Intergovernmental Oceanographic Commission
Reports of Meetings of Experts and Equivalent Bodies

IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean

First Session

Antananarivo, Madagascar, 4-7 April 1989

Unesco

In this Series, entitled

Reports of Meetings of Experts and Equivalent Bodies, which was initiated in 1984 and which is published in English only, unless otherwise specified, the reports of the following meetings have already been issued:

1. Third Meeting of the Central Editorial Board for the Geological/Geophysical Atlases of the Atlantic and Pacific Oceans
2. Fourth Meeting of the Central Editorial Board for the Geological/Geophysical Atlases of the Atlantic and Pacific Oceans
3. Fourth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of «El Niño» *(Also printed in Spanish)*
4. First Session of the IOC-FAO Guiding Group of Experts on the Programme of Ocean Science in relation to Living Resources
5. First Session of the IOC-UN(OETB) Guiding Group of Experts on the Programme of Ocean Science in relation to Non-Living Resources
6. First Session of the Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
7. First Session of the Joint CCOP(SOPAC)-IOC Working Group on South Pacific Tectonics and Resources
8. First Session of the IODE Group of Experts on Marine Information Management
9. Tenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies in East Asian Tectonics and Resources
10. Sixth Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
11. First Session of the IOC Consultative Group on Ocean Mapping *(Also printed in French and Spanish)*
12. Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ships-of-Opportunity Programmes
13. Second Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
14. Third Session of the Group of Experts on Format Development
15. Eleventh Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of South-East Asian Tectonics and Resources
16. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
17. Seventh Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
18. Second Session of the IOC Group of Experts on Effects of Pollutants
19. Primera Reunión del Comité Editorial de la COI para la Carta Batimétrica Internacional del Mar Caribe y Parte del Océano Pacífico frente a Centroamérica *(Spanish only)*
20. Third Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
21. Twelfth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of South-East Asian Tectonics and Resources
22. Second Session of the IODE Group of Experts on Marine Information Management
23. First Session of the IOC Group of Experts on Marine Geology and Geophysics in the Western Pacific
24. Second Session of the IOC-UN(OETB) Guiding Group of Experts on the Programme of Ocean Science in relation to Non-Living Resources *(Also printed in French and Spanish)*
25. Third Session of the IOC Group of Experts on Effects of Pollutants
26. Eighth Session of the IOC-UNEP Group of Experts on Methods, Standards and intercalibration
27. Eleventh Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans *(Also printed in French)*
28. Second Session of the IOC-FAO Guiding Group of Experts on the Programme of Ocean Science in Relation to Living Resources
29. First Session of the IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials
30. First Session of the IOCARIBE Group of Experts on Recruitment in Tropical Coastal Demersal Communities *(Also printed in Spanish)*
31. Second IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
32. Thirteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asia Tectonics and Resources
33. Second Session of the IOC Task Team on the Global Sea-Level Observing System
34. Third Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
35. Fourth Session of the IOC-UNEP-IMO Group of Experts on Effects of Pollutants
36. First Consultative Meeting on RNODCs and Climate Data Services
37. Second Joint IOC-WMO Meeting of Experts on IGOSS-IODE Data Flow
38. Fourth Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
39. Fourth Session of the IODE Group of Experts on Technical Aspects of Data Exchange
40. Fourteenth Session of the Joint CCOP-IOC Working Group on Post IDOE Studies of East Asian Tectonics and Resources
41. Third Session of the IOC Consultative Group on Ocean Mapping
42. Sixth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of « El Niño » *(Also printed in Spanish)*
43. First Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean.
44. Third Session of the IOC-UN (OALOS) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources
45. Ninth Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
46. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico

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Unesco

IOC/EB-IBCWIO-I/3
Paris, 27 April 1989
English only

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1. OPENING

1 The First Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean (EB-IBCWIO-I) was opened at 11:00 a.m. on Tuesday 4 April 1989, in the Convention Room of the Ministry of Foreign Affairs of Madagascar in Antananarivo, by the General Secretary of the National Commission of Madagascar for Unesco, Mr. H. Raharimanantsoa.

2 The General Secretary welcomed the participants on behalf of the Government of Madagascar and expressed hope that this international Project will be developed successfully to the benefit of the countries of the region.

3 Mr. V. Sedov, Senior Technical Assistant Secretary for Ocean Mapping of the IOC, welcomed the participants of the EB-IBCWIO session on behalf of the IOC Secretary, Dr. G. Kullenberg, who also conveyed to the meeting his best wishes for a successful outcome and development of the project.

4 In the afternoon session, the local Co-ordinator, Mr. S. Andriamihaja, Director of the Malagasy National Surveying and Mapping Agency, who had been unavoidably absent from the morning session, also welcomed the participants on behalf of his Institute. He expressed hope for a most successful meeting and wished all a pleasant stay in Madagascar.

5 A full List of participants is given in Annex IV. Mr. P. Hunter of the United Kingdom sent his apologies as he was unable to attend the Meeting because of flight problems.

2. ADOPTION OF THE AGENDA

6 The proposed Agenda was presented by Mr. Sedov and was adopted without any changes (see Annex I).

3. CONDUCT OF THE SESSION AND DOCUMENTATION

7 Mr. Sedov in his capacity of Technical Secretary for the Session proposed, in accordance with the IOC rules of procedure, that the Board elect a Chairman of the Session and a Rapporteur.

8 Mr. Bettac, who has been appointed Chief Editor for the IBCWIO project, in view of the commitment by the government of the Federal Republic of Germany to edit and print the chart series, was elected as the Chairman following his nomination by Mr. Sedov, Mr. Bettac took the chair, seconded by Mr. Ramasawmy and Mr. Dubad. Mr. T. Holcombe was proposed and unanimously elected to take the responsibilities of Rapporteur of the Session.

9. Mr. Sedov presented the documentation for the session, drawing attention to certain documents which had been prepared for the information of the Members of the Editorial Board.

10 The Chairman, proposed a modus operandi for the Session which was adopted by the participants.

4. TERMS OF REFERENCE OF THE EB-IBCWIO

11 The Chairman drew the attention of the Editorial Board to the Terms of Reference. Each item was considered and several items were discussed.

12 The Technical Secretary, Mr. Sedov, informed about general working procedures of the IOC Editorial Boards for the Regional Mapping projects. He noted that the Editorial Boards do not meet frequently, and that therefore there is a need to work by correspondence between Sessions. Mr. Sedov also reported on IOC Ocean Mapping Activities.

13 The work to be done by the Members of the Board with regard to IBCWIO is a new task for most members. To avoid vain efforts and to allow the project to progress at an adequate rate of speed, the Editorial Board considered it necessary to meet once each year, at least in the initial period.

14 **The Board therefore strongly recommended** that the IOC Secretary investigates the possibility of organizing Sessions of the Editorial Board once each year, at least in the initial period.

5. SPECIFICATIONS FOR THE IBCWIO

15 The Chief Editor presented Annex IV of the Document IOC/CGOM-II/3 entitled "Specifications for the International Bathymetric Charts Produced under Regional Mapping Projects". The members of the Editorial Board considered the Specifications and adopted them with minor modifications. Specifications for the IBCWIO are given as Annex II of the Summary Report.

6. ASSEMBLY DIAGRAM FOR THE IBCWIO

16 The Chief Editor presented two drafts of the Assembly diagram for the IBCWIO. The members of the Board discussed these drafts, keeping in mind the following specific criteria:

(i) Uniformity of format of the sheets.
(ii) Inclusion of all important geographic features.
(iii) Avoiding fragmentation of physiographic units.
(iv) Keeping the number of sheets to a minimum.
(v) Keeping the limits of the sheets coincident with limits of the British Admiralty Diagram plotting sheets of the scale 1:250 000, following the numbering scheme of the B.A. Chart No. H.O. 5330.

17 Following discussion it was decided to accept criteria (v) with the following modifications:

(i) boundaries of the 1:250 000 scale plotting sheets will coincide with the boundaries of British Admiralty 1:250 000 plotting sheets;

(ii) boundaries of Areas of national responsibility for collection of data will coincide with the boundaries of British Admiralty 1:250 000 plotting sheets; and

(iii) final map sheet boundaries will not necessarily coincide with British Admiralty 1:250 000 plotting sheets boundaries.

This decision is based on the need for publishing a minimum number of charts, consistent with sheet size limitations, and the need to make chart boundaries reasonable in terms of the natural distribution of geographic features. It was decided to adopt the proposed draft diagram No. 2 with certain modifications, in particular the addition of a sheet to complete coverage to the African Coast at the southern limits of the mapped area.

18 The Assembly Diagram agreed on is presented as Annex III.

7. POTENTIAL NATIONAL PARTICIPATION IN THE PROJECT

19 Editorial Board Members were asked to provide an assessment of the potential within each nation to contribute to the IBCWIO project, taking into account the availability of data, which institutions might contribute, presence of skilled personnel, and willingness to commit resources.

20 Mr. Andriamihaja of Madagascar reported that a number of institutions within his country participate in the collection of ocean bathymetric data, including FTM (Foiben-Taosaritanin'i Madagasikara/National Institute of Surveying and Mapping); Centre National de Recherches Océanographiques (CNRO); Marine Center of the University of Toliara; Ministry of Transport, Meteorology and Tourism; Ministry of Defence; and private oil companies. FTM could potentially co-ordinate the efforts of the above institutions as well as carry out the assembly of data and preparation of plotting sheets. The data assembly would include that from local and foreign sources. Trained and experienced cartographers and hydrographic technicians are available to carry out the task.

21 Mr. Chodota of the Regional Centre for Services in Surveying, Mapping and Remote Sensing (RCSSMRS) outlined potential participation by his agency. As a Regional Intergovernmental Organization, co-ordinating activities in surveying, mapping and remote sensing for 21 nations: Kenya, Tanzania, Somalia, Comoros, Swaziland, Lesotho, Zambia, Malawi, Sudan, Ethiopia, Uganda, Mozambique, Madagascar, Mauritius, Reunion, Angola, Seychelles, Burundi, Rwanda, Djibouti, Botswana, the RCSSMRS will offer possible assistance, if desired, to member governments in data collection, updating plotting sheets and submission of plotting sheets to the Chief Editor.

22 Should problems arise, the RCSSMRS could advise the Member States how to solve them. It could also co-ordinate data collection on border areas.

Mr. Obel of Kenya stated that responsibility for Hydrographic Surveys and Charting in Kenya resides with the Survey of Kenya. In co-operation with the IHO a National Hydrographic Service will be established in the near future.

23 The Survey of Kenya has well established cartographic services capable of handling the compilation of plotting sheets for the preparation of the Bathymetric Charts under this project. Arrangements are planned for further training of some cartographers in nautical charting at appropriate international centers of training such as the ITC, the Netherlands.

24 The data available within Kenya will be collected by the National Co-ordinator, Mr. J.D. Obel, from various Government Ministries and Agencies as well as private organizations such as oil prospecting companies.

25 Some of the Government Agencies that might have data are: the Survey of Kenya, the Kenya Ports Authority, the Kenya Marine and Fisheries Research Institute, the Kenya Navy, the Ministry of Energy, the Kenya National Oil Corporation and the Mines and Geological Department.

26 A great deal of data is also available outside Kenya, especially in the UK and USA, which could be made available to the National Co-ordinator of this project.

27 Mr. Dubad of the Somali Democratic Republic indicated that his agency, the Ministry of Fisheries and Marine Transport, is keenly interested in the project's overall goal of broad understanding of bathymetry, marine geology, and natural resources. Upon return to Somalia he will consider whether his office can:

(i) obtain data available to the Ministry of Fisheries and Marine Transport and make these available to compilers of plotting sheets;

(ii) co-ordinate the activities of other institutions conducting data collection within Somalia offshore zone; and

(iii) seek government support for to such surveys.

However, Mr. Dubad pointed out that Somalia is not in a position to prepare plotting sheets.

28 Mr. Ramasawmy of Mauritius said that his agency, the Ministry of Housing, Lands and the Environment, would be potentially responsible for assembling, plotting, and submission to the Chief Editor of all available bathymetric data from the ocean area surrounding Mauritius.

29 Mr. Gaveta of Mozambique reported that the main national institution involved in bathymetric data collection is the National Institute of Hydrography and Navigation (INHN). The INHN can potentially assemble all available bathymetric data including that collected by the Portugal Hydrographic Institute which in prior years conducted hydrographic surveys of coastal areas and the Mozambique Channel. The INHN can also

acquire data available from within Mozambique including national institutes and private companies, and can potentially prepare plotting sheets for a limited area such as the Mozambique 200 mile offshore zone.

30 Mr. Nyandwi of Tanzania stated that in his country institutions holding bathymetric data are the Hydrographical Offices of the Port Authority, Marine and Fisheries Research Organizations, and oil exploration companies. These data will potentially be assembled together with the National Mapping Agencies, such as the Surveying and Mapping Division of the Tanzania Government and the Survey Department of Zanzibar. The national EB-IBCWIO board member will co-ordinate the efforts under the auspices of the IOC/Unesco National Committee.

31 Mr. Bonnot of France reported that France holds considerable deep-ocean bathymetric and coastal hydrographic data which have been collected over many years in the IBCWIO region. These data are now principally collected by the scientific vessels of the Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER) or Terres Australes et Antarctiques Françaises (TAAF), and assembled, stored, and plotted by the Service Hydrographique et Océanographique de la Marine (SHOM). He stated the intent that his country to first produce an index of bathymetric data held by French institutions and provide this index to the project.

32 Mr. Holcombe of the USA reported that the US National Geophysical Data Center/World Data Center A for Marine Geology and Geophysics (WDC-A for MGG) has assembled a large data base of digital bathymetric data. These data include most US data available in digital form and data collected by other countries including the UK, USSR, Japan. These data are all potentially available to the IBCWIO project on an exchange basis. Other bathymetric data collected by the US Government are being assembled and are potentially available in the near future. Included in these holdings are coastal hydrography which could be made available upon request of the country off whose coasts the data were collected; about 1 $^{1}/_{2}$ million total soundings are available from the IBCWIO area.

33 Mr. Holcombe proposed, on behalf of the World Data Center A for Marine Geology and Geophysics (WDC-A for MGG), exchange of data with the IBCWIO project. Both digital sounding data and paper plotting sheets would be accepted in exchange. It is expected that sounding data on paper plotting sheets could be digitized and made part of the digital data archive.

34 In connection with the offer of the WDC-A for MGG to exchange data with the IBCWIO project, it was agreed that such an exchange be implemented, with the Chief Editor and the Deutsches Hydrographisches Institut acting as a the focal point for exchange. Data assembled for the IBCWIO project which are approved for release will be reciprocally provided to WDC-A for MGG.

35 Much data utilized in preparation of GEBCO bathymetry still exist on GEBCO and other plotting sheets outside the digital data domain. These data were assembled for the GEBCO Fifth edition; Mr. B. Fisher of Scripps Institution of Oceanography and others assembled the bathymetric data and

prepared the bathymetric contours. Mr. Holcombe recommended that the IBCWIO, through the IOC, inquires as to the potential participation of Mr. Fisher in the IBCWIO project.

36 Mr. Civetta of the International Hydrographic Organization (IHO) noted that a substantial amount of data are held by a number of IHO member states' hydrographic services which have made extensive surveys in the region mainly for navigational purposes, but are not represented at this Meeting; in particular he mentioned India, Japan, Soviet Union and United Kingdom. He expressed concern that participation in IBCWIO be possibly broadened to include some selected of the aforementioned hydrographic services who are potentially willing and able to contribute.

37 Mr. Civetta also reported that the British Hydrographic Department has kindly provided an inventory of sources of information for the 13 GEBCO plotting sheets of the Region under its responsibility and that it has offered to produce for the IBCWIO project paper sounding plots for any digital data provided to them in standard MGD-77 format.

38 In connection with the recognized need for broadened contributions to IBCWIO by hydrographic offices and other institutions not represented at the EB-IBCWIO meeting, it was agreed that the Chief Editor will write letters requesting such contributions which will be forwarded to IOC/IHB. IOC/IHB will in turn send out letters of request to these hydrographic offices and other agencies.

39 Hydrographic offices of the states which are not represented in Unesco but may contribute to this project, could be invited to provide available data through the IHB.

40 It was agreed that by September 1, 1989, of the latest Editorial Board Members will provide the Chief Editor with an inventory of data available from the regions of each respective country's areas of responsibility for data collection. These inventories can take the form of charts showing trackline plots, single dots, or areas of detailed surveys. The Chief Editor will then produce a combined inventory of data which will be distributed to Editorial Board Members.

41 It was agreed that, because of the large amount of sounding data existing on plotting sheets in non-digital form, and the large task associated with digitizing such a large amount of data, the IBCWIO would compile plotting sheets from analogue sounding plots.

42 The Editorial Board agreed to accept the generous offer of the Hydrographic Department of the British Admiralty to plot soundings on paper sheets from digital data provided to them in MGD-77 format, and the Editorial Board would like this activity to be initiated as soon as practicable.

8. ELECTION OF CHAIRMAN AND VICE-CHAIRMAN OF THE IBCWIO

43 Mr. Bettac, Chairman of the Session, was nominated to be Chairman of the Editorial Board by Mr. Ramasawmy and this nomination was seconded by

Mr. Obel. Mr. Bettac was elected unanimously to the post of Chairman of the IBCWIO Editorial Board. There was a common understanding that the Vice-Chairman of the Editorial Board should be from the country designated to host the next meeting of the Board. With this in mind the Board agreed to pass to the next agenda items and decide the Date and Place of the next Session before electing a Vice-Chairman.

9. DATE AND PLACE OF THE NEXT SESSION

44 It was proposed by Mr. Andriamihaja that the next session of the Editorial Board should be held in Mauritius. It was decided unanimously to recommend to the IOC that the Second Session be held in 1990 in Mauritius. The date for the Second Session was tentatively set for early July 1990.

45 In view of the intent that the Second IBCWIO Editorial Board be held in Mauritius, and agreement that the Vice-Chairman of IBCWIO should be the board member in whose country the next board meeting will be held, Mr. D. Ramasawmy of Mauritius was nominated and unanimously elected to be the Vice-Chairman of the IBCWIO Editorial Board.

10. APPROVAL OF THE SUMMARY REPORT

46 **The Board adopted** the Summary Report as amended.

11. CLOSURE OF THE SESSION

47 The First Session of the Editorial Board was closed by the Chairman at 11:45 a.m. on April 7, 1989.

ANNEX I

AGENDA

1. OPENING OF THE SESSION
2. ADOPTION OF THE AGENDA
3. CONDUCT OF THE SESSION AND DOCUMENTATION
4. TERMS OF REFERENCE OF THE EB-IBCWIO
5. SPECIFICATIONS FOR THE IBCWIO
6. ASSEMBLY DIAGRAM FOR THE IBCWIO
7. POTENTIAL NATIONAL PARTICIPATION IN THE PROJECT
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10. APPROVAL OF THE SUMMARY REPORT
11. CLOSURE OF THE SESSION

ANNEX II

SPECIFICATIONS FOR THE INTERNATIONAL BATHYMETRIC CHART OF THE WESTERN INDIAN OCEAN

SECTION 100 - GENERAL

101 - **Introduction**

A. The International Bathymetric Chart of the Western Indian Ocean is a continuation and further development of the General Bathymetric Chart of the Oceans (GEBCO), under the general guidance of the IOC Consultative Group on Ocean Mapping. This chart is prepared and published with the co-operation of volunteer hydrographic Offices and/or groups of scientists from appropriate institutions.

B. The Editorial Board of IBCWIO was established by Resolution of the Twenty-first Session of the IOC Executive Council (Paris, 7-15 March 1988), for the purpose of technical direction of its compilation and publication.

SECTION 200 - BASIC SPECIFICATION

201 - **Projection**

A. Sheets for IBCWIO will be portrayed in Mercator Projection using the WGS-84 reference ellipsoid.

202 - **Scale**

A. A scale of 1:1 000 000, using the equator as a reference parallel, will be used.

203 - **Graticule**

A. A scaled border of each sheet shall be shown subdivided into 1 minute increments of latitude and longitude.

B. Meridians and parallels shall be drawn every 2°.

C. Labelling of the graticule shall be every 1°.

D. The tropic of Capricorn shall be shown.

204 - **Size**

The neat line size of each sheet shall not generally exceed 740 x 900 mm.

205 - **Numbering**

A. For each chart a consecutive sheet number shall be used as shown in the Assembly Diagram.

B. Sheet numbers shall be printed in 8 mm Arabic figures in the lower right-hand and top left-hand corner of each sheet.

206 - **Dating**

The date of the chart publication to be shown on each sheet shall be the date of going to press.

207 - **Units of measurement**

Depths and topographic heights shall be shown in metres. Depths should be corrected from the last edition of the Echo-Sounding Correction Tables, published by the United Kingdom Hydrographic Department, and this should be stated on the face of the chart.

208 - **Marginal information**

A. All marginal information shall be in English (or bilingual if appropriate).

B. This shall include:

1. The general title of the chart.
2. Sheet number.
3. Projection, ellipsoid and scale (see 201, 202).
4. Unit of measurement used for depths and heights.
5. Code of colours used to portray hypsometry.
6. Code of colours used to portray bathymetry.
7. An index of areas and names of countries whose Hydrographic Offices or groups of scientists prepared plotting sheets for the sheet.
8. The names of scientific co-ordinators of the chart series and of scientists responsible for the scientific content of the sheet.
9. The logo of the Intergovernmental Oceanographic Commission (IOC) of Unesco.
10. Edition number and date of publication (see 206) followed by the statement:
"Published by the ..... (name of printer) under the authority of the IOC (of Unesco)".
11. List of the sources of the data used.

SECTION 300 - TOPOGRAPHY

301 - For the land part, topographic maps shall be used.

302 - The best available agreed upon coastline shall be used. The coastline shall be shown as a firm line in black.

303 - A. Contours on land shall be at 200 m intervals.

B. The thicker lines shall be at 200, 1 000, 2 000, 3 000, etc., m. intervals.

C. Additional contours which may be required by the data must be shown.

D. A colour change for hypsometry shall be used at the following intervals: 0-200, 200-1000, 1000-2000, 2000-3000, etc., m.

E. Glaciers shall be shown by contours or by symbols. The significant heights shall be shown.

304 - **Hydrology of the land**

On the chart shall be shown:

- rivers and channels;
- lakes;
- lagoons.

305 - Major cities and towns, priority being given to those on the coast.

SECTION 400 - BATHYMETRY

401 - The 1:250 000 plotting sheets prepared by the participants in the Project, according to their zones of responsibility, shall form the basic bathymetric data to be used for the compilation of the chart.

The plotting sheets shall be prepared according to the Annex to these Specifications.

402 - **Soundings**

A. A sparse pattern of numerical soundings shall be shown to indicate maximum and minimum (and other significant) depths, where known, over major undersea features in such a way as not to detract from the paramount objective of indicating sea floor relief by means of contours.

B. The exact position of all numerical soundings shown shall be indicated by a dot. The depth shall be written as cartographically convenient against the dot using 1.5 mm sans-serif figures. Where space does not permit the juxtaposition of the figures they may be offset and linked by a fine line to the dot placed in the exact position.

C. Actual data control will be shown as data representing discrete soundings or as lines representing continuously sounded traverses. Areas of detailed surveys where sounding lines are closely spaced may be delineated using numbered boxes which are referenced in the margin. Margin reference information will include average spacing of ship traverses together with essential information regarding the source of the data such as collecting institution, ship and cruise, and date of survey.

403 - **Depth contours and colours**

A. Basic contours shall be at 200 m intervals.

B. The 200 m contour line and all contours at 1 000 m intervals shall be drawn using thick lines.

C. 20, 50 and 100 m contours, if necessary, shall be drawn using thin lines.

D. A colour change for the bathymetry shall be sued at the following intervals: 0-200, 200-1000, 1000-2000, 2000-3000, etc., m.

SECTION 500 - NOMENCLATURE AND GEOGRAPHICAL NAMES

501 - A. A proposed list of names for inclusion on each sheet will be submitted for approval to the GEBCO Subcommittee on Geographical Names and Nomenclature of Ocean Bottom Features. In preparing this list account should be taken of the guidelines contained in the GEBCO publication "Standardization of Undersea Feature Names". Names already in use, referring to the GEBCO gazetteer, will be accorded preference, with new names being given only to previously unnamed features.

B. As a general policy, local names (cities, towns, mountain ranges, rivers, etc;) shall be in exact agreement with the form prescribed by the most authoritative national source. However, in those cases where the national names differ substantially from the normal English usage, the English version shall be shown alongside in parenthesis.

C. The nomenclature for undersea features shall be shown in the English language.

APPENDIX TO ANNEX II

RECOMMENDATIONS FOR PREPARATION OF PLOTTING SHEETS FOR THE INTERNATIONAL BATHYMETRIC CHART OF THE WESTERN INDIAN OCEAN

1. For plotting and contouring purposes the British Admiralty's plotting sheets for oceanic soundings should be utilized.

2. Soundings should in metres corrected using the last edition of the "Echo Sounding Correction Tables".

3. The position of the sounding should be the central point of the group of figures representing it. But the position may also be indicated by a dot with the sounding figure alongside, and if necessary, by a thin line drawn to connect the two.

4. The soundings figures should be inscribed across the track; the figures should be easily readable, the recommended average size being 1.5-2 mm in height.

5. The largest possible number of soundings should be shown on the plotting sheets so long as their clarity is not impaired. When soundings are very dense, the number may be reduced if care is taken not to eliminate the more important soundings: maxima and/or minima.

6. The margin of each plotting sheet should contain the following legend:

"Compiled by ....."
"Last brought up to date on ....."
"Prepared under IOC (International Bathymetric Chart of the Western Indian Ocean Project)".

7. Each plotting sheet should be accompanied by two overlays:

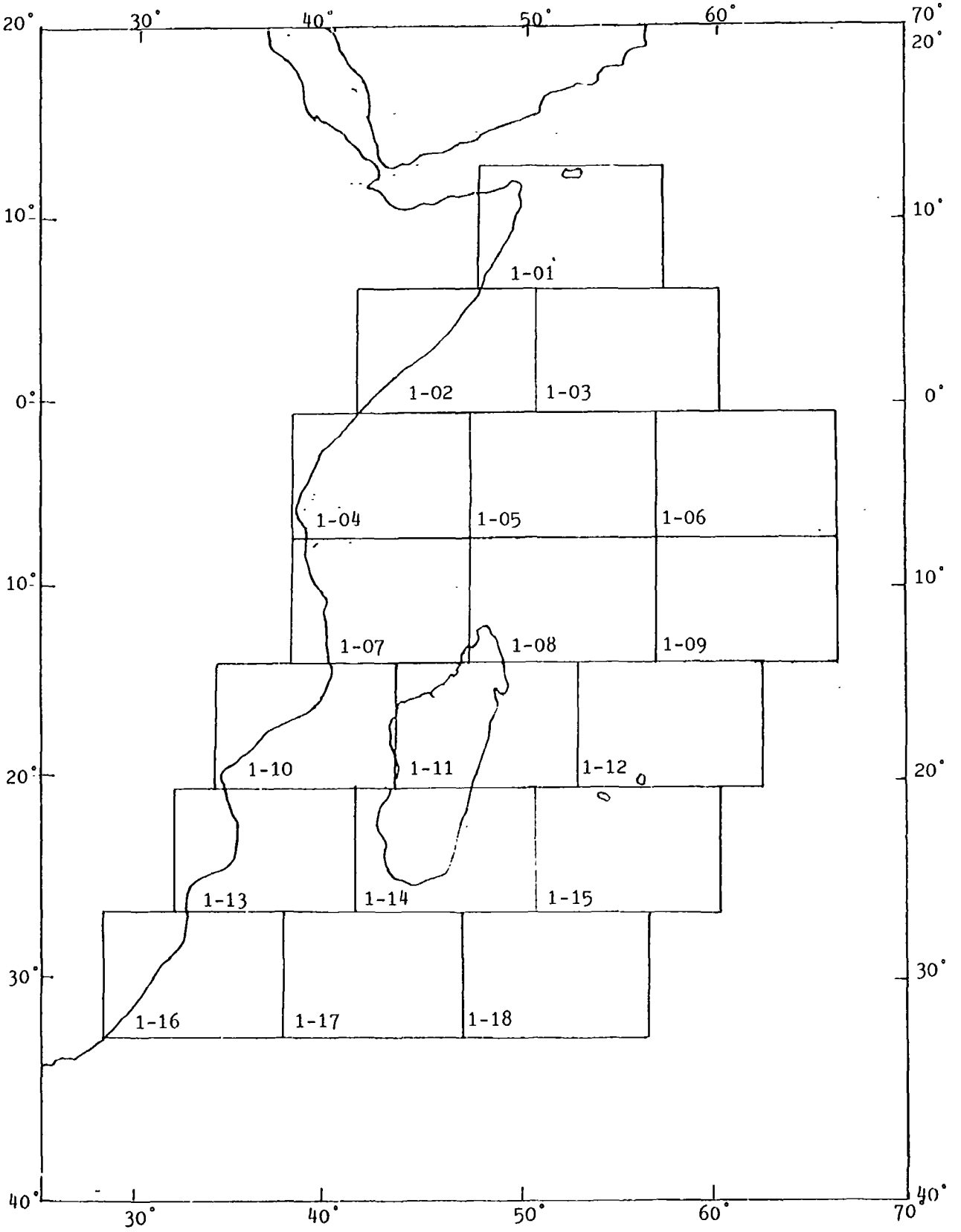
a) overlay contour lines with contouring made through each 100 metres, additional contours may be drawn through 50 and 10 metres, where arranged (on the shelf and abyssal plains);

b) overlay source materials on which should be shown the following:
- areas of soundings and position of isolated soundings with the appropriate legends required to indicate the source and the date of such soundings;
- information on the method of navigation and its precision;
- information on the type of the echosounder and its precision.

8. On each plotting sheet and overlay the date of completion of compilation should be indicated.

ANNEX III

ASSEMBLY DIAGRAM FOR THE
INTERNATIONAL BATHYMETRIC CHART OF THE WESTERN INDIAN OCEAN
Scale 1:1 000 000 at 0°



ANNEX IV

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