



Commission on the Limits of the Continental Shelf

SUMMARY OF RECOMMENDATIONS OF THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF IN REGARD TO THE SUBMISSION MADE BY GHANA ON 28 APRIL 2009¹

Recommendations prepared by the Subcommittee established for the consideration
of the Submission made by Ghana

Adopted by the Subcommittee on 28 February 2014

Adopted by the Commission, with amendments, on 5 September 2014

¹ The aim of this Summary is to provide information which is not of confidential or proprietary nature in order to facilitate the function of the Secretary-General in accordance with Rule 11.3 of Annex III to the Rules of Procedure of the Commission (CLCS/40/Rev.1). This Summary is based on excerpts of the Recommendations and may refer to material not necessarily included either in the full Recommendations or this Summary.

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GLOSSARY OF TERMS

60 M formula line	The line delineated by reference to fixed points determined at a distance of 60 nautical miles from the foot of the continental slope
60 M formula point	Fixed point determined at a distance of 60 nautical miles from the foot of the continental slope
200 M line	The line at a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured
2500 m isobath	A line connecting the depth of 2,500 metres
Article 76	Article 76 of the Convention
Baselines	The baselines from which the breadth of the territorial sea is measured
BOS	Base of the continental slope
Commission	The Commission on the Limits of the Continental Shelf
Convention	The United Nations Convention on the Law of the Sea of 10 December 1982
Depth constraint	The constraint line constructed at a distance of 100 M from the 2500 m isobath
Distance constraint	The constraint line constructed at a distance of 350 M from the baselines from which the breadth of the territorial sea is measured
DOALOS	Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs, United Nations
FOS	Foot of the continental slope
Guidelines	The Scientific and Technical Guidelines of the Commission (CLCS/11 and CLCS/11/Add.1)
M	Nautical mile
Rules of Procedure	The Rules of Procedure of the Commission (CLCS/40/Rev.1)
Secretary-General	The Secretary-General of the United Nations
Sediment thickness formula line	The line delineated 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
Sediment thickness formula point	Fixed point at which the thickness of sedimentary rocks is at least 1 per cent of the shortest distance from that point to the foot of the continental slope

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I. INTRODUCTION

- 1 On 28 April 2009, the Republic of Ghana submitted to the Commission on the Limits of the Continental Shelf, through the Secretary-General of the United Nations, information on the limits of the continental shelf beyond 200 M from the baselines from which the breadth of the territorial sea is measured, in accordance with article 76, paragraph 8, of the Convention.
- 2 The Convention entered into force for Ghana on 16 November 1994.
- 3 On 28 April 2009, the Secretary-General issued Continental Shelf Notification CLCS.26.2009.LOS giving due publicity to the Executive Summary of the Submission in accordance with rule 50 of the Rules of Procedure of the Commission.² Pursuant to rule 51 of the Rules of Procedure, the consideration of the Submission was included in the agenda of the Twenty-fourth session of the Commission.
- 4 The Submission pertains to two separate regions: the 'Eastern Extended Continental Shelf Region' and the 'Western Extended Continental Shelf Region'.³ According to the submitting State, Ghana has overlapping maritime claims with adjacent States in the region, but it has not signed any maritime boundary delimitation agreements with any of its neighboring States to date. (Para.4.1, Executive Summary of the Submission).
- 5 In a note verbale dated 10 June 2009, Ghana informed the Secretariat of the Commission⁴ that it would make a presentation to the Commission during the Twenty-fourth session held from 10 August to 4 September 2009.
- 6 The presentation on the Submission was made to the plenary of the Twenty-fourth session of the Commission on 26 August 2009, by Alhaji Collins Dauda, Minister for Lands and Natural Resources, Chairman of the Ministerial Oversight Committee, Head of Delegation, and Mr. Lawrence Apaalse, Geologist, Project Coordinator, Ghana National Petroleum Corporation. The Delegation of Ghana (the "Delegation") also included a number of advisers.
- 7 In reference to paragraph 2 (a) of annex I to the rules of procedure, Mr. Dauda informed the Commission that Ghana had held consultations with the Republic of Benin, the Republic of Côte d'Ivoire, the Federal Republic of Nigeria and the Republic of Togo concerning adjacent and opposite maritime boundaries. Specifically, following a meeting from 24 to 26 February 2009 in Accra, Ghana, these States agreed that "[i]ssues of the limit of adjacent/opposite boundaries shall continue to be discussed in a spirit of cooperation to arrive at a definite delimitation even after the presentation of the preliminary information/submission, Member States would therefore write "no objection note" to the submission of their neighbouring States" (para. 5.2, Executive Summary). A note verbale from the Federal Republic of Nigeria dated 22 June 2009 confirms that "it has no objection to the Commission on the Limits of the Continental Shelf addressing its recommendations to Ghana with regard to the delineation of the outer limits of the

² See Continental Shelf Notification CLCS.26.2009.LOS at http://www.un.org/depts/los/clcs_new/submissions_files/gha26_09/gha_clcs26_2009e.pdf

³ The list of the material included in the original Submission is contained in Annex II to the Recommendations.

⁴ Division for Ocean Affairs and the Law of the Sea ("DOALOS"), Office of Legal Affairs, United Nations.

continental shelf as long as those recommendations do not prejudice the future definitive delimitation of the continental shelf between Nigeria and Ghana". In this connection, he added that the submission made by Ghana is without prejudice to the delimitation of boundaries with Benin, Côte d'Ivoire, Nigeria and Togo.

- 8 The Commission addressed the modalities for the consideration of the Submission. It decided that, as provided for in article 5 of Annex II to the Convention and in rule 42 of the Rules of Procedure, the Submission would be addressed through the establishment of a Subcommission.
- 9 The Commission received and took note of the contents of the following note verbale transmitted to the Commission in relation to the Submission: note verbale No. 194/09 from the Permanent Mission of Nigeria to the United Nations dated 22 June 2009.⁵ The Commission decided to refer matters raised in this communication to the Subcommission to be established for the consideration of the Submission made by Ghana.
- 10 The Subcommission was established on 2 August 2012 during the plenary of the Thirtieth session (30 July to 24 August 2012). The following members of the Commission were elected as members of the Subcommission for consideration of the Submission made by Ghana: Messrs. Arshad, Jaoshvili, Njuguna, Mahanjane, Paterlini, Roest and Urabe. The Subcommission elected Mr. Roest as its Chairperson, and Messrs. Jaoshvili and Njuguna as its Vice-Chairpersons. At the Thirty-third Session, the Subcommission appointed Mr. Arshad as Vice-Chairperson, replacing Mr. Jaoshvili.
- 11 Following its establishment, the Subcommission met to conduct a preliminary examination of the Submission and the data accompanying it. It was determined that given the volume and nature of the data contained in the Submission, the Subcommission would require additional time for the consideration of the Submission. The Subcommission also decided that there would be no need for advice of other members of the Commission and/or other specialists.
- 12 The Subcommission prepared a set of procedures for the conduct of meetings with the Delegation. During its preliminary examination of the Submission, on 10 August 2013 and continued from 13 to 17 August 2013, the Subcommission carried out an analysis of the data and other material submitted. On the basis of that analysis, the Subcommission decided to continue its work during the Thirty-first session.
- 13 The Subcommission continued its examination of the Submission during the following sessions: Thirty-first, Thirty-second, Thirty-third and Thirty-fourth sessions. During these sessions the Subcommission held meetings with the Delegation, posed questions in writing, presented preliminary considerations involving documents and presentations and consolidated sets of views and general conclusions covering the whole Submission. During the course of the examination of the Submission by the Subcommission, the Delegation provided responses to the questions in writing and as presentations, and provided additional material.⁶ Throughout the examination of the Submission, the Subcommission requested and received support from the Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs.

⁵ The note verbale from Nigeria is available online at

http://www.un.org/Depts/los/clcs_new/submissions_files/gha26_09/nga_re_gha.2009pdf.pdf

⁶ A list of additional material submitted to the Commission by the Delegation(s) is contained in Annex II to the Recommendations.

- 14 The Subcommittee adopted its Recommendations unanimously on 28 February 2014, and submitted them to the Commission on 3 March 2014 for consideration and approval.
- 15 The Subcommittee presented its Recommendations to the Commission on 10 March 2014.
- 16 Following this presentation, and in accordance with paragraph 15.1 bis of Annex III of the Rules of Procedure of the Commission, the Delegation made a presentation to the Commission on the same day.
- 17 The Commission prepared these Recommendations, which were adopted on 5 September 2014, taking into consideration the provisions contained in article 6 of Annex II to the Convention and the Rules of Procedure and the Scientific and Technical Guidelines of the Commission.
- 18 The Recommendations of the Commission are based on the scientific and technical data and other material provided by Ghana in relation to the implementation of article 76. The Recommendations of the Commission only deal with issues related to article 76 and Annex II to the Convention and shall not prejudice matters relating to delimitation of boundaries between States with opposite or adjacent coasts, or application of other parts of the Convention or any other treaties.
- 19 The Commission makes these Recommendations to Ghana in fulfillment of its mandate as contained in article 76, paragraph 8, and articles 3 and 5 of Annex II to the Convention.
- 20 The Commission makes these Recommendations to coastal States on matters related to the establishment of the outer limits of their continental shelf in accordance with article 76, paragraph 8, of the Convention. The limits of the shelf established by a coastal State on the basis of these Recommendations shall be final and binding.
- 21 A Summary of the Recommendations is included as Annex V of this document in conformity with paragraph 11.3 of Annex III to the Rules of Procedure.

II. CONTENTS OF THE SUBMISSION

A. Original Submission

- 22 The original Submission received on 28 April 2009 contained three parts: part one an Executive Summary; part two a Main Body which is the analytical and descriptive part; and part three Scientific and Technical Data.⁷ An Addendum to the Submission was received on 26 August 2009 concerning the western continental shelf area of Ghana.

B. Communications and additional material

- 23 In the course of the examination of the Submission by the Subcommittee, the Delegation submitted additional material, including responses to questions, requests for clarification and written preliminary considerations of the Subcommittee.

⁷ See Annex II to these Recommendations.

- 24 In June 2013, Ghana provided additional data and information to the Subcommission defining two new outer limit points at the western edge of Ghana's "Eastern Extended Continental Shelf Region". Thereafter, the Government of Ghana prepared a Revised Executive Summary reflecting these changes in the outer limits of the continental shelf beyond 200 M as established by Ghana. On 12 September 2013, Ghana transmitted to the Commission, through the Secretary-General, the Revised Executive Summary of the submission.⁸

III. EXAMINATION OF THE SUBMISSION BY THE SUBCOMMISSION

A. Examination of the format and completeness of the Submission

- 25 Pursuant to paragraph 3 of Annex III to the Rules of Procedure, the Subcommission examined and verified the format and completeness of the Submission.

B. Preliminary analysis of the Submission

- 26 Pursuant to paragraph 5 of Annex III to the Rules of Procedure, the Subcommission undertook a preliminary analysis of the Submission, in accordance with article 76 of the Convention and the Guidelines and concluded as follows:
- (i) The outer edge of the continental margin, established from the FOS by applying the provisions of Article 76, Paragraph 4, of the Convention, extends beyond the 200 M line of Ghana allowing Ghana to delineate the outer limits of its continental shelf beyond 200 M in the Gulf of Guinea (Figure 1) (i.e. the test of appurtenance for the region was satisfied by Ghana);
 - (ii) The note verbale dated 22 June 2009 submitted by Nigeria relevant to the region and referred to the Subcommission by the Commission (see Section I(9)) did not preclude the Subcommission from considering the Submission;
 - (iii) The proposed outer limits of Ghana's continental shelf beyond 200 M consist of sediment thickness formula points;
 - (iv) The outer limits of the continental shelf contain straight line segments not exceeding 60 M in length;
 - (v) The advice of any other member of the Commission and/or a specialist was not required; and
 - (vi) Additional time would be required to review all data and to prepare the recommendations during future sessions of the Commission.

C. Main scientific and technical examination of the Submission

- 27 The Subcommission examined the Submission through the following processes:
- (i) Detailed examination of the data and information supporting every FOS point, sediment thickness formula points used for the establishment of the outer edge of the continental margin and for the delineation of the proposed outer

⁸ The Revised Executive Summary is available online at http://www.un.org/depts/los/clcs_new/submissions_files/gha26_09/gha_2013execsummary_rev.pdf

limits of the continental shelf following consideration of the applicable constraint;

- (ii) Seeking clarifications, where necessary, through exchanges between the Delegation and the Subcommission;
- (iii) Presenting preliminary views on both regions to the Delegation;
- (iv) At an advanced stage of the examination of the Submission, a comprehensive document describing the views and general conclusions of the Subcommission, including an outline of the Recommendations to be prepared by the Subcommission, was communicated to the Delegation.

IV. RECOMMENDATIONS OF THE COMMISSION WITH RESPECT TO THE CONTINENTAL MARGIN OF GHANA

- 28 The Submission of Ghana made on 28 April 2009 concerns the continental margin of Ghana in the Gulf of Guinea (Figure 1). The Submission includes two separate regions along the same margin “the Eastern Extended Continental Shelf Region” and “the Western Extended Continental Shelf Region”, henceforth referred to as the Eastern and Western Region, respectively.

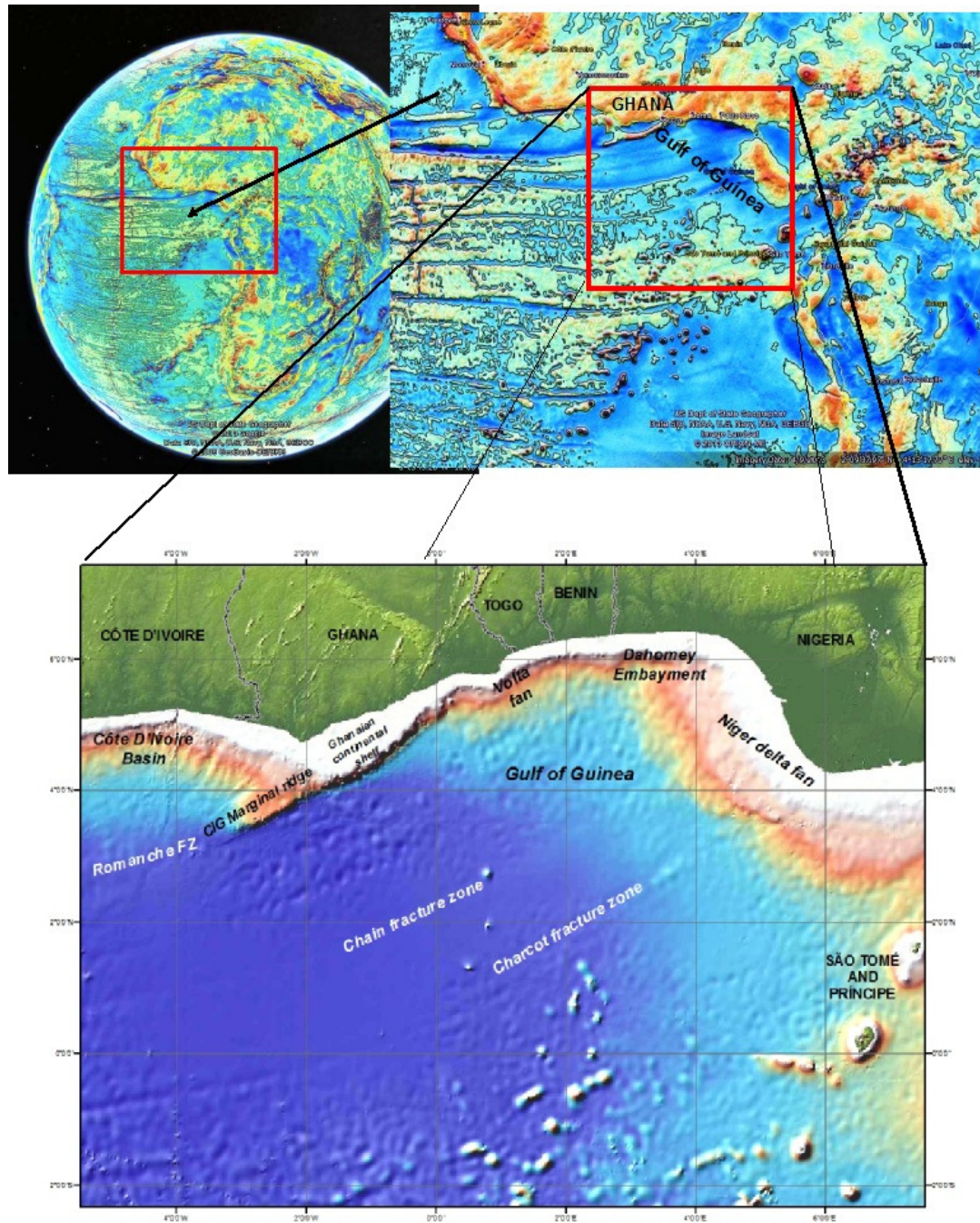


Figure 1: General location of the Gulf of Guinea and the continental margin of Ghana. Top panels: regional satellite derived free air gravity maps (source: Scripps Institution of Oceanography), showing the oceanic fracture zones as linear negative (blue) anomalies. Bottom panel: satellite predicted regional bathymetry, showing the main geographic features in the area (source: ETOPO1).

1. General description of the Continental Margin of Ghana

- 29 Ghana is located at the north coast of the Gulf of Guinea. The continental margin in the north of the Gulf of Guinea is termed a sheared or transform continental margin, which was formed during the opening of the Equatorial Atlantic at about 130 - 125 Ma, during which period the tectonic plates separated by transform motion and faulting in this region. The Romanche, Chain and Charcot Fracture Zones are present in the Gulf of Guinea and are clearly imaged in the free-air gravity map (Figure 2).

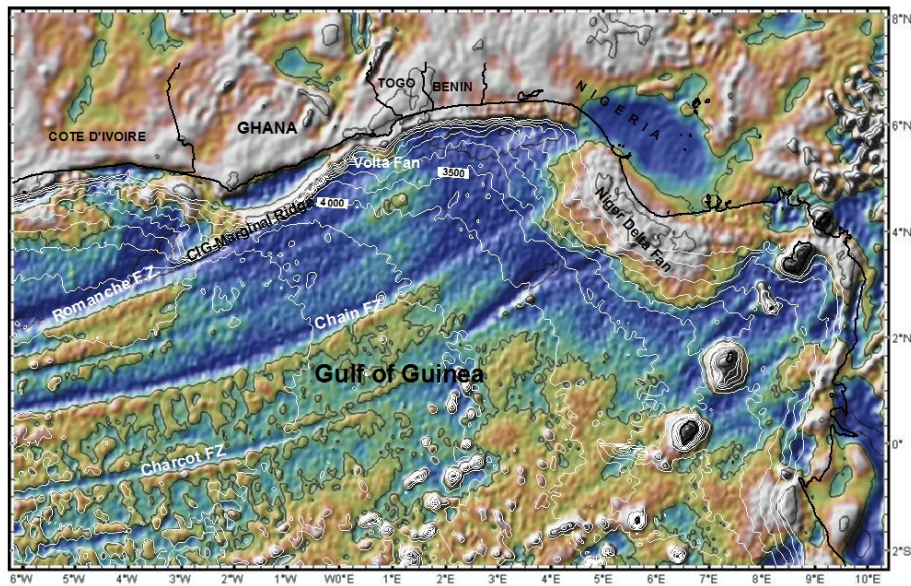


Figure 2: Satellite derived free-air gravity map of the Gulf of Guinea with bathymetric contours in white (source: GeoMapApp, Lamont-Doherty Earth Observatory). The transform margin is characterised by the Côte d'Ivoire-Ghana Marginal Ridge, and aligned with the Romanche Fracture Zone. Other important fracture zones are the Chain and Charcot Fracture Zones.

- 30 Significant sediment accumulations are observed in these fracture zones, which come from both the Niger River, forming a major submarine fan at the northeast corner of the Gulf of Guinea and the Volta River in the eastern part of Ghana.
- 31 The continental margin of Ghana beyond 200 M is subdivided, for the purpose of the Submission, into two regions. The Western Region is characterised by a steep continental slope, which extends seaward along an elongated and sediment-starved marginal ridge, the Côte d'Ivoire-Ghana Marginal Ridge, which is aligned with the Romanche Fracture Zone. The Eastern Region, on the other hand, displays more gentle slopes, that are a result of sediment accumulations derived from both the Niger and the Volta rivers.
- 32 Since both regions are situated along the same continental margin, these Recommendations will address each of the issues arising from Article 76 of the Convention (Base and Foot of the Continental Slope, Formula Lines, Constraint

Lines and Outer Limits) for both regions, rather than addressing all considerations for one region and subsequently for the other.

2. The determination of the foot of the continental slope (Article 76, Paragraph 4(b))

- 33 The FOS points should be established in accordance with article 76, paragraph 4(b), of the Convention.

2.1 Considerations

- 34 In the submission, Ghana defined three FOS points in the Eastern Region: FOS-GHA-1, -2 and -3, using three bathymetric profiles GNCS-08-001B, GNCS-08-002 and GNCS-08-004 (Figure 3). Ghana determined these FOS points on the basis of the maximum change in gradient, without an explicit prior identification of the Base of the continental Slope (BOS).

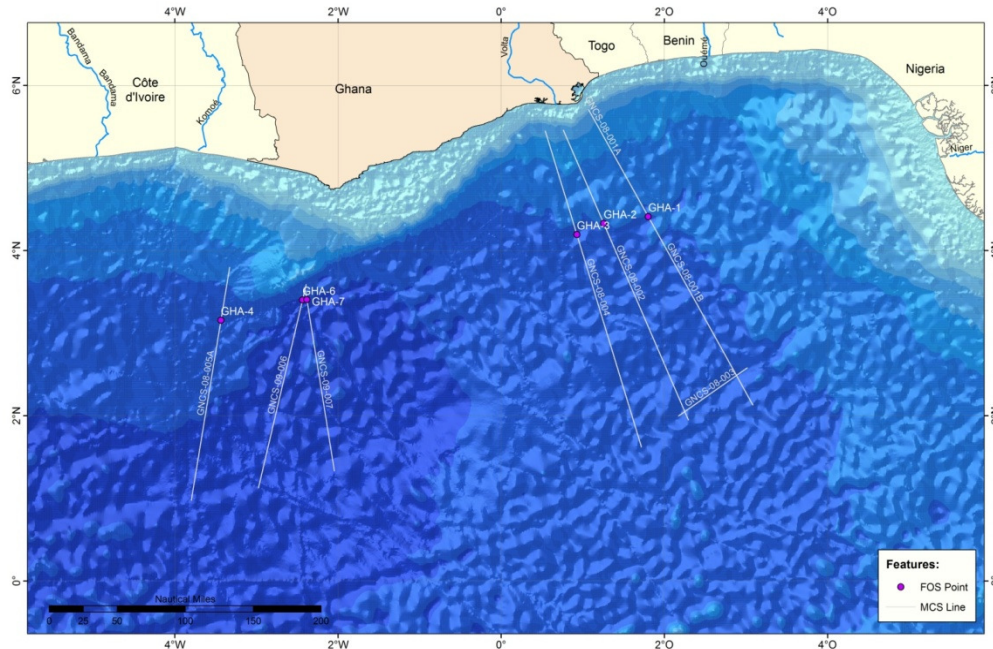


Figure 3: The location of the regional simultaneously acquired single-beam echo-sounder bathymetry and multi-channel seismic reflection lines used by Ghana to establish both the FOS and the sediment thickness formula points as per the submission and its addendum.

- 35 The Subcommittee was of the view that the determination of the FOS points as the maximum change in gradient at the base of the slope requires in the first instance the determination of the BOS. The Subcommittee further considered that the landward edge of the base of the slope should be positioned clearly inside the slope, whereas the search for the seaward edge should start from the rise, or from the deep ocean floor where a rise is not developed, in a direction towards the continental slope. Gradient values together with morphological and/or sedimentary process criteria could be used to define and/or further substantiate the BOS. Analysis of seismic profiles provided by Ghana revealed the presence of wavelike

sediment formations that are typically associated with down slope sedimentary processes.

- 36 During the interactions between the Subcommittee and the Delegation, the question of the presence or absence of a continental rise was discussed. Ghana, in document 2013_10_23_GHA_PRE_SCGHA_006 reiterated its view that this region does not have a sedimentary wedge that would typify a continental rise according to paragraph 6.2.1 of the Guidelines. The Subcommittee came to the conclusion that the Volta River fan forms part of the eastern section of the Ghanaian continental margin, which is generally characterised as a transform margin. In this context, the outer edge of this fan seems critical to the Subcommittee in the identification of the BOS. Ghana proceeded to define a BOS along this part of the margin.
- 37 The Subcommittee agrees with the position of the BOS determined along profiles GNCS-08-002 and GNCS-08-004 in the Eastern area. Since the FOS points are located along these profiles at the maximum change in gradient at its base, the Subcommittee also agrees with the positions of FOS points GHA-2 and GHA-3.
- 38 However, as is outlined in document 2013_03_08_SC_DOC_GHA_003, the Subcommittee is of the view that on profile GNCS-08-001B, the proposed landward edge of the BOS is not unequivocally located in the continental slope and it should therefore be moved further landward, in order to include part of the lower slope. The FOS point along this profile, as maintained by Ghana, seems to have been placed either at a local feature on the rise, or on the deep ocean floor.
- 39 After exchanges on this issue, in letter 2014_01_23_GHA_LET_SCGHA_005, Ghana responded to the Subcommittee's document 2013_11_01_SCGHA_DOC_GHA_006 and stated that it would no longer utilize this FOS point, or any of the alternative FOS points it had presented to replace it, for the determination of the outer edge of the continental margin in this region. Instead, Ghana utilizes FOS-GHA-2, which had already been accepted by the Subcommittee. As a result of these exchanges between the Delegation and the Subcommittee, only two FOS points (FOS-GHA-2 and -3) are used to determine the outer edge of the continental margin of Ghana in the Eastern Region.
- 40 Ghana defined in the Western Region one critical FOS point (FOS-GHA-4 along profile GNCS-08-005) by application of the general rule. In the Addendum to the Submission, dated 25 August 2009, Ghana provided two additional FOS points, FOS-GHA-6 and -7 located on profiles GNCS-09-06 and GNCS-09-07 respectively.
- 41 Ghana is of the view that there is clear absence of a continental rise in the Western Region, as it is typically the case for transform margins. The Subcommittee agrees with the Delegation that in the Western Region the continental slope directly merges with the deep ocean floor. The Subcommittee is of the view that this is a major consideration in the determination of the BOS and FOS in this region.
- 42 Ghana had not identified a BOS in the submission. Following interaction with the Subcommittee, Ghana defined the BOS, based on geomorphological characteristics of the transform margin and the provided data in the Addendum. The Subcommittee subsequently accepted the BOS.
- 43 The Subcommittee agrees with the determination of FOS-GHA-4 along line GNCS-08-05 as the point of maximum change in gradient at the base of the continental slope. However, the Subcommittee considered that FOS-GHA-6 and -

7, positioned on lines GNCS-09-06 and -07 respectively, are located beyond the BOS.

- 44 Ghana provided, in document 2013_07_26_GHA_DOC_SCGHA_015, additional single-beam echo-sounding bathymetric data further landward from the previous profiles, extracted from the GEODAS database. Upon analysis of GEODAS Profile A2075L03, the Delegation of Ghana determined a FOS point, located slightly more landward and acceptable to the Subcommittee. The new FOS point, FOS GHA-7A, which has been established according to the general rule, replaced original FOS points FOS-GHA-6 and -7 (Figure 4).

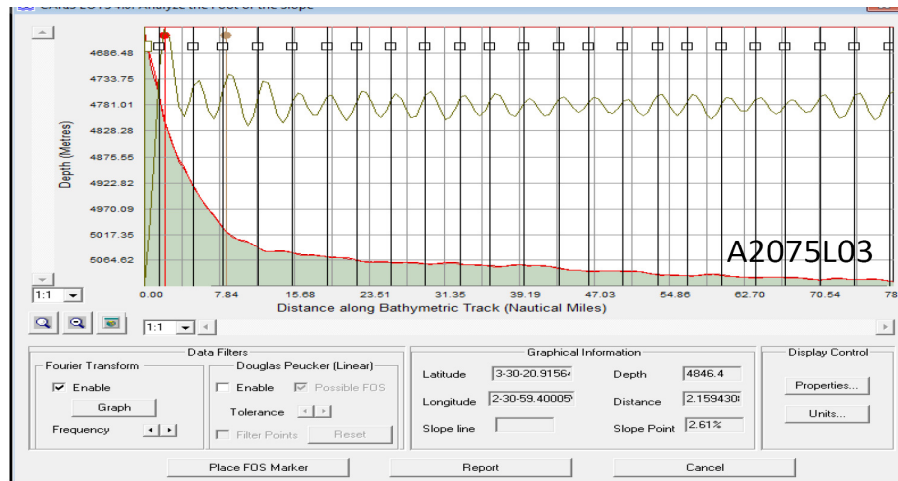


Figure 4: Revised FOS point, FOS-GHA-7A on the GEODAS profile A2075L03 in the Western Region.

2.2 Recommendations

- 45 The Commission considers that, both in the Eastern and the Western Regions of the continental shelf of Ghana, the FOS points listed in Table 1 of Annex I to these Recommendations, fulfil the requirements of article 76 and Chapter 5 of the Guidelines (Figures 5 and 6) based on the consideration of the scientific documentation presented in the Submission, the addendum, and the additional data and information provided notably in the documents referred to above. The Commission recommends that these FOS points form the basis for the establishment of the outer edge of the continental margin of Ghana.

3. The establishment of the outer edge of the continental margin (article 76, paragraph 4(a))

- 46 The outer edge of the continental margin of Ghana in the northern Gulf of Guinea extends beyond 200 M from the baselines in two regions: an eastern and a western region (Figures 5 and 6).
- 47 The outer edge of the continental margin of Ghana in the Gulf of Guinea should, for the purposes of the Convention, be established in accordance with article 76, paragraphs 4 and 7, of the Convention.

- 48 In establishing the outer edge of the continental margin Ghana did not implement the 60 M formula line contained in article 76, paragraph 4(a)(ii) of the Convention.

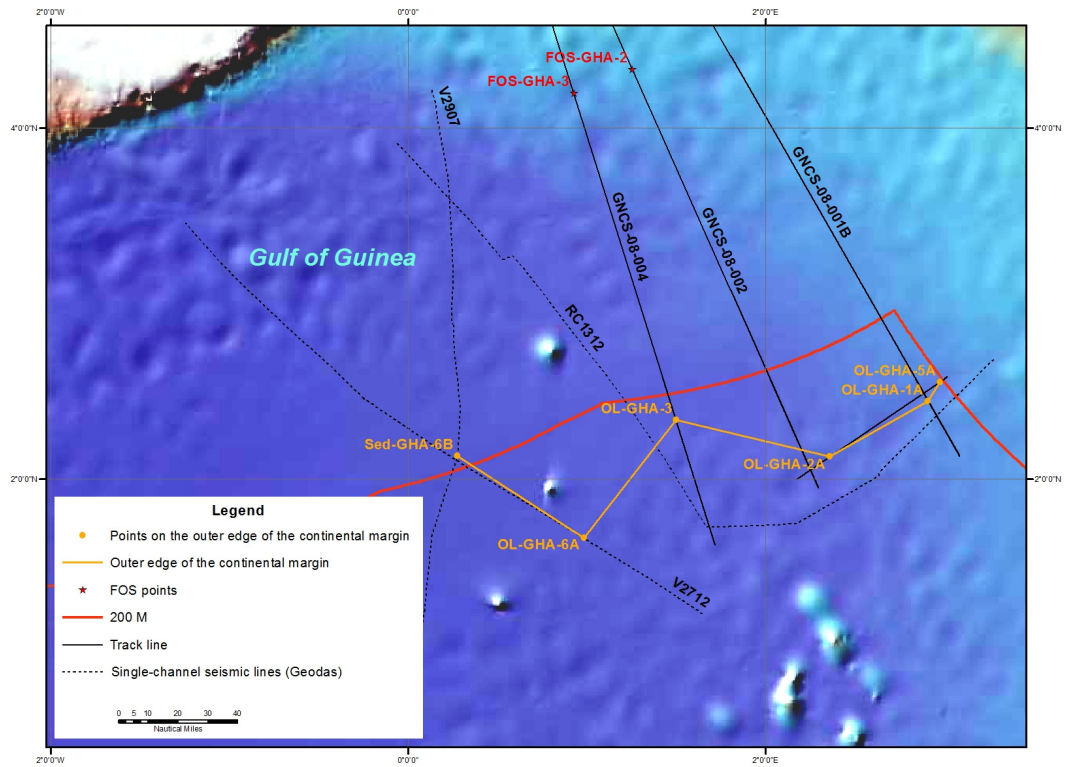


Figure 5. The outer edge of the continental margin of Ghana in the Eastern Region, as revised by Ghana, is established by straight lines connecting fixed points OL-GHA-5A, -1A, -2A, -3, -6A and SED-GHA-6B.

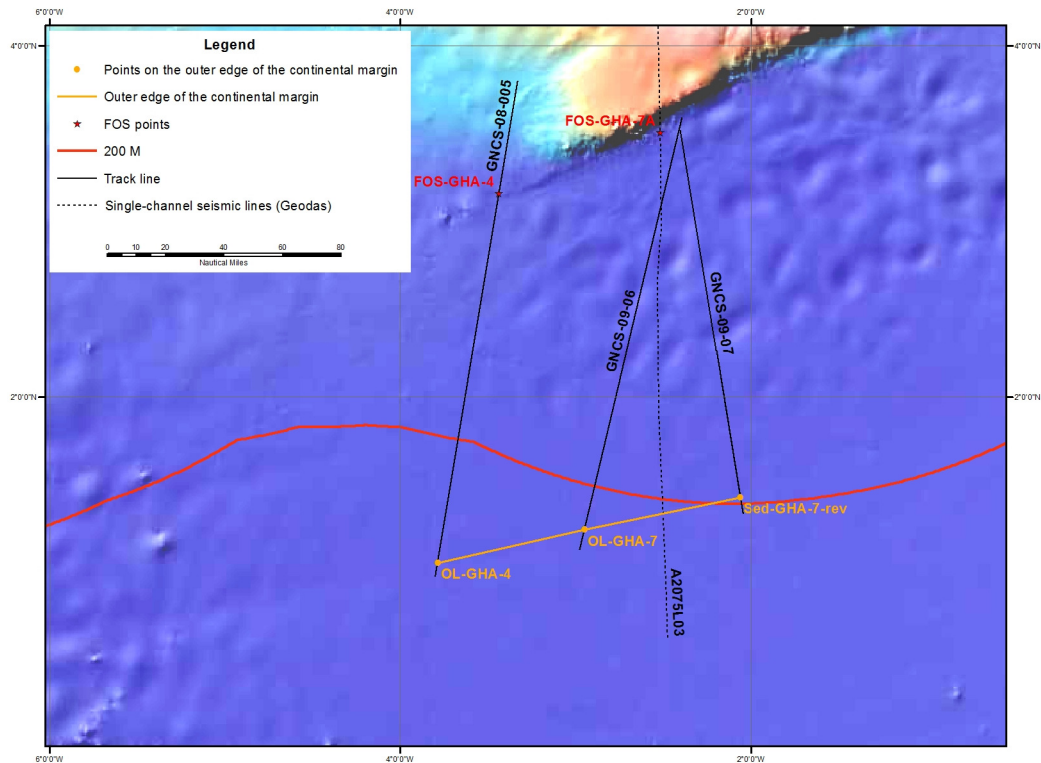


Figure 6. The outer edge of the continental margin of Ghana in the Western Region, as revised by Ghana, is established by straight lines connecting fixed points Sed-GHA-7-Rev, OL-GHA-7 and OL-GHA-4.

3.1 The application of the 1% sediment thickness formula (article 76, paragraph 4(a)(i))

- 49 In the Eastern Region, using FOS points FOS-GHA-2 and -3, described previously (para. 39), Ghana established six sediment thickness formula points on the outer edge of the continental margin as provided for in article 76, paragraph 4 (a)(i) of the Convention (Figure 5). Ghana established these sediment thickness formula points based on seismic lines GNCS-08-001B, GNCS-08-003, GNCS-08-004, V2907 and V2712.
- 50 In the Western Region, using FOS points FOS-GHA-4 and -7A, described in paragraphs 43 and 44, Ghana established three sediment thickness formula points on the outer edge of the continental margin as provided for in article 76, paragraph 4 (a)(i), of the Convention (Figure 6). These sediment thickness formula points are based on the seismic lines GNCS-08-05, GNCS-09-06 and GNCS-09-07.
- 51 The Commission agrees with the procedure applied by Ghana to establish the sediment thickness formula points in both the Eastern and Western Regions, as contained in Table 2, Annex I. The commission based its conclusions on the data provided, the seismic interpretation, the methods of depth conversion, and the distance calculations.

3.2 Recommendations

- 52 In both the Eastern and the Western Regions, the outer edge of the continental margin beyond 200 M is based on the sediment thickness formula points as described in section 3.1, (Figures 5 and 6). The Commission recommends that these points are used as the basis for delineating the outer limits of the continental shelf in these regions in accordance with article 76, paragraph 7, of the Convention.

4. The application of the constraint criteria (article 76, paragraphs 5 & 6)

- 53 The outer limits of the continental shelf should be based on the established outer edge of the continental margin, taking into consideration the constraints contained in article 76, paragraphs 5 and 6, of the Convention.
- 54 The outer limits of the continental shelf cannot extend beyond the constraints as per the provisions contained in article 76, paragraph 5, of the Convention. Accordingly, the provision that the outer limits of the continental shelf may not exceed 350 M from the baselines from which the breadth of the territorial sea is measured (the “distance constraint”) may be applied in all cases. Alternatively, the provision that the outer limits of the continental shelf may not exceed 100 M from the 2500 m isobath (“depth constraint”) may be applied to those parts of the continental margin that are classified as natural components of that margin.
- 55 In its Submission, Ghana has provided both constraints. However, Ghana has applied only the distance constraint for the determination of the outer limits of the continental shelf.
- 56 The distance constraint line submitted by Ghana is constructed by arcs at 350 M distance from the baselines from which the breadth of the territorial sea of Ghana is measured. The Commission agrees with the procedure and methods applied by Ghana in the construction of this constraint line.

5. The outer limits of the continental shelf (article 76, paragraph 7)

- 57 The outer limits of the continental shelf are subject to the application of the constraint determined according to paragraph 56 above. The outer edge of the continental margin lies entirely landward of this constraint in both the Eastern and the Western regions.
- 58 In the Eastern region the outer limits, as revised by Ghana under letter dated 23 January 2014 addressed to the Subcommission, are delineated by straight lines not exceeding 60 M in length connecting six fixed points (Figure 7).
- 59 In the Western region the outer limits, as revised by Ghana under letter dated 7 October 2013 from Ghana addressed to the Subcommission, are delineated by straight lines not exceeding 60 M in length connecting three fixed points (Figure 8).
- 60 The outer limit fixed points are listed in Tables 3 and 5, contained in Annex I. They are established in accordance with article 76 of the Convention. In the absence of an international continental shelf boundary agreement between Ghana and Côte d’Ivoire, the Subcommission does not make recommendations with respect to the outer limit fixed point OL-GHA-9 as originally submitted by Ghana on 25 August 2009.

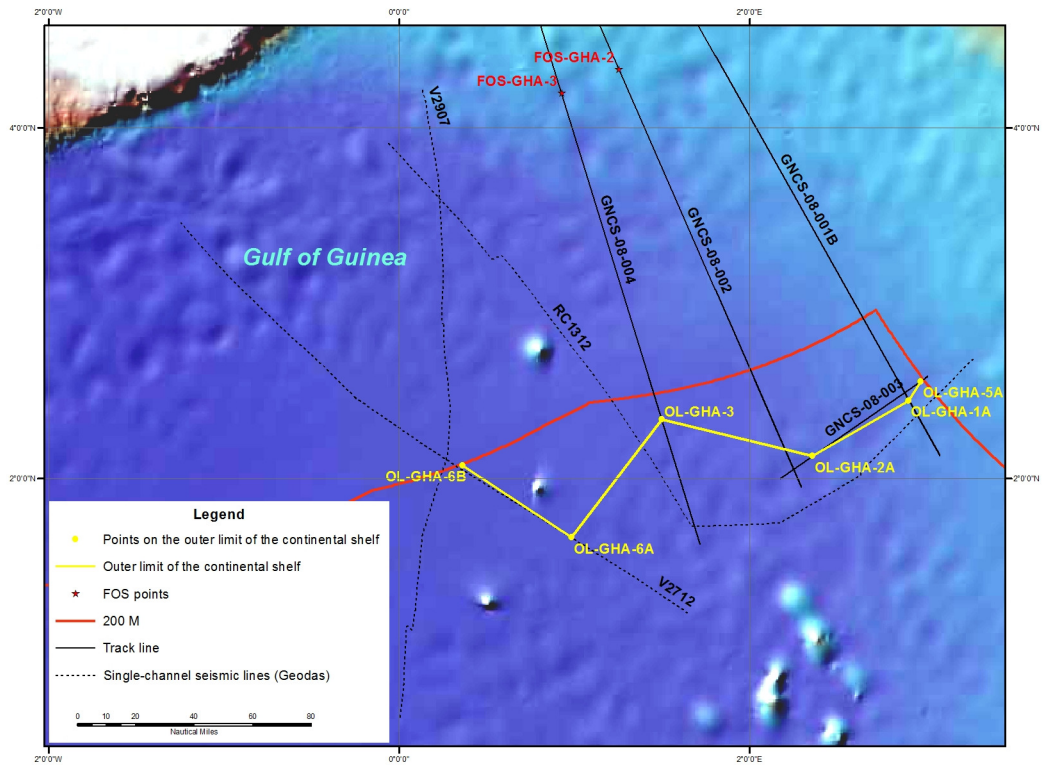


Figure 7. The outer limits of the continental shelf of Ghana in the Eastern Region, as revised by Ghana are delineated by straight lines not exceeding 60 M in length connecting six fixed points OL-GHA-5A to OL-GHA-6B.

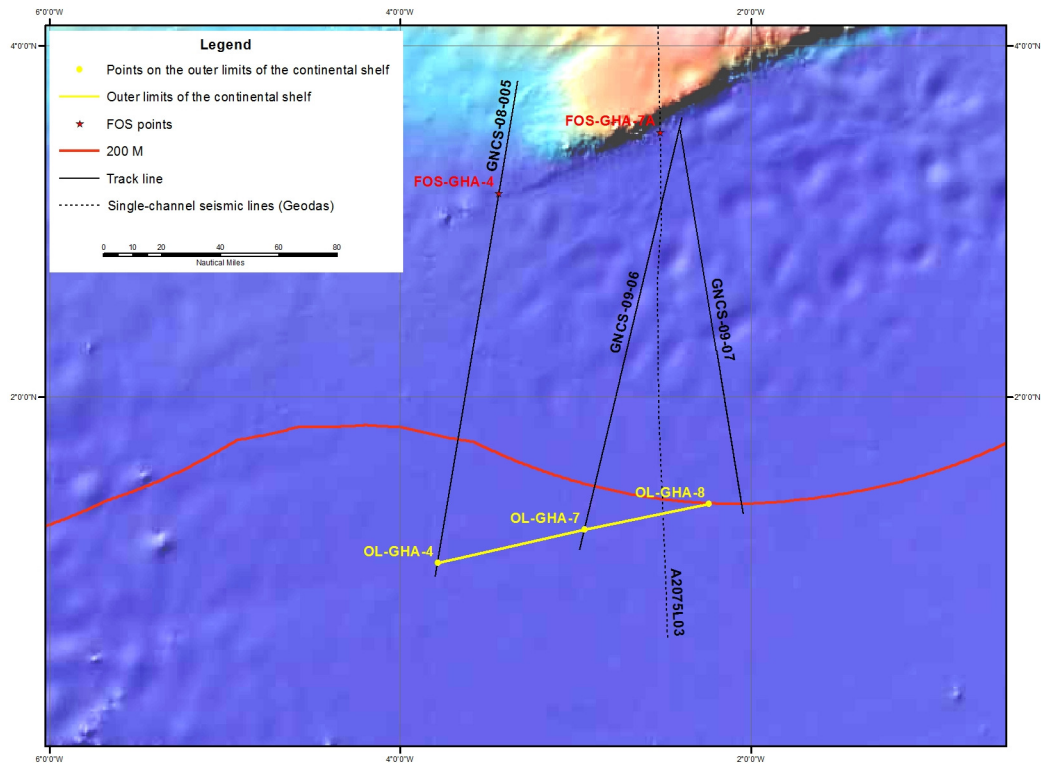


Figure 8. The outer limits of the continental shelf of Ghana in the Western Region, as revised by Ghana, are delineated by straight lines not exceeding 60 M in length connecting three fixed points OL-GHA-8, -7 and -4.

6. Recommendations for the Republic of Ghana (Article 76 Paragraph 8)

- 61 The Commission agrees with the determination of the fixed points listed in Tables 2 and 4, Annex I, establishing the outer edge of the continental margin of Ghana in the Gulf of Guinea. The Commission recommends that the delineation of the outer limits of the continental shelf be conducted in accordance with article 76, paragraph 7, of the Convention, by straight lines not exceeding 60 M in length, connecting fixed points, defined by coordinates of latitude and longitude. Further, the Commission agrees with the principles applied in delineating the outer limits of the continental shelf of Ghana in the Gulf of Guinea, including the determination of the fixed points listed in Tables 3 and 5, Annex I, and the construction of the straight lines connecting those points. The Commission recommends, taking into consideration article 9 of Annex II to the Convention, that Ghana proceeds to delineate the outer limits of the continental shelf in the Gulf of Guinea on the basis of these recommendations.

ANNEX I

TABLES OF GEOGRAPHIC COORDINATES OF: THE FOOT OF CONTINENTAL SLOPE POINTS, THE OUTER EDGE OF THE CONTINENTAL MARGIN BEYOND 200 M AND THE OUTER LIMITS OF THE CONTINENTAL SHELF BEYOND 200 M AS RECOMMENDED BY THE COMMISSION, BASED ON THE SUBMISSION BY GHANA

Table 1. Coordinates of the foot of the continental slope points.

FOS point	water depth [m]	Latitude	Longitude
FOS-GHA-2	4002	4.3310743° N	1.2545894 E
FOS-GHA-3	4104	4.1955828° N	0.9261631 E
FOS-GHA-4	4795	3.1584843° N	3.4368959 W
FOS-GHA-7A	4811	3.5058099° N	2.5165000 W

Table 2. Coordinates for the outer edge of the continental margin and their corresponding foot of the continental slope points in the eastern region.

Continental Margin Point	Longitude	Latitude	CM-related shot point / line	Sediment thickness	Distance to next CM Point	Article 76 criterion	Relevant FOS Point / line	Distance to FOS -
OL-GHA-5A	2.9733719°E	2.5518337°N	SP 3169 / GNCS-08-03	3,641 m	7.63 M	4 (a) (i)	FOS-GHA-2 / GNCS-08-02	274,196 m
OL-GHA-1A	2.9062767°E	2.4431473°N	SP 1795 / GNCS-08-01B	2,842 m	38.00 M	4 (a) (i)	FOS-GHA-2 / GNCS-08-02	277,972 m
OL-GHA-2A	2.3571366°E	2.1260285°N	SP 1502 / GNCS-08-03	2,740 m	53.18 M	4 (a) (i)	FOS-GHA-2 / GNCS-08-02	272,887 m
OL-GHA-3	1.4961533°E	2.3365117°N	SP 8200 / GNCS-08-04	2,158 m	50.73 M	4 (a) (i)	FOS-GHA-3 / GNCS-08-04	215,110 m
OL-GHA-6A	0.9814°E	1.6622°N	V2712	3,330 m	44.58 M	4 (a) (i)	FOS-GHA-3 / GNCS-08-04	280,202 m
Sed-GHA-6B	0.2733°E	2.0736017°N	V2907	2,745 m	-		FOS-GHA-3 / GNCS-08-004	239,446 m-

Table 3. Coordinates for the outer limits of the continental shelf fixed points beyond 200 M and their corresponding foot of the continental slope points in the eastern region.

Final Outer Limit Point	Final OL Point Longitude	Final OL Point Latitude	OL-related shot point / line	Sediment thickness	Distance to next OL Point	Article 76 criterion	Relevant FOS Point / line	Distance FOS - Final OL
OL-GHA-5A	2.9733719°E	2.5518337°N	SP 3169 / GNCS-08-03	3,641 m	7.63 M	4 (a) (i)	FOS-GHA-2 / GNCS-08-02	274,196 m
OL-GHA-1A	2.9062767°E	2.4431473°N	SP 1795 / GNCS-08-01B	2,842 m	38.00 M	4 (a) (i)	FOS-GHA-2 / GNCS-08-02	277,972 m
OL-GHA-2A	2.3571366°E	2.1260285°N	SP 1502 / GNCS-08-03	2,740 m	53.18 M	4 (a) (i)	FOS-GHA-2 / GNCS-08-02	272,887 m
OL-GHA-3	1.4961533°E	2.3365117°N	SP 8200 / GNCS-08-04	2,158 m	50.73 M	4 (a) (i)	FOS-GHA-3 / GNCS-08-04	215,110 m
OL-GHA-6A	0.9814°E	1.6622°N	V2712	3,330 m	44.58 M	4 (a) (i)	FOS-GHA-3 / GNCS-08-04	280,202 m
OL-GHA-6B	0.3614281°E	2.0736017°N	-	-	-	200 M	-	-

Table 4. Coordinates for the outer edge of the continental margin and their corresponding foot of the continental slope points in the western region.

Continental Margin Point	Longitude	Latitude	CM-related shot point / line	Sediment thickness	Distance to next CM Point	Article 76 criterion	Relevant FOS Point / line	Distance to FOS
Sed-GHA-7-rev	2.0621546°W	1.4254922°N	SP 5692 / GNCS-09-07	2,408 m			FOS-GHA-7A / A2075L03	235,518 m
OL-GHA-7	2.9500450°W	1.2410381°N	SP 1256 / GNCS-09-06	2,202 m	51.47 M	4 (a) (i)	FOS-GHA-4 / GNCS-08-05	218,830 m
OL-GHA-4	3.7865667°W	1.0535450°N	SP 7150 / GNCS-08-05	2,374 m	8.30 M	4 (a) (i)	FOS-GHA-4 / GNCS-08-05	235,983 m

Table 5. Coordinates for the outer limits of the continental shelf fixed points beyond 200 M and their corresponding foot of the continental slope points in the western region.

Final Outer Limit Point	Final OL Point Longitude	Final OL Point Latitude	OL-related shot point / line	Sediment thickness	Distance to next OL Point	Article 76 criterion	Relevant FOS Point / line	Distance FOS - Final OL
OL-GHA-8	2.2379639°W	1.3889691°N	-	-	43.66 M	200 M	-	-
OL-GHA-7	2.9500450°W	1.2410381°N	SP 1256 / GNCS-09-06	2,202 m	51.47 M	4 (a) (i)	FOS-GHA-4 / GNCS-08-05	218,830 m
OL-GHA-4	3.7865667°W	1.0535450°N	SP 7150 / GNCS-08-05	2,374 m	8.30 M	4 (a) (i)	FOS-GHA-4 / GNCS-08-05	235,983 m

ANNEX II
LIST OF THE MATERIAL CONTAINED IN THE ORIGINAL SUBMISSION OF GHANA MADE TO THE COMMISSION ON 28 APRIL 2009 AND LIST OF ADDITIONAL MATERIAL SUBMITTED TO THE COMMISSION BY GHANA

28 April 2009 (original submission)

Executive summary (22 copies)

Main body (8 copies)

Supporting scientific and technical data (2 copies)

25 August 2009 (additional material)

Addendum to the submission by the Government of the Republic of Ghana containing new seismic and bathymetric data from Ghana's Western Extended Continental Shelf

18 June 2010 (additional material)

Geophysical Operations Report RVAA Karpinsky, UNCLOS Data Acquisition for the Delineation of Ghana's Outer Continental Shelf, Government of the Republic of Ghana