INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION

Reports of Meetings of Experts and Equivalent Bodies

JOINT CCOP-IOC WORKING GROUP ON POST-IDOE STUDIES IN EAST ASIAN TECTONICS AND RESOURCES

Tenth Session
Bandung, Indonesia, 29 November 1984

SC-85/WS/19

CCOP-IOC/SEATAR-X/3
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1. OPENING OF THE SESSION AND ADOPTION OF THE AGENDA

The Tenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asian Tectonics and Resources (SEATAR) was held in Bandung, Indonesia on 29 November 1984 under the chairmanship of Professor Dr. John Katili (Indonesia), CCOP's principal co-ordinator for SEATAR.

The Session was attended by representatives from the following Member States : Australia, Canada, China, France, Indonesia, Japan, Republic of Korea, Malaysia, Netherlands, Norway, Papua New Guinea, Philippines, Thailand, Union of Soviet Socialist Republics, United Kindom, and United States of America. Representatives of international organizations associated with SEATAR also attended the meeting (ESCAP, IUGS, IOC-WESTPAC). The List of Participants is given in Annex II.

The Agenda adopted is given in Annex I hereto.

2. REVIEW OF ACTIONS TAKEN BY THE PROJECT OFFICE AND IOC SINCE THE LAST SESSION

Project Office : As recommended by the Working Group at its Ninth Session (Kuala Lumpur, 11 November 1983) the Project Office made plans to hold a Transect Co-ordinators and Correspondents meeting just prior to the GEOSEA V Conference in Kuala Lumpur in April 1984. To that end it requested IOC to provide some funding for participation by the Transect Co-ordinators at the proposed meeting, since CCOP Project Office funds were not sufficient to cover such costs.

The IOC was not in a position to provide funds for this purpose and no other suitable financial arrangements could be made. Therefore plans to hold the meeting were postponed.

The Working Group, at its Ninth Session, also requested the Project Office to obtain information from Transect Co-ordinators and other concerned scientists on planned SEATAR research in the region. The Project Office accordingly requested the aforementioned individuals and organizations to provide details of such planned activities.

Details of a proposal to conduct integrated geophysical studies across the young margins of the South China Sea were received from Prof. Dennis E. Hayes of Lamont-Doherty Geological Observatory.

That proposal was brought to the attention of the Ninth Session of the Working Group which strongly endorsed it and requested the Project Office to give any assistance possible to help implement it. The Project Office therefore sent letters strongly endorsing the proposal to the coastal States concerned (China, Philippines and Vietnam) and requested them to seek approval from their relevant authorities to permit the work to proceed.

To date, the Philippines Bureau of Mines and Geosciences has strongly recommended to the Philippine Government that approval be given for the work to proceed.

In July, the Project Office received a recommendation from IOC to hold the postponed Transect Co-ordinators meeting in conjunction with the CCOP meeting in November/December 1984. IOC also indicated at that time that it would be able to provide some travel funds for participants.

Following discussions with Prof. Dr. John Katili and the IOC in Jakarta in September, the Project Office forwarded the proposed agenda for the Tenth Session of the Working Group to IOC, Paris, for approval. A request was also made at that time for advice on the level of funding that IOC could provide for participants, as well as a request for advice on whether IOC could provide or fund a full-time SEATAR Co-ordinator to be attached to the Project Office.

Funding for some of the Transect Co-ordinators to attend the meeting was subsequently provided by IOC, but the Project Office was advised that the question of the provision of a SEATAR Co-ordinator needed further consideration.

In November the Project Office issued a publication "Philippine Porphyry Copper Deposits : Geologic Setting and Characteristics" by Richard H. Sillitoe and Irineo M. Gappe Jr. That volume was the result of studies of Philippine porphyry copper deposits which had been recommended for implementation at the second SEATAR Workshop in Bandung in 1984.

IOC : The IOC Assistant Secretary in charge of the IOC Programme Group for WESTPAC informed the meeting that IOC has a major interest in SEATAR activities and will continue to co-operate with CCOP in this field. However, owing to recent budgetary constraints, IOC cannot at this stage provide a staff member to the CCOP Secretariat office in Bangkok. Assistance to participants in SEATAR Technical Group Meetings can be considered on an ad hoc basis. Such contributions could be mainly travel support to participants from developing countries.

Participants were reminded of the existence of the IOC International Oceanographic Data Exchange (IODE) programme and requested to make contributions of data wherever possible in order to facilitate development of a worldwide data base for the oceans. It was further indicated that IOC would make a full report on IODE activities to the 1985 SEATAR meeting.

Participants were reminded of the Recommendation of the IOC Programme Group for WESTPAC, at its Third Session (Townsville, Australia, 19-24 September 1983), that the IOC form a Group of Experts on Marine Geology and Geophysics in the Western Pacific. The SEATAR Working Group was asked to recommend possible candidates for this Group of Experts to the IOC Secretary, Dr. M. Ruivo.

The IOC Assistant Secretary for WESTPAC suggested that it was now timely to consider a revision of the SEATAR Terms of Reference in order to bring them more into line with recent developments in ocean affairs related to the New Ocean Regime and the Law of the Sea. It was therefore proposed that the 1985 SEATAR meeting be prepared to act on this matter and that, in the meantime, the IOC proposal for the revision should be circulated among CCOP Member States.

The proposal was circulated to all participants on 30 November 1984 as Document CCOP-IOC/SEATAR (X)/21. The proposed Terms of Reference, to be considered at the Eleventh Session of SEATAR, are attached on Annex III to the present Report.

The Joint Working Group indicated its disappointment that IOC would not immediately be able to provide a SEATAR Transect Co-ordinator, but hoped that assistance would be forthcoming in the near future.

A Meeting of SEATAR Transect Co-ordinators and Correspondents was held on 30 November 1984 to discuss matters related to compilation and synthesis of data along the transects.

3. REPORTS OF THE SEATAR ACTIVITIES DURING THE PAST YEAR

PAPUA NEW GUINEA

Transect IX : Dr. H.L. Davies (Australian Bureau of Mineral Resources) had compiled a major review of the transect which was available in draft form.

The Geological Survey of Papua New Guinea had commissioned a compilation of all relevant stratigraphic, structural, geochemical and tectonic data bearing on the petroleum potential of the Papuan Basin and southern Thailand Fold Belt, which were crossed by Transect IX. A significant number of new condensate and gas plays had been identified.

Petroleum exploration was proceeding in areas on or adjacent to the transect.

Geological mapping and mineral exploration were being undertaken along the transect by the Geological Survey of Papua New Guinea as part of its South Sepic Project. That project was scheduled for completion by the end of 1986.

Palaeomagnetic reconnaissance studies were carried out in western PNG in 1984 as a joint BMR/Geological Survey of PNG Project.

In 1985, an airborne geophysics project is to be sponsored and conducted by the government of the Federal Republic of Germany with some financial and manpower support from the Geological Survey of PNG.

Transect X : Much work had been done along with transect by the Australian Bureau of Mineral Resources and the Geological Survey of PNG.

On the northwestern segment of this transect, a 20-day research cruise was carried out in July 1984 in The New Ireland Basin, by Australia, New Zealand and USA. The offshore geology of Manus Island and New Ireland was re-examined by the Geological Survey of PNG and a report is being prepared.

An ESSO (PNG) Pty. Ltd. research geologist has completed a map and report outlining a revised interpretation of stratigraphy, structure, mineralization and tectonics
of the Gazelle Peninsula.

A co-operative study by the Australian Bureau of Mineral Resources, the Geological Survey of PNG and the University of Southern California of the Solomon Sea has been planned and will include seismic reflection and gravity studies offshore in conjunction with bottom sampling, as well as structural analyses of sedimentary units adjacent to the Ranu - Markham fault onshore.

A 23-day research cruise in the Manus Basin is planned by the R.V. MOANA WAVE for August 1985.

No recent geological work has been done on the east northeastern segment of this transect. However, an airborne geophysical survey of Bougainville Island is planned for 1985, to be followed by gravity and other ground studies in 1986 and 1987. Further geological mapping and mineral exploration are also planned on Bougainville, to commence in 1987.

In June 1984, a tripartite (Australia/New Zealand/USA) cruise by the USGS R.V. S.P. LEE was conducted in waters adjacent to the north of Bougainville.

On the west southwestern arm of the transect, a marine geological and geophysical research project has been conducted as a joint Japanese-Australian undertaking, with PNG participation and in consultation with CCOP(SOPAC). A summary of the structure and evolution of the southern Solomon Sea region has been prepared.

In July/August 1984 a research cruise was conducted in the west Woodlark Basin using M.V. TAPINI, by the Australian Bureau of Mineral Resources, the Geological Survey of PNG and the CCOP Project Office. Sparker and magnetic surveys were completed and a report has been prepared.

Regional mapping and mineralization studies of the Papuan Peninsula and Louisade Archipelago by the Geological Survey of Papua New Guinea are continuing. Fieldwork and sampling of part of the Mount Davidson Volcanics has commenced. The work will include mineralogical, geochemical and age-dating studies.

The proposed co-operative Australian Bureau of Mineral Resources/ Geological Survey of Papua New Guinea/University of Southern California project will also cover parts of this transect. Onshore work will include palaeomagnetic studies of parts of the Papuan Peninsula to elucidate microplate rotations during the past ten million years.

China

Although China has not officially taken part in SEATAR activities, it was interested in SEATAR work and had conducted surveys in the northern and central parts of the South China Sea, which was of relevance to SEATAR since it was near to the extensions of transects I, VII and V across the South China Sea. That work has included geological and geophysical surveys and data analyses, including multichannel seismic, gravity and magnetic surveys and sampling. Important conclusions were that the crust beneath the Pearl River mouth basin is less than 26 km thick and that the basin is situated on a transitional zone between continental and oceanic crust.

Japan

During 1984, geological and geophysical surveys have been conducted along the southern part of transect VI to add to those conducted onshore and offshore since 1973. Many studies have been completed on the Pacific side of the transect, including map compilation, drilling and other work.

A Japanese-French co-operative study of the geology of the trenches along the Japanese islands started in 1984, using the R.V. JEAN CHARCOT. Next year, dives will be made to the bottom of the trench by French and Japanese submersibles.

On the Japan Sea side of transect VI, surveys have been carried out since 1977, but more work was still required, particularly on the eastern continental margin of Korea.

On the Korean part of the transect, a geological structure analysis has been conducted jointly by KIER and the Geological Survey of Japan using remotely sensed data.

Future work includes continuation of the Japan/France co-operative studies, geological/geophysical research cruises and on-land investigations of the Cretaceous and Tertiary sedimentary basins in southwest Japan.

Korea

Recent investigations along the Korean section of transect VI have included interpretation of the geological structure of the Chunguam coal field in 1983 and 1984 by using aerial photographs.

Regional structural analyses of the transect area using LANDSAT imagery has been completed and published.

In the offshore area of Pahang and upper slope of the Ulneung Basin, bottom sampling by piston corer and grab sampler has been carried out.

Volcanic and granitic rocks of Cretaceous age in south and north Kyongsang Province were studied to clarify the nature of the crystallization and to elucidate the petrogenesis of the rocks, with special reference to global tectonic models. Strontium isotope analyses were carried out on approximately 30 samples.

Future work along the transect, particularly the marine segment in the Japan on Sea, would require outside assistance.

In the Yellow Sea, seismic and drill-hole data acquired by oil companies would be used to study the geological structure of that part of the transect.

Philippines

During 1984, a considerable amount of work was done in the Philippines along transect VI. That work included :

a) Studies of the geology and tectonics of porphyry copper deposits, conducted jointly with Dr. Richard Sillitoe, who was engaged as a consultant by the CCOP Project Office.

b) Studies on the Mindoro collision zone, conducted with Mr. Daniel Sarewitz of Cornell University.

c) Studies of the geology and metamorphism of the Caramoan basement complex, conducted with Mr. Edward Geary of Cornell University.

d) Studies on the Oligocene - Miocene section of the Angat ophiolite, conducted by Mr. Alfredo S. Zanoria of the B.M.G.

e) Palaeomagnetic studies in northern Luzon, central Philippines and Batangas province, in co-operation with the University of Southern California and the University of Tokyo.

Other work along transect V, or related to it, includes the following :

i) detailed surveys of ophiolites in Panay through a UNDP project.

ii) geological/geophysical/mineral resources surveys in Mindoro, as part of a co-operative Japan/Bureau of Mines and Geosciences project.

iii) completion of a report by Hawkins and Moore et. al. on the East Mindoro collision zone.

iv) publication by the CCOP Project Office of the volume on Philippines porphyry copper deposits, by Sillitoe and Gappe Jr.

A second volume is to follow which will be on aspects of tectonics and age distribution. That will be published when the results of petrographic and age determination by the British Geological Survey are completed.

Future activities planned include :

i) A symposium on ore-deposit modelling, planned for 1985 and dealing with mineral deposits in island arc settings, such as porphyry copper, chromite, massive sulphides and geothermal energy system.

ii) Co-operative work with Dr. Charles Blome (USGS) on Mesozoic palaeontology of the Augat Ophiolite.

iii) Palaeomagnetic studies of the Zambales ophiolite and in southern Leyte, Ambil and Lubang Islands, with Dr. Michael Fuller and Dr. Robert McCabe, respectively.

iv) Studies of the fracture zone in Mindanao.

v) Research cruiss in the Sulu Sea, on board the R.V. EXPLORER of the BMG.

Malaysia

In Malaysia, a National Committee for SEATAR has been formed, with representation by the Geological Survey of Malaysia, University of Malaya, University Kebangsan, University of Science, Malaysian Mining Corporation and Petronas. Two meetings have been held during 1984 to discuss work along transects III and VII.

Some papers related to those transects were presented at the GEOSEA V Conference (Kuala Lumpur, April 1984).

Activities along, or adjacent to, transect III have included exploration for precious and base metals in Pahang, age determination on the Kuantan granite and dolerite dykes and Quaternary geology studies along the west coast of peninsular Malaysia.

Future activities will include mapping of granite plutons in the Kuala Lumpur-Karak area and semi-detailed mapping of parts of the transect area. Radiometric dating of the Kuala Lumpur-Karak granites will be continued.

On transect VII, field exploration for lignite deposits in the Mukah-Balingian area and coal deposits near Bintulu is being undertaken.

Detailed geological mapping (1:5,000) of the Tanjung Mani-Roban area was started in 1984, and follow-up geochemical and ground geophysical exploration for Cu-Mo was being undertaken in the Bt. Nimong area.

Thailand

Work along transect I has included stratigraphic studies which have provided important biochronological data for correlation of Upper Paleozoic, Mesozoic and Cenozoic sequences. That work has been carried out in Loei province, in Chou Doeu, Phetchabun province, at Lampong and several other areas in north and northeastern Thailand.

Palaeomagnetic studies have been carried out on non-marine Mesozoic rock samples from a number of localities in northeastern Thailand. A clockwise rotation of northeastern Thailand after middle Cretaceous time is indicated by those studies.

Magneto-stratigraphic studies have been carried out on the Khorat Group Strata and have formed an important basis for correlation and age determination.

Studies of magmatic bodies in northern Thailand have been carried out, since that magmatic activity was directly related to the major economic mineral deposits of the country. The magmatic activity had produced significant plutons and flows; e.g., granites of various ages, calc-alkaline volcanic rocks, ultramafic rocks and basalts. Mineral deposits associated with that activity include tin, wolfram, antimony, fluorite and gold.

Systematic geological mapping on a scale of 1:50.000 has been carried out along parts of transect I, particularly an area of volcanic terrain in the Phetchabun area.

Geothermal and heat-flow studies have been carried out since 1977 in northern and northeastern Thailand.

Proposed future work along this transect will include palaeomagnetic studies, interpretation of satellite imagery, heat-flow studies, age-dating of granites and airborne geophysical studies.

Along transect II, work has continued on the southwest coast, as part of the DMR's offshore tin exploration project. That has produced a large amount of seismic and drilling data which would be very relevant to studies of Quaternary sedimentation offshore southwestern Thailand.

Some isotopic age dating of the granites on Phuket have also been carried out as part of a tin/wolfram mineralization study.

Indonesia

Three transects cross Indonesia: Nos. III, IV and VII.

Along transect III, work in the past year has been restricted to onland geological studies in Sumatra. It has been observed that the existence of microplates appeared to dominate the pre-Tertiary basement and that 90% of the oil production from the Sumatra area was associated with a major structure assemblage running through eastern Sumatra to northern peninsular Malaysia.

Along Transect IV - the Banda Arc- work has been carried out in the Makassar Strait as part of a joint French-Indonesian project (Corindon), by the R.V. CORIOLIS. All of the French data in the Banda Arc are expected to be published within 18 months.

Future work along Transect IV is expected to include further cruises by French research vessels and possibly a research cruise by a vessel from the Federal Republic of Germany.

Work along Transect VII has included aeromagnetic surveys in west Kalimantan, geophysical and geochemical studies in Java, several research cruises in the Java Sea and aeromagnetic surveys over the Sunda shelf. Pertamina has provided data from oil exploration activities in the Java Sea and those data are being compiled.

In Kalimantan, the joint Indonesian-Australian mapping project has continued, as well as gravity surveys. It was proposed that future work along this transect should include :

i) Gravity and magnetic surveys in Sarawak

ii) Seismic and magnetic surveys offshore Sarawak

iii) Basement studies in western Kalimantan

iv) Studies of granitic rocks along the transect and their mineralization.

4. REPORTS ON ACTIVITIES IN RELATED NON-SEATAR PROGRAMMES

The Working Group was informed of activities associated with the joint Indonesian - Dutch SNELLIUS II Expedition in eastern Indonesian waters, which covered the Transect IV area. SNELLIUS II was a multidisciplinary programme using the M.V. TVRO, which included geophysical and sampling. The geological and geophysical work was aimed at testing existing hypotheses on the origin of the Banda Sea, filling in data gaps left by previous expeditions and learning more about the mechanics and magnitudes of the tectonic and sedimentary process in the region studied.

Single-channel seismic, magnetic and gravity data were to be obtained, and extensive sampling of bottom sediments was planned, since these had not previously been extensively sampled. The hydrocarbon prospects of sediments in the region would be an important topic of study.

The French vessel R.V. CORIOLIS has conductd surveys in the Sunda Strait, including heat-flow measurements along previous refraction lines recorded in 1983. Seismicity studies have been made, with 10 seismic stations established around the Sunda Strait.

Studies of vertical land motions were also being carried out around the Sunda Strait and first results have been reported at a symposium in Jakarta in September 1984.

The Group was reminded by a USGS representative of the ongoing compilation of the seven 1:2,000,000 scale base maps of eastern Asia (see Document CCOP(X)/39). Although these bases are being prepared for the Basin Evaluation Programme, they may be equally useful for the final compilation of SEATAR data. This possibility would encourage the beneficial exchange of data between the two programmes.

The Working Group was also reminded that the ongoing IGCP project 220 was focussed on the resource evaluation of the tin/tungsten granites in southeast Asia and that its progress would be of interest to SEATAR.

The Working Group was informed that the studies of southeast Asian tin granites being carried out by the British Geological Survey would be continued. To date, work has been done in Indonesia and Malaysia, and it would be extended to Thailand next year. In Malaysia, the project has shown that it is possible to subdivide what had previously been depicted as large masses of granitoids into smaller manageable units by using petrographic criteria in the field. Efforts are at present being put into the identification of geochemical and other signatures to distinguish tin-related granitoids from the others.

Another project being carried out by the British Geological Survey is the Project on Precious and Associated Base - Metal Mineralization in Indonsia and Malaysia. During the last two years, work has been concentrated in Sumatra and the data would be compiled within the next six months.

The Working Group was informed that Australian scientists were active in the study of low-angle faults and their role in extensional continental mergui development and in convergent tectonic areas. Recent work world-wide indicates that low-angle faults (flat faults) are associated with disseminated gold and are important in hydrocarbon exploration studies, particularly during the rift phase. Data collected over deep structures normally attributed to academic studies of a region can become of immediate economic interest as the re-activation of primary lithospheric lines of weakness are exploited by secondary and tertiary tectonic overprints. The latest overprints are usually ones that contain the shallowest structures and are sites where economic structures are exploited. Long seismic records are required for such studies. For example, the USGS routinely records to 20 seconds two-way time and in Australia there is a plan to use recording lengths in excess of 12 seconds two-way time, even in oil province areas where, traditionally, recording has been only of 4 to 5 seconds two-way time. These examples show that lithospheric studies, once thought to be of long-term interest to oil and mineral exploration are now quickly being applied to intermediate and short-term exploration strategies.

The Working Group was informed of the newly acquired Australian Bureau of Mineral Resources seismic vessel RIG SEISMIC and its capabilities. The vessel will not work in the SEATAR region in the near future, but a seismic and geological survey planned for the last quarter of 1985 is expected to investigate structures that extend north from the Gulf of Papua in the western Coral Sea.

The Working Group noted that the First Session of the CCOP(SOPAC)-IOC Joint Working Group on South Pacific Tectonics and Resources (STAR) was held in Apia (Samoa), 2 November 1984, to plan a work programme, including surveys of potential Ocean Drilling sites and medium-range submersible dives.

5. PLANNED FUTURE RESEARCH CRUISES IN THE REGION

A proposed 60/65-day South China Sea marine field project was outlined by Dr. Dennis Hayes. This Lamont-Doherty Geological Observatory proposal was previously endorsed in principle at the Twentieth Session of CCOP. Since that time, a commitment of support from the NSF (USA) has been obtained that will allow the project to be implemented in mid-to-late 1985. The exact dates and details of the field programme are still under discussion, but will be decided in early 1985.

Recognizing the importance of this project to the overall objectives of the SEATAR programme, the joint CCOP-IOC Working Group Working on SEATAR strongly reconfirmed their earlier endorsement of the proposed South China Sea project.

The Working Group was informed that, as a follow-up to the Sunda Strait work being carried out by a French research vessel, deep submersible dives were planned in the area adjacent to the strait and in the Banda Sea.

In January 1985, the R.V. JEAN CHARCOT would carry out further surveys in the Sunda Strait to test the hypothesis of extension along the great Sumatra fault as far as the Sunda Strait. A 30-day multisensor geophysical cruise was planned.

Comprehensive onland seismotectonic surveys around Sunda Strait would also be continued as well as some *in situ* stress measurements in 1985.

A joint Japanese-French co-operative study of the trenches around Japan was planned to commence in 1985.

Deep submersible work was to be conducted in the Marianas/Bonin area in January - March 1986.

The Group was informed that the USGS had submitted to the CCOP Project Office an initial draft of a proposal for cruises totalling about 90 days in the SEATAR region. It was proposed that the R.V. S.P. LEE undertake marine geological and geophysical investigations for about 60 days in the southwestern part of the South China Sea and for about 30 days in the Andaman Sea. The principal objective in both areas would be to assess the potential for hydrocarbon resources. The USGS would greatly appreciate receiving endorsement and/or comments on these drafts from the countries involved and from the Project Office, before submitting the final proposals to appropriate funding agencies for consideration.

The Representative of the U.K. informed the Working Group that a cruise of the R.V. CHARLES DARWIN was being planned for the Pacific in 1988 and that some work in Indonesian waters could be included.

The Representative of the USSR informed the Working Group that the USSR research vessels PEGAS and MARINE GEOPHYSICISTS have carried out geophysical surveys and dredging in the areas covered by some polygons close to the Ninety East Ridge. The data obtained are currently being processed and interpreted and would be published and made available to the concerned SEATAR organizations (IOC and CCOP).

A programme of new geological/geophysical expeditions by the specialized research vessels of the USSR Academy of Sciences is in preparation. These expeditions will be directed to studies of the fundamental problems of the geology of the oceans and continental margins. At the request of CCOP member countries, such research work could be undertaken along the SEATAR transects.

The Working Group was informed that the Hawaii Institute of Geophysics (HIG) could run cruises in the region if good programmes were put forward, and would be interested in using their submersibles in the region.

The Working Group recommended that CCOP Project Office approach HIG to find out the capabilities of the submersibles and try to develop, through SEATAR, a programme of work in the area which could be conducted by HIG.

6. POSSIBLE OCEAN DRILLING SITE SURVEYS IN THE SEATAR REGION

Dr. Dennis Hayes (USA-LDGO) who is a member of the Planning Committee of the Ocean Drilling Programme reported on the status of the ODP. The new ship for the programme, SEDCO 472, has been renamed D.V. JOIDES RESOLUTION, and is currently being outfitted. It will carry about 26,000 ft of tapered drill-pipe, have space for 50 scientists, and will be able to set casing. All drill holes will be logged and completely sampled. A 10-year programme is envisioned; the ship will circumnavigate the world in 5 years. Work in the CCOP area will probably be carried out in 1988, with a period of 4 to 6 months in Southeast Asia.

The Indian Ocean Panel (Joe Curray, Chairman) considers sites west of the Malay Peninsula and west and south of Indonesia. The Western Pacific Panel (Eli Silver, Chairman) covers most of the CCOP area. The Western Pacific Panel has already received many suggestions of locations for drill holes in the CCOP area. Further suggestions (informal letters citing scientific reasons for drilling particular targets) are welcome, and should be sent to the appropriate regional panel: to Eli Silver, or to Joe Curray.

The Western Pacific Panel will meet in Honolulu in January to review existing site nominations. Dr. Hayes will send a copy of their minutes to the CCOP Office for further distribution. Dr. John Katili proposed to hold an informal meeting of interested persons in the spring of 1985 to discuss proposed drill sites.

7. DATES, PLACE AND AGENDA FOR THE ELEVENTH SESSION OF THE WORKING GROUP

The Working Group decided that the Eleventh Session would be held in conjunction with the 22nd annual Session of CCOP. The venue was Guangzhou, China, and the dates would be announced in due course. The agenda for the Session would be prepared by the CCOP Project Office, in consultation with IOC and would be sent to all potential participants for their comment prior to the Session.

8. OTHER MATTERS

The CCOP Project Office again raised the problem of co-ordination of SEATAR activities. Since Project Office staff were committed virtually full-time to many other activities, the time available to them for SEATAR matters would be totally insufficient for the work which needed to be done during the next two years. Provision of a SEATAR scientist full-time or half-time to the Project Office to handle SEATAR matters, particularly the preparation of transect syntheses and the planning and organization of the proposed review and planning workshop for 1986 was therefore essential and urgent. *

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* The Working Group agreed to consider this matter further and discuss it at the Transect Co-ordinators Meeting on 30 November 1984.

The Working Group also met briefly on 5 December 1984, to consider the Report and Recommendations of the Transect Co-ordinators meeting and the ad hoc meeting on uniform SEATAR transect data presentation.

The Working Group endorsed the Recommendations of these two meetings and urged the CCOP Project Office to take appropriate action to implement those Recommendations at the earliest possible date.(Annex IV)

9. ADOPTION OF THE REPORT AND CLOSURE OF THE SESSION

The Working Group adopted the Summary Report of its Tenth Session on 5 December 1984, and this supplementary meeting was then closed by the Chairman of CCOP, Mr. H.M.S. Hartono.

ANNEX I

AGENDA

1. OPENING OF SESSION AND ADOPTION OF AGENDA
2. REVIEW OF ACTIONS TAKEN BY THE PROJECT OFFICE AND IOC SINCE THE LAST SESSION
3. BRIEF COUNTRY REPORTS OF SEATAR ACTIVITIES DURING PAST YEAR
4. REPORTS ON ACTIVITIES IN RELATED NON-SEATAR PROGRAMMES
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8. OTHER MATTERS
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ANNEX II

LIST OF PARTICIPANTS

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Dr. George G. Shor Jr.
Mr. Maurice J. Terman
Mr. Otis E. Avery
Mr. Roger W. Bowen
Mr. William Rucker Greenwood
Prof. D.E. Hayes

ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC/ESCAP

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ANNEX III

PROPOSED SEATAR TERMS OF REFERENCE
FOR CONSIDERATION AT 1985 MEETING

1. To act as joint mechanism for co-operation between CCOP and IOC Programme Group for the Western Pacific (WESTPAC) in the field of marine geoscience, tectonics and resources.

2. To promote and co-ordinate the implementation of agreed projects with particular attention to those parts of the IOC-UN(OETB) programme of Ocean Science in Relation to Non-Living Resources relevant to the CCOP and IOC (WESTPAC).

3. To evaluate and assess the results of projects contained in the programme of research as they become available.

4. To ensure the continued updating of the programme of research in the light of the above-mentioned evaluation and assessment.

5. To facilitate exchange of data collected, with due attention to the mechanism available in the IODE, and to ensure dissemination of the scientific results.

6. To assess the scientific needs of the participating States in the region on a continental basis.

7. To provide advice to participating States on the development of their capabilities and facilities for the projects, with due attention to the guidance available from the IOC Working Committee for Training, Education and Mutual Assistance in the Marine Sciences (TEMA).

ANNEX IV

REPORT OF THE SEATAR TRANSECT CO-ORDINATORS MEETING 30 NOVEMBER 1984, BANDUNG, INDONESIA)

A meeting of the SEATAR Transect Co-ordinators and Correspondents was held at Bandung, Indonesia, on 30 November 1984, under the chairmanship of Dr. George Shor of the Scripps Institution of Oceanography. The following agenda was adopted:

Agenda:

1) Detailed reporting of past and future SEATAR investigations.

2) Discussion of formats for final compilation of existing data along Transects.

3) Timing, venue, agenda, funding and participants for proposed 1985 Workshop on SEATAR Transect Studies.

1. Detailed reporting of past and future SEATAR investigations

Transect Co-ordinators and Correspondents gave detailed reports of the work carried out along the Transects to date and particularly since the last SEATAR Workshop, which was held in 1978. Most of the reports were circulated for the information of participants and summaries of the work done are included in the report of the 10th Session of SEATAR.

2. Discussion of Formats for Final Compilation of Existing Data Along Transects

The Meeting agreed that final compilation/synthesis of data along the SEATAR Transects would be undertaken with the aim of presenting results at a Workshop to be held during the Circum-Pacific Conference in Singapore in August 1986.

The meeting convened an ad hoc group to consider formats, etc., and their report and recommendations form Attachment 1 to this report.

It was pointed out by the Representative of the Circum-Pacific Council that if a SEATAR meeting was to be held at the August 1986 Circum-Pacific Conference at Singapore, then prompt action would need to be taken by the SEATAR Group. He recommended that a letter should be prepared by the CCOP Project Office to be forwarded to the Conference organizers indicating what the aims of the SEATAR meeting were, some details of the type of papers to be presented, availability of copies for distribution, details of proposed poster sessions and the proposed follow-up Session to evaluate results and formulate plans for the future.

3. Proposed Meeting of Transect Co-ordinators in 1985

The Transect Co-ordinators agreed that there was a need to hold a meeting in 1985 in conjunction with the Eleventh CCCOP-IOC/SEATAR Working Group Session and that it should be attended by Transect Co-ordinators as well as other key people involved in SEATAR studies. The main aim of that meeting was to be a review of progress of the Transect compilations to that time and to recommend work to be done to finalize the compilations in time for the August 1986 Circum-Pacific Conference.

4. Recommendations regarding items 2) and 3)

The Transet Co-ordinators urged that:

i) A SEATAR Co-ordinator, approximately half-time, be selected promptly to assist the Transect Co-ordinators and individual scientific investigators in preparing transect reports, to gather existing data and reports, to prepare syntheses or find persons who will, for each Transect, and to make sure that reports are prepared on schedule.

ii) That the CCOP Project Office, IOC and the participating Delegations be asked to seek joint funding for honorarium, travel and support expenses for the SEATAR Co-ordinator.

iii) A working meeting of Transect Co-ordinators be held just prior to the 1985 CCOP meeting.

iv) That the Circum-Pacific Conference organizers be asked to provide facilities at their conference in Singapore in August 1986, for the following:

   a) Poster sessions on SEATAR Transect results.

   b) A meeting after the scientific sessions to discuss the Transect sytheses, plans for their publication and for future SEATAR work.

Those who could present formal papers to the Circum-Pacific Conference on transect work should be encouraged to submit them to the conference organizing committee in the normal manner, for inclusion in the conference proceedings.

ATTACHMENT I

REPORT OF AD HOC GROUP ON UNIFORM SEATAR TRANSECT DATA PRESENTATION

Summary

An ad hoc Panel met after the SEATAR Transect Co-ordinators meeting on 30 November 1984, at the request of that meeting. Its purpose was to cnsider and give recommendations on uniform formats for compilation and synthesis of data along the SEATAR Transects.

Recommendations

The ad hoc meeting made the following recommendations.

1. Standard scales, projections, formats and symbols are required for Transect maps, sections and profiles. Written contributions summarizing Transect data should be compiled by Transect Co-ordinators in a predetermined format.

2. Three essential products are required for each Transect. These are:

   i) Cross-sections/profiles

   ii) Strip maps

   iii) A summary report.

3. The cross-section/profile sheet should contain the information itemised below at the scales indicated for a 1:1,000,000 compilation. Cross-sections and profiles should be at a horizontal (lateral) scale of 1:1,000,000 or integral multiples of 1:1,000,000 so that Transect data can be displayed on no more than two sheets not exceeding 1 metre in the profile- parallel dimension. If possible, smaller profiles should be displayed on a single sheet.

4. Detailed considerations: Profiles and Sections

Profiles and sections should be stacked in the following order, which is the same order as that used in Figure 63 in CCOPO/TP 7a.

   i) Heat Flow: 20 MW M^{-1}/cm at a scale of 1:1,000,000. HFU could also be shown on the profile's right hand side scale.

ii) Gravity: 20 mgals/cm at a 1:1,000,000 scale. Free air data should be shown over marine areas and Bouguer data over land areas.

iii) Magnetics: 40 nT/cm at 1:1,000,000 scale.

Note: Scales for the above geophysical profiles will have to be adjusted in a consistent manner if integral multiples of 1:1,000,000 scale are used for sections iv), v) and vi).

iv) Geology/seismic section at a vertical exageration (VE) of 10:1. The Section should show surface geology projected to shallow depths and seismic velocity distributions on both land and in oceanic aras, to Mohorovicic discontinuity depths.

v) Geological interpretation/tectonic elements: along the same topographic/bathymetric profile shown in iv) and at a vertical exaggeration (VE) of 10:1. This should also show mineral deposits, occurrences and mineralization types for each tectonic element.

vi) Seismicity/topography/crust-upper mantle structure/volcanic features. Should be shown at a natural scale (no vertical exageration), but deep seismicity (say deeper than 250 km) may have to be indicated off-scale.

5. Detailed Consideration: Maps

For all Transects, strip maps should be produced.

As a general guide, Transects may have a nominal width of 200 km, but the final choice of strip width should be decided in consultation with the co-ordinator of co-ordinators, taking into account the distribution, quantity and quality of data in directions orthogonal to the transect. Maps should be at the same integral multiple of 1:1,000,000 scale chosen for sections/profile sheet(s).

The following maps, using a scale of 1:1,000,000, are essential:

i) topography/bathymetry
ii) surface geology
iii) gravity (Bouguer/Free air as appropriate)
iv) magnetics (contours or lineations)
v) heat flow in mW/m
vi) tectonic terranes
vii) metallogenic/mineral deposits-occurrences superimposed on simplified geological/tectonic map.

There should also be one or more maps showing data distribution and reliability, particularly ship tracks, magnetic/gravity/heat-flow data locations, areas geological mapping, areas covered by air photographs, LANDSAT, SLAR, etc.

6. Detailed considerations: Written synthesis report.

Transect Co-ordinators should compile a summary report for their Transect which may have contributions from experts in specialist areas such as geophysics or mineralization where appropriate. As a general guide, such synthesis reports could be of 30-40 manuscript pages.

Reports should conform to the following structure:

i) Introduction - location of Transect, amount of data available, access, special problems.

ii) Tectonic setting

iii) Principal geological/geophysical units

iv) Known and potential resources

v) Resources/tectonics relations

vi) Linkage of Transect with surrounding areas

vii) Problems

viii) Further work

ix) Reference

x) Appendix or appendices should list sources of geophysical/geochemical/geochronological data and any bibliographic works pertaining to the Transect.

It should be emphasized that this appendix should not tabulate actual data nor should it contain an exhaustive bibliography. Transect Co-ordinators should investigate the possibilities of compiling raw data and exhaustive bibiographic data on floppy disk or microfiche.

Other specialized Transect studies and compilations are encouraged but should be reported as separate contributions, additional to the synthesis.

Members of the Group

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J.R.E. Harger
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