Intergovernmental Oceanographic Commission
Reports of Meetings of Experts and Equivalent Bodies

Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources (STAR)

Third Session

Rarotonga, Cook Islands, 2-3 September 1986

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CCOP-IOC/STAR-III/3
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In this Series

Reports of Meetings of Experts and Equivalent Bodies, which was initiated in 1984, the reports of the following meetings have already been issued:

- Third Meeting of the Central Editorial Board for the Geological/ Geophysical Atlases of the Atlantic and Pacific Oceans
- Fourth Meeting of the Central Editorial Board for the Geological/ Geophysical Atlases of the Atlantic and Pacific Oceans
- Fourth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of «El Niño»
- First Session of the IOC-FAO Guiding Group of Experts on the Programme of Ocean Science in relation to Living Resources
- First Session of the IOC-UN(OETB) Guiding Group of Experts on the Programme of Ocean Science in relation to Non-Living Resources
- First Session of the Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
- First Session of the Joint CCOP (SOPAC)-IOC Working Group on South Pacific Tectonics and Resources
- First Session of the IODE Group of Experts on Marine Information Management
- Tenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies in East Asian Testonics and Resources
- Sixth Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
- First Session of the IOC Consultative Group on Ocean Mapping
- Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ships-of-Opportunity Programmes
- Second Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
- Third Session of the Group of Experts on Format Development of the Working Committee on International Oceanographic Data Exchange
- Eleventh Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of South-East Asian Tectonics and Resources
- Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
- Seventh Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
- Second Session of the IOC Group of Experts on Effects of Pollutants
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1. OPENING OF THE SESSION

The Chairman, Dr. Charles Helsley, called the Third Session of the Joint CCOP/SOPAC - IOC Working Group on South Pacific Tectonics and Resources (STAR-III)+ to order at 1400 hours on Tuesday, 2 September 1986, in the Te Marae Room of the Rarotongan Hotel, Rarotonga, Cook Islands. He welcomed the Delegates and Observers from Member Countries of CCOP/SOPAC and Member States of the IOC, as well as Representatives of UN Agencies and Observers from regional project groups (the List of Participants is given in Annex III).

The Chairman reminded the Joint Working Group that STAR is a body that has two parents: IOC and CCOP/SOPAC. As such, the responsibility of the Joint Working Group is to formulate and assist in the implementation of a scientific research programme under the general guidelines of IOC, but addressing needs of the SOPAC region. The Chairman also stressed the need for close interaction between SOPAC member countries and scientists interested in the region in the formulation of these plans.

The Assistant Secretary of the IOC, Dr. Kazuhiro Kitazawa, acting as the IOC Technical Secretary for the Session, welcomed participants on behalf of the Secretary of the IOC, and thanked the Government of the Cook Islands for hosting the Session, and the Scientific Research Department of the Prime Minister's Office of the Cook Islands for the local organization.

2. ADOPTION OF THE AGENDA

The Chairman introduced the Provisional Agenda. The Joint Working Group, after agreeing to some amendments, adopted the Agenda. (Annex I).

Mr. Frisbee Campbell, of the Hawaii Institute of Geophysics (USA), accepted the invitation to serve as Rapporteur for the Session.

3. REVIEW OF THE INTERSESSIONAL ACTIVITIES OF IOC

The Assistant Secretary of the IOC informed the Joint Working Group that the Summary Report of the Second Session of the Joint CCOP/SOPAC - IOC Working Group on South Pacific Tectonics and Resources (STAR-II), held in Honiara, Solomon Islands from 10 to 12 September 1985, was submitted to the Nineteenth Session of the IOC Executive Council in Paris from 6 to 12 March 1986. The Executive

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+ A list of Acronyms is given in Annex VI.

Council accepted the Summary Report and thanked the Technical Secretariat of CCOP/SOPAC for having organized the Session. The Council welcomed the evidence of the vigorous activity of the study groups established by STAR to advance its programme. He also informed the Joint Working Group that the Summary Report of the CCOP/SOPAC-IOC-IFREMER-ORSTOM Workshop on the Use of Submersibles and Remotely Operated Vehicles in the South Pacific, (Suva, Fiji, 24 to 29 September 1985) was submitted to the same Session of the Executive Council. The Executive Council welcomed the report of the Workshop, and thanked the co-sponsors, CCOP/SOPAC, IFREMER and ORSTOM for their support of this Workshop. It believed that the use of submersibles and remotely operated vehicles would continue to be a very important tool in a variety of marine scientific contexts, and called on the Joint Working Group to continue to study these developments and advise the Commission on training needs and opportunities in the application of these devices. The Executive Council instructed the Secretary of the IOC to maintain and develop co-operative programmes with CCOP/SOPAC related to scientific and technical matters, particularly studies of non-living resources, and the use of manned submersibles and remotely operated vehicles.

Regarding training opportunities for scientists of the STAR region, the Assistant Secretary reported that IOC supported participation of scientists from Fiji and China in the 12th International Sedimentology Congress held in Canberra, Australia from 24 to 30 August 1985. He regretted that no applications were received for on-board training on oceanographic cruises and for training courses on oceanographic data management, although these were announced through IOC Circular Letters to Member States in the region and to the CCOP/SOPAC Technical Secretariat.

4. REVIEW OF INTERSESSIONAL ACTIVITIES OF CCOP/SOPAC

During the reporting period, CCOP/SOPAC's newly appointed Director, Mr. Jorgi Kotovalabu, assumed his duties, and arrangements were made for the Technical Secretariat to occupy new quarters.

The CCOP/SOPAC Technical Secretariat has been funded for US $3 million for the UNDP Fourth-Cycle Period 1987-1991. CCOP/SOPAC has also been assigned 5 million ECU's in EEC regional aid funds for the 1986 to 1991 period, and Australia provided a special contribution of $30,000 for 1985/1986.

Nine short-term consultants were contracted during the past year for various tasks of the Technical Secretariat. The regular staff numbered 22 during the year.

A special CCOP/SOPAC Session was held in June 1986 to give guidance on the five-year programme. Technical training and fellowships to first-degree level were emphasized as priority requirements.

Thirty-four projects were completed; twenty-one have reports pending; twenty seven are in progress; and five have been rescheduled.

A Microvax II computer contributed to CCOP/SOPAC by France is being programmed for data management, mapping and other purposes.

Training activities included the Earth Science and Marine Geology Course, the 4th Coastal Mapping Workshop, participation in work on Survey Vessels, conferences and special courses.

During the year, 19 Technical Reports, 6 Cruise Reports, 2 South Pacific Marine Geological Notes, 14th Session Proceedings, 2 Training Reports and 8 Miscellaneous Reports were published.

5. REVIEW OF ON-GOING STAR ACTIVITIES

5.1 FOLLOW-UP OF THE STAR WORKSHOP ON THE USE OF SUBMERSIBLES AND REMOTELY OPERATED VEHICLES IN THE SOUTH PACIFIC

Dr. Bernard Biju-Duval (France), the Chairman of the CCOP/SOPAC-IOC-IFREMER-ORSTOM Workshop on the Use of Submersibles and Remotely Operated Vehicles in the South Pacific, reported on the Workshop held in Suva, Fiji from 24 to 29 September 1985. The Workshop was attended by 72 participants from 13 countries (Australia, China, Cook Islands, Fiji, France, Kiribati, Japan, New Zealand, Solomon Islands, Tonga, Tuvalu, United Kingdom, United States of America).

The Summary Report was printed by IOC as IOC Workshop Report No. 39, which was distributed to all participants, IOC Member States, and CCOP/SOPAC Member Countries. The main objectives of the Workshop were to:

(i) help to determine the feasibility of using manned submersibles and remotely operated vehicles (ROVs) in South Pacific geological and geophysical exploration;

(ii) develop guidelines for their use in mineral resource assessment, resource management and engineering studies;

(iii) identify appropriate technologies and target areas for their use in the South Pacific region;

(iv) encourage the establishment of international co-operative programmes for their use in the region.

The first part of the Workshop was devoted to short presentations on:

(i) capabilities of the submersibles and reviews of national programmes;

(ii) aspects of south-west Pacific marine geology;

(iii) advances in technology, recent results and new strategies;

(iv) applications of manned submersibles and remotely operated vehicles to specific geological problems in the South Pacific.

The second part of the Workshop was the occasion for four Sessional Working Groups to discuss the development of new projects and future activities using submersibles and remotely operated vehicles. The four Groups were as follows:

A. Tectonics, Magmagenesis, Volcanic Processes, and Metallogenesis.

B. Exploration for Hydrocarbons in Southwest Pacific Island Arcs.

C. Geohazards and Engineering Geology.

D. Seabed Processes and Environments.

The Workshop recognized the importance of acquisition of detailed information, such as photographic/televideo images of the sea bottom, as well as acoustical, geophysical and geological data, to facilitate targeted research with the use of submersibles and ROVs adequately and safely. The Workshop felt it necessary to establish close linkages with related international research programmes such as the Ocean Drilling Programme (ODP) and relevant IGCP and IOC programmes. The Workshop noted that marine geological/ geophysical studies with submersibles and ROVs are often carried out as interdisciplinary studies together with marine biological studies.

The Workshop noted that the CCOP/SOPAC Technical Secretariat has a co-ordination role in the South Pacific. It felt that the use of submersibles and ROVs should be included as a part of research programmes to be implemented in the region, and be co-ordinated by CCOP/SOPAC Technical Secretariat, if necessary, to avoid duplication of effort.

The Workshop noted that adequate training is necessary for scientists and technicians from the region to acquaint them with techniques and the usefulness of submersibles and ROVs for marine scientific research. It recommended that such training opportunities be a component of all proposed programmes.

The final recommendations of the Workshop are shown in the IOC Workshop Report No. 39 which has been widely distributed. The Joint Working Group accepted the Chairman's report and expressed its appreciation to Dr. Bernard Biju-Duval for having chaired a very successful and interesting Workshop.

The Joint Working Group agreed with the recommendation in the Summary Report of the Workshop and adopted Resolution STAR-III.1+ to create a STAR Study Group on the Use of Submersibles and Remotely Operated Vehicles, and invited Dr. Biju-Duval to be its Chairman.

5.2 REPORTS OF THE STAR STUDY GROUPS

The Chairman of the Joint Working Group requested the Chairman of each Study Group to report to the Joint Working Group on his Study Group's intersessional activities. These reports are given and discussed in the follow-up sections 5.2.1 to 5.2.8. The membership of each STAR Study Group is given in Annex IV hereto.

5.2.1 Ocean Drilling

In the absence of the Study Group's Chairman, Dr. Jacques Recy (France) accepted the invitation to chair the discussion on this Study Group's activities. However, the Study Group Chairman (Dr. Keith Crook) prepared a written submission which has been drawn on in this report.

During the past year the Ocean Drilling Programme's scientific panels and Planning Committee have been drawing up a plan for western Pacific drilling, mainly on the basis of proposals received during 1985.

As at 21 June 1986, the Western Pacific Panel's 9-leg drilling programme - which may be modified before final adoption by the ODP Planning Committee - includes drilling legs in the following areas within the south-west Pacific region: Great Barrier Reef (Ranking: 6); Lau Basin (Ranking: 8); Vanuatu (Ranking: 9).

+ The Joint Working Group's Resolutions and Recommendations are given in Annex II.

The Acting Chairman (Jacques Recy) reported that there has been some recent change in the membership of the Western Pacific Panel, and that there will be several new members at the next meeting. The recent voting on the Western Pacific Panel, which is the key panel for programme formulation, has been very close as regards the last five ranked proposals, which includes all three south-west Pacific proposals. The present situation, which places three south-west Pacific legs in the 9-leg programme, is a good result for the region, but we must realise that a slight change in voting could have a strong influence on the ranking. Therefore, all STAR scientists need to defend strongly the scientific importance of the south-west Pacific proposals before, and on behalf of, the entire scientific community. The Study Group was disappointed that the recommendations of the ODP Tectonic Panel concerning the high priority of collision zones in the south-west Pacific were not taken more into account by the Western Pacific Panel.

Australia is now considering joining ODP in partnership with Canada. This move should be supported as it would increase scientific input to the programme, and strengthen regional input to the ODP panels. Should Australia join, it should produce co-ordinated proposals in conjunction with other scientists working in the region.

More scientists with a deep knowledge of the region need to be added to ODP panels, and especially to the Western Pacific Panel. To this end, STAR should put a case to the Planning Committee.

A greater focus of the world scientific community on the south-west Pacific is needed. The best way to obtain this might be to set up a South-west Pacific Panel or a Working Group within the Western Pacific Panel, which would arrange a regional workshop as a matter of urgency. The Chairman of STAR should write to the Chairman of the Western Pacific Panel with this suggestion.

The Joint Working Group adopted Recommendation STAR-III.1, with a view to encouraging more drilling in the South Pacific. The officers of STAR were requested to correspond with the Chairman of the ODP Planning Committee to ensure that additional scientists with a regional interest be added to ODP panels, and that a South-west Pacific Panel or Working Group be established. The Joint Working Group considered that regional interests would be better served if Australia joined ODP.

5.2.2. Age Dating

The Chairman of the Age-Dating Study Group reported that the age-dating compilation work is nearing completion and that dates are now available for many central Pacific seamounts. Most of these are 0 to 30 million years. The total number of dates available is 362. Cenozoic-age island groups which have been dated include: Austral-Cook, Tuamotu, Caroline, Guadalupe, Louisville, Kodiak-Bowie, Samoa, Line Cross Trend, Marqueses, Society, Gambier and Hawaii-Emperor. Mesozoic-age (67-110 m.y.) seamount/island groups include, the Marshalls, Line Islands, S.W. Hawaiian and Musician Seamount Groups.

The island groups in most need of additional work include, Ellice, Phoenix, Gilbert and those in the western Pacific island arcs.

New data recently published include dates from the Austral-Cook, Bonin, Caroline, Samoa, Line, S.W. Hawaiian and Musician seamounts. A total of 116 ages are now available.

Current unpublished results received include studies from Fiji and additional studies concentrated on the Mariana Island region.

Roughly 10 rocks from the Tuvalu-Kiribati region were collected during the cruise this past year. However, it is unlikely that more than 1 date will result from this sampling. The Regional Mineral Resources Development Centre (RMRDC) Project to establish an Age-Dating Network in the ESCAP region is now being reviewed and evaluated; the compilation will be made available to CCOP/SOPAC in due course, and will be included in the final report of the Study Group.

Study Group members of the Joint Working Group were requested to provide new age data directly to the Study Group Chairman, Dr. Barbara Keating, to enable her to assemble all ages for the region into a final report of the Study Group.

The Joint Working Group adopted Recommendation STAR-III.2.

5.2.3. Tectonics

The STAR Tectonics Study Group met at the Rarotongan Hotel, Cook Islands, on September 3, 1986, preceeding the 15th Session of CCOP/SOPAC. The following work was reported in the south-west Pacific since the Study Group meeting in September 1985.

(i) HIG-Tripartite Programme on R.V. MOANA WAVE

(a) November 1985 - January 1986 (Chief Scientists: Brian Taylor and Keith Crook). The triple junction area of the Woodlark Rift - South Solomon Islands, and the southern part of the Manus Basin, PNG, were studied using SeaMARC II.

(b) February - March 1986 (Chief Scientists: Barbara Keating and Barris Bolton). Geophysical surveys and dredge stations for cobalt-enriched manganese crusts and manganese nodules were occupied in the Gilbert and Phoenix Islands groups of Kiribati.

(ii) Scripps Institution of Oceanography: Papatua Expedition on the R.V. THOMAS WASHINGTON

(a) Papatua III, November - December 1985 (Chief Scientist: Jacqueline Mammerickx). SeaBEAM and magnetic data were collected from Mexico to Manahiki Plateau.

(b) Papatua IV, January 1986 (Chief Scientist: Jim Hawkins). Pago Pago, American Samoa to Nukú alofa, Tonga including Lau Basin, using SeaBEAM, magnetics, and dredging.

(c) Papatua V, January - February 1986 (Chief Scientist: Harmon Craig). A search was made for active hydrothermal vents by looking for methane and helium anomalies between Tongatapu and Auckland. A SeaBEAM survey to locate structural trends and spreading ridges in the southern Lau Basin and Havre Trough, funded by New Zealand, was also undertaken.

(d) Papatua VI, February - March 1986 (Chief Scientist: Harmon Craig). Hydrothermal activity was studied and axial basalts and volcanic gases were sampled from Auckland, New Zealand, through the South Fiji, North Fiji and Woodlark Basins into the Manus Basin.

(iii) IFREMER/ORSTOM SEAPSO Programme on R.V. JEAN CHARCOT

(a) Leg 1, October - November 1985 (Chief Scientist: J. Daniel). Collisions of aseismic ridges were studied at: (1) Loyalty Ridge - New Hebrides Arc (incipient collision); and (2) D'Entrecasteaux Ridge - New Hebrides Arc (orthogonal collision).

(b) Leg 2, November 1985 (Chief Scientist: J. Recy). Tectonics of the Coriolis and Vot Tande extensional basins were studied in the New Hebrides Arc.

(c) Leg 3, December 1985 (Chief Scientist: J. Auzende and J.P. Eissen). Ridge and hydrothermal activity were studied in the North Fiji Basin.

(d) Leg 4, December 1985 - January 1986 (Chief Scientist: J.P. Foucher). Hydrothermal activity and spreading processes were studied in Lau Basin.

(e) Leg 5, January 1986 (Chief Scientist: B. Pontoise). Oblique collision of the Louisville Ridge-Tonga Arc was studied and seamounts east of Tonga, discovered using Seasat data, were verified.

(iv) NZOI Tripartite II Programme Using H.M.N.Z.S. TUI

April - May 1986 (Chief Scientists: Geoff Glasby and Maurice Meyland). Manahiki Plateau, Penrhyn Basin, Machias Seamount, Capricorn Seamount and Niue area were sampled for cobalt crusts and manganese nodules.

(v) ORSTOM-University of Texas EVA XIII Programme on R.V. CORIOLIS

August - September 1986 (Chief Scientist: Remy Louat). Seismicity was studied using OBSs in northern New Hebrides. Seismic refraction profiling, using OBSs, was undertaken in the back-arc troughs of Vanuatu.

Work recommended by the Tectonics Study Group at the Second Session of STAR (Honiara, Solomon Islands, 12 September 1985) has been implemented as follows:

- A CCOP/SOPAC Tectonic Elements Chart of the SW Pacific has been completed.

- Investigations of back-arc basins in the SW Pacific have been initiated.

- A new programme to study back-arc basins in the SW Pacific using ROVs and submersibles is in the planning stage.

- A SeaBEAM survey in the Havre Trough has been undertaken on the R.V. THOMAS WASHINGTON.

- A proposal to compile geological and geophysical data on the Micronesian Trench has been submitted to the U.S. National Science Foundation and is under consideration.

- A survey of the Woodlark-Solomon Islands triple junction using SeaMARC II on the R.V. MOANA WAVE has been completed.

At an ODP workshop on drilling objectives in the South Pacific and Southern Ocean, convened at the University of Florida, Gainsville, Florida, proposals were presented for drilling on the Ontong Java and Manihiki Plateaus, in the Nauru Basin, and along the new Micronesian Trench.

An informal meeting of the Tectonics Study Group was convened in Singapore on 19 August 1986 with the participation of some marine geologists and geophysicists taking part in the Fourth Circum-Pacific Energy and Mineral Resources Conference. It was noted that several proposals submitted to ODP to investigate tectonic processes in the Solomon Islands and Vanuatu areas under consideration by both the Western Pacific Panel (WPAC) and the Tectonics Panel (TECP) have not yet been assigned a high drilling priority. The participants in the Study Group's ad hoc meeting in Singapore were dismayed at the lack of drilling legs in the south-west Pacific and the low priority assigned to proposed drill sites there. They recommended that continued strong support be given to these proposals to increase their priority rating and strongly urged that proposals for ocean drilling in these areas be revised and resubmitted to the Tectonics Panel (TECP) of the Ocean Drilling Programme. They also recommended that the TECP Chairman be contacted for advice or guidelines for the tectonic focus of these proposals.

The experts who met in Singapore also stressed the need for proponents to continue to voice their support for these drilling proposals and to advocate repeatedly the merits of the drilling objectives in the thematic as well as the regional panels of ODP.

The Study Group was informed that future work planned for the area includes cruises of the R.V. MOANA WAVE under the Tripartite II programme beginning in December 1986. The first cruise will study cobalt-enriched manganese crusts in the northern Cook Islands including the Manahiki Plateau, starting from Honolulu and ending in Pago Pago, 26 days later. A second cruise from Pago Pago to Suva, Fiji, also for 26 days, will work in selected areas of Western Samoa and on potential sulphide deposits associated with rifting in the northern part of the North Fiji Basin.

A project proposed by David Cronan, Imperial College of London, to use the Scripps Institution of Oceanography's vessel R.V. THOMAS WASHINGTON in 1987 for SeaB and bottom sampling work west of the Line Islands for 26 days has been funded. Other projects, to continue work in the Lau Basin and Tonga Trench using SeaBEAM and OBSs have also been proposed.

The Study Group was informed that the cruise of the two USSR research vessels, R.V. PEGAS and R.V. MORSKY GEOFIZIK, planned for January-March 1986 and commended by STAR earlier (see STAR-II Summary Report, item 5.3) was fully prepared, but the USSR Academy of Sciences was obliged to postpone it, having received no permission to work within Tongan and New Zealand waters. A new cruise timetable is set for October-November 1986, using the more up-to-date research vessel R.V. ACADEMIK NESMAYANOV to carry out the work, with the main aims and area of the cruise much the same as formulated in the programme for the R.V. PEGAS and R.V. MORSKY GEOFIZIK, in the Kermadec and Tonga arc-trench system and back-arc area. More detailed information, including the exact location of geotraverses and the timetable of the work, is presented in the documents submitted to the Fifteenth Annual Session of CCOP/SOPAC.

Future cruises of Soviet research vessels (probably R.V. ACADEMIC NESMEYANOV) are also planned along two transects:

(i) within the western part of the Vityaz Trench (scheduled for late 1987/early 1988;

(ii) from the Three Kings rise to the northern part of the Tasman Basin (scheduled for late 1988/early 1989).

The Study Group, recognizing the scientific and economic merit of all the proposed projects, recommended funding to be found for their early implementation and completion.

The Study Group discussed the use of Long-range Refraction Surveying (LRRS) along geotraverses within the CCOP/SOPAC region, as a component of the International Lithosphere Programme (ILP) under the co-ordination of STAR.

The following organizational activities for LRRS are needed:

- Technical advisors should contact the corresponding institutions in their countries and determine their interest in participating in this proposed study;

- the Chairman of STAR should apply to the president of ILP and to the head of the LRRS Project for support of this study within the framework of the ILP;

- A STAR member should be designated responsible for contacts with technical advisors, Head of the LRRS Project, and institutions, in order to prepare concrete proposals for the LRRS study. These proposals then could be considered at the next CCOP/SOPAC and STAR Sessions in 1987, and the LRRS programme may be started in 1988-1989.

The Study Group, noting the need to focus on key structural and tectonic problems, recommended that future investigations include studies of: the tectonics of collisions, initiation of subduction, nascent back-arc basin rifting, arc reversal, and the formation and migration of allochthonous terrains.

The Study Group took particular interest in tectonics problems associated with mineralization and hydrocarbon generation. It agreed that, since little is known about these processes involving collision and subduction polarity reversals, such processes should be targeted for further study in this region.

The Study Group also decided that a joint approach should be undertaken on the part of the STAR Tectonics Study Group and the Coastal and Nearshore Processes and Resources Study Group on separating the effect of tectonic subsidence from eustatic changes in sea level in the South Pacific region.

The Tectonics Study Group, recognizing the present fragmentary approach to marine geoscientific research in the region and the many outstanding research proposals, recommended that a "Third CCOP/SOPAC-IOC International Workshop on Geology, Mineral Resources and Geophysics of the South Pacific" be organized to review the considerable volume of new geoscientific information collected and to develop a comprehensive five-year programme outlining in definite terms particular problems and areas in the region that need further investigation, and to lay down the strategies for future scientific work.

In view of the recommendation made by the Study Group, the Joint Working Group adopted Recommendation STAR-III.3

5.2.4. Information Exchange

The Study Group met on 3 September 1986 at the Rarotongan Hotel, Cook Islands prior to the 15th Session of CCOP/SOPAC. The Chairman of the Study Group, Dr. Laurent d'Ozouville (CCOP/SOPAC Technical Secretariat), reported that a synthesis of the cruises carried out in the region in 1984-1985 has been prepared which includes a map of the area surveyed. A synthesis of cruises planned for 1986-1987 has also been prepared based on answers to a questionnaire distributed at the end of 1985.

The format of the SOPAC Newsletter has been changed and now includes a section devoted to updating information concerning cruises and their preliminary results. A directory of marine geological projects in the South Pacific has been initiated and more than 10 geological projects are already listed.

Data-management facilities have been developed at the Technical Secretariat for library, draughting, data processing and publication. The Study Group discussed the use of those facilities for improving information exchange with institutions and agencies, as well as regional and world data centres.

The Study Group made several recommendations as follows:

(i) The mailing of research ship schedules at least once a year to scientists interested in the South Pacific and to update this information through the CCOP/SOPAC newsletter should be continued.

(ii) Training in the use of the CCOP/SOPAC information base called DOMINO should be available to personnel from the member countries.

(iii) The CCOP/SOPAC Technical Secretariat should be represented at the Twelfth Session of the IOC Working Committee on International Oceanographic Data Exchange (Moscow, 8-13 December 1986).

(iv) Scientists should be reminded that several CCOP/SOPAC series (e.g. Technical Bulletins, South Pacific Marine Geological Notes, Technical Reports, Cruise Reports) are available for publication and should be invited to use these possibilities for publications related to the South Pacific.

(v) Scientific interest in the region should be promoted by devoting one day of each STAR Session to the formal presentation of scientific papers and by publishing those papers in the South Pacific Marine Geological Notes.

(vi) The co-sponsors of STAR should recognise that a secretary should be made available to handle this work.

The Joint Working Group recognized with gratitude the efforts made by the Study Group through the CCOP/SOPAC Technical Secretariat, and encouraged the continuation of its work.

5.2.5. Island Drilling

In the absence of the Chairman, Rodney Walshaw (Solomon Islands) accepted the offer to chair the Study Group. The previous Chairman, Mike Sandy, reported by letter that, in November 1985, a letter and site proposal summary form were sent to all potentially interested parties. The response to the request for ideas and site proposals was encouraging, with 14 sites proposed by 6 proponents, and words of advice from many other quarters. These proposals fall into two broad categories:

(i) Those with a primary objective of investigating the nature of the basement.

(ii) Those orientated more to a study of stratigraphic sections above the basement.

A few proposals combined both objectives.

One proposal is for shallow drilling on the Ontong Java Plateau and this could well be achieved by using the Acker drilling rig currently being operated by the Technical Secretariat in Cook Islands. None of the other proposals is suitable for this rig. A summary of Proposals follows:

Country	Region	Estimated Depth (m)	Main Objective
Deep holes			
PNG	N.W. New Zealand	500	Stratigraphy to basement
	S. New Zealand	1000 +	Stratigraphy
	N.W. New Zealand	300	Stratigraphy
Solomon Islands	New Georgia	1000 +	Basement
	Guadalcanal	1000 +	Stratigraphy to basement
Vanuatu	E. Malakula	2000	Stratigraphy
	Big Bay	7000	Stratigraphy
	N.W. Malakula	?	Stratigraphy
	S. Pentecost	?	Basement
	S.W. Santo	?	Stratigraphy to basement
Shallow holes			
Solomon Islands	Ontong Java	200	Age of coral above basement

These proposals indicate the need for a focussed programme of stratigraphic drilling to identify the nature of the source and reservoir rocks and potentially petroliferous strata within the region (9 sites). There is also a need for basement drilling to assess the age of basement and place it in an approximate tectonic and/or metallogenic framework (5 sites).

Mr. Bruce Richmond reported on the drilling programme in the Cook Islands. Drilling equipment and expertise provided by the Geological Survey of the Netherlands were used in a lagoonal drilling programme at Aitutaki in the southern Cook Islands. The programme was supervised by Technical Secretariat personnel and included members from the USGS and local Cook Islanders. Six sites were drilled to a maximum depth of 69m with an average recovery of 35%. The cores are presently at the USGS in Menlo Park, California, for geochemical analyses, age dating, and preparation of thin sections.

The representative of ESCAP, Mr. Larry Machesky, reported that drilling equipment offered by the Geological Survey of the Netherlands to ESCAP will likely be donated to CCOP/SOPAC for use in its activities in the future.

The Study Group concluded that there is sufficient interest in the Island Drilling Programme to justify its continued inclusion in future CCOP/SOPAC and STAR programmes of work, as well as to justify seeking funding for its early implementation.

The Joint Working Group stressed the importance of standardization of reporting of drilling results and the need to gain the capability to drill deeper than is possible with present equipment.

The Joint Working Group adopted Recommendation STAR-III.4.

5.2.6. Coastal and Nearshore Processes and Resources

The Study Group reported that their principal activity in this reporting period was to organize a Workshop on Coastal Processes and Non-Living Resources. It was intended to hold a Workshop in the Cook Islands prior to the 15th Session of CCOP/SOPAC; however, it was postponed until prior to the 16th Session in 1987. The Study Group considered the organization of the Workshop on Coastal Processes and Non-Living Resources to be held in 1987 prior to the 16th Session of CCOP/SOPAC. It was agreed that at least two participants (including the National Representative) from each Member Country should attend the Workshop. Participation by member country individuals from government departments other than Natural Resources/Geological Surveys is anticipated.

The Study Group was informed that the USSR Academy of Sciences would be prepared to provide partial funding for an expert to attend the Workshop.

The following programme was discussed as an appropriate approach, recognizing that the final workshop programme details will be determined by the Steering Committee. It was agreed that two or three evening sessions should be planned in order to give additional time.

Day One : Opening; Introduction; Organization.
Keynote addresses (one hour each, including discussion time) - presented by invited speakers on the following topics:
Volcanic island geology; Coral-reef communities, structures, transplantation and impact of sedimentation; Coastal processes; Sediment budget (carbonate, non-carbonate); Sea-level changes (short-term, long term); Non-living resources overview; New technology and equipment.

Day Two : Case-studies from the region to be presented by member countries and staff of the Technical Secretariat, to stimulate discussion on the following topics:
Historical coastal changes; Geologic history and predicted trends, including seismicity and tectonics; Tsunamis, cyclones, and floods; Sediment budget studies; Coastal erosion; Coastal development and engineering.

Day Three: Resource case studies: Groundwater; Cement; Placers; Phosphate; Precious coral; Training; Public awareness; Hazard mapping.

Day Four : Formulation (probably by small discussion groups) of 5-year Work Programmes at the national and regional levels.

Day Five : Final session to endorse Workshop report and prepare format for Coastal Processes and Resources Manual.

The Study Group identified the following as the major topics of interest to the member countries where remote sensing might make a useful contribution:

(i) shallow water bathymetry;

(ii) currents and the movement of material in suspension in coastal regions;

(iii) faulting.

The Study Group identified two immediate needs:

(i) information on what satellite data are available for the SOPAC region, its relevance and from where it might be obtained;

(ii) training in the application of remotely sensed data.

The following actions have been taken since the Second Session of STAR:

(i) Information on the availability of useful satellite data has been circulated.

(ii) The availability of hand-held photography by U.S. Space Shuttle astronauts has been investigated. None is now available of the SOPAC region, but NASA has been informed of the Group's interest, and there is a prospect of acquiring some coverage when the Shuttle missions are renewed.

(iii) Two member country scientists attended the ESCAP-USP Workshop on Remote Sensing for Mapping of Pacific Resources (Suva, February 1986);

(iv) The Technical Secretariat has requested ORSTOM to process SEASAT altimeter data of the SOPAC area for study of ocean topography in relation to seabed features;

(v) The Technical Secretariat and IFREMER are examining the possibility of collaborating in studies of the SOPAC area using SPOT HRV data.

The second meeting of the Study Group took place in Rarotonga before the 15th Session of CCOP/SOPAC on 3 September 1986.

Concern was expressed at the shortfall of funds to hold the Workshop during 1986 as was originally planned.

The Study Group recommended that the Deputy Director of CCOP/SOPAC act as co-ordinator of the Steering Committee for the Workshop which would consist of the Training Co-ordinator of CCOP/SOPAC, an IOC representative, and local experts, if required.

The Study Group considered the possible consequences of the "Greenhouse Effect" on sea level and agreed that the following activities should be undertaken:

(i) identification of low-lying or subsiding areas;

(ii) establishment of instrumentation for monitoring (i.e. tide gauges, bench marks, etc.);

(iii) establishment of an advisory group to keep the countries abreast of recent developments;

(iv) convening of a Workshop on the Greenhouse Effect, with experts invited to make presentations;

(v) increase public awareness of the implication of the Greenhouse Effect;

(vi) develop contingency plans for mitigation of the Effect.

Upon the Recommendation of the Study Group, the Joint Working Group strongly recommended that the Workshop on Coastal Processes and Non-Living Resources be held, pursuant to Recommendation STAR-II.2.

5.2.7. Remote Sensing

The first meeting of the Study Group followed the Second Session of STAR (Honiara, 15 September 1985). The Study Group's terms of reference were discussed and the potential uses of remote sensing in CCOP/SOPAC studies were reviewed. The use lies in two main fields:

(i) Basic mapping and inventory: (a) topographic mapping of poorly known areas; (b) map revision; (c) thematic mapping (shallow water bathymetry, reef and lagoon distribution and geomorphology, coastal vegetation, lithologies, structure, especially fracture systems, effects of hazards such as storms, flooding and eruptions).

(ii) Monitoring of dynamic phenomena: (a) establishment of circulation patterns; (b) movement of suspended sediments, pollutants, and pumice rafts; (c) wave height and wind direction; (d) effect of man's activities.

The Study Group recognized that the objective of raising the level of understanding of remotely sensed data and its application in and by the member countries could best be promoted by undertaking a small number of demonstration projects. The most appropriate data to use are those from the SPOT HRV. It was agreed that each project should involve:

(i) acquisition of SPOT HRV data from SPOT IMAGE;

(ii) digital processing and initial interpretation of photographic output in France and U.K.;

(iii) transfer of images and initial interpretations to the relevant country for more detailed interpretations, provision of ground control and assessment of the utility of the data;

(iv) presentation of the results at subsequent STAR Sessions, aiming at some results being presented at the Fourth Session;

(v) close follow-up by the Technical Secretariat.

The Study Group also agreed that the following should be the first demonstration project areas:

(i) Aitutaki (Cook Islands);

(ii) Suva area (Fiji);

(iii) Northern Guadalcanal (Solomon Islands);

(iv) Northern coast of Papua New Guinea.

Digital data of (i) and (ii) have already been obtained by IFREMER. Coverage of (iii) and (iv) in the form of one 60 x 60km scene will need to be specified by the country representatives and, if funds are available, ordered from SPOT IMAGE.

In view of the need for using remotely sensed data in the region, the Joint Working Group adopted Recommendation STAR-III.5.

5.2.8. Use of Submersible and Remotely Operated Vehicles

The Study Group met on September 3, 1986 prior to the 15th Session of CCOP/SOPAC meeting at the Rarotongan Hotel on Rarotonga, Cook Islands. The Chairman of the Workshop, Dr. Bernard Biju-Duval, summarized the results (see section 5.1, above).

During the Fourth Circum-Pacific Conference (Singapore, 17-22 August 1986), Gary McMurtry (in agreement with Dr. Biju-Duval, who came later), chaired an informal expert consultation during which several ideas for diving projects were presented and discussed:

(i) Vanuatu transect (USGS) (see Annex V, hereto);

(ii) tectonics of the South Pandora Ridge, North Fiji Basin (HIG);

(iii) a French project including ridge-arc collision and bark-arc basin (Vanuatu), ocean accretion and hydrothermal processes - metallogenesis (North Fiji Basin and Lau Basin), and Louisville Ridge-Tonga arc collision;

(iv) rift system in the southern part of North Fiji Basin: geological and biological aspects, this latter project being presently under consideration by France and Japan in the development of a joint programme of research using different submersibles.

Information on international collaboration was exchanged. Several possible opportunities for co-operation are presently being investigated: a Franco-Japanese diving programme in the southern part of the North Fiji Basin (STA and IFREMER with other national institutions); a possible joint programme between French and US groups (UBO, ORSTOM, IFREMER, USGS, HIG); a possible French-German programme in the Lau Basin and a possible joint US-Australian dive programme were also mentioned.

On the question of the timing of the submersible dive programme, it was suggested that the first step be the development of a general scientific programme (with applied science aspects) in areas of relatively certain results, such as Vanuatu, Lau Basin, Tonga, and Fiji. The present tentative IFREMER schedule could begin in 1988 or 1989, with additional reconnaissance dives to identify specific applied targets, which would be studied in detail later during new follow-up dive programmes.

As to the method of selecting dive sites, it was suggested that formal proposals be presented at the next Session (1987) of STAR as poster displays with a 15-minute talk explaining the scientific background, objectives, and justification. Some proposals could later be combined, if practical. An important aspect of successful proposals is that they have in hand the necessary detail of the site; for example, SeaBEAM coverage.

Several suggestions were made for additions to the list of dive sites prepared at the Suva meeting. Each site must have mineral potential and geological significance. These suggestions were:

- Johnston Islands; An ALVIN proposal has been made for this area of seamounts and cobalt crusts, but perhaps this will be switched to PISCES through NOAA.

- Samoa: A volcanological study in water depth less than 200 metres.

- Woodlark Basin: Includes several enigmatic features, including the presence of volcanoes on the subducting plate. SeaMARC coverage exists in the area.

- Manus Basin: An area of spreading centres, extensional tranform and hydrothermal vents. SeaMARC coverage exists, and rock samples have been collected.

The ALVIN work is scheduled for the Guam-Marianas area in late 1987, to investigate back-arc spreading.

A transect concept for some submersible dives was presented; diving along transects, similar to that done by the DSDP and ODP programmes, is proposed for the efficient use of submersibles in the south-west Pacific. The advantage of selecting dive sites along a transect are:

(i) minimizes transit time from one site to another;

(ii) allows for multiple diving objectives to be met;

(iii) it allows the addition of dive sites and extension of the transect;

(iv) it allows for a more comprehensive study in one geographic region;

(v) allows for a multi-disciplinary approach; and

(vi) it expedites collection of site survey data.

The tectonic setting of the south-west Pacific, comprising long, linear volcanic island arcs, lends itself to the transect approach. Volcanic island arcs and their processes of formation and modification are of extreme scientific interest and any across-arc studies are valuable. Recent geoscientific studies along the Solomon Islands, New Hebrides, and Tonga arcs and in Fiji have resulted in a better understanding of the tectonic processes associated with arc formation and the generation of energy and mineral resources. Well planned transect diving in these areas for observational and geological sampling purposes will significantly contribute to those on-going studies.

Surveys to locate and assess black and pink corals were discussed. The Solomon Islands, where the best information on black coral exists from CCOP/SOPAC work, and Tonga, where studies of black coral have been made, were suggested as the best places for the next investigation. The best methods still have to be determined, but include dredging sea bed (good method where previous information exists, particularly in deep water), and ROV (relatively inexpensive, but useful only in water depth less than 600m).

The Study Group recommended that a detailed proposal be put forward to the CCOP/SOPAC Committee for consideration for inclusion in their Work Programme on the use of ROV in Tonga to map in detail black coral distribution and the environment in which it occurs, and, in association with such work, to identify sites where this technology may be used to further assess the potential of Corallium species in those areas where it is known to occur.

The following site-survey guidelines for submersible dives were agreed:

(i) depth contours known to 50m or better, surveyed by SeaMARC II or SeaBEAM, or by track lines of 200m spacing or less;

(ii) type of bottom material be identified by dredging or coring;

(iii) bottom photography or ROV television desirable for target definition.

The Joint Working Group accepted the proposals of its Study Group and adopted Recommendation STAR-III.6.

5.3 PREPARATIONS FOR THE WORKSHOP ON COASTAL PROCESSES AND NON-LIVING RESOURCES

Following Recommendation STAR-II.2, a preparatory series of meetings were held at the CCOP/SOPAC Technical Secretariat during January-March 1986. It was agreed that the most important aims of the Workshop should be:

(i) the exchange of information on coastal zones between technical experts and member-country decision makers and planners who are in a position to implement any programmes recommended;

(ii) putting this information together into a comprehensive report for future national and regional work programmes;

(iii) publication and/or distribution of the report.

Since it is desired that member countries be involved in the Workshop programme, it is suggested that apart from the member country representative, at least one other technical person for each member country be actively involved in the Workshop. It was decided to postpone the Workshop until prior to the 16th Session of CCOP/SOPAC because of:

(i) lack of sufficient committed funds; and

(ii) shortage of time to organize the Workshop.

A draft programme for the planned Workshop is given in section 5.2.6., above.

The Joint Working Group stressed the importance of holding this Workshop as a means of providing scientific and technical background to SOPAC member countries that are presently facing serious problems of coastal protection.

The Joint Working Group recalled Recommendation STAR-II.2 which was adopted at the Second Session of STAR, and requested IOC and the CCOP/SOPAC Technical Secretariat to seek funds to hold the Workshop.

The Joint Working Group decided to form a Steering Committee for the Workshop with a small group of experts on coastal processes from the region as well as representatives of CCOP/SOPAC and IOC, and requested the Deputy-Director of CCOP/SOPAC to act as Co-ordinator of the Steering Committee.

6. OTHER ACTIVITIES RELEVANT TO STAR

The Assistant Secretary of IOC described the activities of the CCOP-IOC Joint Working Group on Post-IDOE Studies of South-East Asian Tectonics and Resources (SEATAR), with particular reference to its transect studies which are now reaching their conclusion; possible ways and means of publishing the results of these studies in an integrated form are now being actively sought. He informed the Joint Working Group that IOC plans to hold the First Session of its Group of Experts on Marine Geology and Geophysics in the Western Pacific in December 1986 to develop two major activities as part of the IOC Programme of Ocean Sciences in relation to Non-Living Resources (OSNLR) within the framework of the IOC Programme Group for the Western Pacific; these are: Sea-level, Environments and Tectonics (SET), and Margins of Active Plates (MAP). These studies will be designed to contribute to the IOC-UN (OETB) Programme of Ocean Science in relation to Non-Living Resources (OSNLR), and will be co-ordinated with relevant activities of CCOP and CCOP/SOPAC through SEATAR and STAR, respectively. The Ocean Drilling Project (ODP) is highly relevant to the above-mentioned programmes in this region.

The Joint Working Group expressed its strong interests in the planned IOC meetings related to non-living resources studies, and requested IOC to consider adequate representation of the region.

The need for changes in the format and interval of the STAR sessions was discussed and consensus was reached that future meetings should emphasize written reports and progress reports in a general scientific meeting format. The Joint Working Group agreed that such a change is desirable and adopted Recommendation STAR-III.7

Regarding the intervals of the Sessions, some participants wished to hold a full session, scientific and business sessions, of two or three days, every two years in conjunction with STAR workshops and a small-scale business meeting of officers in intersessional periods, if necessary. There are some opinions to hold two day sessions every year jointly with the annual session of CCOP/SOPAC which would be the same as the current operation. Since the Joint Working Group did not reach a consensus, it requested the Chairman and Technical Secretary to study the matter and propose future arrangements at the next session.

The Chairman of STAR, Dr. Charles Helsley, indicated that he felt that his service in the initial formulation of STAR had now been completed and indicated his desire to be replaced at the next meeting. On behalf of the Joint Working Group, Mr. Tongilava (Tonga) expressed his appreciation to Dr. Helsley for his chairmanship and guidance on the scientific content of the STAR Programme since it started as a joint venture between CCOP/SOPAC and IOC in 1984. The Technical Secretaries expressed their appreciation of his efforts and indicated that they would assist him in identifying suitable replacements for nomination to the chairmanship at their next session.

7. STAR PROGRAMME OF WORK

7.1. FUTURE PROJECTS AND REQUIREMENTS

Considering the postponement of the Workshop on Coastal Processes which was planned to be held in 1986, the Joint Working Group strongly requested the IOC and CCOP/SOPAC Technical Secretariat to make their efforts to convene the Workshop in 1987 in conjunction with the next session of CCOP/SOPAC. The Joint Working Group recognized the importance of the Workshop to review current developments in scientific research on coastal processes and to develop future programmes, as well as to provide guidance to CCOP/SOPAC Member Countries and IOC Member States on coastal management.

The Joint Working Group recognized that the Joint International Workshop on Marine Geology, Geophysics and Mineral Resources in the South Pacific, held in 1975 and 1980, served to identify 5-year scientific research programmes. These efforts were supplemented by the CCOP/SOPAC-IOC-UNU Workshop on Basic Geo-scientific Marine Research required for Assessment of Minerals and Hydrocarbons in the South Pacific, held in Suva in 1983. Taking into account these past planning efforts, the Joint Working Group encouraged the IOC and CCOP/SOPAC to organize a follow-up workshop, preferably in 1988, in response to Recommendation STAR-III.3.

7.2. DESIGNATION OF NATIONAL CONTACT POINTS FOR STAR

The Chairman of the Joint Working Group reminded all participants to provide names, as requested by the Resolution STAR-I.4 at the First Session in 1984, to the CCOP/SOPAC Technical Secretariat and IOC. In the absence of such designated contact points, the Chairman aksed whether the present delegates and observers could act provisionally as the National Contact Points.

The Joint Working Group accepted this provisional designation.

8. DATES AND PLACE OF THE FOURTH SESSION

The Joint Working Group agreed that the Fourth Session of STAR should be organized in conjunction with the 16th Annual Session of CCOP/SOPAC to be convened in Madang, Papua New Guinea in October 1987.

9. ADOPTION OF THE SUMMARY REPORT

The Joint Working Group met on 11 September 1986 especially to deal with this Agenda item. It adopted the Summary Report, and Resolution and Recommendations contained in Annex II.

10. CLOSURE

On behalf of the Joint Working Group, the Chairman, the Vice-Chairman, and the Technical Secretary thanked the Scientific Research Department of the Prime Minister's Office of the Cook Islands and the CCOP/SOPAC Technical Secretariat for the local organization of the Session, and the participants for their valuable inputs into the discussions.

The Chairman closed the Session at 10h30 on 11 September 1986.

ANNEX I

AGENDA

1. OPENING

2. ADOPTION OF THE AGENDA

3. REVIEW OF IOC INTERSESSIONAL ACTIVITIES

4. REVIEW OF INTERSESSIONAL ACTIVITIES OF CCOP/SOPAC

5. REVIEW OF ON-GOING STAR ACTIVITIES

5.1 FOLLOW-UP OF THE STAR WORKSHOP ON THE USE OF SUBMERSIBLES AND REMOTELY OPERATED VEHICLES IN THE SOUTH PACIFIC

5.2 REPORTS OF THE STAR STUDY GROUPS

- 5.2.1 OCEAN DRILLING
- 5.2.2 AGE DATING
- 5.2.3 TECTONICS
- 5.2.4 INFORMATION EXCHANGE
- 5.2.5 ISLAND DRILLING
- 5.2.6 COASTAL AND NEARSHORE PROCESSES AND RESOURCES
- 5.2.7 REMOTE SENSING
- 5.2.8 USE OF SUBMERSIBLES AND REMOTELY OPERATED VEHICLES

5.3 PREPARATIONS FOR THE STAR WORKSHOP ON COASTAL PROCESSES AND NON-LIVING RESOURCES

6. OTHER ACTIVITIES RELEVANT TO STAR

7. STAR PROGRAMME OF WORK

7.1 FUTURE PROJECTS AND REQUIREMENTS

7.2 DESIGNATION OF NATIONAL CONTACT POINTS FOR STAR

8. DATES AND PLACE OF FOURTH SESSION

9. ADOPTION OF THE SUMMARY REPORT

10. CLOSURE

ANNEX II

RESOLUTION

Resolution Number	Title
STAR-III.1	STAR Study Group on Use of Submersibles and Remotely Operated Vehicles

RECOMMENDATIONS

Recommendation Number	Title
STAR-III.1	Ocean Drilling Programme (ODP)
STAR-III.2	Age Dating
STAR-III.3	Tectonics Study
STAR-III.4	Island Drilling
STAR-III.5	Remote Sensing
STAR-III.6	Use of Submersibles and Remotely Operated Vehicles
STAR-III.7	Formulation of the STAR Session

Resolution STAR-III.1

STAR STUDY GROUP ON USE OF SUBMERSIBLES AND REMOTELY OPERATED VEHICLES

The Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources:

Noting the success of the CCOP/SOPAC-IOC-IFREMER-ORSTOM Workshop on the Use of Submersibles and Remotely Operated Vehicles in the South Pacific held in Suva, Fiji from 24 to 29 September 1985.

Noting further the recommendations made at the Workshop.

Decides to establish a STAR Study Group on Use of Submersibles and Remotely Operated Vehicles.

Recommendation STAR-III.1

OCEAN DRILLING PROGRAMME (ODP)

The Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources,

Noting that ocean drilling in the western Pacific will start in 1988, and that three ODP legs in the south-west Pacific region are presently included in a nine-leg western Pacific programme,

Noting further that the three legs are in jeopardy because of ODP voting patterns,

Noting further that such drilling is a vital aspect of the resolution of geological problems of major regional and global significance,

Recommends that steps be taken to develop a major drilling programme; these steps should include: (i) strong defence of the scientific importance of south-west Pacific drilling by all interested scientists; (ii) encouraging Australia to join ODP; (iii) seeking the addition of more interested scientists to ODP panels, by putting a case to the ODP Planning Committee; (iv) asking ODP to form a south-west Pacific Working Group or a new regional Panel, charged, inter alia, with organizing a regional ODP Workshop.

Recommendation STAR-III.2

AGE DATING

The Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources,

Noting that the STAR Study Group on Age Dating is now nearing the conclusion of its task to compile age-dating of seamounts in the central Pacific,

Noting further the importance of such a compilation to the provisions of basic scientific information to interested scientists in South Pacific research,

Requests members of the STAR Joint Working Group to provide new available data to the Study Group Chairman to enable her to complete the Group's task;

Recommends to the Secretariat of IOC and the CCOP/SOPAC Technical Secretariat that they seek ways and means of publishing the compiled data.

Recommendation STAR-III.3

TECTONICS STUDY

The Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources,

A

Recognizing the need to encourage further tectonics studies in the region.

Noting the abundance of new data acquired during recent cruises,

Noting the importance of understanding collision tectonics and back-arc processes,

Noting the need for further understanding of the process of terrain formation and migration,

Recognizing the need to develop a five-year programme and strategy to carry out the needed scientific work,

Recommends that the Third CCOP/SOPAC-IOC International Workshop on Geology, Geophysics and Mineral Resources in the South Pacific be planned;

Requests the CCOP/SOPAC Technical Secretariat and the Secretary IOC to identify sufficient funding to hold the Workshop.

B

Recognizing the presence of well developed and well surveyed collision zones in the region, including the Louisville Ridge-Tonga Arc, the d'Entrecasteaux Ridge-New Hebrides Arc, the Wooklark Basin-Solomon Arc, and the Ontong Java Plateau-Solomon Arc,

Noting that classic examples of arc reversal occur in the Solomon Arc and New Hebrides Arc, and

Noting that incipient or nascent back-arc basin development occurs in the Lau, North Fiji, Woodlark, and Manus Basins,

Recommends that strong submissions be made to the ODP Tectonics and Western Pacific Panels on the suitability of drill sites in the south-west Pacific for investigating tectonic processes, particularly those relating to collisions, arc reversal and nascent back-arc spreading;

Requests that the Officers of STAR convey these comments to other appropriate JOIDES and ODP Panels including the Planning Committee.

C

Noting that the tectonic interpretation of the South Pacific region is dependent upon quality and quantity of regional geological and geophysical data,

Noting the interest of many groups of scientists in increasing the understanding of the geological data for the region,

Recognizing the scientific and economic value of increasing the general level of geological and geophysical knowledge of the region.

Recommends that the projects proposed to, and discussed by, the STAR Tectonics Study Group be encouraged, initiated and completed,

Recommends further that planning begin for detailed study, under STAR co-ordination, of a series of geophysical traverses within the region using long-range refraction profiles as well as conventional geophysical techniques in accordance with the Study Group's recommendations.

Recommendation STAR-III.4

ISLAND DRILLING

The Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources,

Noting the lack of scientific knowledge from stratigraphic drilling on islands in the region,

Noting further the importance of stratigraphic drilling to the assessment of potential petroleum resources of the region,

Recommends the CCOP/SOPAC Technical Secretariat assist the Member Countries in formulating well documented proposals, and assist in packaging these proposals into a coherent regional stratigraphic drilling programme which could be funded by interested external agencies.

Recommendation STAR-III.5

REMOTE SENSING

The Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources,

Noting the potential usefulness of satellite imagery for mineral resources assessment,

Noting also the usefulness of remote sensing data in the study of the shallow-water environment, such as bathymetry mapping and the movement of suspended materials,

Noting futher the need for a demonstration project in this region,

Recommends that CCOP/SOPAC and IOC seek funding to cover necessary cost of demonstration projects within one or all of the following four areas: (i) Aitutaki (Cook Islands); (ii) Suva Area (Fiji); (iii) Northern Guadalcanal (Solomon Islands); (iv) Northern coast of Papua New Guinea (Papua New Guinea).

Recommendation STAR-III.6

USE OF SUBMERSIBLES AND REMOTELY OPERATED VEHICLES

The Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources,

A

Noting that a number of research programmes using submersibles in the South Pacific are planned, and will be implemented in 1988-1989,

Considering the importance of establishing methods of selecting dive sites,

Decides to hold a poster session on dive proposals on the occasion of its Fourth Session in 1987, with presentation of scientific background, objectives and justification of each programme;

Recommends that the Study Group on the Use of Submersibles and Remotely Operated Vehicles compile existing proposals and submit them to the CCOP/SOPAC Technical Secretariat to facilitate its co-ordination role in the research programmes using submersibles in the SOPAC region;

Recommends further that the Study Group prepare guidelines for the survey of diving sites and submits these guidelines to the next session of STAR.

B

Noting that several research programmes using submersibles in the South Pacific are planned,

Recognising the need for international co-ordination of such programmes,

Recommends that a correspondent or correspondents on the use of submersibles and remotely operated vehicles be appointed by each of the countries interested in such activities or programmes;

Recommends further that the national correspondent(s) assist in the development of national and international proposals, circulate national proposal submission deadlines to appropriate investigators, exchange draft proposals between international submersible correspondents and the CCOP/SOPAC Technical Secretariat, and assist in reviewing scientific proposals prior to formal submission to funding agencies.

Recommendation STAR-III.7

FORMULATION OF THE STAR SESSION

The Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources,

Noting the need for dissemination of the results of scientific work to interested parties in the region,

Noting the increased level of scientific activities in the region,

Recommends that a session devoted to the presentation and discussion of recent scientific results be added to the programme of its future sessions,

Recommends that the abstracts of these presentations be included in the Summary Report of the STAR Session.

ANNEX III

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ANNEX IV

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TECTONIC STUDY GROUP

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ANNEX V

VANUATU DIVING TRANSECT

The New Hebrides Arc is the manifestation of active plate collision with the Indian-Australian Plate subducting eastward beneath the Pacific Plate and the Fiji microplate (North Fiji Basin). In the vicinity of the Central Arc (Vanuatu) the d'Entrecasteaux Ridge (DER) is colliding with the Western Belt islands of Espiritu Santo and Malakula. Distinct intra-arc basins (grabens) and multiple volcanic island ridges (horsts) have formed. The formation of this complex structure is believed to result from both the DER-Arc collision and subduction polarity reversal. Diving in this region for observation and photographic documentation of structure and stratigraphic sampling will assist in the tectonic evaluation of the region. In addition mineralogic and hydrocarbon source rock sampling by submersible would contribute to the energy and mineral resources appraisal of Vanuatu. Tentative proposed dive sites and the general objectives for each site are listed below in order of west to east, along a transect.

1. DER-Arc Collision Zone - A series of dives should be made in the region of the DER collision, along the ridge, fore-arc accretionary ridge and trench to study collisional processes.

2. Big Bag - Cumberland Basins - Recent elevation of the basins has initiated exhumation of Big Bag Basin with accelerated deposition in Cumberland Basin. A series of dives along the axis of Santo Submarine Canyon would be useful in documenting the active submarine erosion in the headward region of the canyon and determining the formation of an inverted stratigraphic sequence along the distal parts of the canyon.

3. North and South Aoba Basins - A series of dives made along the steep, marginal fault scarps for the purpose of stratigraphic sampling would be desirable for correlation of seismic and geologic stratigraphy and the evaluation of source, migration, and trapping of hydrocarbons.

4. Epi Submarine Volcanoes - Dives on the active vents on the seafloor of S.E. Epi to sample for hydrothermal mineralisation would be valuable in assessing the mineral potential of shallow water volcanic vents. In addition, a recent seismic relection survey of the area produced data that showed the stratigraphic construction of submarine volcanoes and sampling along these vents would assist in further understanding the construction processes.

5. Back Arc Troughs - A series of dives in either the Coriolis or northern troughs would be valuable in determining whether these troughs are the product of incipient back-arc rifting or arc associated with normal island arc volcanic processes.

6. North Fiji Basin - A possible extension to the Vanuatu transect would be the inclusion of dives along a possible spreading centre in the North Fiji Basin, east of the New Hebrides Arc.

Most all diving sites proposed here have good bathymetric control. SeaBEAM data have been collected over the DER-Arc collision zone and in the back-arc troughs and good detailed bathymetric data need to be collected for the Santo Canyon and North and South Aoba Basins. Good geophysical coverage, including MCS data are available for the entire transect.

ANNEX VI

LIST OF ACRONYMS

BMR	Bureau of Mineral Resources (Australia)
CCOP/SOPAC	Committee for Co-ordination of Joint Prospecting for Mineral Resources in South Pacific Offshore Areas
DSDP	Deep Sea Drilling Project
ECU	European Currency Unit
EEC	European Economic Council
ESCAP	UN Economic and Social Commission for Asia and the Pacific
GLORIA	Geological Long Range Inclined Asdic
HIG	Hawaii Institute of Geophysics (University of Hawaii, USA)
IDP	Island Drilling Programme
IFERMER	Institut Francais de Recherche pour l'Exploitation de la Mer
IGCP	International Geological Correlation Programme (of Unesco)
ILP	International Lithosphere Programme
IOC	International Oceanographic Commission
MAP	Margins of Active Plates (WESTPAC Project)
NOAA	National Energy Research Development and Demonstration Council (Australia)
NZOI	New Zealand Oceanographic Institute
OBS	Ocean Bottom Seismometer

ODP	Ocean Drilling Programme
ORSTOM	Institut Français de Recherche Scientifique pour le Développement en Coopération (previously Office de la Recherche Scientifique et Technique Outre-Mer)
OSNLR	Ocean Science in Relation to Non-Living Resources
RMRDC	Regional Mineral Resources Development Centre
ROV	Remotely Operated Vehicle
SEAPSO	Sea-beam dans le Pacifique Sud-Ouest
SEATAR	CCOP-IOC Joint Working Group on Post-IODE Studies of South-East Asian Tectonics and Resources
SET	Sea Level, Environment and Tectonics (WESTPAC Project)
SIO	Scripps Institution of Oceanography (USA)
SPOT	Satellite pour l'Observation de la Terre
STA	Science and Technology Agency (of Japan)
STAR	The Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
Techsec	Technical Secretariat of CCOP/SOPAC
UBO	Universite de Brest Department d'Oceanographie
UN	United Nations
UN(OETB)	UN Ocean Economics and Technology Branch
UNDP	United Nations Development Programme
UNU	United Nations University
USGS	Geological Survey of the United States of America
USP	University of the South Pacific (Fiji)
WESTPAC	IOC Programme Group for the Western Pacific
WPAC	West Pacific Pan (of Ocean Drilling Programme)