



**IOC Editorial Board for
the International Bathymetric
Chart of the Mediterranean
and its Geological/
Geophysical Series**

Fifth Session

Trieste, 26-28 June 1991

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-FAC 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 IOC-ARIBE 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 RNOECs 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
47. First Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean
48. Twelfth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans
49. Fifteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asian Tectonics and Resources
50. Third Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
51. First Session of the IOC Group of Experts on the Global Sea-Level Observing System
52. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean
53. First Session of the IOC Editorial Board for the International Chart of the Central Eastern Atlantic (*Also printed in French*)
54. Third session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico (*Also printed in Spanish*)
55. Fifth Session of the IOC-UNEP-IMO Group of Experts on Effects of Pollutants
56. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean
57. First Meeting of the IOC *ad hoc* Group of Experts on Ocean Mapping in the WESTPAC Area
58. Fourth Session of the IOC Consultative Group on Ocean Mapping
59. Second Session of the IOC-WMO/IGOSS Group of Experts on Operations and Technical Applications
60. Second Session of the IOC Group of Experts on the Global Sea-level Observing System
61. UNEP-IOC-WMO Meeting of Experts on Long-Term Global Monitoring System of Coastal and Near-Shore Phenomena Related to Climate Change
62. Third Session of the IOC-FAO Group of Experts on the Programme of Ocean Science in Relation to Living Resources
63. Second Session of the IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials
64. Joint Meeting of the Group of Experts on Pollutants and the Group of Experts on Methods, Standards and Intercalibration
65. First Meeting of the Working Group on Oceanographic Co-operation in the ROPME Sea Area
66. Fifth Session of the Editorial Board for the International Bathymetric and its Geological/Geophysical Series

Intergovernmental Oceanographic Commission
Reports of Meetings of Experts and Equivalent Bodies

**IOC Editorial Board for
the International Bathymetric
Chart of the Mediterranean
and its Geological/
Geophysical Series**

Fifth Session

Trieste, 26-28 June 1991

UNESCO

IOC/EB-IBCM-V/3
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1. **OPENING OF THE SESSION**

1 The Chairman Professor Carlo Morelli, opened the Fifth Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and its Geological/Geophysical Series, on Wednesday 26 June, at 09:30. The Session took place at the International Centre for Theoretical Physics, Trieste, Italy.

2 Dr. Viktor Sedov welcomed the participants on behalf of the Secretary IOC, Dr. Gunnar Kullenberg.

3 The List of Participants is given in Annex II.

2. **ADOPTION OF THE AGENDA**

4 The Provisional Agenda was discussed and adopted with small amendments to the order of the items, due to the fact that not all the participants had arrived by the opening of the Session.

5 The Agenda is given in Annex I.

3. **CONDUCT OF THE SESSION - DOCUMENTATION**

6 The Chairman presented the arrangements for the Session, and the IBCM Secretary, Mr. Dmitry Travine, introduced the documentation.

4. **STATE OF PREPARATION AND PUBLICATION OF THE IBCM GEOLOGICAL/GEOPHYSICAL SERIES**

4.1 **BOUGUER GRAVITY ANOMALIES SERIES**

7 The gravity maps were discussed in terms of their accuracy. Comparison between data collected in 1989 by R/V Meteor having GPS-navigation and modern marine gravity meters combined with older surveys permitted to confirm 3-5mGal accuracy. The fact that the western Mediterranean onshore data have no topographic reductions had to be considered when analysing the data since effects can be up to 15mGal.

8 The Board was informed that gravity from Yugoslavia and Bulgaria are still not available. It was decided that every attempt will be made to finalize the gravity brochure during the next 4 weeks.

4.2 **SEISMICITY SERIES**

9 Captain A. Popov, the Chief Editor, presented this series which had recently been published in a one-sheet version (1:5 M) and a 10-sheet set (1:1 M). It was adopted by the members of the Editorial Board and it was decided that Professor Bonnin's remarks should be included in the explanatory brochure and in a catalogue which will be published before the next meeting of the IBCM Editorial Board.

10 The situation regarding the explanatory brochure (Chapter 3 of the supporting volume) was then discussed. Dr. J. Hall informed the members of the difficulties involved with this subject and expressed his opinion that it would only be ready in time for the next informal consultation. He required about three months for review of the material received. The IBCM Secretary presented for discussion some information from Prof. Bonnin. Prof. Morelli had sent Prof. Bonnin a fax on 27 June, requesting the despatch of all materials directly to Dr. Hall and received an answer from Prof. Bonnin immediately where he explained his situation and the explanatory brochure and his difficulties. Mr. D. Scott agreed to provide an English translation of Prof. Bonnin's text as soon as possible and send it to Dr. Hall for editing.

Once the text is complete and edited, it will be printed in its final form in English by Prof. Bonnin on his laser printer and returned to Dr. Hall for publication.

- 11 Prof. Bonnin has agreed to mount an exhibition of the IBCM during the Council of Europe Meeting in Strasbourg, in October of this year.

4.3 MAGNETIC ANOMALIES SERIES

- 12 The magnetic data from the eastern Mediterranean have been processed and compiled for one magnetic epoch by Prof. Makris. The data from Israel will be provided by Dr. Hall, who has already scanned them. They will be forwarded to Prof. Makris. The data from Turkey are still missing. Mr. Scott has already contacted the Turkish Geological Survey (M.T.A.) but no data have as yet been received. Data of the Black Sea have not yet been taken in hand. Professor Makris said that he now holds all data for the area of the Soviet land mass and the northern part of the Black Sea but it is impossible to integrate this properly into the main part of the map without the Turkish data.

4.4 PLIO-QUATERNARY SERIES

- 13 The Chief Editor, Captain A. Popov, submitted the following drafts for the consideration of this session:

- (i) draft design of the general legend for the map (so called enlarged legend);
- (ii) draft design of the legend for each sheet (so called small legend);
- (iii) draft of sheet 7 as an example of his planned sheet design.

- 14 All three were based on the material he had received from Prof. Genesseeux, i.e. ten sheets of the preliminary version of the map (author original), and his proposals on the legend contents.

- 15 He proposed that the Plio-Quaternary Sedimentation Map be published in the traditional IBCM style preserving the existing sheet limits and all the design elements: legend composition, border, letterings, types, geographical graticule, etc. It is also planned to preserve land and bottom relief, hydrology, settlements and geographical names.

- 16 In designing the enlarged legend, Prof. Genesseeux's proposals have been carefully studied and specific details have been analysed on the ten sheets. It was pointed out that some symbols drawn on the map had no explanation in the legend; the uniformity of symbol sizes had not been retained everywhere; the colour of the line symbols had not been specified, etc. The legend design and proposals on the symbol colours and sizes were submitted. The following colours were proposed:

brown	- for isopachs;
violet	- for Messinian sediment limits;
red	- for fault lines;
purple	- for volcanos;
blue	- for salt domes;
black	- for limits of the Mediterranean tectonic ridge, drill holes and their numbers.

- 17 Some symbols appearing on the map, but not explained in Prof. Genesseeux's proposals, were included in the legend also without any explanations. The Board agreed to include lists of contributors to each sheet in the small legends giving a general list in the enlarged legend. As an example of the whole map design, the Chief Editor displayed a colour proof copy of IBCM-PQ sheet 7. It contained all the symbols used on the map: symbols for volcanos, salt domes and drill holes. In contrast to the previously published maps, the 200m and 2000m depth contours representation had been intensified by a narrow grey belt - this was Prof. Kuprin's proposal

aimed at making the shelf limit and the continental rise more clear. The wide belt along the coastline had been preserved (as on the Bouguer Gravity Anomalies Map), in order to make the boundary between land and sea more prominent.

- 18 Prof. M. Gennesseaux presented the second proof black and white copy of the chart for the consideration of the Editorial Board. He also reported on the preparation of the supplementary text for this series. It was agreed that the final proof copy will be approved by correspondence and for this purpose, it will be sent to Dr. Hall and other copies to Dr. Sedov in Paris, where Prof. Gennesseaux and other members of the Editorial Board will meet. Prof. Gennesseaux will send the draft text of his brochure (English version) and all figures to Dr. Hall, who will prepare it for the next meeting. After lengthy discussions, the Editorial Board adopted the legend of the series with some amendments and the colours proposed by the Chief Editor. It was decided to ask the Chief Editor to prepare the final colour proof of the series within 10 months (1 sheet per month) and to send it to the members of the Editorial Board for approval.

4.5 UNCONSOLIDATED SEA-BED SEDIMENTATION SERIES

- 19 Professor P. Kuprin presented a draft compilation of sheet 10, which has been prepared by Professor E.M. Emilianov as a basic sheet of this series. He also presented a list of the other scientists who had participated in the compilation. After consideration, the Board agreed on the proposed presentation and recommended that it be adopted as a basis for the final compilation.

- 20 The Board recommended also that the Secretary IOC be invited to send a letter to the responsible organizations/institutions of Turkey, Greece, Romania, Algeria, Spain, Italy and France, asking them to send available data for certain areas to the scientific co-ordinator of this series.

- 21 The Board advised Prof. Kuprin to involve Dr. A.E. Aksu from Canada in the compilation of the series.

- 22 The Board requested the scientific co-ordinator to finalize the compilation of the series by the beginning of 1992 and to present the black and white copies for the consideration of the members of the Editorial Board.

- 23 The Board requested the Secretary IOC to investigate the possibility of supporting the participation of Prof. E.M. Emilianov at the IBCM consultations to be held in Trieste, Italy, in October 1992.

5. PROBLEMS RELEVANT TO THE BATHYMETRY OF THE MEDITERRANEAN

5.1 UPDATING OF THE BATHYMETRIC PLOTTING SHEETS

- 24 The representative of the IHO, Ing. en Chef Michel Huet, informed the Session that an IHB letter had been sent in October 1990 to the Hydrographic Offices of Spain, France, Italy, Greece, Turkey, United Kingdom and USSR requesting them to provide IHB and the IBCM Secretary, Mr. D. Travine, with updated copies of the Bathymetric Plotting Sheets (BPS) under their responsibilities, in readiness for the publication of the 2nd edition of the IBCM Bathymetric Series, planned for 1994. He also said that so far copies had been received from France and UK.

- 25 Mr. Travine informed the Editorial Board that Spain, Italy, Greece, Turkey and USSR have agreed to submit their updated plotting sheets.

- 26 Dr. Hall described his MEDMAP-DTM Project for compiling six bathymetric charts for the Eastern Mediterranean off Israel at a scale of 1:100,000 on the local Cassini datum. These charts will present the bathymetry as a shaded relief image based upon the offshore DTM on a 25m grid. The land areas will consist of full colour high resolution (10m pixel) STM

(SPOT-LANDSAT TIM Merge) satellite imagery. For the bathymetry it is intended to develop a colour palette with different colours for every 1m of depth. The thrust of this work is to carry-out mapping on an inexpensive PC computer system in a raster image format, which is then used to print using the Scitex raster process plate-making technology and four-colour process printing. Dr. Hall hoped that a successful execution of this project would convince the Editorial Board to adopt these presentation techniques for the next edition of the IBCM.

5.2 PROPOSAL OF THE GFCM ON THE PREPARATION OF A DATA BASE ON SHELF SEAS BATHYMETRY

27 The representative of the IOC, Dr. V. Sedov, introduced this item. The Board held a lengthy discussion on this proposal.

28 Dr. Hall noted that the offer of Professor Makris and Dr. Hall to produce a DTM on a 0'.25 grid from digitized IECM contours, would probably satisfy the FAO requirements. Unfortunately, the lack of land topography on the original HDNO tape was delaying this effort. Captain Popov estimated that this high priority project, which was awaiting the arrival of new equipment, would not be completed earlier than 1992.

29 Dr. Hall described his new MEDMAP-DTM project to produce a DTM for the sea off Israel on a 25m grid. He proposed to use these methods to scan sheet 10 and produce a 0'.25 DTM in time for the next meeting.

30 Dr. Hall expressed his opinion that the basic FAO database should not consist of more than a DTM for the shelf areas, needed for FAO purposes, on a suitable grid, together with another layer on the same grid, giving the sediment type, at each grid point. He felt that, as a start, such a sediment type database could also be prepared from the IBCM Unconsolidated Sediment sheets. He would investigate a similar analysis for sheet 10 using the preliminary IBCM Unconsolidated Sediment chart at 1:5M scale. Dr. Hall felt that if the FAO database attempted to collect basic data or to produce DTMs on a much finer grid, perhaps less than 0'.25 would be too coarse for useful shelf resource calculations.

31 Dr. Hall was asked to prepare, as soon as possible, a proposal which the EB-IBCM could send to FAO describing the feasibility, methodology and cost of preparing such a database from traditional hydrographic charts and the IBCM plotting sheets. These methods would be based on the PC computer programmes he had used to date. The resulting DTMs, perhaps on a finer grid, could also be used for the 2nd edition of the IBCM. The EB-IBCM would require financial support from FAO to carry out this work. Due to the urgent nature of this project, the Board requested Dr. Hall to complete the proposal within 1-2 months, and to send it to the Secretary IOC with a copy to the Chairman CGOM. It also requested Dr. Hall to prepare the depth and sediment DTM examples based on sheet 10 within 4 months, so that FAO could evaluate it.

32 During this discussion, the representative of the IHB informed the Board of the possible setting up of a foundation, proposed by Norway, to establish an IHO World Centre for ECDIS (Electronic Chart) data; this will be discussed in Monaco next October. He also recalled that ECDIS data will include bathymetric data and essentially concerns the nearshore (to 200m depth) as safety of navigation is the main purpose of the work of the IHO. He further observed that the ECDIS database would be established through digitization of existing nautical charts, and co-operation between IOC and IHO on the GFCM project might be useful.

6. DISTRIBUTION ARRANGEMENTS AND PUBLICITY

33 Captain A. Popov reported on the steps to be undertaken to improve the distribution of the IBCM printed charts. Unfortunately, little progress had as yet been made. He explained that the situation is the result of the difficult economic structure of the USSR. He expressed the hope that in the

next year this problem will be solved.

34 Dr. Sedov and Mr. Travine reported to the Editorial Board on the IBCM exhibitions, during the IOC Assembly held in Paris and at the Oceanographic Museum in Monaco.

35 Dr. Hall suggested sending copies of all the IBCM products with their full description to the special professional magazine of the United States Library of Congress, as yet another advertising measure. This suggestion was accepted.

36 The IHO representative said that they are still waiting for coloured leaflets advertising IBCM maps (HDNO - Dr. J. Hall) for inclusion in the IHO Catalogue of Publications. The Chief Editor promised to send the original plastics as soon as possible.

7. ANY OTHER BUSINESS

7.1 INCLUDING OF THE LOGO OF THE IHO INTO A 2ND EDITION OF THE IBCM

37 The IHO representative said that the IHB had been very pleased to learn that, following a request made at Perpignan in October 1990 (informal consultations) by its representative, the IHO logo will appear on all the future bathymetric sheets of the Regional International Bathymetric Chart (IBC) projects sponsored by the IOC.

7.2 CATALOGUE OF BATHYMETRIC PLOTTING SHEETS

38 The IHO representative informed that the IHO-IOC Publication BP-0002 "Catalogue of Bathymetric Plotting Sheets" and its Annex BP-0003, showing dates of issue or latest updating of plotting sheets, have been published respectively in March and May 1991. These editions include information on the IBCM BPS at scale 1:250,000. The IHB will be pleased to send copies of these two publications to the Members of the EB-IBCM who are not in possession of them.

39 Inset 6 of the Catalogue of Bathymetric Plotting Sheets (BP-0002) concerning the International Bathymetric Chart of the Mediterranean (IBCM) was also discussed. The Editorial Board noted that, owing to the continuing dispute between Greece and Turkey regarding limits of allocation of BPS in the Aegean Sea, the IHB had purposely omitted an "area allocation" limit (in red) on the inset between these two countries' allocations.

40 The Board stressed that in its opinion the use of sheet limits as area allocation limits is quite arbitrary and only a convenience.

41 The identification of territorial and other limits between contiguous countries results from political decisions which do not fall within the competence of either IOC or IHO. The Board therefore, suggests to IHB that inset G might be qualified by a footnote which states that the "area allocated" limit through plotting sheets 6303, 6307, 6311, 6315 and 6316 should follow the political boundary of national jurisdiction between the two countries defined elsewhere.

7.3 DATA CENTRE FOR DIGITAL BATHYMETRY

42 The representative of the IHO informed the Session that the IHO Data Centre for Digital Bathymetry (DCDB), Boulder, Colorado, USA, has been operational since June 1990. Operational procedures for the banking of data have now been defined and will appear in the next edition of the IOC-IHO publication, GEBCO Guidelines (BP-0007) to be issued by the end of this year.

8. DATE AND PLACE OF THE NEXT SESSION AND INFORMAL CONSULTATIONS

43 The Editorial Board decided that the next informal consultations will be held during the 24th Congress of ICSEM, in Trieste, in the month of October 1992.

44 Recalling the previous proposal made by Dr. Hall, the Editorial Board asked him to investigate the possibility of hosting the next session in Israel, in October 1993.

9. ADOPTION OF THE SUMMARY REPORT

45 The Members of the Editorial Board considered a draft of the Summary Report prepared during this meeting and have made the necessary corrections. After discussion the Summary Report was adopted.

10. CLOSURE OF THE SESSION

46 The Session was closed on Friday 28 June 1991 at 15:00.

ANNEX I

AGENDA

1. **OPENING OF THE SESSION**
2. **ADOPTION OF THE AGENDA**
3. **CONDUCT OF THE SESSION, DOCUMENTATION**
4. **STATE OF PREPARATION AND PUBLICATION OF THE IBCM GEOLOGICAL/
GEOPHYSICAL SERIES**
5. **PROBLEMS RELEVANT TO THE BATHYMETRY OF THE MEDITERRANEAN**
6. **DISTRIBUTION ARRANGEMENTS AND PUBLICITY**
7. **ANY OTHER BUSINESS**
8. **DATE AND PLACE OF THE NEXT SESSION AND INFORMAL CONSULTATIONS**
9. **ADOPTION OF THE SUMMARY REPORT**
10. **CLOSURE OF THE SESSION**

ANNEX II

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ANNEX III

LIST OF ABBREVIATIONS

BPS	Bathymetric Plotting Sheets
DCDB	Data Centre for Digital Bathymetry (of IHO)
DTM	Digital Terrain Model
ECDIS	Electronic Chart Display Information System
FAO	Food and Agriculture Organization of the United Nations
GFCM	General Fisheries Council for the Mediterranean (of FAO)
GPS	Global Positioning System
IBCM	International Bathymetric Chart of the Mediterranean and its Geological/Geophysical Series
IBCM-PQ	Plio-Quaternary Series of the IBCM
ICSEM	International Commission for the Scientific Exploration of the Mediterranean Sea
IHB	International Hydrographic Bureau (of IHO)
IHO	International Hydrographic Organization
IOC	Intergovernmental Oceanographic Commission