Intergovernmental Oceanographic Commission
Reports of Meetings of Experts and Equivalent Bodies

IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico (IBCCA)

Sixth Session

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1. OPENING

The Sixth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico (IBCCA) was opened by Mr. José Luis Frías Salazar on 18 November 1996 at 10:00, in the Crystal Room of the Hotel Costa del Sol, in Cartagena de Indias, in his capacity of Acting Chairman of the Editorial Board.

At the opening, Mr. Frías Salazar expressed his gratitude to all participants of the meeting and manifested his wish that all results and achievements of the project be made available to all of them.

He apologized for the absence of Ing. Juan Lobo Zertuche, Chairman of the Editorial Board, who was unable to attend due to last minute difficulties in his home country.

He welcomed Capt. Luis Alvaro Mendoza Mazzeo, Director of the Centro de Investigaciones Oceanográficas e Hidrográficas (CIOH) of the Colombian Navy, Capt. Gregorio Pérez Moreno, Director of the Division of Hydrography and Navigation of the Venezuelan Navy and Mr. Eduardo Bedoya Benitez, Director of the National Geographic Institute of Costa Rica, who were participating as members of the Editorial Board for the first time.

Capt. Mendoza Mazzeo warmly welcomed the participants on behalf of Colombia and the Centro de Investigaciones Oceanográficas e Hidrográficas (CIOH) and wished a successful meeting for the benefit of the cartographic production of the Caribbean Sea and Pacific Ocean. He also offered his support to solve any difficulties that might arise during their stay in the city of Cartagena.

Following this, Mr. Rafael Steer-Ruiz, Acting Secretary IOCARIBE, reported that within the projects of intergovernmental scope, IBCCA was considered successful, among other reasons, due to the fact that it consists of a small and dedicated group. In general, it has developed satisfactorily thanks to the efforts of all participating members and the continuity of the majority of them. He stated that the world scientific community is awaiting the results of the project and that possibly when the initial objectives are achieved, it would be necessary to hold a review and start a new phase.

Dr. Dmitri Travin, IOC Technical Secretary for Ocean Mapping, welcomed the participants on behalf of the Executive Secretary IOC and thanked the Government of Colombia and the Centro de Investigaciones Oceanográficas e Hidrográficas (CIOH) for the excellent organization of the work to be developed, and all facilities provided for the participants. He regretted very much the absence of the representative from Cuba in the Session. He hoped that the project would fulfill its objectives to follow on with the next step which is the creation of geophysical and geological maps.

2. ADOPTION OF THE AGENDA

Mr. Frías Salazar submitted the provisional agenda which had previously been sent to participants. It was adopted with some additions (see Annex I).

3. REPORT OF THE FIFTH SESSION OF THE IOC EDITORIAL BOARD FOR THE INTERNATIONAL BATHYMETRIC CHART OF THE CARIBBEAN SEA AND THE GULF OF MEXICO (IBCCA)

The Chairman gave an overview of the main issues dealt at the Fifth Session of the Committee held in San José, Costa Rica, 21-22 November 1994. The objectives proposed during the Second Meeting of IBCCA Officers were highlighted, among which the approval and revision of the compilation made by the scientific co-ordinators to facilitate the Editor's work and avoid duplication of efforts in the editing process; the importance and development of the data base for IBCCA; the participation of the Hydrographic Service of France which will be responsible for sheets 1-10 and 1-16.

He then made a summary of progress reports on the discussions and considerations about the future proposals for cartographic work in areas of geology and geophysics.

4. PROGRESS REPORT ON THE COMPILATION OF THE PLOTTING SHEETS FOR THE IBCCA PROJECT

Mr. Frías Salazar invited the members of the Board to report on the present state of the compilation sheets in their respective areas of responsibility.

On behalf of the US National Geophysical Data Center (NGDC), Ms. Lisa Taylor thanked Capt. Mendoza Mazzeo, Director of the Centro de Investigaciones Oceanográficas e Hidrográficas (CIOH) for his hospitality and excellent organization of the Session and Dr. Dmitri Travin, IOC Technical Secretary for Ocean Mapping, for inviting her to attend this Session. She then presented a progress report on the compilation of sheets 1-01, 1-02 and 1-03:

(i) Topographic and bathymetric compilation for sheets 1-01, 1-02 and 1-03 is complete.

(ii) Half of the compilation of sheets 1-02 and 1-03 have been scanned and vectorized on scale 1:500.000; the remaining parts are being converted by INEGI.

(iii) A colour image bathymetry of sheet 1-01 has been created with vectorized contours through the use of a cartographic programme called General Mapping Tool (GMT). Ms. Taylor distributed 3-D spectacles to the participants to see the colour image in three dimensions.

(iv) Complete bathymetry of the Floridas escarpment on sheet 1-01, and a mosaic from GLORIA SIDE SCAN SONAR plotted on the compilation scale which shows the area with its numerous canyons. The image helps interpreting sounding data and determining of position and shape of each canyon.

(v) Compilation of sheets 1-01 and 1-02 included detailed bathymetry surrounding the northern part of the Bahamas, with lines based on soundings obtained by the United States Army as well as bathymetry of the escarpment of Banco de Campeche taken from data provided by the National Ocean Service (NOS) of United States.

Sheets 1-01, 1-02 and 1-03 will be presented to Chief Editor at INEGI in the spring of 1997 after a formal review of bathymetry and proposed names.

Mr. Eduardo Bedoya, Director of the National Geographic Institute of Costa Rica, started his presentation stating that IBCCA had become a very important programme for his country considering that members of his staff have received training and are now able to carry out this work. So far, 22 of the 29 sheets under Costa Rica's responsibility, have been compiled through manual plotting and contouring every 200 metres.

He added that during the IBCCA Session held in 1994 in San José, Costa Rica, Prof. José Maria Diaz Andrade had informed the Board about problems they had encountered with the compilation of sheet 1-12 due to lack of equipment and shortage of staff with experience in these skills. To solve these problems the following actions had been taken:

(i) Seven openings were made available in the Cartography curriculum for specialists in geography.

(ii) A working group with staff from the Geography and Cartography Divisions was formed to give direct support to the project.

(iii) A course on "Principles of Nautical Cartography" was organized and directed by the NIMA (ex

DMA), and a staff member was appointed to attend a four-month course on "Nautical Cartography" held in Japan.

(iv) Files 2JG, 2FG and 2KG were requested from the INEGI containing bathymetric information and coastlines in the responsibility area of Costa Rica.

(v) Computer tests for plotting bathymetric contours every 200m using INEGI data were undertaken, but owing to the computer inability to recognize them, the plotting has been carried out manually.

(vi) A staff member has been assigned full time for drawing the bathymetric contours on existing sheets and other nautical charts.

(vii) A sample of work carried out before the Session was presented to INEGI.

Lt. Juan Manuel Soltau and Ms. Natasha Tabares presented a progress report on compilations and future perspectives for the project in Colombia and reported the following:

The Centro de Investigaciones Oceanográficas e Hidrográficas (CIOH) of the Colombian Navy has been involved in the project since 1986, and the compilation has been carried out in three stages. The first one completed in 1993 when the compilations of San Andres and Providencia were delivered.

The second stage ends with the delivery during this present Session of sheets 1-13 and 1-14. The geomorphologic description is finished. The material used has resulted in the confirmation of existing features, and drew the attention on other features so far unknown, or known but with names not yet officially accepted. Every sheet delivered is accompanied by a source diagram, topography (when the area includes continental shelf) and toponomy. The sources used to draw curves correspond to topographic sheets of the IGAC (Instituto Geográfico Agustin Codazzi) and the NIMA (National Imagery Mapping Agency). For the continental shelf off the Colombian coast, information was obtained from ECOPETROL (Empresa Colombiana de Petróleos) and from oceanographic cruises carried out by CIOH's oceanographic vessels, which also obtained a great number of soundings in San Andres and Providencia. The main data sources for 80% of deep water areas are listings provided by the NGDC (National Geophysical Data Center) of USA and in some sectors material from British Admiralty charts.

The third stage consists of the elaboration of assigned sheets for the Pacific Ocean, which is now in the phase of geomorphologic description and toponomy, and the sheets will be sent to the Chief Editor before 31 March 1997.

Capt. Gregorio Perez, Director of the Division of Hydrography and Navigation of the Venezuelan Navy, started his presentation thanking Capt. Luis Alvaro Mendoza, Director CIOH, for his kind reception and collaboration. He also thanked the Chairman of the Session for the welcome he was given when he first joined the Group as a member.

Venezuela was responsible for the compilation of sheets 1-14 and 1-15 on scale 1:500.000. The first delivery was made in 1993 and after several observations made by the INEGI, it was sent back for correction and subsequent delivery to this Session. Capt. Perez stated that thanks to the hard work of the staff of the Division of Hydrography and Navigation, Venezuela had finished its assigned task which had been processed under the established specifications of the project.

As information sources for topography and bathymetry, maps published by the Servicio Autonomo de Geografía y Cartografía Nacional (SAGECAN) and nautical charts of the DMA (now renamed NIMA) and DHN charts and GEBCO sheets were used.

After his presentation, he delivered compiled work done by Venezuela to the Secretary of the

Editorial Board in analogue format (nine sheets) and also in digital format (a cartridge on ARC/INFO containing: bathymetric contours, bathymetric points, transects, names of undersea features, coastline, land contours, relevant heights, terrestrial hydrography and toponomy), and the corresponding technical report in Spanish and English.[1]

Mr. Frias Salazar made a presentation on progress in the compilation of sheets 1-05, 1,06 and 1-11 of the IBCCA Project for which Mexico is responsible. He explained that bathymetric sources used for compilation of sheets 1-05 and 1-06 are bathymetric surveys carried out by the governmental company Petroleos Mexicanos (PEMEX) for the platform zone in the Southern part of the Gulf of Mexico and Gulf of Tehuantepec, data obtained from bathymetric studies carried out by the Mexican Navy jointly with the Oregon State University, and data from NGDC contained in GEODAS.

He also stated that bathymetric compilation of all sheets for which Mexico had accepted responsibility is now completed, and that sheets 1-05 and 1-06 have been digitalized from material at a 1:250,000 scale, and derived on a 1:1,000,000 scale using ARC/INFO software. Sheet 1-11 is in process of digitalization and expected to be completed this year (1996).

At present a software is being developed to recover information on EXABITE tape of 8mm and information received from foreign institutions where surveys of the Exclusive Economic Zone of Mexico have been carried out.

The Chief Editor had sent to compilers in Colombia, Cuba, Venezuela and Costa Rica , instructions on how to modify and/or correct such compilations so they could digitize their data to a common format.

Regarding the compilation of sheets 1-07 and 1-08 under the responsibility of Cuba, Mr. Frias Salazar pointed out that mosaics at a 1:1,000,000 scale for these sheets have been compiled to initiate their digitization and vectorization. Nevertheless, this could not be carried out owing to discrepancies in the positives, mainly:

(i) Bathymetric contours present "steps" at the junction of blocks of sheets forming the mosaic.

(ii) No continuity of bathymetric contours in some sheet unions of the mosaic: there is a larger number of contours on one side than on the other.

(iii) Depth values are not defined for all bathymetric contours and occasionally, it could be noticed that following the contour, different values were given.

(iv) Bathymetric contours often cross or invade islands.

(v) The drawing of ship tracks is not complete and sometimes missing.

(vi) Detailed compilation and institutions, as well as zones and sub-zones are missing.

Considering the above-mentioned information, the Committee asked the Chief Editor to send these observations to the Cuban Representative with a copy of the mosaics for revision and correction by the Cuban compilers, and to have them ready for conversion into a digital format for next year.

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1 Lt. Soltau warmly welcomed Dr. Leonor Botero, Representative of the Instituto Colombiano de Ciencias y Tecnologías Francisco José de Caldas (COLCIENCIAS) and, on behalf of CIOH, thanked her for the financial support provided by her Institute for the implementation of the IBCCA Project which previously had not been progressing as expected due to lack of funds.

The Editorial Board recommended that, in order to improve communications and delivery of data to the Chief Editor, the Internet network should be used, considering the multiple advantages it offers in terms of speed, security and economy. As a first step of this recommendation, E-mail addresses of all participants will be updated and included in this report.

Mr. Frias Salazar delivered a 3½ inch diskette to the USA Representative containing bathymetric information on Guadeloupe and Martinique coastal zones, to be included in the GEODAS database of NGDC. He stated that this information had been received through Mr. Rafael Steer-Ruiz as a contribution to the IBCCA project on bathymetric information exchange.

The Chairman presented a report on receipt and distribution of geographical and digital information to the Chief Editor and participants of the Project (see Annex IV).

5. PROGRESS REPORT ON EDITING AND PRINTING OF SHEETS FOR THE IBCCA PROJECT

Mr. Frias Salazar informed the Session that, in addition to the publication of sheets 1-09 and 1-04, a 50% progress has been achieved in the editing of sheets 1-05, 1-06 and 1-01, and a 20% regarding sheets 1-11, 1-02 and 1-03. He added that this task had been carried out using methodology for an automatized edition and the information contained in the bathymetric compilations already provided in digital format.

He also pointed out that sheets 1-09 and 1-04 have been standardized and vectorized, and included in the database so that new products can be added in a standard form, such as 3-D images.

On the other hand, he emphasized that there were three levels of digitization at 1:250,000, 1:500,000 and 1:1,000,000 scales, as shown in the attached diagram (see Annex IV).

Mr. Frias Salazar presented a colour proof print of the bathymetry of sheet 1-05 obtained from isobatic digitization using the BARCO system. At the same time, he presented a virtual 3-D relief chart of the Mexican Republic at a 1:400,000 scale, obtained through processing Digital Elevation Models produced in the INEGI, indicating that similar products might be produced for the IBCCA Chart.

Participants expressed favourable comments for such presentation of products, emphasizing the advantage of using automatized systems for production of IBCCA maps.

6. PRESENTATION OF THE IBCCA DATABASE

Mr. Frias Salazar made a presentation on the different steps followed by the INEGI for the preparation of digital maps, and pointed out the importance of their incorporation in the database. He also presented a project concerning the inventory of bathymetric data including the vectorial data model of the IBCCA database.

At present, information derived from sheets 1-09 and 1-04 is already available at the IBCCA database. Therefore, the capacity to generate new products based on these sheets now exists.

Mr. Frias Salazar completed his presentation by giving the guidelines for collection and despatch of digital files to be sent to the Chief Editor by the compilers, and the general procedures to be followed for digitalization (see Annex V). He also delivered a progress report on digitalization (Annex IV).

7. ADDITIONAL NEW PRODUCTS DERIVED FROM IBCCA

Considering that most information is now in digital format, the Board expressed its interest in the development of new products derived from IBCCA, such as cartography of digital terrain models, virtual 3-D charts,

colour maps using chromostereoscopy techniques, as in the examples presented by Mr. Frias Salazar and Ms. Lisa Taylor. On the other hand, taking into account the existence of international laws on authors' rights, the Board agreed that every country should only use information corresponding to their study area for the production of new products derived from IBCCA.

8. CONSIDERATIONS ON PROJECTS OF GEOLOGICAL AND GEOPHYSICAL MAPS BASED ON THE IBCCA CHART

Considering the importance of improving the knowledge of the sea-bed of the Caribbean Region and the Gulf of Mexico, as well as its application to the interpretation and exploration of the non-living marine resources, there exists a great interest within the Editorial Board for the development of geological and geophysical maps based on the bathymetric IBCCA Chart.

The objectives for the compilation of these maps are diverse, and the production order of the theme series will be a first priority, taking into account the needs expressed by the members and the quantity of data available.

It was agreed that Mexico would be in charge of analyzing the information sent by the NGDC on undersea geophysics and geology in the IBCCA region, and forward it to member states in about one month. At the same time, the members of the Committee agreed to commit themselves to consult national institutions likely to be interested in assuming tasks and responsibilities in this project.

Regarding consultations with institutions involved in geological and geophysical studies, the assistant of the Assistant Chief Editor informed the Board on the contacts he had been maintaining with the Instituto de Geofisica de la Universidad Nacional Autonoma (UNAM) of Mexico and the Centro de Investigaciones Cientificas y de Educación Superior (CICESE) of Ensenada, Mexico, to explore the possibility for experts of these institutes to be involved in the elaboration of geophysical and geological maps based on the IBCCA chart. He also informed about the organization of a Workshop with participation of the staff of the INEGI working with the IBCCA Project Editor. At present, there is a software available for analysis, modelling and geophysical interpretation (Potential Field) obtained free of charge through internet, with the collaboration of Ms. Taylor from the NGDC. At the same time, geophysical data files (gravity and magnetism) of GEODAS are now available for manipulation with the Potential Field.

Mr. Bedoya informed the Board about the contacts he made with organizations of Costa Rica specialized in this field, particularly: the Physics School of the University of Costa Rica, the Comisión de Geofisica de la Sección Nacional del Instituto Panamericano de Geografía e Historia, and the Instituto Costarricense de Electricidad. There is a permanent willingness of these organizations to work jointly with the Instituto Geográfico Nacional, therefore the project will continue based on unified existing information which will be sent by the Chief Editor.

Ms Taylor informed the Board that the NGDC has a list of experts potentially interested in the field of geology and geophysics for the Caribbean area and, after receiving confirmation of the themes selected for these geological and geophysical maps, they will pass on the information to other persons who might also be interested.

A concrete proposal is expected from every member state of the Board regarding the potential experts to attend and topics to be considered in the project proposal for the production of geological and geophysical maps based on the IBCCA Chart. Furthermore, recommendations will be drafted with a view to co-ordinate with the Board the establishment of a new Working Group with these experts. The Board requested IOC to organize during the year a Session of this Group of Experts, with the participation of a special guest from the Mediterranean Project, under the direction of the Chief Editor.

It was established that once the objectives for the IBCCA project are fulfilled, the production of geological and geophysical maps would be initiated using the Mediterranean Project as a reference, following the same specifications.

9. SALE AND DISTRIBUTION OF IBCCA PRODUCTS

Mr. Frias Salazar informed the Board that the production of sheet 1-09 reached 1,095 copies in August 1993; 675 copies for sheet 1-04 in July 1994, and 250 in September 1996. He also stated that these sheets are available for public sale at a cost of US$ 10 each.

Dr. Travin suggested that, taking into account the experience gained with the Mediterranean Project (IBCM) regarding distribution and sale of bathymetric and geological/geophysical series charts, the INEGI should be the Focal Point for sale and distribution of sheets, but that organizations such as IOC and IHO, -as well as institutions from countries participating in IBCCA- could act as secondary depository centers.

He also pointed out the great interest expressed for the IBCCA project by the scientific community in other countries of Europe and Asia, and requested the Chief Editor to produce a promotional brochure for IBCCA and develop a strong marketing campaign to inform the community about the present results, and the expected development of the project.

10. ELECTION OF VICE-CHAIRMAN

In accordance with IOC procedures, the Vice-Chairman of the Editorial Board was elected for the next intersessional period.

Dr. Travin appointed Mr. Frias Salazar as Vice-Chairman for the next two years in consideration of his active and efficient participation in the development of the project, his professional skills and the valuable experience acquired along with the working group.

The proposal was unanimously approved by the members attending the Session.

The Board expressed its appreciation for the work and achievements carried out during the last two years by the representative of Cuba, Vice-Chairman, which resulted in the progress of the on-going activities of the project.

11. OTHER MATTERS

Mr. R. Steer-Ruiz, Acting Secretary for IOCARIBE, raised three points to be discussed under this agenda item by the members of the Board:

(i) Presentation of a document summarizing the contributions received in kind during 1996 and, if possible, to include the contributions received in the previous years from each country for the development of the IBCCA project.

(ii) Establish priorities -in agreement with the members of the Editorial Board- for the implementation of the project, so that IOCARIBE be able to search international funding which could be used for such implementation, specially in relation to training purposes.

(iii) Investigate the possibility of accelerating the project implementation in order to be able to present a stand in EXPO' 98 in Lisbon, Portugal during the commemoration of the International Year of the Oceans.

The IOCARIBE Secretary also requested the Editorial Board to specify clearly the co-ordination and promotion actions that should be carried out by the Regional Secretariat in support of the IBCCA Project. As an example, and provided the Editorial Board considers it appropriate, co-ordination for carrying out multi-national cruises and/or communication with the Governments to ensure the continuity of the members of the Editorial Board could be mentioned.

The Board pointed out that in view of the progress achieved using digital technology in IBCCA and the new alternative products presented by Ms. L. Taylor and Mr. Frías Salazar regarding map production in three dimensions using different systems, the possibility of convening a training course at the INEGI, Aguascalientes, Mexico, in November 1997, will be forwarded to the IOC.

Mr. Frías Salazar indicated that, to comply with this request and considering the INEGI's interest in knowing about all technological developments in the elaboration of the IBCCA maps, they will make the necessary contacts to convene the proposed Session.

Dr. Travin, IOC Technical Assistant Secretary for Ocean Mapping, informed the Session about the availability in Russia of an important amount of information on the Caribbean. On account of this information, the Board decided to invite the Russian Federation to facilitate the access to these data and to participate in the revision of compilations in some areas of IBCCA, taking advantage of their expertise in this matter.

12. DATE AND PLACE OF THE SEVENTH SESSION OF THE EDITORIAL BOARD

The Chairman of the Session asked for the participants' suggestions regarding the place and date of the next session of the IBCCA Editorial Board.

Capt. Pérez Moreno offered to host the Seventh Session of the Editorial Board in Caracas, Venezuela, after consultations with the Navy of his country. He will then confirm his offer to the members of the Editorial Board.

Lt. J.M. Soltau, after pointing out the important progress of activities carried out by this Committee in view of the project implementation and, considering the importance to present to IOC most charts completed, proposed to hold the next meeting in Paris, in 1998.

Dr. D. Dravin informed the Committee that he would take all necessary steps, together with the Executive Secretary IOC, so that the Seventh Session can take place in Paris.

13. DISCUSSION AND ADOPTION OF THE SUMMARY REPORT

After some deliberations and modifications of a number of agenda items of the Summary Report, it was unanimously approved.

14. CLOSURE

The Acting Chairman of the IBCCA Editorial Board, Mr. Frias Salazar, closed the Session at 19:30, on 20 November 1996, and thanked Capt. Mendoza Mazzeo, Director of the Centro de Investigaciones Oceanográficas e Hidrográficas (CIOH) and his colleagues, for the excellent organization of the Session.

The members of the Board also expressed their thanks for the hospitality and attention they had received during their stay in Cartagena de Indias.

ANNEX I

AGENDA

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ANNEX II

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ANNEX III

LETTER FROM THE HYDROGRAPHIC SERVICE OF FRANCE TO THE CHAIRMAN OF THE EDITORIAL COMMITTEE, EXPRESSING HIS COMMITMENT TO PARTICIPATE IN THE FOLLOWING IBCCA SESSIONS

Dear Sir,

Following discussions held during the Second Session of IBCCA, France was invited by the Executive Secretary IOC to participate in the Sixth Session of the Editorial Board to be held in Cartagena, Colombia, 18-20 November 1996.

Unfortunately, taking into account the short notice announcement and, on the other hand, the lack of funding, this unexpected mission cannot be carried out by the French Oceanographic and Hydrographic Service.

We regret very much this delay, and hope that France will be informed well before the next Session of the Editorial Board, to be able to participate.

Please find enclosed an updated information document which was sent to the Executive Secretary IOC, in November 1994.

Sincerely Yours,

PARTICIPATION OF THE FRENCH OCEANOGRAPHIC AND HYDROGRAPHIC SERVICE IN THE PROJECT OF THE INTERNATIONAL BATHYMETRIC CHART FOR THE CARIBBEAN AND GULF OF MEXICO (IBCCA)

1. On request of the Intergovernmental Oceanographic Commission (IOC), the Hydrographic and Oceanographic Service of the French Navy (SHOM) has accepted the compilation of sheets 1-10 and 1-16 of the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico.

2. A similar work will be undertaken after completion of the Annual Project of the International Bathymetric Chart of the Eastern Atlantic (IBCEA). This work will be supervised by the French Oceanographic and Hydrographic Service.

3. The SHOM identified the following data sources:

   - GEBCO plotting sheets under the responsibility of the Netherlands (data not yet available in digital format);

- GEBCO plotting sheets under the responsibility of the USA (data available in digital format);
- Digital data taken by the NGDC (GEODAS CD-ROM)

The SHOM would be grateful if the Members of the Board could provide any other source of information they are aware of by other means, and copies of printed sheets.

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ANNEX IV

PROGRESS DIAGRAM ON IBCCA DIGITALIZATION
(Exchange of bathymetric information among Member States of the IBCCA Project)

DATA SENT: (main source NGDC)

Country	Floppy DD/HD	Content	Date
Colombia	7	Bathymetric Data	August 1990
Costa Rica	13	Bathymetric Data Coastal Line of the World Vector Shoreline (WVS) Software for processing and graphics	August 1990
	9	Software for data treatment, bathymetric data and coastal line of WVS	March 1992
	3	Bathymetry data and coastal line of WVS System for data graphication	September 1995
	1	Sounding sheets: 18017, 18019, 21084 and 21111	August 1996
Cuba	34	Bathymetric data	October 1990
	6	Coastal Line of WVS	August 1991
	1	Bathymetric data	February 1993
	3	Bathymetric data	March 1994
Venezuela	2	Coastal Line of WVS	August 1991
	8	Bathymetric data	January 1992

DATA RECEIVED:

Country	Content	Mean	Format	Date
Cuba	Tropic Cruise	Floppy disk 3½ HD	MGD77	January 1987
	Bathymetric Digital information	Tapes (19)	MGD77	1989
	Coastal line digitalized	Tapes (2)	WVS	November 1990
	Geophysic data	Compact disk GEODAS (2)	MGD77	1994
	Geophysic data	Compact disk GEODAS (3)	MGD77	1995
Martinique (France)	Bathymetric data of Guadalupe and Martinique Islands	Floppy disk 3½ HD	Bitmaps and data	April 1996

DATA RECEIVED:

Country	Files	Description	Scale	Date
USA	3	Sheets 1-09,1-04 and 1-01	1:1 000 000	1996
	2	Sheets 1022, 1024, 1033 and 1034	1: 500 000	
	2	Part of sheets 1-02 and 1-03		
Mexico	2	Sheets 1-05 and 1-06	1: 1 000 000	1996
		Sheet 1-09	1: 1 000 000	
Venezuela	1	Sheets 1-15 and part of 1-14*		

Note: Observations to digital information were sent to Venezuela in 1995.

COLOMBIA

DATA SENT:

Sheets	Description	Scale	Date
23	Coastal Line of the World Vector Shoreline	1: 250 000	May 1991
11	Bathymetric graphic information sent by the H.D.U.K.	1: 1000 000	June 1991
3	Topographic charts of Nicaragua	1: 250 000 1: 175 000	July 1992
4	Geographic maps of Ecuador	1: 500 000	
3	Aeronautical charts	1: 50 000	September 1992
1	Transects GEBCO 181	1: 1000 000	
1	GEBCO Compilation Sheet	1: 1000 000	
2	Sismic charts and gravimetry of IBCM project	1: 1000 000	December 1992

DATA RECEIVED:

4	Compilation sheets (15013, 15012, 15017, 15008)	1: 250 000	December 1992
1 disk 3½	Form No. 1 "Proposal for names and shapes of Undersea Features"		February 1994

NOTE: Observations to the compilation sheets were sent in 1995

COSTA RICA

DATA SENT:

Sheets	Description	Scale	Date
13	Coastal Line of the World Vector Shoreline	1: 250 000	May 1991
7	Graphic bathymetric information sent by the H.D.U.K.		June 1991
3	Aeronautical charts: TPCK-25 A, TPCK-25B, TPCK-25C	1: 500 000	September 1992
1	Aeronautical chart BNCK-25	1: 1 000 000	
22	Sounding graphic sheets		November 1993
4	Topographic charts of Guatemala	1: 250 000	July 1995
9	Topographic charts of Nicaragua	1: 175 000 1: 250 000	
1	Carta del DMA-1	1: 713 000	
3	Topographic charts of Honduras	1: 500 000	

DATA RECEIVED:

4	Provisional compilation sheets	1: 250 000	1996

NOTE: Observations to the compilation sheets were sent in 1996

CUBA

DATA SENT:

Sheets	Description	Scale	Date
2	NOAA's Bathymetric Charts for the Caribbean and the Gulf of Mexico	1: 250 000	January 1989
32	Sheets of Coastal Line of the World Vector Shoreline	1:2 500 000	October 1990
1	GEBCO Bathymetric Chart	1: 1 000 000	November 1990
1	Sheet from the British Admiralty		June 1991
12	Graphic sheets of the Hydrographic Department Ministry of Defense		August 1991
1	Topographic chart of Nicaragua	1: 250 000	July 1992
1	Aeronautical chart of Honduras	1: 500 000	
2	Topographic charts of Mexico	1: 250 000	
2	Heliographic copies of sheet 1-04	1: 1000 000	February 1993
3	Heliographic copies of compilation sheets 12210, 12215, 12220	1: 250 000	
6	Isobaths sheets	1: 250 000	July 1994
1	Aeronautical chart	1: 500 000	
1	Aeronautical chart	1: 1000 000	
1	Bathymetric Chart for the Caribbean sent by NOAA	1: 2 500 000	
2	GEBCO Charts	1: 1 000 000	
2	Nautical Charts sent by the USA	1: 40 000 1: 15 000	February 1994
0	Compilation sheets corresponding to sheet 1-07	1: 250 000	December 1995
4	Compilation sheets corresponding to sheet 1-08	1: 500 000	

NOTE: Observations to the compilation sheets were sent in January 1995

UNITED STATES

DATA RECEIVED:

Sheets	Description	Scale	Date
2	Bathymetric sheets sent by the H.D.U.K.	1: 1000 000	1989
41	Compilation sheest sent by the H.D.U.K.	1: 250 000	
3	Compilation sheeets of their area of responsibility	1: 250 000	July 1989
1	Compilation sheet 1-09	1: 1 000 000	
1	Compilation sheet 1-04	1: 1 000 000	September 1991

VENEZUELA

DATA SENT:

Sheets	Description	Scale	Date
14	Coastal Line of the WVS	1: 250 000	May 1991
9	Bathymetric graphic information sent by the H.D.U.K.	1: 1 000 000	June 1991
3	GEBCO Transects	1: 1 000 000	September 1992
4	GEBCO Graphication sheets	1: 1 000 000	
5	Nautical charts	1: 500 000	

DATA RECEIVED:

Sheets	Description	Scale	Date
1	Tape cartridge DC 6150 in Arc-info export format	1: 1000 000	July 1994
1	3M cartridge in Arc-Info export format Sheet 1-14 (incomplete) Sheet 1-15 (incomplete)	1: 1000 000	June 1994

ANNEX V

GUIDELINES FOR CAPTURE AND DESPATCH OF DIGITAL FILES TO THE CHIEF EDITOR OF IBCCA

To maintain the printing quality of the International Bathymetric Chart for the Caribbean and the Gulf of Mexico (IBCCA) sheets, it is necesssary to establish some standards and norms for cartographic compilation through automatized means, which should be in accordance with the following pattern:

a) Contour lines will be expressed in corrected meters.

b) IBCCA basic contour is 200 m; however, contours with 10, 20 or 50 m intervals could be included to improve the representation of areas with good density of information, when the compilation scale allows it.

c) The coastal line provided by the WVS will be used as the basic coastal line

d) Compilations should be sent together with the following:

* Bathymetry
* Transects cover
* Detailed sounding areas
* Names of undersea features
* Topography of terrestrial area covering the sheet
* Hydrology of terrestrial area covering the sheet
* Toponomy and hydronomy of terrestrial area covering the sheet

Each cover will be independent. Contour lines for bathymetry and topography must identify depth values and altitude to facilitate their implementation.

e) Detailed surveys will be delivered as an appendix to the covers including information on sources used for the elaboration of bathymetric contours.

f) Include names of the scientific coordinator, compilers and corrector.

g) Proposals for new names of undersea features will be sent to the Chief Editor, then to the GEBCO Subcommitte for names and shapes of undersea features (SCUFN) to be analized and included later on in the newsletter edited by the International Hydrographic Organization (IHO).

General Digitalization Processes

1. Minimize map distorsion between digitalizing sessions, using stable materials like MYLAR.

2. Digitalize at a higher scale of the edition.

3. Contours will be digitalized from left to right.

4. Closed contours should initiate and finalize in the same point.

5. Contours should not cross each other.

6. Contours should be unique segments, avoiding the elaboration of contours for many sections.

7. Separation between digitalized points will depend on the sinuosity of the contour to be digitalized. There are no formal rules on the required points to represent a contour. A straight contour will need few points; nevertheless, a sinuous contour will need a bigger quantity of points. Personal judgment must be applied, but this can only be implemented through experience gained on the digitalization process. The objective is to have enough points to draw the digitalization process by overlaying the original maps contours, in order to describe correctly the contours, without leaving the original one. Few points on the digitized contour will produce square contours or straight sections.

8. Files should be sent to the Chief Editor in an exportation format ARC/INFO without compression and DXF, IFF.

   Means: Diskette
   8 mm recorded cartridges
   Magnetic tape
   Floppy disks
   FTP files for INTERNET

9. It is recommended to use INTERNET for sending data (remember to include INTERNET address on the sheets).

ANNEX VI

LIST OF ACRONYMS AND ABBREVIATIONS

CICESE	Centro de Investigaciones Científicas y de Educación Superior (Mexico)
CIOH	Centro de Investigaciones Oceanográficas e Hidrográficas (Colombia)
COLCIENCIAS	Instituto Colombiano de Ciencias y Tecnologías Francisco José de Caldas (Colombia)
DHN	Directoria de Hidrografia e Navegaçao (Brazil)
ECOPETROL	Empresa Colombiana de Petróleos
GEBCO	General Bathymetric Chart of the Oceans
GEODAS	Geophysical Data System
GMT	General Mapping Tool
HDUK	Hydrographic Department of the United Kingdom
IBCEA	International Bathymetric Chart of the Central Eastern Atlantic
IBCM	International Bathymetric Chart of the Mediterranean
IGAC	Instituto Geográfico Agustín Codazzi
IHO	International Hydrographic Organization
INEGI	Instituto Nacional de Estadística, Geografía e Informática (Mexico)
IOC	Intergovernmental Oceanographic Commission
IOCARIBE	IOC Sub-Commission for the Caribbean and Adjacent Regions
NGDC	National Geophysical Data Center (USA)
NOS	National Ocean Service (USA)
NOAA	National Oceanographic and Atmospheric Administration
PEMEX	Petróleos Mexicanos
SAGECAN	Servicio Autónomo de Geografía y Cartografía Nacional

SCUFN	Sub-Committee on Undersea Feature Names
SHOM	Service Hydrographique et Océanographique de la Marine (France)
UNAM	National Autonomous University of Mexico (Universiad Nacional Autónoma de México)
UNESCO	United Nations Educational, Scientific and Cultural Organization
WVS	World Vector Shoreline