Sea 1982.

Bangladesh delivered its submission to the Commission on the Limits of the Continental Shelf through the Office of the United Nations Division of the Oceans and Law of the Sea on 25 February 2011, and presented it to the 28th session of the Commission on 24 August 2011. The submission comprises the Executive Summary, Main Body, supporting data and documentation, according to the Commission's rules of procedure. The Executive Summary has been published on the Commission's website and has also been submitted to the Tribunal as Annex R3. You can see the front page of this on your screen and under tab 5.10 in your folders. An electronic copy of the full text of the submission has also been deposited with the Registry of this Tribunal.

For the preparation of the submission, Bangladesh assembled a large and complex suite of state-of-the-art geophysical and geological data. This includes bathymetric profiles for measuring water depth, and seismic data for measuring sediment thickness, similar to those used in the petroleum industry to explore for subsurface hydrocarbon deposits.

For the past twelve years, Bangladesh has been working on gathering data in the Bay of Bengal to understand its maritime territory. This map on your screen shows the numerous hydrographic survey programmes collected by the Bangladesh Navy and the Bangladesh Continental Shelf Technical Team, this is under Tab 5.11. They extend from the coastal region and the shallowest waters of the delta out to some of the deepest waters of the Bay of Bengal, providing dense coverage of the foot of slope and the deeper water out to beyond 2,500 metre isobath.

As well as the bathymetric data required to identify the foot of slope, Bangladesh also needed seismic data for the sediment thickness formula of article 76, paragraph 4(a)(i).

This graphic (also under tab 5.11) shows the track lines of the industry-standard seismic reflection profiles used in the submission. These were acquired to provide acoustic slices into the seabed of the Bay, deep enough to identify the base of the sediment layer and hence measure the sediment thickness. This parameter is critical for the determination of the outer edge of the continental margin.

The first stage of analysis is to define the foot of slope, from which all the other measurements are taken. Article 76, paragraph 4(b) states that "the foot of the continental slope shall be determined as the point of maximum change in gradient at its base". Accordingly, the new bathymetric profiles were used for this purpose. This graphic shows the shallow near-shore shelf in pink at a water depth of less than 200 m - the edge of the pink corresponds to the edge of the shelf; southwards we plunge off the edge of the shelf down the continental slope, on to the pale blue area hat makes the base of the slope at a water depth of approximately 1,800 metres. This map shows the profiles used to define the base of the continental slope and the foot of slope points; nine were used in the final submission. Mr President, rather than take you through all of these profiles one by one, I will use one representative profile

to show you the methodology used. (You will find this map and the others relevant to the analysis of the foot of the slope under tab 5.12).

Our method of analysis comprised three stages: first, we constructed a regional profile to demonstrate the bathymetric context of the foot of the slope. This profile extends from the shallow shelf area adjacent to the Bangladesh coastline into the deep abyssal plain. There you can see the shallow shelf, the relatively steep continental slope, and the start of the rise that extends throughout the Bay of Bengal, which, as Dr Parson previously stated, corresponds to the Bengal Fan. This regional profile also allowed us to identify the base of the slope zone, within which we could analyze the maximum change of gradient to determine the foot of slope. The next slide will show you in more detail the transition from the shelf to the rise, and I will show you an enlargement of the part of the profile outlined in pink.

This graphic shows a profile from the edge of the shelf, down the slope and into the top of the rise to where we have determined the limits of the base of slope region. By limiting the width of this zone, the analysis of gradient can be more easily focused.

In the final step, we analyzed a small section of the bathymetric profile within the base of slope region to select a foot of slope point. In this case, each selection was based on the maximum change in the gradient in accordance with paragraph 4(b) of article 76. This slide shows a detailed analysis of the foot of slope profile. The bathymetry is shown in green, ranging only from 1,750-1,850 metres water depth. Overlain in red is the analysis of the change of gradient of the sea floor, performed using specialist and highly regarded software.[12] This is fairly uniform across most of this profile, and shows a distinct spike on the right at the distinct break in slope. This is “the maximum change of gradient”. And it is, by definition, the foot of the slope.

We carried out the same analysis for each of the nine base of slope profiles; the plate you can see shows the location of the nine final foot-of-slope points. This is at the back of tab 5.12.

Having established the foot of the slope positions, we proceeded to apply the formulae in article 76, paragraph 4, to delineate the outer edge of the continental margin. The first formula applied here is the “distance” formula as given in article 76, paragraph 4(a)(ii), that is, points not more than 60 M from the foot of the continental slope. Here you can see (and also under tab 5.13) the line drawn using the standard envelope of arcs method showing the control lines connected to the respective foot of slope points.

From the distance formula construction, we now move to the second formula, which defines the edge of the continental margin at the point where the sediment thickness is at least one per cent of the distance to the foot of the continental slope. To remind us of the unusual sediment distribution of the Bay of Bengal, you can see now on your screens a published sediment thickness map[13]. This model, derived from gravity data calibrated by seismic velocities, can be regarded as a generally reliable

[12] Geocap and CARIS LOTS were used

[13] Radhakrishna, M., Subrahmanyam, C. & Damodharan, T. (2010). Thin oceanic crust below Bay of Bengal inferred from 3-D gravity interpretation, Tectonophysics, 493, 93-105.

estimate of sediment thickness. The warmer colours, red and orange, show the thickest parts, here more than 12 km; the green and blue colours show the thinner sediments. Sediment thickness in the central Bay of Bengal, some 400 M from the Bangladesh land mass, generally exceeds 6 km. Such published data were used to help plan the acquisition of a number of seismic profiles. As the lines are designed for the application of the sediment thickness formula, they must demonstrate sufficient sediment to prove both that at each point of the sediment thickness is at least 1% of the distance to the foot of the slope, and that the sediment is continuous back to the foot of slope.

I am now going to show you an example of our seismic data. This is a short line from the south-western part of the survey, highlighted on your screens in red. The survey was designed to measure the sediment thickness points and to demonstrate sediment continuity. The image that is now on your screens (and at tab 5.14) shows the seismic data itself; this line is approximately 100 km in length and about 15 km in depth. The seafloor lies towards the top of the image and is marked in blue. The top of the basement and the base of the sediment is shown in red. The sediment and underlying basement have a different seismic response and appear here with different textures; the section illustrates the relative uniformity of the thick sedimentary sequence and the clear contrast in character between it and the underlying oceanic basement. You can see the multi-layered nature of the sediment, as layer upon layer of sand and mud have accumulated over millennia. The oceanic basement by comparison is much more rugged and chaotic, with a very irregular surface. The sediment thickness is measured between the top of the basement and the seabed. This is the value that is used for the sediment thickness formula.

Using these seismic profiles, sediment thicknesses were calculated together with the distance from the foot of the slope. This summary map now on the screen (and also under tab 5.15) shows the seven resulting sediment thickness points, used to delineate the outer edge of the continental margin in accordance with article 76, paragraph 4(a)(i). These points lie typically about 500 km (or 280 M) from the foot of the slope and have more than 5 km of sediment, thus satisfying the 1% criterion. All these points clearly lie oceanward of the “distance” formula; accordingly, it is only the sediment formula which Bangladesh needs to use in its continental margin construction.

Having established the outer edge of the continental margin according to the rules of article 76, paragraph 4, I would now like to examine the constraint options provided in paragraph 5 of article 76. This states that the outer limits of the continental shelf

> “either shall not exceed 350 nautical miles from the territorial sea baselines or shall not exceed 100 nautical miles from the 2,500 metre isobath, which is the line connecting the points lying along the depth of 2,500 metres.”

It was recognized during the initial studies that the construction of a 350-M limit would fall some distance landwards of a constraint constructed at 100 M from the 2,500 m isobath. Therefore work proceeded to identify precisely this latter constraint only.

Establishing the exact geometry of the 2,500 metre isobath requires precise surveying, as the seafloor gradient at such depths is generally very low. Moreover, depending on relatively small variations in relief, isobath configuration may be very complex. The dedicated surveys that the Bangladesh Navy carried out to assess the exact position of the 2,500 metre isobath are illustrated here (and in your folders under tab 5.16) as blue lines; the red circles indicate individual surveyed 2,500 metre depth points from which the constraint was accurately constructed. With these data, we were able produce the final outer limit of Bangladesh's continental shelf entitlement in accordance with article 76.

Perhaps it would be helpful to the Tribunal for me to summarize this process, that is, how Bangladesh has applied the requirements of article 76 to determine the final outer limit of our continental shelf entitlement. The following slides sequentially review the methodology for constructing the outer limit of the continental shelf. This first slide provides an overview of the regional context and background bathymetry, on which we have superimposed the nine foot of slope points identified during the analysis of our bathymetric profiles.

Using the foot of slope positions, a series of 60-M arcs generated a potential outer limit to the continental margin in accordance with sub-paragraph 4(a)(ii) of article 76: and this is the distance formula.

The 1% sediment thickness positions derived from our seismic data are then added, as you can see on this next plate. As these are seaward of the distance lines, they define the outer edge of the continental margin according to article 76 paragraph 4.

We have now added the 2,500 metre sounding locations, and the constructed line 100 M seaward. This constraint is inside - or landward of - the sediment thickness line in all but its very western end. In this way, the line defines the outer limit of our continental shelf in conformity with article 76 of the United Nations Convention on the Law of the Sea, 1982.

Article 76, paragraph 7 requires the outer limit to be defined as a series of fixed points. The 2,500 metre + 100-M constraint line is now converted to a number of points (in this case there are 120) that are no more than 60 M apart. These are shown as points Fixed Point 1 through to Fixed Point 120. You will also find this final map under tab 5.17.

This final map in the sequence (and also under tab 5.17) shows an enlargement of the outer limit showing the 120 fixed points, joined by straight lines (in orange), none of which are greater than 60 M in length. These connect the fixed points andthis is the complete definition of Bangladesh's continental shelf.

To conclude, I would now like to show a brief animation depicting a fly-over of the Bay of Bengal, showing the differences between its various margins. This highlights the rather dramatic seafloor features, from the immensity of the Fan itself to its detailed channelling and sediment patterns. It also shows the inherent features which define the various components of the Bangladesh's outer continental shelf entitlement.

As you can see, we fly in northwards across the Bay of Bengal, crossing the vast expanse of the Bengal Fan that extends as an immense apron of sediment hundreds of miles from the coastline. The central parts of the Fan are crossed by numerous active and inactive channels, fed by the major underwater canyon known as the "Swatch of No Ground". As we turn back towards the south, we leave the shallow water part of the shelf, to pick up the locations of the nine "foot of slope" points, seen here as yellow dots; the distance formula constructed using these points as a series of red arcs; the outer edge of the continental margin outlined at the 1% sediment thickness point is marked by yellow pyramids; the 2500 metre isobaths picks are indicated in green circles along with the construction of the 100-M constraint arcs. This allows the determination of the outer limit of the continental shelf, shown here in orange, consistent with the provisions of article 76 of the United Nations Convention on the Law of the Sea, 1982. I have extracted some stills from this animation which you will find under tab 5.18, and we will be providing you with a digital copy later this week.

Mr President and Members of the Tribunal, that concludes my presentation regarding Bangladesh's continental shelf. Bangladesh has an easily defined natural prolongation consisting of the thick sediment of the Bengal Fan that extends from the north and throughout the Bay of Bengal. The outer limit of Bangladesh's continental shelf, as established by article 76 and submitted to the Commission, lies well within the continental margin of Bangladesh.

Mr President, and the Members of the Tribunal, I thank you very much for allowing me to make this presentation today. May I now ask you to call Professor Boyle to the podium.

THE PRESIDENT: Thank you for your presentation. I now give the floor to Mr. Alan Boyle.

MR BOYLE: Mr President, Members of the Tribunal. My task this morning is to set out Bangladesh's case on delimitation of the continental shelf beyond 200 M from the territorial sea baselines. (And I will obviously have to divide this presentation into two, and I will try and find a convenient point at which to do so.) In its Memorial and Reply, Bangladesh argued that pursuant to article 76 of the 1982 Convention, it has an entitlement to a continental shelf beyond 200 M.[14] Bangladesh further argued that Myanmar enjoys no such entitlement because its land territory has no natural prolongation into the Bay of Bengal beyond the 200-M limit.[15] Alternatively, Bangladesh also argued that even if Myanmar has some entitlement to a continental shelf beyond 200 M, then an equitable delimitation would nevertheless still allocate all or most of the disputed areas of continental shelf beyond 200 M to Bangladesh.[16]

Myanmar's Counter-Memorial and its Rejoinder argue in response that the question of delimiting the shelf beyond 200 M simply does not arise because an equidistance delimitation would terminate well before reaching the 200-M limit.[17] In the

[14] Memorial of Bangladesh (hereinafter "MB"), paras. 7.14-7.26.
[15] *Ibid.*, paras. 7.27-7.36.
[16] *See ibid.*, para. 7.42; Reply of Bangladesh (hereinafter "RB"), paras. 4.75-4.89.
[17] Counter-Memorial of Myanmar (hereinafter "CMM"), para. 1.15; Rejoinder of Myanmar (hereinafter "RM"), paras. 7.7, A.2.

appendices to its pleading Myanmar goes on to argue firstly that based among other things on the geomorphology of the seabed, Myanmar's continental shelf entitlement extends beyond 200 M regardless of the underlying geology;[18] and secondly they say that delimitation beyond 200 M is based on the same principles as delimitation within 200 M.[19] In effect both Parties are claiming the whole area in dispute beyond 200 M. Alternatively, both Parties also agree that if there is any overlapping entitlement beyond that limit, then any boundary delimitation must also result in an equitable solution, but Myanmar has not so far given any indication of what an equitable solution beyond 200 M would look like.

The full extent of Bangladesh's submission to the Commission on the Limits of the Continental Shelf has just been outlined by Admiral Alam, but it may be useful to recall at this point how large an area beyond 200 M is at stake in this case. And you will see the map on the screen and you will find it also at tab 5.19 in your folders. Myanmar does not dispute that Bangladesh's land territory has a natural prolongation beyond 200 M, as required by article 76(1); nor does it say that Bangladesh does not satisfy the conditions set out in article 76(4) and (5) for establishing the outer limits of its continental shelf. And to that extent, both Parties agree that there is a continental shelf extending beyond 200 M from Bangladesh's land territory. Myanmar has also submitted no evidence to the contrary; so no issue arises concerning Bangladesh's entitlement to a continental shelf beyond 200 M. The Tribunal merely has to determine where the boundary line should be drawn between the Parties beyond that limit.

I will address two issues this morning. First, I will argue that there is no overlapping continental shelf beyond 200 M because Myanmar has no natural prolongation from its land territory at that point and therefore no entitlement to extend its continental shelf beyond the 200-M limit. Secondly, and in the alternative, I will argue that, insofar as the continental shelf of both Parties does overlap beyond 200 M, then the boundary must be delimited in accordance with article 83(1) in order to achieve an equitable solution.

And in this context the most significant factors in the present case are, firstly, seabed geology and geomorphology, and, secondly, the disproportionate cut-off effect which Myanmar's equidistance line or indeed any equidistance line generates beyond 200 M.

In conclusion, I will sum up Bangladesh's view of the equitable solution required by article 83(1). At this point, before I go any further, it may also be convenient to reiterate that the location of the outer limit of the continental shelf, as defined in article 76(5) of the Convention, is not an issue in these proceedings, and it is not relevant to the delimitation of the maritime boundary between the Parties to this dispute. I hope that Admiral Alam's presentation will have made that very clear. And as Dr Akhavan explained yesterday, each Party delineates the outer limit of its own continental shelf on the basis of the recommendations made by the CLCS. With respect to the shelf beyond 200 M, this Tribunal's role in the present case is simply to delimit the lateral boundary between Bangladesh and Myanmar. There is no

[18] *Ibid.*, paras. A.28-A.40.
[19] *Ibid.*, paras. 5.3, 5.110.

question of delineating the outer limit of the shelf nor is that required by the *compromis*: on that issue both Parties agree. The outer edge of the continental margin and the boundary with the international seabed area, wherever that may be, lie well to the south of the area covered by the overlapping claims of the Parties to the present case. And I think again, Admiral Alam's presentation was intended to demonstrate that point.

My first argument, therefore, is that there is no overlapping shelf beyond 200 M. In the present dispute, there is overwhelming and unchallenged evidence of a "fundamental discontinuity" between the land mass of Myanmar and the seabed beyond 200 M. Geologically and geomorphologically, as Dr Parson explained this morning, the tectonic plate boundary between the Indian and Burma Plates is manifestly "a marked disruption or discontinuance of the seabed" that serves as "an indisputable indication of the limits of two separate continental shelves, or two separate natural prolongations". I am sure many of you will recognize those as quotations from the International Court judgment in the *Tunisia/Libya Case*.[20] In contrast, there is complete and undisputed physical continuity between Bangladesh and the seabed beyond 200 M.

Myanmar's claim to a continental shelf beyond that limit can only rest on "natural prolongation", as article 76 requires. Given the geological and geomorphological evidence elaborated this morning by Dr Parson, it seems evident that Myanmar cannot meet the physical test of natural prolongation in article 76(1), and Myanmar itself has not submitted any evidence to challenge this conclusion. That would mean that it is not entitled to a continental shelf beyond 200 M, and the question whether the conditions set out in article 76(4) are met simply does not arise; Myanmar does not get there.

The continental shelf in the Bay of Bengal is thus the natural geological prolongation of Bangladesh and, to a lesser extent, of India, but it cannot be the natural prolongation of Myanmar. There is no geological basis for Myanmar's claim to a continental shelf beyond 200 M. Myanmar's juridical continental shelf can of course extend westwards to the 200 M provided by Article 76, but no further. And crucially, and if you look at the map you can see where that is – outlined in orange. And crucially, Myanmar has not contradicted – or even questioned – any of the scientific facts. It admits them in its pleadings[21] and in its submission to the CLCS.[22]

Entitlement to a continental shelf beyond 200 M is of course governed by article 76 of the 1982 Convention. If we look very quickly and remind ourselves what article 76(1) provides, you will see there that it defines the continental shelf of a coastal State:

> "The continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout *the natural prolongation of its land*

[20] *Continental Shelf (Tunisia/Libyan Arab Jamahiriya)*, Judgment, ICJ Reports 1982, p. 18 (hereinafter "*Tunisia/Libya*"), para. 66.
[21] *See, e.g.,* CMM, paras. 2.5, 2.12, A.12, A.32-A.35.
[22] *Continental Shelf Submission of Union of Myanmar, Executive Summary, 16 December 2008*, p. 2, *Annex MCM-16*.

> *territory to the outer edge of the continental margin*, or (and this is of course the alternative) 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."[23]

And if we look very quickly also at article 76(3) on the screen, it provides that:

> "The continental margin comprises the submerged prolongation of the land mass of the coastal State, and consists of the seabed and subsoil of the shelf, the slope and the rise. It does not include the deep ocean floor with its oceanic ridges or the subsoil thereof."[24]

Bangladesh takes the view that entitlement to a continental shelf beyond 200 M under article 76(1) requires evidence of "natural prolongation" from the coastal State's land territory. Article 76(1) defines the continental shelf as the "seabed and subsoil" of the submarine areas beyond the territorial sea. It does not define "natural prolongation". Nevertheless, in Bangladesh's view the ordinary meaning of the words "natural prolongation" of the "seabed and subsoil" of the submarine areas beyond the territorial sea is sufficiently clear and unambiguous: both geomorphological and geological continuity must, in Bangladesh's view, exist between the coastal State's land mass and the seabed and subsoil beyond 200 M. And indeed, the very composition of the Commission on the Limits of the Continental Shelf about which you heard yesterday – a mixture of geologists, geophysicists and hydrographers – rather speaks for itself on that point.[25]

In this respect the basis of title beyond 200 M is fundamentally different from entitlement within 200 M. Beyond 200 M natural prolongation is essentially a physical concept; it is not an abstract legal one. It must be established by evidence. It cannot be based solely on the geomorphology of the ocean floor alone but must also have an appropriate geological foundation, as Dr Parson has explained. Mere "appurtenance" or proximity to the nearest land mass does not create an entitlement to a continental shelf, as decided by the International Court in the *North Sea* case.[26]

Myanmar disputes Bangladesh's interpretation of article 76.[27] Put simply, Myanmar argues that where the outer edge of a continental margin can be delimited in accordance with either of the formulae stated in article 76(4), a "natural prolongation" within the meaning of article 76(1) can be presumed.[28] In the words of the Counter-Memorial: "'Natural prolongation' is not the criterion; it is the (legal) outcome."[29] Myanmar also argues that the legal criteria for delineating the outer limit of the

[23] Emphasis added.
[24] Emphasis added.
[25] *See* Art. 2(1) of Annex II to UNCLOS.
[26] *See North Sea Continental Shelf (Federal Republic of Germany/Denmark; Federal Republic of Germany/Netherlands)*, Judgment, ICJ Reports 1969, p. 3 (hereinafter "*North Sea Cases*"), para. 39.
[27] RM, paras. A.23-49.
[28] CMM, paras. A.21-A.22.
[29] *Ibid.*, para. A.10.

continental shelf "do not involve geological continuity, but are based primarily on concerns of horizontal distance and the shape (or geomorphology) of the seabed."[30]

On Myanmar's interpretation, article 76(1) and its reference to natural prolongation play almost no role in determining entitlement to an outer continental shelf; only the location of the foot of the slope and the article 76(4) formula lines are relevant.[31] That's their view. By using paragraph 4 to override paragraph 1, Myanmar gives the concept of natural prolongation a purely geomorphological character, focusing on the superficial character of the ocean floor and ignoring the underlying geology of the seabed and subsoil altogether.[32] It goes on to say that article 76,

> "refers to a legal concept which takes some account of scientific notions. It is not at all designed to describe necessary natural and scientific characteristics of the continental shelf, but refers only to a legal concept which assesses the legal title of a State to the continental shelf."[33]

In its view there is simply no need to produce evidence of natural prolongation, and unlike Bangladesh it has not offered you any.

Myanmar's reliance on article 76(4) rather than article 76(1) is not surprising, since, as Dr Parson showed this morning, Myanmar has no geological extension beyond 200 M (or indeed beyond 50 M). By reading article 76(1) out of UNCLOS, Myanmar is obviously trying to avoid the question whether there is any geological continuity between the seabed and subsoil beyond 200 M and its own adjacent land mass. It wants you to ignore the intervening tectonic plate boundaries and seabed trenches, or any other major geological discontinuity. Even on its own terms, Myanmar goes too far, because of course the application of article 76(4) on which it relies also requires geological evidence concerning the thickness of sedimentary rocks.[34] Sediment thickness is nothing if it is not geology. As Sherlock Holmes should have said: "Sedimentary, my dear Watson"; so geomorphology does not provide all the answers in article 76.

Bangladesh takes the view that the reference to natural prolongation in article 76(1) cannot be ignored in the way that Myanmar argues, or at all. Article 76 as a whole, as you all know, is a carefully structured package, and proceeds logically from the definition of the "continental shelf" in article 76(1), which expressly includes natural prolongation of the seabed and subsoil, before coming to the rules and procedures for establishing the outer edge of the "continental margin" in article 76(4), and then the legal outer limit of the shelf in article 76(5). Myanmar is thus wrong to claim that the "legal concept of 'natural prolongation' must be understood by reference to the formulae of article 76(4)(a) of UNCLOS and their starting point, i.e., the foot of the continental slope …"[35]

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[30] RM, para. A.45.
[31] CMM, para. A.11.
[32] RM, paras. A3-A27.
[33] CMM, para. A.9.
[34] Article 76(4)(a)(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…"
[35] CMM, para. A.23.

The most crucial point to emphasize in response here is that even if Myanmar can draw an outer edge of the continental shelf in accordance with article 76(4), there must still be an intervening physical shelf to constitute natural prolongation from the land territory. Let us just for a moment imagine the outer continental shelf as an egg. Myanmar's version of the egg has a shell, but it need *not* have a yolk. For Bangladesh, a shell is a shell, but an egg is a shell *and* the yolk. The two go together. So it is with the continental shelf. For the physical shelf to reach the outer edge of the margin as defined by article 76(4), and *a fortiori* to reach the outer limit of the legal shelf defined by article 76(5), its physical structure must run continuously from the land territory, as required by article 76(1).

For that most basic of reasons – and really this is a very obvious point – even for a professor – article 76(4) does not help Myanmar establish a continental shelf beyond 200 M. It is not the case, as Myanmar argues – and I quote again – that "article 76(4) is applicable independently of the question whether the continental shelf is or is not the scientific natural prolongation of the land mass".[36] Yes, they did say that. That dismissive sentence does not really require much of a response from me. But the idea that the continental margin can be the "natural prolongation" of a land mass to which it has no physical connection whatever – even if separated by a black hole – is surely not what the International Court had in mind in the *North Sea Continental Shelf* cases.

I think, Mr President, that is probably the right moment to give you a coffee break, if I may.

THE PRESIDENT: Thank you very much. I think now we will break for thirty minutes and we will come back at 12 noon.

(Short adjournment)

THE PRESIDENT: Mr. Boyle, you have the floor to resume your statement.

MR BOYLE: Mr President, Members of the Tribunal, before the coffee break I made the point that the idea that the continental margin can be the natural prolongation of a land mass to which it has no physical connection whatever, even if separated by a black hole, is surely not what the ICJ had in mind in the *North Sea Continental Shelf* cases.

Even if we accept Myanmar's argument that "the seaward edge of an accretionary wedge ... scientifically speaking, is supposed to represent the edge of the continental margin",[37] the undisputed scientific evidence still shows that in the present case the accretionary wedge simply does not reach beyond 50 M.[38] You can see that on the

[36] *Ibid.*, para. A.25.
[37] *Ibid.*, para. A.34.
[38] MB, paras. 2.22-23, 2.41; RB, para. 1.20. *See also* Joseph R. Curray, "The Bengal Depositional System: The Bengal Basin and the Bay of Bengal" (23 June 2010), Annex BM-37; Joseph R. Curray, "Comments on the Myanmar Counter-Memorial, 1 December 2010" (8 March 2011), Annex BR-4; and Hermann Kudrass, "Elements of Geological Continuity and Discontinuity in the Bay of Bengal: From the Coast to the Deep Sea" (8 March 2011) E68, Annex BR-5.

screen and in tab 5.23 of your folders. Article 76(4) therefore does not and cannot define "natural prolongation". It merely defines the outer edge of the continental margin in cases where there already exists the necessary natural prolongation from the land territory as required by article 76(1).

Myanmar tries to argue that Bangladesh's interpretation would leave the CLCS with no means for defining the outer limit of the shelf in cases where a major geological discontinuity in the seabed and subsoil exists beyond 200 M.[39] Myanmar says that "article 76 does not contain any principles or rules in order to determine the outer limit of the continental shelf in such a case."[40] This is quite wrong. Article 76(4)(b) permits "evidence to the contrary" to be used where the foot of the slope cannot be measured by reference to the maximum change in gradient.[41] This would allow for geological evidence to be used in such cases.[42] Bangladesh's interpretation of article 76 is no impediment to a determination of the outer limit of the shelf.

Bangladesh's argument, Mr. President and Members of the Tribunal, thus remains that the ordinary meaning of the term "natural prolongation", and the context in which it is used in article 76, requires evidence of a geological character connecting the seabed and subsoil directly to the land territory. Both geology and geomorphology are relevant and necessary in applying article 76(1), as they also are when determining the outer edge of the margin under article 76(4). And it's only the definition of the outer limit of the shelf in article 76(5) that is a purely legal construct – and it is not relevant for the purposes of these proceedings.

The *travaux* of the 1982 Convention, and the jurisprudence, also point to the same conclusion. In the Official Records of the 3rd UN Conference on the Law of the Sea the term "natural prolongation" first appears in a Working Paper submitted by China to the Committee on the Peaceful Uses of the Seabed and the Ocean Floor Beyond the Limits of National Jurisdiction.[43] Working papers and draft texts submitted at the conference itself also used the term.[44] The same terminology was used in article 62 of the 1975 Informal Single Negotiating Text[45] and article 64 of the 1976 Revised

[39] RM, para A.35.
[40] *Ibid*.
[41] Article 76(4)(b): "In the absence of evidence to the contrary, the foot of the continental slope shall be determined as the point of maximum change in the gradient at its base."
[42] *See* Chapter 6 of the Commission on the Limits of the Continental Shelf, *Scientific and Technical Guidelines,* U.N. Doc. No. CLCS/11 (13 May 1999).
[43] UNDOC A/AC.138/SC.II/L.34, reproduced in UN, *Report of the Committee on the Peaceful Uses of the Seabed and the Ocean Floor Beyond the Limits of National Jurisdiction*, New York, 1973, Vol. III, p. 74, GAOR, 28th Session, Supp. 21 (A/9021).
[44] See Third United Nations Conference on the Law of the Sea, Canada, Chile, Iceland, Indonesia, Mauritius, Mexico, New Zealand and Norway: working paper, U.N. Doc. No. A/CONF.62/L.4 (26 July 1974), Annex BR-8; Third United Nations Conference on the Law of the Sea, United States of America: draft articles for a chapter on the economic zone and the continental shelf, U.N. Doc. No. A/CONF.62/C.2/L.47 (8 August 1974), Annex BR-10; Third United Nations Conference on the Law of the Sea, Preliminary Study Illustrating Various Formulae for the Definition of the Continental Shelf, U.N. Doc. A/CONF.62/C.2/L.98 (18 April 1978), p. 189, n. 11, Annex BR-13.
[45] Third United Nations Conference on the Law of the Sea, Informal Single Negotiating Text (Part II), U.N. Doc. A/CONF.62/WP.8/PART II (7 May 1975), Annex BR-11.

Single Negotiating Text.[46] I am sure that you are all familiar with those. These draft articles are identical to article 76(1) of the 1982 Convention.

The drafting history shows that the term natural prolongation is drawn from the *North Sea Continental Shelf* cases.[47] In those cases – you will see the excerpt on the screen – the ICJ understood "natural prolongation" as follows:

> "More fundamental than the notion of proximity appears to be the principle — constantly relied upon by all the Parties — of the natural prolongation or continuation of the land territory or domain, or land sovereignty of the coastal State, into and under the high seas, via the bed of its territorial sea which is under the full sovereignty of that State....."[48]

The Court itself used the terminology "natural prolongation". It is of course true that the Court's comments have since been overtaken in part by the development of the 200-M continental shelf introduced by the 1982 Convention, but that is essentially an artificial legal construct. The Court's view in 1969 of natural prolongation remains equally applicable today to the shelf beyond 200 M. As Professor Crawford explained on Thursday, the *North Sea* cases are a very relevant authority in the present litigation.

The subsequent jurisprudence also supports Bangladesh's interpretation of article 76. In the *Tunisia/Libya* case, the ICJ echoed the *North Sea* cases and it referred to "the physical factor constituting the natural prolongation".[49] It also made clear that "a marked disruption or discontinuance of the sea-bed" may constitute "an indisputable indication of the limits of two separate continental shelves, or two separate natural prolongations". It is true that it was unable to identify such a discontinuity on the facts of that case[50] but that was a matter of evidence.

In the *Libya v. Malta* case, the ICJ again held that a discontinuity in the seabed and subsoil could be "so scientifically 'fundamental', that it must also be a discontinuity of a natural prolongation in the legal sense".[51] However, it also found the evidence insufficient to demonstrate such a discontinuity in that part of the Mediterranean. Throughout the *Libya/Malta case* the ICJ was very careful to refer both to the seabed and the subsoil when discussing arguments based on geology. It appears from both the *Libya v. Malta* and the *Tunisia v. Libya* cases that the Court had something more than geomorphology in mind: a "discontinuance" in the seabed, a "scientifically fundamental discontinuity", suggest not just the surface of the ocean floor but also

[46] Third United Nations Conference on the Law of the Sea, Revised Single Negotiating Text (Part II), U.N. Doc. A/CONF.62/WP.8/REV.1/PART II (6 May 1976), Annex BR-12.
[47] See *North Sea Cases*, paras. 19, 39-40, 43; miles. Nordquist et al., eds., United Nations Convention on the Law of the Sea 1982: A Commentary, Vol. II (1993), p. 846, Annex BM-32.
[48] *North Sea Cases*, para. 43.
[49] *Tunisia/Libya*, para. 68.
[50] *Ibid.*, para. 66.
[51] *Continental Shelf (Libyan Arab Jamahiriya v. Malta)*, Judgment, I.C.J. Reports 1985, p. 13 (hereinafter "*Libya v. Malta*"), para. 41.

the underlying geological structure of the subsoil.[52] Both cases treat the geological and geomorphological evidence as relevant beyond 200 M.

That conclusion is also shared by the Commission on the Limits of the Continental Shelf. A declaration of principles interpreting article 76 was made by a sub-commission of the CLCS during its examination of the UK's Ascension Island submission and is referred to by Myanmar in its Counter-Memorial.[53] That declaration of principles contains the following very pertinent paragraph:

> "(i) The 'natural prolongation of [the] land territory' is based on the *physical extent* of the continental margin to its 'outer edge' (article 76, paragraph 1) i.e. 'the submerged prolongation of the land mass ...' (article 76, paragraph 3)"[54]

I will obviously emphasize in particular the words "physical extent of the continental margin".

Contrary to what Myanmar argues, this declaration reflects Bangladesh's view of the continental shelf beyond 200 M. Its existence is essentially a question of fact – a physical concept, based on natural prolongation to the edge of the continental margin, but one whose outer limit – but only the outer limit – is then defined by law. Taking into account the jurisprudence on natural prolongation[55] and applying it, in the language of the International Court in *Tunisia v. Libya*, to "the physical circumstances as they are today",[56] leaves no doubt that the continental shelf that runs southwards from Bangladesh into the Bay of Bengal is a natural prolongation of its land mass, as required by article 76(1), and that the outer edge of the margin is far beyond the area in dispute, as my colleagues showed earlier. In the International Court's words, the "submarine area concerned is to be regarded as a natural extension" of the land mass of Bangladesh.[57] In contrast, as you have heard today from Dr Parson, the evidence amply demonstrates that the Bengal Depositional System and its associated Fan are not the natural extension of Myanmar's land territory.

To summarize the argument so far, if Myanmar has no entitlement to an outer continental shelf in accordance with article 76, then it necessarily follows that Myanmar's claimed entitlement to the bilateral area also covered by Bangladesh's CLCS submission, and to the trilateral area also covered by the CLCS submissions of Bangladesh and India, are invalid. Because Bangladesh, by contrast, *can* demonstrate a legal and scientific basis for natural prolongation from its land territory, it must be entitled to an outer continental shelf beyond 200 M. Any boundary between that shelf and Myanmar's must then lie no further seawards from

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[52] *See* also the many references to seabed geology in *Tunisia/Libya.*

[53] *CLCS Ascension Island Recommendations,* adopted on 15 April 2010*,* para. 22. Cited by CMM, para. A.25.

[54] *Ibid*. Emphasis added.

[55] MB, paras. 7.10-7.13.

[56] *Continental Shelf (Tunisia/Libyan Arab Jamahiriya)*, Judgment, I.C.J. Reports 1982, p. 18 (hereinafter "*Tunisia/Libya*"), para. 60.

[57] *North Sea Cases*, para. 43.

Myanmar's coast than the 200-M juridical shelf provided for in article 76. There is then no overlapping shelf beyond 200 M from Myanmar.

Many states do not have a physical continental shelf extending beyond or even as far as the 200-M line.

At present there are 162 States Party to the UN Convention, of which 136 appear to be coastal States.[58] Of the latter, some 48 have made continental shelf submissions to the CLCS.[59] In addition, another 31 States have submitted preliminary information indicative of the outer limits of the continental shelf beyond 200 M. Thus there are 79 States that believe their continental shelf may extend beyond 200 M. That leaves 57 coastal states that have made no submissions to the CLCS, and for them it would seem that the 200-M limit is likely to be the maximum outer limit for their continental shelf, in most cases because their shelf does not physically extend beyond that limit. However, even among those whose shelf does exceed 200 M, there are, of course, variations and in some cases they too have areas where the outer limit stops at 200 M because the physical shelf does not extend that far everywhere.

Of the submissions made to the CLCS, it has made recommendations on 14. We would like to show illustrative maps for two of these recommendations, Australia and New Zealand. Australia made its submission to the CLCS on 15 November 2004 and received the Commission's recommendation on 9 April 2008. New Zealand made its submission on 19 April 2006 and received the CLCS recommendation on 22 August 2008.

Even for a country that has an extensive continental shelf beyond 200 M, Australia also has areas, which you can see very clearly on the screen, where the 200-M EEZ line is the limit for those parts of the continental shelf that do not extend any further. On the map you will see those illustrated in green.

New Zealand's CLCS recommendation also has areas where the 200-M limit defines the outer limit of the continental shelf, and you will see those highlighted in yellow.

In the situation before this Tribunal it is Bangladesh's firm belief that Myanmar's physical continental shelf extends only about 50 M offshore. Its continental shelf limit would thus be the 200-M limit coincident with the EEZ boundary. In that respect, Myanmar would be in good company with many other coastal States worldwide whose continental shelf limits in whole or in part fall at the 200-M line.

Let me now turn to the second part of my presentation, which deals with equitable delimitation beyond 200 M. If, contrary to all the evidence and to what Bangladesh

[58] *See* Chronological lists of ratification of, accessions and succession to the Convention and related agreements as at 3 June 2011 at http://www.un.org/depts/los/reference_files/chronological_lists_of_ratifications.htm accessed 12 September 2011.

[59] There are several countries, such as France, that have made several submissions for different areas. There have also been several submissions made by more than one country. A list of submissions, recommendations, preliminary information documents, executive summaries of submissions, diplomatic notes responding to submissions and other relevant material related to the work of CLCS is found on the Commission's website http://www.un.org/depts/los/clcs_new/clcs_home.htm accessed 12 September 2011.

believes the correct interpretation of article 76 to be, if the Tribunal were to decide nevertheless that both parties have some entitlement to a continental shelf beyond 200 M – although on what basis is far from clear – the question of an equitable delimitation of the overlapping areas would then arise.

It's important in that respect, to remember that this is a bilateral dispute between Bangladesh and Myanmar, both within 200 M and in the continental shelf beyond 200 M. The Tribunal has no power to adjudicate on whatever boundary India may have with Bangladesh or with Myanmar, and it is not requested to do so here. If we look once more at the map, we can see the bilateral area in dispute between Bangladesh and Myanmar and the larger trilateral area in dispute between all three States, and to the south there is another extensive bilateral area in dispute between India and Myanmar.

Article 83 of the 1982 Convention does not distinguish between delimitation of the continental shelf beyond 200 M and delimitation within 200 M. The objective of delimitation in both cases is "to achieve an equitable solution". The merits of any method of delimitation in this context can only be judged on a case-by-case basis. It is then for the Tribunal to delimit an equitable boundary with Myanmar throughout the very large area in dispute, both within and beyond 200 M, taking into account all the relevant circumstances.

In the shelf beyond 200 M, the relevant circumstances, in Bangladesh's view, include the encroachment by Myanmar on the natural prolongation of Bangladesh which results from the unusually concave coastal geography; they include also the geology and geomorphology of the seabed and subsoil, and they include further the absence of any natural prolongation from Myanmar's land territory. The Tribunal's task – and it is not an easy one – is to accord each of the parties some access to their potential entitlement beyond 200 M but to do so in a manner which gives full weight to the relevant circumstances and the specific regional context.[60] As Professor Crawford argued yesterday, the Tribunal must facilitate a solution which will be equitable to all of the states that have entitlements to extend their continental shelf beyond 200 M in the Bay of Bengal. To reiterate the point made yesterday by Mr Reichler, the purpose of an equitable solution is to allow "the adjacent coasts of the Parties to produce their effects, in terms of maritime entitlements, in a reasonable and mutually balanced way".[61]

Myanmar argues that the rules and methodologies for maritime delimitation beyond 200 M are identical to those within 200 M.[62] It claims that equidistance is the guiding principle within 200 M, and that it must also be the guiding principle in the area beyond 200 M but this insistence on equidistance – an insistence that has bedevilled negotiations between the Parties from the outset – ignores the exaggerated cut-off effect resulting from Bangladesh's pronounced coastal concavity. It ignores Bangladesh's natural prolongation beyond 200 M. It ignores the geological and

[60] *See Delimitation of Maritime Boundary between Guinea and Guinea-Bissau*, Award, 14 February 1985, *reprinted in* 25 ILM 252, para. 108; Reproduced in MB, Vol. V; Libya v. Malta, para. 69; *See* also note 57.
[61] *Maritime Delimitation in the Black Sea (Romania v. Ukraine), Judgment, I.C.J. Reports 2009*, p. 61, para. 201.
[62] CMM, paras. 5.3, 5.39, 5.110.

geomorphological weakness of Myanmar's case for extending its own shelf beyond 200 M. In this context, equidistance is not equitable.

Myanmar also ignores the most fundamental difference in the basis of entitlement to a continental shelf within 200 M and beyond. Within 200 M natural prolongation of the landmass is irrelevant because entitlement is based on distance from the coast [Article 76(1)]. Beyond 200 M entitlement depends on natural prolongation – that is, in Bangladesh's view, on the geology and geomorphology of the seabed and subsoil.

For the purposes of an equitable delimitation, Bangladesh need not prove that Myanmar has no prolongation at all in order to establish a superior claim to the disputed areas of continental shelf beyond 200 M. Bangladesh need only show that, *vis-à-vis* Myanmar, it has, in the International Court's words, "the most natural" prolongation.[63] In its judgment in the *North Sea* cases, the International Court put it this way:

> "…….. whenever a given submarine area does not constitute a natural — or the most natural — extension of the land territory of a coastal State, even though that area may be closer to it than it is to the territory of any other State, it cannot be regarded as appertaining to that State; — or at least it cannot be so regarded in the face of a competing claim by a State of whose land territory the submarine area concerned is to be regarded as a natural extension, even if it is less close to it."[64]

Mr President, we would say that Bangladesh has the most natural extension.

The Court says here that the shelf does not appertain to a coastal state on the basis of proximity or adjacency but on the basis of natural prolongation. Its reference to the "most natural" extension of the land territory suggests that natural prolongation can be a relative concept, and where one State has the more compelling physical connection, like Bangladesh, with the shelf beyond 200 M, that will be very relevant to an equitable delimitation.

The *Tunisia/Libya* case supports this view. While the Court in that case was not persuaded that the evidence before it showed a "marked discontinuity in the seabed", the International Court nevertheless accepted that

> "[i]n such a situation, however, the physical factor constituting the natural prolongation is not taken as a legal title, but as one of several circumstances considered to be the elements of an equitable solution".[65]

It is referring there to the marked discontinuity in the seabed, to the geology and geomorphology.

The same conclusion is supported by scholars. Colson, one of the leading authorities in this field, argues that

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[63] *North Sea Cases*, para. 43
[64] *Ibid*. Emphasis added.
[65] *Tunisia/Libya*, para. 68.

> "geological and geomorphological factors will re-emerge in the law of maritime delimitation of the outer continental shelf [...] Presumably, they will work together with the other factors in the case, perhaps prominently or perhaps not, depending of the circumstances, to achieve an equitable solution".[66]

Keith Highet, another authority in this field, goes further and predicts that, in delimitation of the continental shelf beyond 200 M,

> "it is clear that geological and geomorphological factors will not merely be important; they will be of the essence, in accordance with the intricate provisions of article 76 of the LOS Convention."[67]

The evidence before you shows that Myanmar at best enjoys only geomorphological continuity between its own landmass and the outer continental shelf. This "continuity" is based simply on oceanic sediments scraped off the Indian Plate as it subducts under the Burma Plate, filling in the deep trench that marks the divergence of the two plates (you can see that on the screen and at tab 5.29) In contrast, Bangladesh's entitlement to extend its continental shelf beyond 200 M rests firmly on the Bengal Depositional System, comprising the land territory of Bangladesh, the physical shelf and slope in the Bay of Bengal, and the deep-sea Bengal Fan.[68] Geologically as well as geomorphologically, the shelf is a natural prolongation of Bangladesh – there is no discontinuity between the land territory of Bangladesh and the entire seabed of the Bay of Bengal. Dr Parson has, I think, made that very clear. From either perspective, the seabed of the Bay of Bengal and the subsoil is "the most natural extension of the land territory" of Bangladesh. That cannot be said of Myanmar.

Concluding this section of my presentation, in Bangladesh's view, an equitable delimitation consistent with article 83 must necessarily take full account of the fact that Bangladesh has the most natural prolongation into the Bay of Bengal, and that Myanmar has little or no natural prolongation beyond 200 M. If the geology and geomorphology of the seabed and subsoil are to be treated seriously as relevant factors in an equitable delimitation, then this has to be reflected in the boundary which the Tribunal indicates. On this basis, Bangladesh believes that the Tribunal should therefore attribute a substantially greater portion of the disputed shelf beyond 200 M to Bangladesh.

Now let me turn to the second relevant circumstance: the continuing effect of Bangladesh's concave coast and the cut-off effect generated by Myanmar's equidistance line, or by any other version of an equidistance line. My colleagues Mr Reichler and Mr Martin have already demonstrated that equidistance is not an appropriate basis for delimiting the maritime boundary between the two Parties within 200 M. They have drawn attention to other precedents and I will not repeat

[66] D.A. Colson, "The Delimitation of the Outer Continental Shelf between Neighboring States," *American Journal of International Law*, Vol. 97, No. 91 (2003), p. 107.
[67] K. Highet, "The Use of Geophysical Factors in the Delimitation of Maritime Boundaries", in J.I. Charney and L.M. Alexander (eds.), *International Maritime Boundaries,* Vol. 1 (1996), p. 196.
[68] *See* MB, paras. 7.17-7.18.

what they said on this point. It suffices, Mr President, to reiterate that if equidistance fails to achieve an equitable solution within 200 M, then *a fortiori* it does not achieve one beyond 200 M. As Bangladesh has already shown, equidistance cuts off Bangladesh's maritime space well within the 200-M line. You can see that on the screen. The farther an equidistance or even a modified equidistance line extends from a concave coast, the more it cuts across that coast, continually narrowing the wedge of sea in front of it. Even a modified equidistance line adjusted to allow Bangladesh to intersect the 200-M line and to provide some access to the outer shelf will still continue in a direction that inevitably cuts off Bangladesh a short distance beyond the 200-M line. That token piece of outer continental shelf would be very small, and very inequitable to Bangladesh in light of its extensive natural prolongation far beyond 200 M.

Some 17 years ago Jonathan Charney concluded in an important article on this subject that international courts and tribunals in maritime boundary cases have sought "to delimit maritime boundaries so that all disputants are allotted some access to the areas approaching the maximum distance from the coast permitted for each one".[69] Given its geographical location within the Bay of Bengal, and the fact that most of the seabed of the Bay is the natural prolongation of its land territory, Bangladesh has no doubt that access to the shelf beyond 200 M is one of the key elements of its case before this Tribunal. An equitable solution will necessarily have to give full effect to this important principle.

The *Barbados/Trinidad & Tobago* case is relevant in this respect. That case was fully explained by Professor Crawford and Mr Martin in yesterday's sitting. I will cite it only for

> "[t]he principle that delimitation should avoid the encroachment by one party on the natural prolongation of the other or its equivalent in respect of the EEZ." [70]

The Arbitral Tribunal, having made that statement, went on to refer to the *North Sea Continental Shelf* cases, the *Gulf of Maine* case, and the *Libya/Malta* case for the same point. The obvious problem for Myanmar is that its continental shelf claim is more than an encroachment on the natural prolongation of Bangladesh; as we have explained throughout these proceedings, it represents the complete cut-off of Bangladesh's prolongation into the outer continental shelf.

Myanmar invites the Tribunal to disregard geography, to disregard geology, and to disregard Bangladesh's otherwise indisputable entitlement to extend its continental shelf beyond 200 M. Its solution would prevent Bangladesh from reaching any part of its entitlement beyond that line, while at the same time permitting Myanmar to reach

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[69] J.I. Charney, "Progress in International Maritime Boundary Delimitation Law," *American Journal of International Law*, Vol. 88, No. 227 (1994), pp. 247ff. In support of this view, Charney cites the following cases: *North Sea Cases*, para. 81; *Land, Island and Maritime Frontier Dispute (El Salvador/Honduras: Nicaragua Intervening)*, Judgment, I.C.J. Reports 1993, p. 351, paras. 415-420; and *Case Concerning Delimitation of Maritime Areas between Canada and France (St. Pierre et Miquelon),* Decision, 10 June 1992, *reprinted in* 31 ILM 1149 (hereinafter "*St. Pierre & Miquelon*"), paras. 66-74. Reproduced in MB, Vol. V.

[70] *Delimitation of Maritime Boundary between Barbados and Trinidad and Tobago,* Award, 11 April 2006, *reprinted in* 27 RIAA 147 (hereinafter "*Barbados/Trinidad & Tobago*"), para. 232. Reproduced in MB, Vol. V.

all of its entitlement, although in fact it has none. As Mr Reichler said yesterday, it seems self-evident that Myanmar's proposed delimitation is plainly not reasonable, it is not balanced and it is not an equitable solution.

On this basis Bangladesh believes that the Tribunal should further adjust the course of the boundary line beyond 200 M in order to reflect the fundamental inequity of cutting off Bangladesh from extending its continental shelf well beyond 200 M. That brings me finally to what Bangladesh regards as its preferred equitable solution beyond 200 M, should the need arise.

Let me recapitulate on the principles which, in Bangladesh's submission, should shape an equitable solution in the circumstances of this case.

First, in the area beyond 200 M, an equitable delimitation consistent with article 83 must reflect

> "[t]he principle that delimitation should avoid the encroachment by one party on the natural prolongation of the other or its equivalent in respect of the EEZ",

It must delimit the maritime boundary so that both parties are allotted some access to the areas approaching the maximum distance from the coast, and in doing so it must necessarily take full account of the geology and geomorphology of the seabed and subsoil of the continental shelf.

Secondly, in the same area, beyond 200 M, an equitable delimitation consistent with article 83 must have regard to the continuing impact of Bangladesh's coastal concavity and the fundamental inequity of cutting off Bangladesh from extending its continental shelf beyond 200 M. In doing so it must also reflect Bangladesh's "most natural" prolongation into the Bay of Bengal, and the absence of any comparable basis for Myanmar to extend its continental shelf beyond 200 M.

Thirdly, the proposed delimitation should be reasonable and balanced if it is to be an equitable solution.

Bangladesh therefore proposes the following delimitation in the EEZ and continental shelf if, and only if, contrary to article 76 and all the undisputed evidence, the Tribunal were to conclude that both parties have overlapping entitlements beyond 200 M. You will see that illustration on the screen and at tab 5.31.

Let me briefly explain the basis on which this line has been drawn, after much careful consideration – there are essentially no precedents. First, it originates at the seaward terminus of the 215^{o} bisector in the EEZ outlined yesterday by Professor Crawford.

Second, in order to reflect the relevant factors referred to earlier, the line turns southwards from the 200-M boundary, and continues until it meets the tripoint at the extreme south-east corner of the outer limit of Bangladesh's CLCS submission.

Third, you will notice that the bilateral area in dispute between the Parties to this case is thereby shared with Myanmar in roughly the proportion two thirds to Bangladesh and one third to Myanmar.

Finally, the larger portion of the trilateral area in dispute between Bangladesh and Myanmar and India is left for the Bangladesh/India tribunal to settle, but Myanmar's entitlement in a small sector immediately adjacent to the EEZ boundary is recognized. This of course is the sector which adjoins the much larger area of outer continental shelf disputed only by India and Myanmar.

Mr President, you would want me to explain, I am sure, why Bangladesh has not proposed a simple extension of the 215^{o} bisector beyond 200 M. As yesterday's presentations showed very clearly, even this bisector would not – cannot – compensate fully for the cut-off effect generated by the concavity of Bangladesh's coastal geography. As you have seen, even this bisector produces a narrowing wedge of maritime space for Bangladesh. The wedge becomes narrower and smaller the further the bisector extends seawards. If it were to cross the 200-M line, the wedge would be very narrow and the space available to Bangladesh beyond 200 M would be very small. This, in our submission, does not leave Bangladesh with very much space in the outer continental shelf at all. To prevent this inequity, the bisector must change direction at the point where it reaches the 200-M line.

Most importantly, extending the bisector beyond 200 M would not give any weight to – would ignore – the very factors that are only relevant in the shelf beyond 200 M. Of course, I mean, the geographical and geological factors addressed this morning by Dr Parson and also referred to by the ICJ in the *Libya/Malta* and *Tunisia/Libya* Cases. Within 200 M, the delimitation line is controlled by coastal geography. Beyond 200 M it is controlled by natural prolongation, and coastal geography takes a back seat. The overlapping shelf area beyond 200 M is geologically and geomorphologically the most natural prolongation of Bangladesh, and hardly at all of Myanmar. For all these reasons, as well, the 215^{o} bisector must change direction at the 200-M line in order to avoid a serious inequity to Bangladesh.

For all those reasons, extending the 215^{o} bisector beyond 200 M would not result in an equitable solution between the parties to this dispute.

Mr President, Members of the Tribunal, what I have said this morning constitutes Bangladesh's response to the Tribunal's first question addressed to the Parties on 7 September. In that question you requested that both Parties expand on their views with regard to the delimitation of the continental shelf beyond 200 M. I hope that on behalf of Bangladesh you feel that I have done so adequately this morning.

In conclusion, let me remind the Tribunal again that Bangladesh's first argument remains that there is no need for an equitable boundary to be drawn beyond 200 M because Myanmar has no entitlement to extend its continental shelf beyond that distance. There is simply no evidence of the necessary natural prolongation required by article 76(1). Bangladesh invites the Tribunal to decide accordingly, and to declare that, as between Bangladesh and Myanmar, only Bangladesh is entitled to claim the disputed area beyond 200 M. Only if you reject that argument will there be

any need for you to make an equitable division between Bangladesh and Myanmar of the areas in dispute beyond 200 M.

Mr President, Members of the Tribunal, that concludes the case for Bangladesh. Thank you for your patience and attention.

THE PRESIDENT: Thank you, Mr Boyle. This brings us to the end of today's sitting and to the end of the first round of arguments by Bangladesh. We will meet again on Thursday 15 September 2011 at 3 p.m. to hear the first round of oral arguments of Myanmar. The sitting is now closed.

(The sitting closed at 12.40 p.m.)