

**Intergovernmental Oceanographic Commission**  
*Reports of Governing and Major Subsidiary Bodies*



**IOC Working Committee  
for the Global Investigation  
of Pollution  
in the Marine Environment**

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**Fifth Session**

Bangkok, 30 July - 3 August 1984

**Intergovernmental Oceanographic Commission**  
*Reports of Governing and Major Subsidiary Bodies*

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**Unesco**

**In this Series**

"Reports of Governing and Major Subsidiary Bodies", which was initiated at the beginning of 1984, the reports of the following meetings have already been issued:

- Eleventh Session of the Working Committee on International Oceanographic Data Exchange
- Seventeenth Session of the Executive Council
- Fourth Session of the Working Committee for Training, Education and Mutual Assistance

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Marine Pollution Research and Monitoring
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With a view to incorporating the *decisions* and *actions* internal to the Commission in the body of the Summary Report of the Working Committee, the relevant paragraphs have been marked by the symbol

D for *decisions* on policy, and

A for calls for *action* (e.g. by the Member States, the governing and subsidiary bodies, the Secretary, Unesco, etc.) required to give effect to policy. Obviously, the distinction is not always clear cut.

Expressions of general approval or of appreciation are not marked, except that all the positions taken by the Working Committee are indicated by underlining in the text of the Report.

1. OPENING

1 The Chairman, Dr. Vladimir Gruzinov, called the Session to order at 10.00 on 30 July 1984.

2 Mr. Enam A. Chaudhury, Special Assistant to the Executive Secretary and Secretary of the Economic and Social Commission for Asia and the Pacific (ESCAP) welcomed the participants\* on behalf of the Executive Secretary. He stressed the importance that ESCAP attaches to the collaboration with IOC and the various relevant bodies of the UN system on matters concerning the protection of the marine environment and the deeper understanding of pollution and its implications in the coastal zones as well as its spread to the oceans. He felt that the work of the Working Committee was particularly important in establishing a firm scientific basis for the study of pollution in the overlapping areas covered by the IOC Programme Group for the Western Pacific and the ESCAP Region. His address appears in Annex III hereof.

3 The Chairman responded to Mr. Chaudhury's welcome, thanking him for the invitation to host this Session at ESCAP Headquarters and stressing the importance of the Session in addressing the priorities for the establishment of a firm scientific basis for the study of pollution in the marine environment. The Chairman then called upon Dr. Rodger Dawson, the Technical Secretary for the Session, to address the Working Committee on behalf of the Chairman, Professor Inocencio Ronquillo and the Secretary of IOC, Dr. Mario Ruivo. The Technical Secretary conveyed the regrets of the Secretary that he was unable to attend owing to other obligations, but that since he was the former Chairman and one of the founder members of the Working Committee, he maintains an active interest in its development. On behalf of the Secretary of IOC, the Technical Secretary thanked ESCAP for its offer to host the Fifth Session of GIPME and for the demonstration of its interest in this endeavour of IOC. He recalled the role of IOC as a joint specialized mechanism of the United Nations organizations parties to the ICSPRO Agreement.

4 He suggested that it was timely that the Fifth Session was taking place in the WESTPAC region which overlaps with that of ESCAP, since there had been considerable development in the region. He stressed that the question of the Working Committee was to establish the scientific approach for the investigation of pollution in the marine environment and to define the priorities, together with its partners in the UN System and other international organizations.

5 He conveyed the Secretary's best wishes for a successful meeting.

2. ADMINISTRATIVE ARRANGEMENTS

2.1 ADOPTION OF THE AGENDA

6 The Working Committee adopted the Provisional Agenda of the Session (Document IOC/WC-GIPME-V/1 prov.) and this is given in Annex I of this Report.

2.2 DESIGNATION OF THE RAPPORTEUR

7 The Working Committee designated Mr. Victor Anderlini (Oman) as Rapporteur for the Session.

\* The List of Participants is given in Annex IV.

## 2.3 CONDUCT OF THE SESSION, TIMETABLE AND DOCUMENTATION

8 The Technical Secretary for the Session briefly introduced the documentation and informed participants of the proposed arrangements for the Session. He explained that the Working Committee should normally work in Plenary, but that ad hoc Sessional Drafting Groups could be established if necessary.

9 The Working Committee considered the scheduling of Agenda Items and proposed that the provisional schedule be adhered to in principle but adjusted on a day-to-day basis.

## 3. INTERSESSIONAL ACTIVITIES

10 The Technical Secretary introduced Document IOC/WC-GIPME-V/6 "Report of the Intersessional Activities in the Field of Marine Pollution Research and Monitoring" (Annex II). He reviewed the progress achieved during the intersessional period. He also provided a brief account of some fields, where in his opinion, limited or little progress had been made.

11 The Group of Experts on Methods, Standards and Intercalibration (GEMSI) had been productive during the intersessional period between its Fourth and Fifth Sessions and a number of ad hoc Groups had met and contributed to several IOC publications. GEMSI had also been actively supplying advice and support to the Regional Components of MARPOLMON and particularly in IOCARIBE and WESTPAC; training workshops and intercalibration exercises in the context of TEMA had benefited from significant inputs from members of GEMSI.

12 Considerable progress had been made in collaboration with UNEP and a number of joint activities had occurred within the Actions Plans of UNEP Regional Seas Programme.

13 GEMSI was also continuing to review standard methodology proposed for use in UNEP's Regional Seas Programme.

14 The areas where little apparent progress had been achieved included the work of the Group of Experts on the Effects of Pollution and the conduct of an Open-ocean Baseline Study had met with obstacles.

15 Since the outset of the Global Investigation of Pollution in the Marine Environment following Recommendations of the UN Conference on the Human Environment held in Stockholm, 1972, the developments and achievements of the Working Committee had been considerable. A leading activity of the last intersessional period had been the development of a strategy for the implementation of the Comprehensive Plan for GIPME and the development of the MARPOLMON System which had been seen to move towards operational activities within its Regional components.

16 The Working Committee stressed the need to set clear priorities for on-going and future GIPME activities. It also noted that there appeared to be a growing interest and demand, in developing and more developed countries, in the field of methods, standards and intercalibration, and that it may be difficult for GIPME to meet these demands.

17 The Working Committee accepted the Report on the intersessional activities.

4. MARINE POLLUTION RESEARCH

4.1 POSSIBLE PRIORITY ITEMS REQUIRING PROMOTION

18 An IOC Consultant, Dr. A. Jernelov, introduced Document IOC/WC-GIPME-V/12 "Possible Research Priorities - A Basis for Discussion" and suggested that there were three major research areas, related to GIPME activities which required increased attention in view of the results of recent investigations:

- (i) transient deep-sea current phenomena affecting pollutant transport;
- (ii) studies of biogeochemical cycles with the emphasis on a distinction between anthropogenic and natural input rates;
- (iii) CO<sub>2</sub> cycling at air-sea interface as a function of patchiness of primary production and/or degradation of organic matter.

19 He informed the Committee of several ongoing or proposed programmes which were designed to investigate the above-mentioned topics, and specific examples were cited from the US GEOSSECS Programme and the International Decade of Ocean Exploration (IDOE). The need for a co-ordinated international effort to investigate biogeochemical cycling was emphasized, whereas IOC's role in funding basic research was questioned.

20 The Working Committee agreed that GIPME programmes should stress monitoring rather than basic research activities and take into account the importance of the three research areas listed above.

21 The Working Committee also agreed that, in view of the importance of this Agenda Item, an ad hoc Session Group should: D

- (i) review IOC Technical Series 25 in this context;
- (ii) discuss research priorities related to monitoring goals and review questions that may arise from trying to meet these goals; and
- (iii) identify avenues of contact between GIPME, organizations involved in or supporting research in the three areas related to this Agenda Item, and the various agencies funding such GIPME-related research.

22 The Working Committee adopted the following list of research topics as being of relevance to GIPME objectives: D

- Deep-sea currents and dispersion mechanisms
- Biogeochemical cycles
- Primary production and degradation rates of organic material relevant to carbon dioxide flux
- Effects of contaminants on marine organisms, populations and ecosystems
- Atmospheric transport and deposition of pollutants
- Sediment stratigraphy and palaeosedimentary studies
- Patchiness in the marine environment
- Analytical methodological research
- Particle/water exchange
- Boundary exchange generally

- 23 All the above research topics are of direct relevance to GIPME since contemporary knowledge of environmental processes will be required both for the interpretation of MARPOLMON data (i.e., contamination assessment) and for the pollution-assessment stage of the GIPME programme.
- 24 For the MARPOLMON component of GIPME, however, the Working Committee concluded that the following research topics would be clearly relevant:
- Site or region-specific atmospheric deposition studies
  - Site or region-specific sediment deposition and stratigraphic/palaeostratigraphic studies
  - Site or region-specific patchiness studies
  - Site or region-specific biogeochemical process studies
  - Site or region-specific physical oceanographic studies
- 25 The Working Committee recognized the value of combining MARPOLMON contributions with on-going research activities in Member States and within regional areas, and the need for mechanisms to ensure that the data acquired through MARPOLMON are thoroughly evaluated and interpreted in the context of contemporary understanding of conditions and processes in the marine environment.
- 26 The Working Committee also felt that contributing Member States should endeavour to co-ordinate MARPOLMON activities with other on-going research activities and attempt to ensure the complete and authoritative interpretation of MARPOLMON data by their own research investigators and those collaborating in regional or multilateral monitoring ventures. National GIPME co-ordinators should take steps to ensure that these activities are undertaken within their Member States' contributions to MARPOLMON. The form of agreement on procedures agreed to between IOC and UNEP can be used as a model of ways in which full co-ordination and evaluation of marine pollution activities can be achieved. A
- 27 The Working Committee noted that nothing in the foregoing is meant to prejudice the responsibility of marine investigators involved in MARPOLMON programmes to maintain awareness of research activities, results and publications, such that the highest level of scientific validity of MARPOLMON programmes and their data be maintained.

#### 4.2 SCIENTIFIC BASIS FOR IDENTIFICATION OF VULNERABLE AREAS

- 28 Dr. Jernelov introduced this Agenda Item and Document IOC/WC-GIPME-V/7 "A Scientific Basis for Identification of Vulnerable Areas". He pointed out that the concept of "vulnerable areas", "sensitive areas" or "special areas" has been the subject of deliberations in various fora. The IMO International Conference for the Prevention of Pollution from Ships (1973) recognized that certain sea areas have a particularly sensitive marine environment and, therefore, set up more stringent standards for such areas through the Marine Pollution Convention of 1973.

- 29           The amount of contamination that a given area can accept without sustaining long-term damage to its ecosystems depends on a number of factors in the area in question. Such factors are, inter alia, biological productivity and diversity, hydrographic conditions, climatic conditions, seasons, coast-line structure, sea-bed morphology etc. In addition, the perception of the vulnerability also depends on social and economic factors. In environmental management and protection, for example in the maritime, legal and scientific fields and national planning, it is frequently necessary to differentiate levels of vulnerability. A question which is sometimes raised is whether from the environmental protection point of view "non-vulnerable areas" should also be defined.
- 30           He indicated that, in several cases, very different draft definitions have been used for similar terms. Such a definition has, of necessity, an important scientific component which should be subjected to careful analysis with a view to establishing a scientific basis for this definition that would make it universally useful for management and protection purposes. Hence, there is a need to establish a solid scientific basis for the definition and to identify such areas.
- 31           The Working Committee realised that the concept of vulnerability with regard to the marine environment will continue to be used in a number of different contexts with terms such as "sensitive" and "special" areas, frequently with varying meaning and without a common translation or definition from a legal or scientific perspective. It believed that, in the field of environmental management and protection and in national planning, it is frequently necessary to differentiate between levels of vulnerability.
- 32           The Working Committee noted the International Maritime Organization's (IMO) designation of special areas within the MARPOL Convention, the London Dumping Convention's recognition of "sensitive areas" and the protocols related to oil spills recently signed in the Caribbean Region and which identify vulnerable areas.
- 33           The Working Committee recognized that there is a clear distinction, but a close relationship, between vulnerability and the assimilative capacity of marine areas and that this latter subject is presently being studied by GESAMP Working Group No: 23.
- 34           The Working Committee stressed that studies on the effects of pollution, as embodied in the Terms of Reference of GEEP, are fundamental to an understanding of vulnerability, and constituted an important first step towards establishing a solid scientific basis for the definition of vulnerable areas and identifying criteria for the identification of such areas.
- 35           The Delegate of the USA stated that, in his country, a coastline vulnerability index had been developed which ranks the sensitivity of different types of coastal environments to oil spills. He requested that this index and similar indices developed by the Member States be considered in defining criteria for vulnerable areas.
- 36           The Working Committee recommended that this approach be followed.

- 37 The Working Committee called upon the Secretary of IOC to initiate A  
the appropriate action with relevant international organizations (e.g., IMO, FAO and UNEP) and expert groups (e.g., GESAMP) for the purpose of ensuring that a scientific basis defining vulnerable areas is developed, so that it will serve the needs of all specialized international organizations concerned with matters of marine pollution research, monitoring and protection.

#### 4.3 STUDIES ON THE EFFECTS OF MARINE POLLUTION

- 38 Dr. A. Jernelov reminded the Working Committee of the rationale for the formation of IOC's Group of Experts on Effects of Pollutants (GEEP) and its Terms of Reference. He also informed the Working Committee of the designation of a new Chairman, Dr. B. Bayne (U.K.) following the resignation of the previous Chairman designate.

- 39 He pointed out that, in the conversion from Stage 2 (Contamination Assessment) to Stage 3 (Pollution Assessment) of the Comprehensive Plan for GIPME, an assessment of the biological effects of contaminants is mandatory, and that these activities lagged far behind those dealing with the establishment of contaminant levels by chemical analysis.

- 40 The role of GEEP was discussed in the light of current developments and needs, after which the Working Committee adopted the following revised Terms of Reference: D

#### Terms of Reference of the Group of Experts on the Effects of Pollution

1. To serve as a source of scientific advice, in this field, for the preparation required for stage 3 of the Comprehensive Plan for GIPME, to refine further the strategy for the Phase and to develop a Plan of Action for related work under GIPME.
2. To assess related work being carried out by other international bodies.
3. To formulate international co-operative research proposals for the study of the effects of pollutants on marine organisms and at different levels in the marine ecosystem.
4. To advise on methods required for quantification of the effects of contaminants on marine organisms and ecosystems.
5. To recommend appropriate reviews and studies to be undertaken by IOC Advisory Bodies.

- 41 The Working Committee also urged GEEP to give consideration to improving A  
the methodology needed to assess the effects of pollution on populations and communities. This effort will require close collaboration with experts in population dynamics and population ecology. Because the population dynamics of many fisheries are being studied intensively, the Working Committee recommended that GEEP draw upon expertise available through FAO and other appropriate organizations for this aspect of their work.

42           The Working Committee strongly recommended to GEEP that, in carrying out its work, it maintain close liaison with GEMSI and with ICES and IOC-UNEP programmes concerned with contaminant and pollution assessments. A

43           The Working Committee instructed the Secretary to arrange two meetings of GEEP itself and one GEEP Workshop (see below) in conjunction with GEMSI, during the intersessional period, provided the costs of the Workshop can be met from IOC's extrabudgetary resources. The Working Committee envisaged the following objectives for the Workshop: A

- (i)       evaluate the effectiveness of a pre-selected set of biological measurements in establishing quantitative indices of pollution effects and
- (ii)      relate these to existing data on body burdens of contaminants to demonstrate dose-response relationships.

44           Following the request of the Delegate of the USSR, the Working Committee agreed to the nomination to the Group of Experts on the Effects of Pollutants (GEEP) of Dr. A. Tsyban as candidate for Vice-Chairman.

5.           THE GLOBAL MARINE POLLUTION MONITORING SYSTEM (MARPOLMON)

5.1          OBJECTIVES OF MARPOLMON; SELECTION OF POLLUTANTS AND AREAS

45           Dr. Neil Andersen introduced Document IOC/WC-GIPME-V/9 "Objective and Components of MARPOLMON" and referred the Committee to IOC Technical Series No: 25. He reviewed the evolution of MARPOLMON in the context of the Strategy for Implementation of the Comprehensive Plan for GIPME and stressed that, while MARPOLMON-P is presently an operational exercise and relatively well publicized and defined, MARPOLMON as a global IOC activity still requires precise definition of user requirements. He emphasized the need for a careful evaluation by the Committee of IOC Technical Series No: 25, since this would form the logical basis for the strategic development of MARPOLMON and could have long-term implications.

46           The Delegate of the USSR stressed the need to develop a clear scientific basis for the creation of an integrated global ocean monitoring system as an important component of the UNEP Global Environment Monitoring System (GEMS).

47           The Working Committee carefully reviewed Technical Series No: 25. It agreed that Technical Series No: 25 contained all essential elements of the implementation of the strategy for the effective development of GIPME. The Working Committee particularly stressed the importance of pollution assessment especially with respect to its focus on pollution effects at the population and ecosystem levels. It also agreed that, although it is not in the main purview of GIPME directly to consider effects of pollution on human health, the information obtained from conducting the contaminants assessment phase of the Comprehensive Plan will provide data that may be helpful to those agencies, such as WHO, that do consider health effects.

48           The Working Committee took the following views on the objective and  
definition of MARPOLMON:

49           MARPOLMON is the combined assembly of regional operational data-gathering activities for selected contaminants in the marine environment, with a view to providing a global assessment of marine contamination. The combination of the individual regional data provides the basis for an evaluation of global marine contaminants; (1) these data sets are submitted to, and managed and distributed by, the relevant Responsible National Oceanographic Data Centres (e.g., RNOOC - MARPOLMON and others). The interpretation of these data is made within a continually emerging knowledge derived from basic research on marine biogeochemical processes and mechanisms, water-mass formation and movement, and the like, and, together with information on baselines established in the open-ocean, serves as a basis for evaluating the consequences of various materials being injected into the marine environment. As such, MARPOLMON represents a marine chemical component of UNEP's Global Environment Monitoring System. Thus, as one example, MARPOLMON-P is the MARPOLMON component dealing with the acquisition of data and the incidence and distribution of petroleum hydrocarbons. Other major components envisaged at the present time include analogous activities for trace metals and organochlorine compounds.

50           The monitoring of chemical contaminants in biota (one component of the so-called "biological monitoring") would clearly be a part of MARPOLMON, whereas the other component of "biological monitoring", that of investigations of pollutant effects on ecosystems, would not belong to MARPOLMON, but is another component of the GIPME programme.

51           MARPOLMON facilitates the accumulation of data for the Contamination Assessment Stage of the Comprehensive Plan (IOC Technical Series No's 14 and 25); it also includes the actual contamination assessment for individual areas and classes of contaminants being carried out in the context of an existing understanding of marine biogeochemical processes, physical oceanography etc.

52           The pollution assessment stage, as proposed in IOC Technical Series No's 14 and 25, clearly lies outside MARPOLMON, since it requires a knowledge of the effects of contaminants on marine organisms and man, and, although it will be carried out in regional contexts, requires a great deal more research information than that likely to be accompanied within the individual data-gathering activities of MARPOLMON.

53           The Working Committee instructed the Group of Experts on Methods, Standards and Intercalibration, together with the ad hoc Group on Policy, Planning and Strategy (GOPPS), and with the collaboration of the Chairman of  
the Working Committee to improve Document IOC/WC-GIPME-V/9, with a view to providing Member States and organization collaborating with the IOC in this activity with a clear picture of MARPOLMON. A

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(1) As defined by GESAMP, "Pollution means the introduction by man, directly or indirectly, of substances or energy into the marine environment (including estuaries) resulting in such deleterious effects as harm to living resources, hazards to human health, hindrance to marine activities including fishing, impairment of quality for use of sea water and reduction of amenities."

## 5.2 DESIGN OF MONITORING NETWORKS AND MONITORING GOALS FOR COASTAL ZONE TREND ANALYSES

54 Dr. A. Jernelov introduced this item, referring particularly to Document IOC/WC-GIPME-V/9 "Objectives and Components of MARPOLMON" which highlighted two main issues: the goals of the monitoring programme; and the level of ambition i.e., the magnitude of the change to be detected within a given period of time.

55 Several Delegates informed the Committee of recent research results of national programmes which gave examples of the magnitude of change in specific pollutant concentrations that were statistically detectable above background variations detected with a specified time.

56 The Working Committee agreed that the detection of a change by a factor of 2 (a 100% increase or a 50% decrease) in contaminant levels over a decade was a reasonable level of ambition to recommend in designing monitoring networks for coastal-zone trend analysis. D

### 5.2.1 Development of the "Mussel Watch" concept as an inter-regional activity

57 Dr. Jernelov introduced this item, summarizing the experiences of various programmes involved in activities of the "Mussel Watch" type. He also referred to two international meetings held during the Autumn of 1983 (The First International Symposium on Integrated Global Ocean Monitoring, Tallinn, USSR; Mussel Watch II Symposium, Honolulu, USA) which had concluded that, with due attention being given to abiotic factors (e.g., salinity, temperature, O<sub>2</sub>) and biotic ones (e.g., growth rate, sex, reproductive cycle), the approach had proved to be a practical means for examining temporal and spatial trends in contamination in the coastal zone. He also reminded the Committee, that IOC and the UNEP Regional Seas Programme Activity Centre had agreed to implement "Mussel Watch" as a joint inter-regional activity through the regional components of MARPOLMON and the UNEP Regional Seas Programme. He stressed the need for adequate descriptions of methods, intercalibration exercises, training opportunities and appropriate design of local monitoring strategies.

58 Several Delegates and Observers gave brief descriptions of their involvement in national or regional "Mussel Watch" activities.

59 The Working Committee expressed its strong support for activities of the "Mussel Watch" type; it welcomed the collaboration between IOC and UNEP in this endeavour and encouraged its continuation. It also noted that a number of Member States are participating in, or plan to initiate, this type of activity either alone or with other regional bodies (e.g., ICES), and instructed GEMSI to assist in the preparation of a review of global activities of the "Mussel Watch" type. A

60 The Working Committee decided that the primary purpose of the document is to evaluate the effectiveness of "Mussel Watch" type activities as to their suitability for incorporation into MARPOLMON. In preparing this evaluation, the document should include but not be limited to: D

- (i) a description of all regional and national "Mussel Watch" programmes;
- (ii) the geographical coverage of each programme;
- (iii) the contaminants being measured;
- (iv) an evaluation of quality control and intercalibration procedures;
- (v) procedures used to archive data.

- 61 The Working Committee instructed GEMSI to complete this document in A  
time to be made available to IOC for the Working Committee's Sixth Session, early  
1986.
- 62 The Working Committee recognized that the Terms of Reference of the  
GESAMP Working Group No: 24 on Integrated Global Ocean Monitoring (IGOM) call  
for a similar task to be undertaken by that Working Group. It therefore instructed A  
the Secretary IOC to ensure that the respective approaches were in harmony, and  
could meet the deadline mentioned above.

### 5.3 METHODS, STANDARDS AND INTERCALIBRATION

- 63 The Technical Secretary introduced this item, drawing attention to  
Documents IOC/GGE(MSI)-IV/3 and IOC/GGE(MSI)-V/3. He pointed out that the  
recommendations contained in these reports of the Fourth and Fifth Sessions of  
GEMSI resulted from the activities of a number of ad hoc GEMSI Working Groups  
which he briefly described. He indicated which of the 23 Recommendations of  
the Fourth Session and the 21 Recommendations of the Fifth Session had been  
followed already and which Recommendations had met with difficulties. The Technical  
Secretary also stated that several of the Recommendations of these two sessions  
have budgetary implications and expressed the view that GEMSI's enthusiasm in  
developing MARPOLMON should be guided by priorities set by the Working Committee.
- 64 Regarding the Recommendations of the Fourth and Fifth Sessions of GEMSI,  
some Delegates felt that GEMSI placed too much emphasis on developing sophisticated  
sampling and analytical methods for incorporation in MARPOLMON activities and that  
more consideration should be given to including simpler monitoring methods which  
could be applied by more Member States. However, other Delegates pointed out that  
GEMSI had been instrumental in the conduct of seminars and that the advice and  
assistance was addressed to developing as well as more developed countries, in an  
effort to improve their analytical capabilities. It was also noted that GEMSI  
experts have attempted to develop and recommend the simplest, most accurate methods  
available such as those recommended in the IOC Manual and Guides No: 13.
- 65 The Working Committee agreed that the most accurate, practical methods  
should be applied to MARPOLMON to ensure the validity of the data obtained.
- 66 The Observer from the IOC Programme Group for WESTPAC drew the Committee's  
attention to the efforts of GEMSI in this region and welcomed any recommendations which  
would continue this co-operation with the Programme Group.
- 67 The Working Committee praised the scientific merit of the GEMSI activities  
especially in promoting intercalibration and training components for developing A  
regions and urged GEMSI to continue such activities.

68 The Working Committee fully endorsed the Recommendations of GEMSI  
directly related to research objectives; those Recommendations involving  
financial implications are further considered under Agenda Items 5.6 and 8. D

69 The Working Committee noted that some of the GEMSI Recommendations  
would be affected by work being carried out by ICES and other groups and that  
research priorities must be established according to GIPME's mandate, MARPOLMON  
programme needs, work being carried out by other groups and individuals in this  
field, as well as financial consideration. However, such concerns have been  
well addressed by GEMSI, and the Working Committee felt confident that GEMSI  
will continue to co-ordinate its activities with those of other organizations.

5.3.1 Methodological requirements and quality assurance for studies of  
riverine input to, and trend analysis in, the coastal zone

70 Dr. M. Bowers, speaking on behalf of the Chairman of GEMSI, introduced  
this Agenda Item and referred the Committee to Documents IOC/WC-GIPME-V/10 and  
IOC/WC-GIPME-V/11. He informed the Committee that the importance of riverine  
input of contaminants to coastal areas has long been recognized but that, to date,  
relatively poor data are available. Dr. Bowers stressed the need for appropriate  
monitoring strategies to investigate riverine inputs of contaminants. He pointed  
out that GESAMP Working Group 22 on Land-Sea Boundary Flux of Pollutants was  
established to investigate this problem. He also noted that SCOR Working Group 46  
on River Inputs to Ocean Systems (RIOS) was addressing the theoretical aspects of  
this questions, while some GEMSI Recommendations suggest practical approaches to  
study this input source of contaminants. In fact, a GEMSI pilot project to  
characterize and to intercalibrate contaminant input from rivers has already been  
proposed for the WESTPAC Region.

71 The Technical Secretary informed the Committee of the support received  
at the Twenty-Second Unesco General Conference and referred to paragraphs 10407  
and 10408 of Document 22C/5 which recognizes the important role of rivers and the  
close co-operation with the Unesco Division of Marine Science's Programme on Coastal  
and Marine Resources (X.3).

72 The Working Committee fully supported GEMSI activities in this field and  
encouraged continued co-operation with SCOR and ICES and other appropriate bodies A  
in carrying out programmes within the established budgetary constraints.

5.3.2 Future activities and Terms of Reference for GEMSI

73 Dr. Bowers introduced this item. He reviewed the roles of various ad  
hoc Working Groups within GEMSI and their progress to date. He also gave a brief  
resume of GEMSI contribution to the MARPOLMON programme in relation to the analysis  
of contaminants in marine environmental samples. He drew the Committee's attention  
to the list of activities presented in Document IOC/WC-GIPME-V/8 which had been  
prepared by the Secretariat in consultation with GEMSI.

74 The Working Committee discussed some of the analytical methods recommended  
by GEMSI and the importance of intercalibration exercises.

75 It agreed upon the proposed list of future activities of GEMSI (appended D  
as Annex V to this Report).

- 76 The Chairman requested the Committee to examine the present Terms of Reference for GEMSI and noted that they may have to be amended in view of the recent agreement on collaboration between UNEP and IOC on GEMSI. Changes in the Terms of Reference for GEMSI suggested by the Secretary of IOC and the Director of UNEP Regional Seas Programme were presented to the Committee.
- 77 The Working Committee examined the Terms of Reference for GEMSI and agreed to delete Terms of Reference No. 7 since the Guidelines for the Structure and Responsibilities of the IOC Subsidiary Bodies of the Commission state that "each Group of Experts will report regularly and make recommendations to its parent body on its activities".
- 78 The Working Committee recommended and requested the Assembly to endorse the following revised Terms of Reference for GEMSI: A
1. To serve as a source of scientific advice, with specific emphasis being given to methods, standards and intercalibrations for the implementation of the Comprehensive Plan for GIPME and MARPOLMON, as well as the Regional Research and Monitoring Programme sponsored through UNEP Regional Seas Programmes.
  2. To identify research and development needs in relation to the conduct of baseline or monitoring operations, and to suggest ways of fulfilling them.
  3. To promote and assist with technical development and methodological intercomparison as required.
  4. To advise on operational planning of intercomparisons, training and baseline activities.
  5. To advise on, and develop, methods for the accurate assessment of pollutant inputs and sinks, and to attempt estimate of fluxes and mass-balance calculations.
  6. To serve as a mechanism enabling the Working Committee for GIPME to co-operate on scientific and technical matters with other international bodies.
- 5.4 DEVELOPMENT OF REGIONAL COMPONENTS OF MARPOLMON
- 5.4.1 IOCARIBE Component (CARIPOL)
- 79 The Delegate of Mexico and member of the CARIPOL Steering Committee, Dr. Alfonso Botello, introduced this sub-item; he gave a brief resume of the organization of the activities of CARIPOL and the progress in implementing MARPOLMON in the Caribbean region. With TEMA support through IOC, many countries in the region had been able to develop capabilities to participate in the MARPOLMON-P project and produce data on a regular basis; more than 7500 data have been received from 10 countries.

- 80 He reported on the collaboration with UNEP in the Region and informed the Committee that several proposals submitted to the UNEP Caribbean Environment Programme had been accepted and some activities had received funding support. They included, the conduct of an intercalibration/training workshop on dissolved dispersed petroleum hydrocarbons, to be held at the Bermuda Biological Station, the convening of a Symposium on the results of the CARIPOL Monitoring Programme, and ad hoc training of scientific personnel from the region. GEMSI has been closely involved in the development of CARIPOL activities and an expansion of MARPOLMON activities to include analysis of organic components in sediments and organisms is foreseen. Guidelines had been developed for the conduct of a major training workshop on monitoring of petroleum hydrocarbons and organochlorine insecticides in both sediments and sentinel marine organisms. The Delegate of Mexico repeated its offer, made at the Fourth Session, to host training workshops and intercalibration exercises in its laboratories.
- 81 The Working Committee noted with satisfaction the progress of the CARIPOL programme and called on the Secretary of IOC to continue the work in close collaboration with UNEP in the implementation of the Action Plan for the Caribbean Environment Programme.
- 5.4.2 WESTPAC component
- 82 The IOC Technical Secretary introduced this Agenda Item; he referred to the Committee to Document IOC/WTTPM-1/3, The Report of the First Session of the WESTPAC Task Team on Marine Pollution Research and Monitoring using Commercially Exploited Shellfish as Determinants, Manila, Philippines, 26-30 January 1981, and the Report of the IOC (WESTPAC) Training Workshop on the Use of Marine Organisms in Marine Pollution Monitoring, Queenscliffe, Australia, 20 August - 11 September 1983. He provided a comprehensive review of WESTPAC activities in recent years and a brief outline of proposed activities for the forthcoming intersessional period following the timetable proposed at the Third Session of the Programme Group for the Western Pacific and the recommendations of the Queenscliffe Workshop.
- 83 He informed the Committee of a proposal to hold a workshop on the analysis of organochlorines in biological tissue to be followed by a second-round intercalibration exercise, and the establishment, by the Programme Group, at its Third Session, of a new Task Team on Marine Pollution Research and Monitoring, to replace the former Task Team.
- 84 Referring to the collaborative efforts with COBSEA and UNEP in the activities in the region, the Technical Secretary reminded the Committee of the proposals for studies of river inputs in the WESTPAC Region.
- 85 The Vice Chairman of WESTPAC, Dr. Piamsak Menasveta, welcomed the report of the advances achieved in his Region and reaffirmed WESTPAC's intention to co-operate with COBSEA. He further recommended that thought be given to the inclusion of sediment monitoring in the programme.
- 86 The Representative of UNEP, Dr. D. Elder, gave a brief account of the activities of COBSEA in the UNEP Action Plan for the East Asian Seas Region and the South Pacific Regional Environment Programme (SPREP). He stressed the need to hold a workshop on organochlorines and indicated that plans had been made

87 to hold such a workshop in Port Moresby. He felt that this could be an excellent opportunity for co-operation between WESTPAC and the two Regional Seas Programmes.

88 The Delegates of the People's Republic of China, the Republic of Korea and the USSR provided brief reports of the monitoring activities in the WESTPAC programme, and the Committee was informed of a joint USSR-USA research cruise presently taking place in the North Pacific under the leadership of Dr. A. Tsyban, which would contribute to MARPOLMON.

89 Several Delegates indicated the urgency of undertaking suitable activity to train scientists in the analysis of organochlorines in order to initiate a mussel watch programme for these compounds, and felt that this was clearly an area where GEMSI could be of major assistance.

90 The Committee welcomed the report on the progress in the WESTPAC region and called on the Secretary of IOC to continue to promote this work in close collaboration with UNEP.

#### 5.4.3 Activities in other ocean regions

91 Dr. Jernelov introduced this sub-item; he summarized the activities during the intersessional period in the Mediterranean, the South East Pacific, the West and Central African Region, the North Indian Ocean and Kuwait Action Plan Region. Dr. Jernelov pointed out the state of available capabilities in the form of training, institutional development, intercalibration exercises and distribution of standard samples.

92 In the Mediterranean, the IOC had assumed responsibility for the conduct of a number of specific projects within the Mediterranean Action Plan developed by UNEP with the support of organizations of the UN system concerned and ICSEM. In the South East Pacific a pollution monitoring programme had been developed with the Permanent Commission for the South Pacific (CPPS) and UNEP concentrating on the monitoring of petroleum pollution, the monitoring of mercury and copper around mining discharges and the monitoring of chlorinated insecticides in areas with agricultural run-off.

93 In the West and Central African Region, IOC in co-operation with UNEP have initiated beach tar survey exercises and are developing plans for extensions into other aspects of petroleum hydrocarbon monitoring. Proposals for MARPOLMON activities in the Indian Ocean were in a formative stage in preparation for the First Session of the Programme Group for the Central Indian Ocean which is to take place in 1985.

94 IOC is co-operating with UNEP and the Regional Organization for the Protection of the Marine Environment "of the Gulf" (ROPME) in the Kuwait Action Plan Region and a Training Workshop on Oceanographic Sampling, Analysis, Data Handling and care of Oceanographic Equipment was held in Doha, Qatar, 3-15 December 1983 and had been followed by a Symposium/Workshop on Fate and Fluxes of Oil Pollution in the KAP Region, held in Basrah, Iraq, 8-12 January 1984.

95 Several Delegates stressed that intercalibration exercises without training workshops could greatly help countries to improve their analytical capabilities and that this may be a most appropriate and cost-effective way of generating interest and support for MARPOLMON.

96 The Working Committee welcomed the report and called on the Secretary of IOC to continue to promote this work in collaboration with UNEP. A

#### 5.5 OPEN OCEAN BASELINE STUDIES

97 The Technical Secretary briefly introduced this item and reviewed the progress. The programme had been delayed to allow development of methods that would allow for the inclusion of individual organohalogens in the baseline survey.

98 The Representative of ICES informed of the proposed ICES baseline survey of trace metals in the North Atlantic.

Several Delegates provided brief accounts of their national efforts in this field.

99 The Delegate of the USSR reminded the Committee of the recommendations of the Tallin Symposium on Integrated Global Ocean Monitoring.

100 Several Delegates stressed the importance of open-ocean baseline studies to GIPME activities and felt that every effort should be made to undertake a cruise or series of cruises as soon as possible. They agreed on the desirability of including studies of individual organohalogen compounds in these studies, and felt that this activity could not be delayed further.

101 Some Delegates felt that there was a need to de-couple the organo-chlorine components, as ICES had done, if failure to do so would further delay the baseline study, but expressed the view that every effort should be made to conduct the necessary research to avoid this, and the priorities of GIPME should reflect this.

102 The Working Committee gave the Open-Ocean Baseline Survey its full support and encouraged interested Member States to develop suitable methods for investigation of individual organohalogen compounds prior to these cruises, as recommended to GEMSI. D

103 The Working Committee called upon the Secretary of IOC to arrange for the development of the operational framework for the conduct of the baseline study in connection with appropriate organizations and national institutions. A

104 The Working Committee recommended that GEMSI be encouraged to proceed with planning and preparatory work and that IOC solicit offers of shiptime suitable for the execution of the Open-ocean Baseline Study. A

#### 5.6 STRATEGY FOR THE IMPLEMENTATION OF THE PLAN OF ACTION FOR MARPOLMON

105 The Technical Secretary introduced this item; He informed the Committee that, by Circular Letter 906, all Member States had received copies of Document IOC/INF-523 "The Marine Pollution Research and Monitoring Programme of the IOC", despatched in accordance with the instructions of the Assembly at its Twelfth Session. The Document essentially reviewed the progress on the

implementation of the Comprehensive Plan for GIPME. It was also submitted to the UNEP Governing Council at its Eleventh Session. Since the background document, IOC Technical No. 25 "A Framework for the Implementation of the Comprehensive Plan for GIPME" had been considered by the Committee and adopted under Agenda 5.1, the outstanding issues were the setting of priorities and the identification of IOC and Member-States' responsibilities and contributions to the GIPME programme.

106 The Delegate of the USA reminded the Committee of the importance of establishing priorities under the Plan and recalled the enthusiastic support given to the programme, the plan and the work of GEMSI at the Seventeenth Session of the Executive Council. Since the Committee was presently engaged in a crucial Session, prior to a forthcoming Assembly, where its priorities should be vigorously presented, he expressed his disappointment with Member-State representation at the present Session. He reaffirmed his country's intention to continue to support the fundamental scientific aspects of the strategy and stressed the importance of Member-State participation.

107 Several Delegates supported the view that a list of priorities within the different stages of the Plan should be reviewed by an ad hoc Sessional Group which provided the following list of priorities for consideration by the Committee.

108 In preparing this list of priorities for future activities within GIPME, the ad hoc Sessional Group considered the varying extent of progress in respect of different classes of contaminants and activities in different regions. The Working Committee felt there was a need to pursue or initiate activities within GIPME at several stages of the Comprehensive Plan simultaneously.

109 The Working Committee noted that items B2, B4 and B5 presented under Stage 1 of the Comprehensive Plan should logically belong to Stage 0. It also noted that, whereas some activities that have yet to commence (e.g. Indian Ocean activities) were included in the list of priorities, other ongoing programmes (e.g. those under WACAF and CPPS) were omitted.

110 The Working Committee agreed the priorities given below and decided to submit them for the consideration of the Assembly at its Thirteenth Session. A

111 Methodological Development (Stage 0)

- |               |   |
|---------------|---|
| A1 (priority) | Completion of analytical method development for the determination of PCBs in sea water and suspended particulate material   |
| A2            | Production and dissemination of suitable research and reference materials for the improvement and standardization of methods for marine pollution monitoring activities on a global basis |
| A3            | Development of intercomparable and reliable techniques for the analysis of suspended particulate or natural matter for trace metals   |

- A4 Preparation and publication of manuals describing methods of sampling and analysis for contaminants in the marine environment suitable for use in the MARPOLMON programme

Mass-Balances or Operations (MARPOLMON) (Stage 1)

- B1 (priority) Conduct of an open-ocean baseline programme
- B2 Conduct of WESTPAC Intercalibration Workshop and related activities
- B3 Conduct of river-discharge monitoring programme within ASEAN/WESTPAC Region
- B4 Conduct of a training workshop in the IOCARIBE/CARIPOL Region
- B5 Commencement of training and intercalibration activities in the Indian Ocean Region

Contamination Assessment (Stage 2)

- C1 (priority) Evaluation of mussel-watch monitoring in various regions
- C2 Evaluation of pollution monitoring and research data from the Mediterranean Region not included in MEDPOL

Pollution Assessment (Stage 3)

- D1 (priority) Commencement of examination and selection of procedures for the assessment of the effects of contaminants

6. MANAGEMENT OF MARPOLMON AND OTHER DATA IN THE FRAMEWORK OF IOOE

112

This Agenda Item was introduced by the Chairman of the IOOE Group of Experts on Responsible National Oceanographic Data Centers, Dr. K. Hughes who referred the Committee to Document IOC/WC-GIPME-V/13 for review. Dr. Hughes noted the activities of three groups involved with the processing and management of pollution monitoring data:

- a) IOOE Task Team on Marine Pollution Data
- b) ICES - Working Group 8 on Data Management
- c) IOOE work on RNOOC's for MARPOLMON

113

He stated that the Terms of Reference for establishment of an RNOOC Marine Pollution Monitoring should be considered by the GIPME-V Working Committee and comments submitted to the IOC Secretariat for finalization.

- 114 The Chairman of the IODE Task Team on Marine Pollution Data, Dr. M. Pertilla, informed the Committee of IODE's efforts in this field. He emphasized the need to develop suitable data reporting and exchanging formats for contaminants in the marine environment. The system of ICES Working Group for Data Management should serve as a starting point for the IODE Group of Experts on Format Development. Dr. Pertilla stressed the need for suitable reporting formats which would allow for reporting of ancillary data apart from contaminant concentrations, necessary for accurate interpretations. He also referred to the need for quality assurance prior to submission of data. He expressed the view that ICES interim formats with regard to pollution data could be used experimentally and suggested that GEMSI experts could be requested to review them and propose changes if necessary.
- 115 The representative of IODE also reported on relevant activities of that Working Committee.
- 116 The Working Committee carried on an intensive exchange of views regarding the contents of the proposed Terms of Reference for an RNODC-MARPOLMON. The Committee's deliberation centred on the issue of whether such RNODC's should have the option "to operate on a cost-recovery basis for data products with allowance for exchange on a quid pro quo basis for appropriate contributors".
- 117 The USSR Delegate strongly opposed an insertion in the Summary Report of the present Session (IOC/WC-GIPME-V/3) of the suggestion regarding the financial coverage of the pollution data exchange. He also noted such exchange of data has always been conducted free-of-charge.
- 118 The Delegate of the Federal Republic of Germany, Korea, Mexico, United Kingdom and USA supported the retention of cost-recovery language in the Summary Report and referred the matter of cost-recovery to the IODE Group of Experts on RNODC's for its opinion.
- 119 The Working Committee unanimously agreed that Document IOC/WC-GIPME-V/13 provided valuable guidance to the IOC Secretariat on establishment of an RNODC MARPOLMON. However, in view of the divergent positions expressed concerning the financial operation of such a centre and the importance of this Item, the Working Committee felt it could not reach a consensus on this issue at this Session. D
- 120 The Working Committee decided to refer this matter to the Secretary and requested that it be brought to the attention of the forthcoming Fifth Session of the Group of Experts on RNODC's. A

7. TRAINING, EDUCATION AND MUTUAL ASSISTANCE IN SUPPORT OF GIPME  
AND MARPOLMON

- 121 The Technical Secretary briefly introduced this item, outlining the relative support from TEMA to GIPME as well as the importance of the TEMA component in the development of national capabilities to participate in MARPOLMON. Specifically, he stressed that it had been well demonstrated that TEMA efforts stood a much better chance of being successful when an activity, such as an intercalibration exercise, had demonstrated the precise TEMA requirement and when the trained person could immediately make use of his acquired knowledge for data generation through an activity such as MARPOLMON than when the requirements for, and the usefulness of, the training were less clear.
- 122 The Delegate of the USSR reaffirmed his country's willingness to provide training for 5-7 trainees in the field of marine pollution.
- 123 The Delegates of USA and Canada informed the Committee that their countries were willing to provide practical training at scientific institutions, provided that funds to cover travel and per diem for the participants could be found from other sources.
- 124 The Delegate of the USA pointed out the appropriate use of TEMA resources has been a long-standing subject of debate in many, if not all, IOC fora. The IOC Working Committee for TEMA seems to be acutely aware of the shortcomings of the present organizational structure and is making a concerted effort to improve the situation, which the USA appreciates. However, he stressed that maximum efficiency in the use of TEMA resources is essential if this programme is to remain credible and productive. He suggested greater effort be given to establishing a closer relationship between training and education, and the various programmatic goals, not only for the GIPME programme, but all IOC programmes. Training and education should not be provided in isolation but should be provided to achieve a specific purpose that is clearly related to a question or capability that needs to be developed to achieve the objectives of specific IOC programmes. Moreover, there should be follow-up actions by the IOC to ensure that TEMA resources expected for such purposes are indeed achieving a stated goal.
- 125 The Delegate of Canada agreed with the principles outlined by the Delegate of the USA, particularly the need for closer identification of TEMA activities with the aims and objectives of IOC programmes such as GIPME.
- 126 The Delegate of Mexico, on behalf of his country, offered to host another workshop and intercalibration exercise on petroleum hydrocarbons and organohalogenes for the IOCARIBE Region in the GEMSI framework.
- 127 Several Delegates stated that a larger proportion of TEMA funds ought to be given to GIPME and that a forum should be sought to facilitate long-term planning of TEMA activities in GIPME.
- 128 The Working Committee stressed the importance of the TEMA component within GIPME and requested the Assembly to increase, if possible, the TEMA contribution to GIPME.

8. IOC PROGRAMME AND BUDGET FOR 1984-1985 AND REQUIREMENTS FOR  
FOLLOWING BIENNIUM

- 129 The Technical Secretary introduced this item. He informed the Committee of the approximate size of the IOC regular budget for GIPME for 1985. He referred to Agenda Item 5.6 where priorities were agreed upon for the intersessional activities and reminded the Committee of the repeatedly stated position of the USA that all demands for increases in basic regular budget of IOC should be avoided.
- 130 The Technical Secretary also suggested that budget requirements should be presented as they relate to the GIPME priorities agreed under Agenda Item 5.6.
- 131 Several Delegates stressed the need to keep activities with a financial incidence on IOC under strict control and to set well considered priorities in order to avoid financial restrictions limiting vital programmes. It was emphasized that the budget figures attached to the Agenda Items were indicative only. It was also pointed out that some activities already catered for in the 1984-85 budget, (e.g., relating to West and Central Africa) were not included in this budget estimate which mainly relates to activities foreseen for 1985 and the following biennium (1986-87), although certain on-going activities would appear in subsequent biennia.
- 132 The Delegates of the USA and Canada expressed their appreciation of the fact that the total sum of the items on the budget had been kept within the zero-growth level.
- 133 Several Delegates commented that budget discussions would be much facilitated if GIPME intersessional periods were better adjusted to IOC/Unesco budgetary biennia.
- 134 The Working Committee recommended to the IOC the suggested budget allocations for the priority activities, given in the following Table.

SUGGESTED BUDGET ALLOCATIONS FOR IOC PROGRAMME AND BUDGET FOR 1984-1985  
AND REQUIREMENT FOR FOLLOWING BIENNIUM (PROBABLE TIMING INDICATED)

Estimated Biennial Budget

1. <u>Obligations</u>	<u>IOC</u>	<u>UNEP</u> *		
i) WC-GIPME-VI (mid 1986)	10	-		
ii) GEMSI - 2 Meetings (1985-86)	15	15		
ad hoc Working Groups	15	10		
iii) GEEP - 2 Meetings (1985, 86)	12	-		
ad hoc Consultations	8	-		
2. <u>Priorities for Future Activities within GIPME</u>	<u>IOC</u>	<u>TEMA</u>	<u>UNEP &amp;/or other int. Orgs.</u>	<u>Member States</u>
i) <u>Action Plan Programme Components - Stage 0</u>				
a) Analytical methods refinement and training for open-ocean baseline survey (1985)	10	15	-	50
b) Provision of reference materials (1985-1986)	10	-	10	-
c) Intercalibration of trace metals in suspended material (1986)	15	-	-	25
d) Manual preparation (1985, 1986)	10	-	10	-
ii) <u>Action Plan Components - Stage I</u>				
a) Open-ocean baseline (1986)	25	-	-	100
b) WESTPAC Intercalibration Workshop (1985)	15	15	35	10
c) ASEAN/WESTPAC River Discharge Monitoring Programme (1985,86)	15	20	15	40
d) New MARPOLMON Activities IOCARIBE/CARIPOL Training Workshop (1985, 1986)	10	15	50	10
e) New MARPOLMON Activities (1985-1986)	15	25	40	-

\* To be negotiated between IOC and UNEP

	IOC	TEMA	UNEP &/or other int. Orgs.	Member States
iii) <u>Action Plan Component</u> <u>- Stage 2</u>				
a) Evaluation of Mussel Watch-type activities (1985)	10	-	10	-
b) Evaluation of contami- nants in the Mediterranean (1986)	5	-	10	-
iv) <u>Action Plan Component</u> <u>- Stage 3</u>				
Evaluation of Effect Measurements (1985-1986)	10	10	10	20

9. CO-OPERATION WITH OTHER ORGANIZATIONS IN THE FIELD OF MARINE  
POLLUTION RESEARCH AND MONITORING

- 135 Dr. Jernelov introduced this item; he emphasized the close and fruitful collaboration between GEMSI and relevant ICES Working Groups, and presented the Memorandum of Understanding on Co-operation which the two organizations had signed. He also informed the Committee that a Memorandum of Understanding and Co-operation has also been signed with ICSEM. He reported briefly on the collaboration with CPPS in preparing a monitoring programme for the South East Pacific.
- 136 The Representative of ICES gave a short account of the past joint activities and presented on-going and planned ICES activities which closely related to the priority items for GEMSI which were identified under Agenda Item 5.6. He stressed the importance that ICES placed on continued collaboration with IOC.
- 137 The Observer from SCOR expressed SCOR's appreciation of the scientific quality of the work done by GEMSI and congratulated IOC and UNEP on their agreement on closer collaboration. He also gave a brief presentation of the SCOR activities that related to GIPME and stated that SCOR was open for discussion on any further collaboration with IOC and GIPME.
- 138 The Working Committee noted with satisfaction the on-going collaboration and encouraged continued use of this mode of operation.
- 9.1 UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP) AND ITS REGIONAL SEAS PROGRAMME
- 139 Dr. Jernelov introduced this item; he mentioned that collaboration between IOC and UNEP had been going on for many years and that IOC had executed UNEP-financed projects for a total of US\$4.5 million over the last nine years. He further referred to agreement on collaboration between IOC and the UNEP Regional Seas Programme Activity Centre reached in January 1984 and reflected in the Aide Memoire; this collaboration involves, among other things, the joint sponsorship of GEMSI and the joint development of an International Mussel Watch, as well as MARPOLMON as an ocean chemistry component of GEMSI.
- 140 The Representative of UNEP gave an overview of the principal fields of collaboration and of the constraints governing the formulation and implementation of UNEP-sponsored Regional Action Plans, and, consequently, the ways in which UNEP could collaborate with the organizations such as IOC. He also outlined the possibilities for collaborative efforts in each of the eleven UNEP Action Plan Regions and expressed the hope that the IOC would make provisions in its own programmes to help ensure that such collaboration could be effected.
- 141 The Working Committee noted with satisfaction the progress made towards co-operation between IOC and UNEP-RS/PAC in the field of marine pollution monitoring as reflected in the Aide Memoire on consultations between representatives of the IOC and UNEP held in Geneva on 16 and 17 January 1984.

142           The Working Committee encouraged the Secretary of IOC and the  
Director of the UNEP Regional Seas Programme to pursue future negotiations,  
143 particularly with a view to ensuring that the regional component to MARPOLMON  
and UNEP's regional monitoring activities are progressively co-ordinated or  
144 linked with the ultimate aim of achieving an integrated monitoring system,  
and to formulate the structural and functional arrangements required to that  
effect.

10.       ELECTION OF OFFICERS

143           The Chairman invited nominations for a Chairman to serve during the  
next intersessional period and the Sixth Session of the Working Committee.

144           The Delegate of Mexico proposed Dr. Neil Andersen (USA). This  
proposal was seconded by the United Kingdom and supported by acclamation.

145           The Delegate of the USSR proposed Dr. A. Tayban (USSR) as Vice-  
Chairman.

146           The Delegate of France informed the Committee that Dr. Roger Chesselet,  
the incumbent Vice-Chairman, would be able and willing to continue to serve the  
the Committee and his re-election was seconded by the Delegate of Mexico and  
supported by acclamation.

11.       DATES AND PLACE OF NEXT SESSION

147           The Technical Secretary informed the Working Committee that increasing  
difficulties of scheduling, as a result of the increased number of IOC sub-  
148 subsidiary bodies, greatly reduced the freedom of each subsidiary and of the  
Secretariat to define precise dates for future meetings. He suggested that the  
Working Committee decide the preferred meetings. He also indicated that the  
difficulties and costs of organizing major meetings outside Headquarters means  
that Member States or Organizations wishing to host the next session would have  
to provide full secretariat and meetings services including interpretation in  
the four working languages of the Commission.

148           The Working Committee agreed that the Secretary should exercise his  
judgement in scheduling the next Session of the Working Committee in order to  
match it with the scheduling of the meetings of the Governing Bodies, and  
149 further had no objection to holding the next Session at Unesco Headquarters,  
in Paris. It suggested a date towards the end of 1986 was suitable.       A

12.       ADOPTION OF THE SUMMARY REPORT

149           The Working Committee adopted the Draft Summary Report of the Session,  
including its Annexes, during the Session.       D

151           It agreed that the Secretary of IOC should retain usual editorial  
freedom to prepare the final version.       D

13.       CLOSURE

152           The Chairman closed the Session at 16.30 hrs, Friday 3 August 1984.

ANNEX I

AGENDA

1. OPENING
2. ADMINISTRATIVE ARRANGEMENTS
  - 2.1 ADOPTION OF THE AGENDA
  - 2.2 DESIGNATION OF RAPPORTEUR
  - 2.3 CONDUCT OF SESSION, TIMETABLE AND DOCUMENTATION
3. INTERSESSIONAL ACTIVITIES
4. MARINE POLLUTION RESEARCH
  - 4.1 POSSIBLE PRIORITY ITEMS REQUIRING PROMOTION
  - 4.2 SCIENTIFIC BASIS FOR IDENTIFICATION OF VULNERABLE AREAS
  - 4.3 STUDIES ON THE EFFECTS OF MARINE POLLUTION
5. THE GLOBAL MARINE POLLUTION MONITORING SYSTEM (MARPOLMON)
  - 5.1 OBJECTIVES OF MARPOLMON; SELECTION OF POLLUTANTS AND AREAS
  - 5.2 DESIGN OF MONITORING NETWORKS AND MONITORING GOALS FOR COASTAL-ZONE TREND ANALYSES
    - 5.2.1 Development of the "Mussel Watch" concept as an inter-regional activity
  - 5.3 METHODS, STANDARDS AND INTERCALIBRATION
    - 5.3.1 Methodological requirements and quality assurance for studies of riverine input to, and trend analysis in, the coastal zone
    - 5.3.2 Future activities and terms of reference for GEMSI
  - 5.4 DEVELOPMENT OF REGIONAL COMPONENTS OF MARPOLMON
    - 5.4.1 IOCARIBE component (CARIPOL)
    - 5.4.2 WESTPAC component
    - 5.4.3 Activities in other ocean regions
  - 5.5 OPEN-OCEAN BASELINE STUDIES
  - 5.6 STRATEGY FOR THE IMPLEMENTATION OF THE PLAN OF ACTION FOR MARPOLMON
6. MANAGEMENT OF MARPOLMON AND OTHER DATA IN THE FRAMEWORK OF IODE
7. TRAINING, EDUCATION AND MUTUAL ASSISTANCE IN SUPPORT OF GIPME AND MARPOLMON

8. IOC PROGRAMME AND BUDGET FOR 1984-1985 AND REQUIREMENTS FOR FOLLOWING BIENNium
9. CO-OPERATION WITH OTHER ORGANIZATIONS IN THE FIELD OF MARINE POLLUTION RESEARCH AND MONITORING
  - 9.1 UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP) AND ITS REGIONAL SEAS PROGRAMME
10. ELECTION OF OFFICERS
11. DATES AND PLACE OF NEXT SESSION
12. ADOPTION OF THE SUMMARY REPORT
13. CLOSURE.

ANNEX II

REPORT ON THE INTERSESSIONAL ACTIVITIES IN THE FIELD OF  
MARINE POLLUTION RESEARCH AND MONITORING

1. IOC SECRETARIAT

Since January 1982, there have been several personnel changes in the Marine Pollution Research and Monitoring Unit (MPU). In October 1982, Dr. Wojciech Slaczka returned to Poland. The vacancy was filled in August 1983 by Dr. Rodger Dawson (UK), a marine organic chemist from the University of Kiel (FRG). In October 1983, Dr. Neil Andersen, Head of the Unit, returned to the United States. The selection process to fill this vacancy is entering the final stages and a replacement is expected to be named in the near future. In addition, Dr. Robert Lankford, who was the IOC Assistant Secretary (IOCARIBE) through a US contribution to the IOC Trust Fund, left the Caribbean region in November 1983 to take up the post of Marine Science Officer and IOC Assistant Secretary for Latin America in the Unesco Regional Office of Science and Technology for Latin America and the Caribbean (ROSTLAC) in Montevideo, with the result that technological backstopping for IOCARIBE is presently being provided by the IOC Secretariat from Paris. A number of consultants have been engaged to fill the vacant posts on an interim basis.

2. GIPME GROUP OF EXPERTS ON METHODS STANDARDS AND INTERCALIBRATION (GEMSI)

There have been two sessions of GEMSI during the intersessional period; the Fourth Session convened in Curaçao (25-31 March 1982) and the Fifth convened in Paris (14-17 June 1983). In addition, a number of ad hoc GEMSI Groups were convened. Specifically these were:

2.1 GEMSI ad hoc Group on the Use of Marine Organisms in MARPOLMON  
(Paris, 8-12 February 1982)

Building upon the recommendations made by the WESTPAC Task Team on Marine Pollution Research and Monitoring Using Commercially Exploited Shellfish as Determinants (Manila 26-30 January 1981) this Group developed the framework for the Training Workshop on the Use of Marine Organisms in Marine Pollution Monitoring that was convened in Quescliff, Australia, 20 August - 11 September 1983. They also conducted an intercomparison exercise in collaboration with ICES; the results of which were used in the evaluation of capabilities in the Region and in selecting participants.

2.2 GEMSI ad hoc Group on the Analysis of Dissolved/Dispersed Petroleum  
Hydrocarbons in Seawater

This group conducted several laboratory experiments and worked through correspondence to resolve questions that had arisen in using fluorescence analysis for this measurement. All questions were finally resolved at GEMSI-V, and a Revised Manual and Guides No. 7 is being printed (IOC Manuals and Guides No. 13).

2.3 GEMSI ad hoc Group on Sampling of the Sea Surface Microlayer

A practice intercalibration experiment was conducted by fifteen students who were attending the Bermuda Biological Station's Annual Training Course on Marine Pollution Analysis, to which IOC provided partial support. A Manual and Guide for sea surface microlayer sampling was produced, approved by GEMSI-V, and will be published as Manuals and Guides No. 14. Plans were also developed for an intercalibration activity.

2.4 GEMSI ad hoc Group on the Use of Marine Sediments on MARPOLMON

This Group had its initial meeting in Mazatlan, Mexico, 11-15 April 1983 in response to an invitation from the Government of Mexico. A second meeting was also held in Mazatlan, Mexico, 3-7 April 1984. Two reports have been prepared on this aspect of marine pollution monitoring.

2.5 GEMSI ad hoc Group on the Analysis of Individual Chlorinated Biphenyls

The intersessional work of this group consisted of the laboratory measurements at three institutes: Institute of Marine Research, Bergen, Norway; Netherlands Institute of Sea Research, Texel; Bermuda Biological Station for Research, Bermuda, and work by correspondence. The results of these studies have provided much of the basis for developing the proposed work on PCB's in open-ocean waters as well as a significant part of IOC Technical Series No. 26.

2.6 GEMSI ad hoc Group on Fluxes and Mass Balance and on River Inputs

These related groups have met twice, and worked by correspondence and consultation, when members found themselves at common locations. Close collaboration is maintained by the Group with the SCOR Working Group No. 46. Results of the activities of this Group have clearly demonstrated that the area under discussion is in greatest need of development (i.e. river flux measurements).

The summary Reports of the Fourth and Fifth Sessions of GEMSI further elaborate on the above points (Documents IOC/GGE(MSI)-IV/3 and IOC/GGE(MSI)-V/3). Additional information can be found in the Action Paper (Document IOC/WC-GIPME-V/8).

3. GROUP OF EXPERTS ON THE EFFECTS OF POLLUTION (GEEP)

Due to problems experienced by the Chairman Designate, Dr. M.G. Gross (USA) relating to his availability, this group has not met. However, Dr. B. Bayne (UK) agreed to assume the duties of the Chairman Designate, and planning continues to initiate work in this Group. Continuation in this endeavour needs close scrutiny by the Working Committee (Agenda Item 4.3).

4. GIPME AD HOC GROUP ON POLICY PLANNING AND STRATEGY (GOPPS)

This Group met on 4 October 1982, with the major items of discussion centering on the areas of responsibilities of GEMSI and GEEP, and the immediate problems and subjects to be addressed by GEEP (document IOC/GOPPS-I/3). If it is considered necessary by the Working Committee, a second meeting of this group may be convened during the next intersessional period where certain policy, planning and strategy items may be addressed and resolutions formulated.

5. COLLABORATION WITH UNEP

An IOC/UNEP intercomparison exercise for petroleum hydrocarbons in tissue was undertaken by the Bermuda Biological Station for Research Inc., with partial support being provided by the UNEP Mediterranean Action Plan through the Programme on Pollution Monitoring and Research in the Mediterranean (MEDPOL). This activity is

being conducted in close collaboration with a related ICES effort, supported by the US National Oceanic and Atmospheric Administration. A final report is now in preparation.

Responding to a request from the Regional Seas Programme of UNEP, GESMI has conducted a number of reviews of UNEP manuals and subsequently provided extensive comments. This activity is now considered to be an ongoing responsibility of GESMI, which conducts such reviews typically within one or two months after receiving a request.

Significant efforts have been expended by the IOC Secretariat within the framework of various Regional Seas Action Plans. In the KAP Region a Training Workshop on Oceanographic Sampling, Analysis, Data Handling and Care of Equipment was developed and carried out at the University of Qatar, 22 October - 4 November 1983. A Symposium on Fate and Fluxes of Material in the KAP Region was also organized and conducted at the University of Basrah (8 - 12 January 1984). In both of these efforts, there was a collaboration with ROPME and staff of the UNEP Regional Seas Programme Activity Centre. Additionally, responding to a specific request from the Marine Science Centre of the University of Basrah, GESMI provided technical input and guidance to finalizing a three-year research plan for the institution.

IOC's involvement in the UNEP Action Plan for the Mediterranean comprised several activities under Phase II of the Programme for Marine Pollution Research and Monitoring. Efforts focussed on technical evaluation, negotiation and execution of contracts for twenty-five research proposals submitted through the UNEP Activity Centre by institutions in the region. Thirteen new research proposals were recently received for similar processing. In addition, five manuals were prepared for subsequent use as Reference Methods in MEDPOL. With the assistance of a consultant, work has started on a Review of Oil Pollution in the Mediterranean.

Enquiries have been sent and a mission undertaken by IOC consultants to the WACAF Region (West and Central Africa). The consultants identified institutions that will participate in a regional beach-tar study, advised on selection of beaches and instructed participants in beach-tar sampling procedures. A total of sixteen institutions in eight countries were visited. At present this is a developing activity with a training workshop being planned for December 1984.

There was close collaboration with COBSEA (Co-ordinating Body on the Seas of South East Asia) prior to convening the training workshop in Queenscliff, Australia in 1983. It is anticipated that such collaboration will continue in the future concerning planned follow-on activities. Support was provided to the COBSEA Regional Technical Meeting, Jakarta (9-10 August 1983) in the form of documentation and technical advice on oil pollution monitoring.

Increasing co-operation in the UNEP Action Plan for the Caribbean Environment Programme has been realized over the past year. Specific activities arise from proposals submitted to the Third Meeting of the Monitoring Committee on the Action Plan for the Caribbean Environment Programme, Havana, 8 - 10 November 1983 (IOC/WC-GIPME-V/8, Agenda Item 5.4.1).

In collaboration with UNEP and CPPS support was provided to the CPPS/UNEP Workshop "Standardization of Methods for Pollution Monitoring in the South-east Pacific: Petroleum and Pesticides", (Callao, Peru, 4 - 15 July 1983).

Together with CPPS and UNEP, IOC has prepared a programme for pollution monitoring in the ocean. The programme concentrates on

- monitoring of petroleum pollution
- monitoring of mercury and copper around mining discharges
- monitoring of chlorinated insecticides in areas of agricultural runoff.

A significant agreement reached by IOC and the UNEP Regional Seas Programme Activity Centre at an intersectorial meeting in Geneva (16-17 June 1984) on mutual co-operation; the agreement was embodied in an Aide Memoire (IOC/INF-564). Further details can be found in the Action Paper (IOC/WC-GIPME-V/8).

6. COLLABORATION WITH ICES

Major collaboration continues with ICES, not the least of which is due to common membership of several experts on GEMSI and several ICES subsidiary bodies. A major achievement was a Memorandum of Understanding on Co-operation between IOC and ICES. A Symposium on "Contaminant Fluxes through the Coastal Zone" and associated Workshop, Nantes, France (14 - 18 May 1984) was arranged by ICES with support from IOC and US NOAA. Reference has already been made to collaborate in intercalibration exercises.

7. WESTPAC

The major activity in this IOC Regional Programme began with the First Session of WESTPAC Task Team on Marine Pollution Research and Monitoring using Commercially Exploited Shellfish as Determinants, Manila 26 - 30 January 1981 (Document IOC/WTTPM-I/3). Based on the evaluations and recommendations of this meeting, GEMSI initiated a number of activities noted earlier, which culminated in the Training Workshop at Queenscliff, Victoria, Australia, 20 August - 11 September 1983, with support from the Governments of Australia, France and the United States to the IOC Regular Programme. Plans are now underway to convene a follow-up training workshop in the region in close collaboration with UNEP, further details are provided in the Action Paper (IOC/WC-GIPME-V/8).

8. IOCARIBE (CARIPOL)

There has been continued activity in this region. A large and growing data base for petroleum pollution in the Caribbean and adjacent regions has been accumulated. At its Third Meeting in Veracruz, Mexico (18 - 20 October 1982), the CARIPOL Steering Committee reviewed in detail the progressive development of marine pollution research and monitoring in the region.

At its Fourth Meeting in Mazatlán, Mexico (9 - 12 April 1984) the CARIPOL Steering Committee reviewed the progress of the monitoring programme and evaluated the proposals which had been submitted to the Third Meeting of the Monitoring Committee on the Action Plan for the Caribbean Environment Programme, Havana, 8-10 November 1983.

The CARIPOL Steering Committee also met with members of the GEMSI ad hoc Group on the Use of Sediments in MARPOLMON and prepared guidelines for the conduct of a training workshop on monitoring of petroleum hydrocarbons and organochlorine insecticides in sediments and selected organisms as an extension of the present monitoring activities. Further details of these proposals will be provided in the Report of the Fourth Session of the CARIPOL Steering Committee.

9. TRAINING, EDUCATION AND MUTUAL ASSISTANCE (TEMA) in GIPME

In support of the IOC-GIPME programmes, the following training was provided through the TEMA programme.

A Training Workshop on the use of Marine Organisms in MARPOLMON for the region covered by WESTPAC was held in Queenscliff, Victoria, Australia, 20 August - 11 September 1983, upon invitation and support of the Australian Government. Nineteen participants from eight countries (Australia, China, Indonesia, Republic of Korea, Malaysia, New Zealand, Philippines, Thailand) of the WESTPAC region received training in the analysis of trace metals and organochlorines following on intercalibration exercise which had been conducted in 1982. The Workshop was supported by contributions to the IOC Trust Fund from France and USA and from the Department of Science and Technology and Department of Home Affairs and Environment, Government of Australia.

A training course was organized by the Bermuda Biological Research Station Inc., Bermuda (10 - 28 August 1982) on analysis of pollutants in sea water. Five scientists from developing countries (Ecuador, India, Jamaica, Mexico, Costa Rica) participated with the support from IOC regular budget. Particular attention was paid to the use of chromatographs, atomic absorption spectrophotometers and clean room techniques.

Similarly, training was provided to scientists from six developing countries (Trinidad & Tobago, Mexico, Jamaica, Bangladesh, Sri Lanka and the Cayman Islands which is not a member of IOC) in a course of analysis of marine pollution, organized by the Bermuda Biological Station for Research, Inc., Bermuda (12 - 30 July 1983).

In a training course organized by the Instituto Nacional de Pesca, Guyaquil, Ecuador (10 - 13 July 1983) on "Instrumentation and Chemical Analysis of Pollutants in Sea Water" support was given for attendance of two scientists from Mexico and Chile.

Study grants to support participation in seminars and workshops related to marine pollution research and monitoring were provided for scientists to attend.

1. Dissertation Symposium on Chemical Oceanography, Honolulu, Hawaii, USA  
24-29 October 1982
2. International Mussel Watch Symposium, Honolulu, Hawaii, USA  
7-11 November 1983

3. Symposium on Contaminants Fluxes through the Coastal Zone, Nantes, France, 14-16 May 1984
4. VIIth International Symposium on the Chemistry of the Mediterranean Sea, Primosten, Yugoslavia, 17-19 May 1984.

10. TECHNICAL MEETINGS

The following meetings concerning marine pollution were co-sponsored by IOC, and were attended by IOC staff members and/or consultants:

- i) A Scientific Workshop on "Estuarine Processes: An Application to Tagus Estuary", Lisbon, Portugal, 13-16 December 1981;
- ii) VI ICSEM/IOC/UNEP Workshop on Marine Pollution in the Mediterranean, Cannes, France, 2-4 December 1983;
- iii) A First Symposium on Integrated Global Ocean Monitoring, Tallinn, USSR, 2-10 October 1984;
- iv) Symposium on Contaminant Fluxes through the Coastal Zone, Nantes, France, 14-16 May 1984;
- v) VII International Symposium on the Chemistry of the Mediterranean Sea, Primosten, Yugoslavia, 17-29 May 1984.

11. PUBLICATIONS

The following publications and reports have either been issued during the intersessional period or are presently in print:

- IOC Technical Series No. 22  
"Scientific Report of the Intercalibration Exercises - the IOC/WMO/UNEP Pilot Project on Monitoring Background Levels of Selected Pollutants in Open Ocean Waters"
- IOC Technical Series No. 25  
"A Framework for the Implementation of the Comprehensive Plan for the Global Investigation of Pollution in the Marine Environment"
- IOC Technical Series No. 26  
"Determination of Polychlorinated Biphenyls in Open Ocean Waters"
- IOC Manuals and Guides No. 11  
"The Determination of Petroleum Hydrocarbons in Sediments"
- IOC Manuals and Guides No. 12  
"Chemical Methods for Use in Marine Environmental Monitoring"
- IOC Manuals and Guides No. 13  
"Procedures for the IOC Programme on Marine Pollution Monitoring (MARPOLMON-P)"

- IOC Manuals and Guides No. 14  
"Manual on the Determination of Basic Physical Oceanographic  
and Meteorological Parameters"
- IOC Manuals and Guides No. 15  
"Operational Manual for Sampling the Sea-Surface Microlayer"
- IOC Training Course Report 4 - Report of the Training Workshop  
on the Use of Organisms in MARPOLMON, Queenscliff, Victoria,  
Australia, 20 August - 11 September 1983.
- Summary Report and the Scientific Data of the Pilot Project  
"Baseline Studies and Monitoring of Oil and Petroleum  
Hydrocarbons in Marine Waters, MED-I"
- Final Report of the Pilot Project  
"Problems of Coastal Transport of Pollutants, MED-VI".

12. GESAMP

The IOC Secretariat provides the Unesco Technical Secretary for the Joint IMO/FAO/Unesco/WMO/IAEA/UNEP Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP). In this capacity, the GESAMP Working Group on the Review of the Health of the Oceans concluded its work and its report was published (GESAMP Reports and Studies No. 15). At the XIII Session of GESAMP, the Working Group on Land/Sea Boundary Flux of Pollutants was formed and its work continues with the Unesco Technical Secretary being responsible for its activities. It held its initial session in Mazatlan, Mexico, 3-7 April 1984.

ANNEX III

ADDRESS OF WELCOME BY MR. ENAM A. CHAUDHURY  
SPECIAL ASSISTANT TO THE EXECUTIVE SECRETARY  
OF ESCAP AND SECRETARY OF THE COMMISSION

Mr. Chairman, Distinguished Delegates, Ladies and Gentlemen,

On behalf of the Executive Secretary of ESCAP, I would like to extend a very warm welcome to all of you to the Fifth Session of the Inter-governmental Oceanographic Commission's Working Committee for Global Investigation of Pollution in the Marine Environment.

The oceans represent a major world resource of nutrition, energy and minerals and the paramount importance of man's dependence on the extensive coastal zones. At the same time, these very areas have been increasingly exposed to the detrimental activities of those dependent upon these resources; this exposure being manifested by a spreading of pollution from the near coastal zone towards the open-oceans themselves. Indeed, the UN Conference on the Human Environment, 1972 Stockholm, recognized and emphasized the need for a continuous appraisal of and measures to control pollution in the marine environment. In its effort to sustain economic development of member countries, most of which are maritime, ESCAP has been concentrating much of its environmental efforts in the protection and management of coastal and nearshore areas.

The Stockholm Conference further recommended that a Global Investigation of Pollution in the Marine Environment (GIPME) be mounted and gave the International Oceanographic Commission of Unesco the responsibility of supervising this task.

Now at its Fifth Session, the Working Committee for GIPME has before it a very substantial agenda which itself reflects the complexity of the task of studying pollution in the global marine environment. The efforts to monitor the spread of pollution globally is, of necessity, built upon a series of regional monitoring components, whose monitoring efforts may be compared to present a global picture from complicated mosaic; the task of this Working Committee being to establish the scientific basis by which to link the marine pollution research and monitoring activities from the various regions widely varying in socio-economic and environmental conditions. The area represented by the IOC Programme Group for the Western Pacific which, to a large extent overlaps with the ESCAP region, represents the world's most populated areas whose coastal zones are increasingly bearing the pressures of rapid industrialization, agriculture and aquaculture and construction activities. The river discharges to the seas of South East Asia are estimated to be as much as 30 per cent of the total world river input to the oceans, and this potential vehicle for transport of pollutants from land-based sources is of great significance in the calculation of the flux of mass-balance of pollutants on a global level. Again on its part, ESCAP has been looking into these problems in selected countries of the region through development of environmental and socio-economic management plans for coastal areas.

In this regard, both IOC and ESCAP have indeed a strong common interest in establishing a joint scientific basis for the study and monitoring of pollution in the marine environment in all its facets and considers the work of this Working Committee particularly relevant to this cause.

I wish you every success in your deliberations.

ANNEX IV

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ANNEX V

FUTURE ACTIVITIES OF GEMSI

At its Fifth Session, the GIPME Group of Experts on Methods, Standards and Intercalibration (GEMSI) drew up a list of planned intersessional activities (IOC/GGE(MSI)-V/3, Section 11). The group agreed that the following ad hoc Working Groups should continue their intersessional activities with the tasks described below:

(i) Ad hoc Working Group on Dissolved/Dispersed Petroleum Hydrocarbons

Upon completion of extensive research on the methodology for determination of dissolved dispersed hydrocarbons in seawater by UV fluorescence (resulting in the production of IOC Manuals and Guides No: 13), the ad hoc Working Group has proposed a major intercalibration exercise. This Recommendation has been followed and adapted to suit the requirements of IOCARIBE laboratories participating in CARIPOL. The training workshop and intercalibration exercise on the determinants of dissolved dispersed petroleum hydrocarbons is planned for October 1984 at the Bermuda Biological Station, Bermuda.

(ii) Ad hoc Working Group on Sampling of Sea-Surface Microlayer

A manual describing a standard method for the sampling of the sea-surface microlayer is near completion and an intercalibration exercise is planned in conjunction with the training workshop described above.

(iii) Ad hoc Working Group on the Use of Marine Organisms in MARPOLMON

The ad hoc Working Group has completed two reports on the subject and has been instrumental in conducting an intercalibration exercise on trace metals and organochlorines in the WESTPAC region in close co-operation with ICES. The ad hoc Group was also instrumental in the design of a Training Workshop on the Use of Marine Organisms in MARPOLMON, Queenscliff, Victoria, Australia, 20 August - 11 September 1983.

The ad hoc Working Group continues to advise on marine pollution research and monitoring activities in the WESTPAC Region and has urged the adoption of the timetable for intercalibration training and monitoring activities under MARPOLMON in WESTPAC (Figure 9, Report of the Training Workshop on the use of Marine Organisms in MARPOLMON).

The Group's future activities require focussing on the problems of monitoring organochlorine insecticides and polynuclear aromatic hydrocarbons in biota and the stronger association with "Mussel Watch" activities in the various regions, including the provision of manuals and design of intercalibration and training exercises.

The co-operation between CARIPOL of IOCARIBE and GEMSI (Report of Fourth Session of CARIPOL, Steering Committee, Mazatlán, Mexico, 9-12 April 1984) is an example of the continuation of the Group's activities together with an envisaged Training Workshop on the Analysis of Organochlorines in Biota, scheduled for the WESTPAC Region in late 1984 or 1985.

(iv) Ad hoc Working Group on the Use of Marine Sediments in MARPOLMON

In a series of two reports, the ad hoc Working Group has addressed the rationale for using marine sediments to monitor pollution, reaching the general conclusion that sediments were useful indicators of pollution and that meaningful results could be obtained at varying levels of sophistication. Outstanding issues include:

- the preparation of an authoritative strategy manual for the design and execution of monitoring campaigns using sediments at different levels of sophistication
- preparation and distribution of standard reference materials to participating laboratories and encouragement of these to participate in international intercalibration exercises, such as those initiated by ICES
- to advise on the design of suitable training workshops for the analysis of trace metals, organochlorine insecticides and polynuclear aromatic hydrocarbons in marine sediments.

(v) Ad hoc Working Group on River Inputs

The ad hoc Working Group has been charged with evaluating measurements of river fluxes for mass-balance considerations and, whilst working in close co-operation with the Working Groups described under Agenda Item 5.3.1, should seek to provide guidance on the improvements in methodology required to make estimates of riverine fluxes to the oceans.

The ad hoc Working Group should address questions relating to the reliability of river data and methods applied and consider the conduct of such practical intercomparison exercises in the form of case studies to evaluate methodology and strategies.

(vi) Ad hoc Working Group on Fluxes and Mass Balance

This ad hoc Working Group addresses the fifth Term of Reference of GEMSI, namely

*"to advise on, and develop, methods for the assessment of pollutant inputs and sinks, and to attempt estimates of fluxes and mass-balance calculations."*

The on-going functions of this ad hoc Working Group derive from the "Strategy for the Implementation of the Comprehensive Plan for GIPME" (IOC-Technical Series No. 25) in preparation for the receipt of MARPOLMON data emerging from activities in the different regions.

(vii) Ad hoc Working Group on Analysis of Individual Components of Petroleum Hydrocarbons

In recognition of the increase in sophistication of methods to determine individual petroleum hydrocarbons in seawater, organisms and sediment, beyond the methodologies currently employed to screen water samples for dissolved dispersed petroleum hydrocarbons (described above), this ad hoc Working Group is addressing the problems of identification and quantification of individual hydrocarbons (and their degradation products). The approach adopted is similar to that reported for polychlorinated biphenyls in open-ocean waters (IOC Technical Series No. 26) and aims towards the production and revision of manuals describing adequate techniques for the determination of the components in organisms, sediments and seawater extracts.

Identification of individual organic pollutants is also essential before studies of effects of single groups of contaminants may be undertaken.

In addition to the activities of the GEMSI Ad hoc Working Groups, GEMSI has proposed the activities for study of open-ocean baselines within MARPOLMON as described under Agenda Item 5.5.

The Aide Memoire on consultations between the representatives of the Intergovernmental Oceanographic Commission (IOC) of Unesco and the United Nations Environment Programme (UNEP), Geneva, 16-17 January 1984, given as the Appendix to Document IOC/INF-564, states that:

*"The importance of adequate methods and their harmonization were recognized as essential for achieving an evaluation of the state of the marine environment on a regional and global basis and as an input to assessing the state of the health of the oceans. In this context it was agreed to co-operate on the development, testing and intercalibration of sampling and analytical methods, on their joint publication (e.g. in UNEP Reference Methods for Marine Pollution Studies Series and IOC Manual and Guides) and on their use in joint projects."*

GEMSI as a jointly sponsored body in the development of MARPOLMON is continuing to review and prepare manuals describing standard methods for us both within MARPOLMON and the UNEP Regional Seas Programme. Ideally, the Manuals on Methodology should cover all three main classes of pollutants, trace metals individual chlorinated hydrocarbons and individual petroleum hydrocarbons (in addition to simple class reaction methods) and their sampling and determination in seawater, sediment and biota phases.

However, some caution should be exercised before methods which have not been proven extensively and intercalibrated widely may be adopted. This has been shown to be particularly important in the case of determination of individual polychlorinated biphenyls in various marine phases; an example of the obstacles encountered to date may be taken from the information document (IOC Technical Series No. 26) with respect to seawater.