JOIDES PLANNING COMMITTEE MEETING
Lamont-Doherty Geological Observatory
28-30 May 1986

AGENDA

Commencing 09:00

1. Welcome, Introduction, Adoption of Agenda

2. Minutes of PCOM Meeting, 21-24 January 1986 (La Jolla)

3. Report of EXCOM and ODP Council Meeting, 29-30 April 1986 (Annapolis)

4. NSF Report

5. JOI Inc. Report
    a. FY 87 Budget - Status Report

6. Science Operator Report
    a. Leg 107 Report
    b. Leg 108 Report
    c. Co-chiefs' Meeting Report

7. Wireline Logging Services Operator Report

8. Panel Meeting Reports:
    a. Panel Chairmen's Meeting
    b. Tectonics
    c. Sediments & Ocean History
    d. Lithosphere
    e. Western Pacific
    f. Central & Eastern Pacific
    g. Southern Oceans
    h. Atlantic
    i. Site Survey
    j. Technology & Engineering Development
    k. Pollution Prevention & Safety review of revised Leg 110 sites

9. Short-term Planning
    a. Leg 109/111
    b. Leg 112
    c. Leg 113-114

10. Medium-term Planning (Indian Ocean 1987-88)
    a. Western Indian Ocean
    b. Kerguelen I & II
    c. Eastern Indian Ocean

11. Long-term Planning (Pacific Ocean 1988-91)
    a. West Pacific - Identification of high-priority themes and a preliminary drilling program
    b. Rest of the Pacific - Identification of high-priority themes

12. COSOD-2 Planning
    a. Selection of Steering Committee and Chairman
    b. Any additional charges to Steering Committee

13. Panel Memberships and Rotations

14. Future Meeting Arrangements

15. Any Other Business

*Note: A lunch-time seminar will be devoted to logging services.

JOIDES Planning Committee Meeting
20-24 January 1986
La Jolla, California

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20-24 January 1986
La Jolla, California

ACTION ITEMS

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12	Request SOHP to consider the conditions and technical requirements needed for drilling a deep stratigraphic test well in the Somali Basin.	PCOM Chairman
16	Request that the thematic panels re-identify their highest priority global objectives for drilling and that they suggest where they can be best attained.	PCOM Chairman
16	Development of a downhole seismic program to be conducted on Leg 109.	Wireline Logging Services
19	Request the CEPAC, TECP and SOHP develop recommendations for Leg 112.	PCOM Chairman
21	Request the schedule for RRS DARWIN for presentation at the next meeting.	UK Representative
22	Request that TECP, SOHP and IOP re-evaluate the options for the SWIR and Red Sea programs with the addition of the Makran area, an additional Neogene package (Neogene-2) and the Somali deep hole proposal as options.	PCOM Chairman
22	Preparation of ship schedules that take into account the following possibilities: the agreed Indian Ocean program including the SWIR and Red Sea programs, an Indian Ocean program without SWIR and Red Sea but which includes the Makran and Neogene-2 programs as replacements and an agreed program with SWIR, Red Sea and the Somali Basin.	Science Operator
23	Request that panels develop a rotation scheme for membership.	PCOM Chairman
23	Appointment of panel chairmen to SOHP and LITHP	PCOM Chairman
24	Preparation and distribution of invitations and agendas for the Panel Chairmen's meeting at Oregon State University.	JOIDES Office

JOIDES PLANNING COMMITTEE MEETING
SCRIPPS INSTITUTION OF OCEANOGRAPHY
LA JOLLA, CALIFORNIIA
20-24 JANUARY 1986

MINUTES

PCOM Members:

R. Larson (Chairman) - University of Rhode Island
H. Beiersdorf - Federal Republic of Germany
J-P. Cadet - France
T. Francis - United Kingdom
S. Gartner - Texas A&M University
D. Hayes - Lamont-Doherty Geological Observatory
J. Honnorez - University of Miami
D. Hussong - University of Hawaii
M. Kastner - Scripps Institution of Oceanography
R. McDuff - University of Washington
N. Pisias - Oregon State University
P. Robinson - Canada
T. Shipley - University of Texas
A. Taira - Japan
R. von Herzen - Woods Hole Oceanographic Institution

Panel Chairmen:

D. Appleman - Information Handling Panel
M. Arthur - Sediments and Ocean History Panel
J. Austin - Atlantic Regional Panel
G. Claypool - Pollution Prevention and Safety Panel
D. Cowan - Tectonics Panel
J. Jarry - Technology and Engineering Development Committee
J. Kennett - Southern Oceans Regional Panel
J. Peirce - Site Survey Panel
G. Purdy - Lithosphere Panel
D. Rea - Central and Eastern Pacific Regional Panel
M. Salisbury - Downhole Measurements Panel
J. Curray (for R. Schlich) - Indian Ocean Regional Panel
B. Taylor - Western Pacific Regional Panel

Liaisons:

R. Anderson - Wireline Logging Services Contractor (ODP/L-DGO)
G. Brass - National Science Foundation
J. Clotworthy - Joint Oceanographic Institutions Inc.
L. Garrison - Science Operator (ODP/TAMU)

Guests/Observers:

J. Baker - Joint Oceanographic Institutions Inc.

R. Buffler - National Science Foundation
D. Heinrichs - National Science Foundation
R. Jarrard - Wireline Logging Services (ODP/L-DGO)
J. Natland - Scripps Institution of Oceanography
J. Orcutt - Scripps Institution of Oceanography
M. Zoback - Stanford University

ODP/TAMU:

B. Harding - ODP Engineering Staff
S. Howard - ODP Engineering Staff
S. Serocki - ODP Engineering Staff

JOIDES Office:

M. Burdett - University of Rhode Island
D. Keith - University of Rhode Island
A. Mayer - University of Rhode Island

576 INTRODUCTIONS AND WELCOMING REMARKS

R. Larson, PCOM Chairman, convened the 20-24 January 1986 annual meeting of the JOIDES Planning Committee and JOIDES Panel Chairmen which was held on the campus of Scripps Institution of Oceanography (SIO) in La Jolla, California. Meeting participants were welcomed to SIO by M. Kastner (SIO PCOM representative).

After the introductory remarks, R. Larson welcomed T. Francis following the decision by the UK to join the ODP and N. Pisias as the new PCOM representative from OSU. Larson welcomed the new Panel chairmen: Rea (CEPAC), Taylor (WPAC), Austin (ARP), Peirce (SSP), Cowan (TECP) and Jarry (TEDCOM) to their first annual meeting.

577 ADOPTION OF THE MEETING AGENDA

The proposed agenda was amended to include a discussion of current and future program operations and a PCOM subcommittee report on packer development at the end of the Science Operator Report and to include a discussion of overall long range planning guidelines, as part of Long Term Planning. Finally, discussion of Engineering Developments and Priorities was inserted between Annual Reports from Panel Chairmen and Short-Term Planning.

It was moved by D. Hussong that the agenda be accepted with the proposed amendments. The motion was seconded by H. Beiersdorf.

Vote: 15 for; 0 against; 0 abstain

578 MINUTES OF THE PCOM MEETING, 8-10 OCTOBER 1985 (RHODE ISLAND)

It was moved by H. Beiersdorf that these minutes be accepted with the inclusion of the following amendment to Item 575:

JOIDES Site Survey Panel

It was noted by the PCOM Chairman that USSAC had appointed Fred Dunnebier (HIG) and Marc Langseth (L-DGO) as US members of this panel. The motion was seconded by A. Taira.

Vote: 15 for, 0 against, 0 abstain

579 REPORT OF THE EXCOM MEETING, 7-8 JANUARY 1986 (HAWAII)

Membership

R. Larson reported that the United Kingdom has joined the ODP and its membership is retroactive to 1 October 1985.With the addition of the UK to the Program, membership now stands at 6 countries, including the US, however the [illegible] has indicated that the current budget for FY86 will not be directly affected this action. T. Francis (UK PCOM representative) expressed the gratitude of the UK geoscience community for an opportunity to participate in the ODP and thanked all of those who aided in keeping the UK informed of ODP activities during negotiations.

It is was also stated that the Scandinavian countries of the European Science Foundation (ESF) may be prepared to increase their initial contributions by 40-50%. In addition, the other ESF countries are also expected to increase their contributions. This commitment should result in 70-75% of a full subscription. In addition, the ESF has asked Australia for an approximate 20% contribution in order to complete the membership and it is anticipated that a full membership could be obtained by May 1986. A decision will be made in early March 1986 at a meeting in the Netherlands.

In closing the issue of membership, Larson mentioned that there was no news from the USSR.

Review of the Budget for FY 87-88

At the Hawaii EXCOM meeting, JOI indicated that they had met with NSF in October 1985 to ask guidance in determining target figures for FY87-88. A preliminary analysis of the proposed FY 87 budget by JOI indicated that there were no major items to be considered at this time. It was agreed that NSF would review potential problem areas with JOI and recommendations will be provided to the EXCOM and the ODP Council at the April 1986 meeting. At that time the EXCOM may/may not require the PCOM to review the program. It was further emphasized that if the PCOM Budget Subcommittee is asked to review the program, it will be asked to do so only after it has been initially presented to the EXCOM and ODP Council.

Rotation of Planning Committee Membership

It was approved by the EXCOM that J. Honnorez (Univ. of Miami) and/or D. Hayes (L-DGO) stay on the PCOM 1 year past their planned rotation date in order to give the new members an additional year of their experience. EXCOM also suggested that in the future, the incoming PCOM chairman serve possibly 1-2 years before taking the helm.

JOIDES Panel Structure

Larson had informed the EXCOM that the present panel structure was under review by PCOM. After discussing the issue and possible reasons for change, it was the consensus of the EXCOM that the PCOM be asked to maintain the status quo, as far as possible. EXCOM further indicated that the present panel structure was established in order to provide the necessary check and balance system for planning. The EXCOM stated that if more than minor changes are proposed at the PCOM then these should be brought to the EXCOM for discussion before implementation.

COSOD-2; Long Range Planning of the ODP

It was unanimously agreed by the EXCOM that now is the time to begin planning and designing a schedule for COSOD-2. Further, it was the consensus of EXCOM that COSOD-2 be held in early 1987, possibly in Europe, and that PCOM should be asked to draft an outline for the meeting at its Jan. 1986 meeting. This draft will be distributed among the EXCOM for comment prior to the April 86 EXCOM and presented at that time. If there were significant objections from the EXCOM then these could be addressed at the May 86 PCOM meeting.

580 NATIONAL SCIENCE FOUNDATION REPORT

G. Brass (NSF) reported that there is no clear picture emerging that indicates how the the Gramm-Rudman legislation will affect the approximately $32 M budgeted for ODP operations during FY 86. NSF is unable to make any long term forecasts for the $36 M proposed for the FY 87 budget as it has not yet been sent to Congress for review. However, Brass did encourage the PCOM to develop long range plans for riser drilling operations and to develop a COSOD-2 conference which would chart the future of the ODP.

Brass asked PCOM members to develop liaisons with continental drilling agencies both nationally (e.g. in the US relevant groups are the Deep Observation and Sampling of the Earth's Continental Crust, Inc. (DOSECC), the United States Continental Scientific Drilling Program and the Salton Sea Scientific Drilling Project) and internationally in order to encourage cooperation and the sharing of technologies between the various organizations. In that spirit of cooperation, Brass suggested that PCOM reinstate a previous practice of inviting a representative of DOSECC to their meetings. In response, JOI indicated that it has cooperated with DOSECC at the corporate level but emphasized that there is a need for cooperation at the science level.

Brass closed his report by announcing that as of September 1986 there will be a vacancy at the ODP Office at the NSF as he will be returning to the University of Miami.

Discussion:

von Herzen: How have the long range plans for continental drilling affected long range planning for ocean drilling ?

Brass: If there has been any effect, it has been to encourage more cooperation between the two groups, possibly to the point of the development of an onshore/offshore drilling transect.

581 JOINT OCEANOGRAPHIC INSTITUTIONS REPORT

Baker (JOI) reported that JOI, Inc. is in the process of producing an ODP brochure (for NSF) for distribution to the US Congress and to the general public which explains the nature, past sucesses and future goals of the program. A draft manuscript is being prepared and will be distributed to PCOM members as soon as it is completed.

Performance Evaluation Committee Report

Baker also reported that the JOI Performance Evaluation Committee (PEC) has not yet completed its report. However, the committee has met to examine operations and facilities at L-DGO, TAMU, JOIDES RESOLUTION and at JOI, Inc. Generally the PEC indicated, in preliminary terms, that the program is working reasonably well and that there are good interactions between the subcontractors and the JOIDES advisory groups. The report will be completed in February 1986 and presented at the EXCOM meeting in April 1986.

Discussion:

Kastner: Did the PEC review the present panel structure ?

Mayer: The PEC covered all aspects of the Program.

Budget Planning for FY 87

J. Clotworthy (JOI) reported that the budget for FY 87 (approx. $36 M) is based on a program with 5 non-US members and was refined by JOI, in concert with NSF and the subcontractors. After examining the proposed budget, TAMU concluded that they could deliver a program with engineering for the upcoming legs, operations at suitable levels and sufficient monies for fuel at possibly increased prices. However, two problems areas were identified in the TAMU budget and a third problem area was identified in the L-DGO budget (for a more detailed explanation, see the JOI Report in the 7-8 January EXCOM meeting minutes).

Clotworthy indicated that a program plan for FY 87 is currently in preparation and will be presented to the EXCOM at its April meeting. Clotworthy also said that the Site Survey Panel's request that $12 K be reinstated in the ODP Databank budget will be honored by JOI and sources are being identified.

582 SCIENCE OPERATOR REPORT

M. Arthur (URI-Co-chief for Leg 105) and J. Honnorez (U. of Miami- Co-chief for Leg 106) and members of the ODP/TAMU engineering staff presented preliminary results from their respective cruises.

Leg 105 (Baffin Bay/ Labrador Sea)

M. Arthur reported that the objectives for Leg 105 were to define the tectonic development of the Baffin Bay/Labrador Sea area, to develop a history of paleocirculation through these regions and determine their connection to the Arctic and Atlantic regions, determine the timing and nature of major paleoclimatic changes and the frequency of oscillations between glacial and interglacial cycles which prevailed in these regions.

At Site 645 (Baffin Bay), seven holes were drilled to a total depth of greater than 1100 meters below the seafloor and a complete L. Pleistocene sequence of glacial dropstones, other ice-rafted debris and generally unfossiliferous sediment that containing glacial/interglacial cycles was recovered. At Site 646 (Labrador Sea), two holes were drilled to a total depth greater than 700 meters below seafloor and penetrated the Miocene-age seismic reflectors R3 and R4. At Site 647, two holes were drilled through an Quaternary-Eocene sedimentary sequence to basement. Drilling also penetrated the Pliocene-age seismic horizon R2 and Miocene reflectors R3 and R4 .

In continuing his report, Arthur reported that while the cruise w generally successful, a number of problems did occur. The late start leaving St. John's was due to repairs to the coring heave compensator which reduced drilling operations by 2 days. Additional problems in drilling operations (e.g. having to pull out of the hole (POOH) and relocate the drill site after encountering subsurface glacial dropstones) resulted in the loss of another 4 days. Recovery of the glacial erratic-rich Pliocene-Quaternary age sedimentary sequence caused several problems and may have been one of the causes of repeated core liner failures. Biostratigraphic age determinations and reconstructions were difficult because of the low $CaCO_3$ concentrations in the sediment. The Advanced Piston Corer (APC) was successfully used in heavy seas using the Wireline Heave Compensator.

Arthur closed his report by stating that the ice picket boat was very helpful in identifying "growlers" and other small icebergs and the time lost due to ice had been minimal. A film crew, commissioned by JOI, had filmed operations during part of Leg 105.

Leg 106 (MARK-1)

J. Honnorez reported that engineering objectives were the basis for Leg 106 planning and that three "firsts" were accomplished: the first unsupported bare rock spud-in along the neovolcanic zone of a slowly-spreading mid-ocean ridge (MOR) system, the first bare rock guidebase system was set on the floor of a MOR and the first and only successful attempt to drill an active hydrothermal system. This latter operation yielded a cross-sectional view of an active hydrothermal vent (APPENDIX A). The success of this was a credit to the TAMU engineers and to the SEDCO drilling team. Honnorez commended the Site Survey party for their detailed mapping of potential sites. The success of the operation was enhanced by using the Mesotech sonar and the TV/camera system in combination to provide precise navigation and location of the site during deployment of the guidebase and during bit re-entry operations.

In further reviewing Leg 106 operations, Honnorez noted that there were communication problems between the engineers and the drillers and between the scientists and the technicians. In addition, Honnorez suggested that there could be a problem on Leg 109 if a new drilling crew is used to the deepen the already established hole and he recommended that the SEDCO crew used on Leg 106 be used since they are familiar with potential drilling problems. The science party recommended the following for operations on Leg 109: that more and better drill bits be designed, that there be more and better designed drilling jars and that the cementing process be improved to control the rubble problem encountered on Leg 106. In terms of the science laboratories, the science party recommended that the X-ray fluorescence(X unit be repaired and that a sample preparation area for XRF/XRD samples established near the XRF/XRD labs. The science party also recommended that the number of spaces for petrographic microscopes be increased and that point counting stages for these instruments be obtained for modal analysis.

Hard Rock Drilling Guidebase

S. Howard (ODP/TAMU Engineering) reported that the assembly of the guidebase took place in the moonpool of RESOLUTION in 17 hours in deteriorating weather conditions which lasted 4 days. However, if conditions are right, the total time for assembly and deployment should be 1 1/2 - 2 days. Due to the size of the structure (it only just fitted within the moonpool) and weight (40k lbs -in air), it was somewhat difficult to handle during deployment.

Deployment

During deployment, electronic beacons on the foot pads determined the height of the guidebase above the seafloor and the beacon was landed at the summit of a volcanic plateau (Site 648B-Serocki Volcano) in an area of very low slopes (less than 5 degrees) covered by recent pillow lavas. The guidebase was deployed with one leg in a fissure and the other three on firm ground because the deployment team could not see under the structure. In the future, a camera will be attached to the side of the structure in order to provide a view of the footing under each pad.

Drilling

At Site 648A, unsupported bare rock drilling was achieved by using the mudmotor to drill a single bit hole. After this site was established the guidebase was lowered on Site 648B. In reviewing drilling operations (APPENDIX B, sheets 1-4), Howard indicated that the total time for drilling was 69 hours; the remainder of the time was spent reaming and cementing the hole. Howard noted that the most difficult part of the operation was rubble collapse in the hole. However, the problem eased when the hole size was reduced. Another problem noted at Site 648A was the lack of freshwater needed to mix with the drilling mud. The situation was somewhat eased by mixing the mud with seawater; however, it was felt that this solution may have created an additional problem during drilling as the viscosity may have been changed. Howard concluded the site summary for Site 648A by indicating that the reason for terminating operations with 6 days left in the program was that hole conditions steadily worsened. The remaining time of Leg 106 was spent at Site 649 (Snake Pit hydrothermal vent area). At this site coring motors were deployed but problems were encountered as another type of core catcher was needed to sample the sand-size hydrothermal sediments.

Engineering Recommendations

S. Serocki (ODP/TAMU), on behalf of the other ODP/TAMU engineers, made the following recommendations for Leg 109: casing should be set 40-60 meters below the seafloor, the hole should be drilled out with a 12 1/4 inch drill bit, set 10 3/4" flushjoint casing and continue drilling with 9 7/8" drill bit. With the smaller diameter hole (9 7/8") the penetration rate should increase dramatically (APPENDIX B). In addition with a smaller diameter hole, no more reaming will be necessary as drilling will be in much more stable conditions and should result in reduced wear on the bit design. Further, ODP/TAMU engineers recommended that a variety of bit designs with improved cutting structures should be taken on Leg 109. The hole should be easier to keep clean due to its smaller diameter. Present estimates with this less aggressive strategy indicate that rates of up to 10 meters/day of penetration are possible and that in 40 days approximately 200-250 meters can be drilled using high viscosity drilling mud. Serocki closed the report by indicating that the most difficult part of the program has been accomplished.

Current Operations and Future Plans

Current Schedule (APPENDIX C)

Leg 107 (Tyrrhenian Sea)

L. Garrison (TAMU) indicated that at the Malaga, Spain portcall in late December 1985 there were logistics problems with freight deliveries to RESOLUTION. Present plans, once the missing freight is located, are to ship it to Naples, Italy to be loaded on a supply boat which would in turn transport the freight to the ship. The freight includes a supply of helium and electronics for the cryogenic magnetometer. In order to accomplish this operation, the drilling order has had to be reversed from that originally planned. Leg 107 is currently operating in the Marsili basin at Site 7B with objectives to compare the age and geochemistry of this area with that of the Vavilov basin. Current results indicate that 30 m of basement have been drilled but the hole was terminated when the Extended Core Barrel (XCB) became lodged in the hole. Preliminary analysis of the recovered material indicated unexpectedly young sediments (1.7-1.8 m.y. old) composed of an upperunit of turbidites underlain by calcareous sediments with mudstones.These units overlie a basaltic basement of possible tholeiitic composition. There was no logging conducted at this site due to hole conditions. At site TYR 5B, a single bit hole was drilled to a total depth of 550 m with 50 m into basement. Analyses suggest that basement at this location consists of a gabbroic breccia which overlies peridotite. Logging was conducted on the upper sections of the hole.

At the time of this report, the ship was operating at TYR 3A (Site 652a). Future plans call for two film crews to visit the ship during the leg. The cruise will end in mid February at Marseilles, France.

Leg 108 (NW Africa)

Leg 108 is now fully staffed. Some changes to the original drilling plan have been made to avoid clearance problems. Because of the lack of response from the Moroccan Government for permission to drill, two sites were changed and approved at the pre-cruise meeting of the co-chief scientists. MAU 6 has been moved south of its original position into the waters of Mauritania and renamed to MAU 6A. Mauritania has been asked for clearance to drill. In addition SLR-1, located in the territorial waters of Guinea-Bisseau, has been moved south of its original location into international waters and renamed SLR-1A. Finally site 139R may be eliminated from the program due to the current Moroccan clearance situation.

Discussion:

During discussion of the clearance situation, Garrison warned that as the Program moves from the Northern Atlantic and Mediterranean areas into Third World waters clearances will be harder to obtain no matter how far in advance of cruises the applications are made. JOI indicated that it is working with NSF to establish informal contacts and to create other mechanisms for obtaining clearances from Third World governments. It was also suggested that the non-US members of JOIDES may be able to assist ODP by advising on appropriate contacts and by using their influence with the countries concerned. This has been tried in the past with some limited success. In view of the increasing complexity likely for ship's clearance in the Indian Ocean and the West Pacific region, PCOM suggested that ODP/TAMU should consider an additional full-time position to process and follow-up clearance applications.

Packer Development:

D. Hussong introduced a report (APPENDIX D) on the status of packer development and M. Salisbury presented a detailed report by K. Becker which outlined the types of packers presently available and their properties. It was agreed that a straddle packer should be used in th re-entry hole in both the cased and open sections. The possibility of using a Lynes sampler for fluid sampling was discussed.

Engineering Development:

Underway Geophysical Capability of RESOLUTION:

Presently, RESOLUTION has a single channel seismic system with 80 cu.in. waterguns and an airgun that is capable of real-time digital signal processing. The ship also is equipped with hull-mounted 3.5 and 12 kHz systems that are presently non-functional due to their location along the hull. ODP/TAMU plans to study where they can be best relocated to be operational. The consensus is that the seismic system provides data, of reasonable quality, up to speeds of 6 knots. At higher speeds the quality of the data drastically declines until the ship is on site. It has been suggested that the tow point off the stern is so high as to disturb the receiving capabilities of the streamers. It was suggested that lowering the towpoint should be investigated as should the possibility of towing the streamers from a boom amidships.

Engineering and Technology Developments and Priorities:

B. Harding reported. He pointed out that he has only a small team of engineers to tackle the major developments agreed for the program of which the developments of a barerock drilling system and drill-in casing were the highest priorities. He also indicated that an ongoing program of bit and coring developments as well as review and improvement of existing systems were high on the agenda. In order to achieve these objectives, Harding welcomed additions to his group of non-US engineers to work at TAMU as visiting engineers whose positions are funded with ODP/TAMU covering living expenses and the member country covering salary.

Specifically, Harding reported on the following developments:

Leg 107

On Leg 107, a number of engineering tests will be conducted on a new hydralic bit release system and on a lockable flapper valve for the XCB system. An evaluation and examination of the material of the core liners has been undertaken, a venturi sub has been developed to improve core recovery and the XCB cutting shoes have been modified.

Leg 108

A free-fall re-entry cone will be loaded on RESOLUTION for testing. The venturi sub will be tested on this leg.

Leg 109

ODP Engineering is presently getting prepared for Leg 109 with drilling motors undergoing refurbishing, and there will also be an increase in the inventory for drill bits and drilling jars.

Leg 110

Harding indicated that the major thrust for Leg 110 is the development of a triple casing string for the decollement zone. The back-up for this system will be the drill in-casing system from DSDP, which has been refurbished and overhauled. R. McDuff (UW) added that the Barnes/Uyeda porewater tool will be available for this leg.

Leg 112

The Pressure Core Barrel is undergoing modification and an overhaul for Leg 112 activities.

Future Activities

Harding requested that a riser drilling seminar (similar to the logging seminar presented at this meeting) be presented at the next PCOM meeting in order to give the membership an introduction to drilling with a riser.

Other activities include sponsoring (with USSAC and Sandia Labs)a high temperature water sampling workshop and continuing discussions with Norton-Christiansen on high speed diamond drilling operations. Further, the engineering group requested that the non-US members of JOIDES suggest participants for two positions in their Visiting Engineers Program. These positons are funded with ODP/TAMU covering living expenses and the member country covering salary.

Discussion:

During discussion of developing a deep sedimentary environment program (e.g. a Moroccan deep hole), it was agreed that the idea needs additional research and SOHP was asked to develop boundary conditions. Further, several PCOM members supported the development of high speed diamond drilling techniques and welcomed its inclusion into the program.

583 WIRELINE LOGGING SERVICES OPERATOR REPORT

R. Anderson (L-DGO) reported that the Terralog Log Analysis System, placed on RESOLUTION during early 1985, is giving very good results. When applied to Leg 103 data, a seismogram was generated from the logging data that correlated with dolomite "stringers" observed in the lithologic data. Presently, L-DGO is investigating possible solutions to the problem of logging in bad hole conditions and problems associated with the swelling of clays in the freshwater drilling mud. The TAMU engineering group has been asked to investigate ways in which the problem of clay swelling can be eliminated or its effects reduced. Anderson indicated that a second edition of the ODP Logging Manual will be published during 1986 which will emphasize the scientific uses for the tools. The manual may also be published in the 1986 edition of REVIEWS OF GEOPHYSICS. Anderson closed his introductory remarks by stating that an additional $140 K is needed in the L-DGO budget for the purchase of a second Borehole Televiewer (BHTV) and Multi-channel Seismic (MCS) system. He noted that the availability of backup tools increases the success rate of logging from 68% to 98%.

Leg 107 (Tyrrhenian Sea)

On Leg 107, logging analyses from the Terralog system will be compared with that of the Energy Systems logging package. In addition a Californium atomic source will placed on the ship, prior to Leg 109, for use in the nuclear combination tool. The nuclear combination tool will be built into a sonde 95 ft. high and should yield information for clay typing, including the weight percent of aluminum.

Leg 108 (NW Africa)

The L-DGO Borehole Research Group has lowered the priority of thru-the-pipe logging due to potential damage to the structural integrity of the drillpipe by hole conditions when not rotating at the bottom of the hole. On Leg 108, a sidewall entry sub (APPENDIX E) developed by IFP (France) will be tested as an alternative to thru-the-pipe logging.

R. Jarrard (L-DGO) also indicated that the co-chiefs now favor the inclusion of sonic and lithologic logs into the cruise plan, if clearance problems create more operations time. The Borehole Research Group estimates that logging at Sites MAU4, MAU 5 and SLR 1A will take 18 hrs./hole, with 11 hours devoted to the nuclear combination tool, 3 hours for hole preparation and 4 hours for the Long Spacing Sonic tool (LSS).

Because of this request, Anderson asked guidance from the PCOM on whether, based on the uncertain logging workload, to include a Schlumberger field engineer in the logging party. The Downhole Measurements Panel (DMP) favors logging on Leg 108 because of the potential for clay typing, possible detection of climatic cycles and seismic stratigraphic correlation. The PCOM indicated that based on this new information, it should probably rescind the decision made at the October 1985 meeting. A new motion proposed by von Herzen (WHOI) and seconded by Kastner (SIO) was as follows:

PCOM Motion: The Planning Committee requires that the Leg 108 co-chief scientists conduct a standard logging package at the three priority sites (MAU 4, MAU 5 and SLR 1A). Options exist for logging the other sites.

Vote: 13 for, 1 against, 1 abstain

Members of the L-DGO Borehole Research Group (R. Anderson, R. Jarrard and M. Zoback) held an evening seminar for PCOM members and guests to explain the detailed measurements and interpretations that can be made with the present logging instrumentation. This seminar was adjourned and will be resumed during the May PCOM meeting.

584 ANNUAL REPORTS FROM JOIDES PANEL CHAIRMEN

For Executive Summaries of JOIDES Panel Activities for 1985, see the following appendices:

Lithosphere Panel (LITHP)-APPENDIX F
(presented by M. Purdy-WHOI)

Purdy updated his report with the conclusions of the January 1986 LITHP meeting (see Addendum to Appendix F). LITHP requested that more publicity be given to the Leg 106 achievements. For Leg 109, a program of deepening Site 648B and a program of logging (with downhole experiments) at Site 395A was recommended. LITHP also recommended EPR rather than 504B. In the Indian Ocean, LITHP placed high priority on Red Sea, 90°E Ridge and SWIR with a full leg for the latter. For the West Pacific, LITHP anticipated needing 4-5 legs and had identified primary themes of ophiolite comparison; mass balance; magmatic, hydrological and crustal processes; and the evolution of forearc areas.

Discussion:

Purdy said that it was the unanimous view of LITHP that if present planning priorities remain unchanged <u>none</u> of the primary lithosphere objectives will be achieved in the foreseeable future.

In addressing a question on planning for an East Pacific Rise drilling program versus a return to Site 648B, Purdy indicated that LITHP considered both programs to be of equal importance to the ODP and should be investigated. When asked what would be the amount of time necessary to achieve COSOD objectives, Purdy responded that the question could be answered on a number of levels. However, the COSOD objectives could be best addressed by establishing a global suite of natural laboratories (4-6 ridge segments with multiple drill holes) for long term observation and sampling.

Sediments and Ocean History Panel (SOHP) - APPENDIX G
(presented by M. Arthur-URI)

Discussion:

Discussion centered on the SOHP recommendation to drill a deep stratigraphic test hole in the Somali Basin as part of deep stratigraphic tests program. During this time the deep drilling capabilities of RESOLUTION, with a riser, were discussed and it was generally agreed that there is a substantial amount of interest for a deep hole in the Somali Basin. Discussion also indicated that from the standpoint of engineering feasibility additional drilling techniques may have to be developed. In closing discussion, the Science Operator suggested that as a prelude to riser drilling, a deep hole (approx. 2000 m deep) may be needed.

Tectonics Panel (TECP) - APPENDIX H
(presented by D. Cowan-Univ. of Wash.)

Atlantic Regional Panel (ARP)-APPENDIX I
(presented by J. Austin-UT, prepared by L. Montadert-IFP)

Southern Oceans Panel (SOP) - APPENDIX J
(presented by J. Kennett-URI)

Indian Ocean Panel (IOP) - APPENDIX K
(presented by J. Curry (SIO) for R. Schlich (IPG)

Western Pacific Regional Panel (WPAC) - APPENDIX L
(presented by B. Taylor- Univ. of Hawaii)

Central and Eastern Pacific Regional Panel (CEPAC) - APPENDIX M
(presented by D. Rea- Univ. of Mich.)

Downhole Measurements Panel (DMP) - APPENDIX N
(presented by M. Salisbury- Dalhousie Univ.)

Site Survey Panel (SSP) - APPENDIX O
(presented by J. Peirce- Petro Canada)

Information Handling Panel (IHP) - APPENDIX P
(presented by D. Appleman- Smithsonian Inst.)

Pollution Prevention and Safety Panel (PPSP) - APPENDIX Q

(presented by G. Claypool- USGS)

Technical and Engineering Development Committee (TEDCOM)- APPENDIX R
(presented by J. Jarry- IFREMER)

585 REVIEW OF JOIDES SCIENTIFIC ADVISORY STRUCTURE

The Planning Committee agreed that since the chairmen of the JOIDES Panels were in attendance at this meeting, it would be appropriate and very useful to discuss potential restructuring of the JOIDES panels.

Discussion of the present structure indicated that frustration with the system has resulted in the resignations of the LITHP chairman and the SOHP chairman. The frustration was based on a general feeling among LITHP and SOHP chairmen that there is an apparent lack of coordination between the panels, there is an unnecessary duplication of effort among the panels, there is a feeling that the advice of the thematic panels is largely ignored in favor of recommendations from the regional panels and that some disciplines within the geologic community (especially geochemistry) are not represented in the present structure and are being overlooked. Lastly, there was a general feeling of a majority of the chairmen that panel liaisons presently have too many meetings to attend and this system is not an effective means of communicating information.

It was suggested and agreed by both chairmen and PCOM that one of the main problems is one of communication between the panels and with PCOM. One possible solution was that an exchange of ideas between the panels occur at an annual meeting for panel chairmen and through joint panel meetings. These would provide chairmen with an opportunity to interact and develop drilling suggestions into a well defined and unified plan without duplicating ideas or objectives and to resolve differences between panels. Another suggestion was that the panel liaison system be improved to more effectively disseminate information among panels and PCOM. It was also recommended that the responsibilities of SOHP be broadened into a geochemistry panel, an ocean history-stratigraphy panel and a sedimentary processes panel in order to address the concerns of the geochemical and sedimentologic communities.

Discussion also indicated that most panel chairmen generally supported the present structure of thematic panels with support from regional panels. In addition, the group further emphasized that the drilling program should be driven by the thematic problems addressed by COSOD.

The consensus of PCOM was that it was premature to change the panel structure at this time although it was recognized that there have been difficulties, especially in terms of communications, between thematic and regional panels. In view of this situation a better inter-panel liaison network is required. One effective means of achieving this will be to establish a meeting of the panel chairmen, to be held during the summer (in addition to the annual meeting with PCOM). A second means is to have relevant panels have overlapping meetings in order to resolve conflicts on priorities.

development of drilling plans should be based on an identification, by the thematic panels, of the global thematic objectives which may be best attained in any particular region. Regional panels should take these themes as the basis for regional drilling plans and there should be a further evaluation by the thematic panels. At this time the resolution of any conflicting advice from the regional and thematic panels should occur. The PCOM will then construct a drilling plan based on this flow of advice. PCOM further agreed that although the Program is placed within a 10 yr. framework, it should be emphasized that the boundary conditions are flexible. It was the general consensus that while thematic panels will continue to receive proposals, regional panels will concentrate on detailed proposal review in the development of the regional plans.

PCOM agreed that COSOD-2 may provide an opportunity for a review and possibly re-alignment of the panel structure. Meanwhile, PCOM will consider ways to best include the views of the geochemical community into the planning process.

The above consensus was achieved with the Panel chairmen and later confirmed by PCOM. M. Purdy (LITHP) requested that his disagreement with the above consensus of the PCOM be reflected in the minutes of the meeting.

586 SHORT-TERM PLANNING

Revisions to the 1986 Ship Schedule

L. Garrison (TAMU) indicated that the schedule (APPENDIX C) has been changed to include a transit leg (Leg 112T) between Legs 112 and 113 with a portcall in Punta Arenas, Chile. This adjustment occurs because Callao, Peru will be used as a portcall for Legs 111 and 112 due to the difference in fuel ($76/ton in Dec. 1985) which could potentially save the program $150 K.

Leg 108 (NW Africa)

No problems are anticipated for Leg 108 other than those caused by clearance difficulties. The addition of a heat flow program has been discussed and okayed with TAMU and the co-chiefs and will be implemented by the physical properties specialist on RESOLUTION. In addition, engineering tests on the minicore system and the sidewall logging sub will be conducted.

Leg 109 (MARK-2)

It was consensus of the Downhole Measurements Panel (DMP-APPENDIX M) and the Lithosphere Panel (LITHP) that the hole established on Leg 106 be deepened with some logging conducted at the site (Site 648 B) and full suite of logging at DSDP Hole 395A. The scientific importance of logging Hole 395A (as stressed by DMP and LITHP) was endorsed by the PCOM.

Discussion:

During discussion the questions arose of how much drilling time is estimated to achieve a depth of 300 m and what are the options if drilling is slower than expected (i.e. is there a cut-off time and are there options to try other techniques such bare rock spud-in without the guidebase). TAMU responded that current estimates are that approximately 36 days are needed to reach an estimated depth of 250 m. It was the consensus of the group that deepening Site 648B is the highest priority of Leg 109 and that goal should remain the primary objective. If options exist, they should be along the lines of attempting different ways of bare rock spud-in.

Additional discussion was held concerning the recommendation LITHP and DMP that logging be conducted as part of the scientif objectives for Leg 109. The following motion was proposed by Robinson and seconded by Kastner.

PCOM Motion: Recognizing that drilling into zero age crust is a major goal of the ODP, the highest priority of Leg 109 is the deepening of Hole 648B including the logging package as recommended by the Downhole Measurements Panel. If no substantial progress in drilling is achieved after 30 days the remainder of the time will be spent logging Hole 395A and the final backup for this leg will be to default to the Kane Fracture Zone as the first priority.

Vote : 11 for, 3 against, 0 abstain

Discussion then focused on determining to what extent and to what depth the rubble zone may continue to impact on drilling plans. It was generally agreed that better seismic experiments were needed in order to make that determination. Hussong proposed, seconded by Shipley, the following motion:

PCOM Motion: The Planning Committee recommends that Wireline Logging Services investigate the development of a downhole seismic program, to be conducted at an early stage in Leg 109 and at various stages of drilling, to determine the structure below the hole (including identification of rubble zones) at Site 648B using downhole geophysical techniques.

Vote: 14 for, 0 against, 1 abstain

It was felt by various members of the PCOM that the back-up plan for Leg 109 be more detailed. After discussion, the following motion was proposed by von Herzen (WHOI) and seconded by Robinson:

PCOM Motion: The PCOM recommends that the Lithosphere Panel's (LITHP) priority objectives for Leg 109 be accepted as the back-up plan with the understanding that Kane Fracture Zone objectives have a higher priority than the Snake Pit hydrothermal area and the logging at Hole 418.

Vote: 15 for, 0 against, 0 abstain

Leg 110 (Barbados)

TAMU indicates that there are no problems and that progress continues on drill-in casing development.

Leg 111

Discussion indicated that LITHP (APPENDIX F) supported the French hydrothermal program at EPR 13^{o}N and that DMP (APPENDIX N) supported deepening DSDP Hole 504B. Some PCOM members indicated that possibly Leg 111 should be a return to further deepen Site 648B, if Leg 109 was a great success. It was generally agreed by PCOM that deepening and logging Hole 504B is a major goal of ODP and would complement the work done at Site 648B. The TAMU engineers indicated that better drill bits will be available and are confident that the hole can deepened an additional 500 m. The following motion proposed by Robinson and seconded by Kastner:

PCOM Motion: Recognizing the importance of sampling the deep oceanic crust and the difficulties of bare rock drilling on the East Pacific Rise (EPR) at this time, the PCOM recommends that Leg 111 be primarily devoted to the deepening and logging of Hole 504B.

Vote: 13 for, 0 against, 0 abstain

In discussing the option of using Leg 111 for the continued deepening of Site 648A and deferring deepening of Hole 504B to a late cruise it was generally agreed that DMP and LITHP should be asked to consider this option. In the meantime, Kastner proposed the following motion, which was seconded by Cadet :

PCOM Motion: At this stage in the planning process, the prime objective of Leg 111 is the deepening of Hole 504B. Dependent on the results from Leg 109, in terms of substantial drilling progress and the downhole experiments, PCOM will consult LITHP and DMP regarding a decision to replace drilling at Hole 504B by a third leg devoted to Hole 648B.

Vote: 12 for, 2 against, 1 abstain

The PCOM considered the logging program for the 504B program as proposed by DMP (APPENDIX N). M. Salisbury indicated that this program is similar to that proposed for Hole 395A but includes a Vertical Seismic Profiling experiment. Robinson proposed and Hussong seconded the following motion:

PCOM Motion: The PCOM recommends that the logging program as suggested by the DMP be adopted, with the inclusion of a Vertical Seismic Profiling (VSP) experiment, into the downhole measurements program for Hole 504B.

Vote 15 for, 0 against, 0 abstain

N. Pisias (OSU) indicated that a recommendation of SOHP was that a double APC program be undertaken at 504B to recover a reference sequence for the late Neogene-Quaternary section of the eastern Pacific (APPENDIX G). In considering the recommendation, PCOM agreed to the following:

PCOM Consensus: It is the consensus of the PCOM that a maximum of 5 days be included into the primary objectives of Leg 111 for drilling double APC and XCB sites in the vicinity of Hole 504B with one site to be a representative geochemical, as proposed by Mottl and the other is to be a paleontological site.

Co-Chief Scientists for Leg 111:

The PCOM recommended that, for Leg 111, the team of Becker (UM) and Sakai (Japan) be suggested to TAMU.

Leg 112 (Peru Margin)

TAMU indicated that co-chiefs have been selected and no logistical problems are expected. However, no specific drilling program has been developed and problems with clearances have not yet been investigated. D. Hussong indicated that before a detailed program can be developed the site survey data needs to be evaluated by SOHP,TECP, CEPAC and the co-chiefs. It was agreed that further planning be deferred until the site survey information has been evaluated by TECP, CEPAC and SOHP.

Leg 113 (Weddell Sea)

A review indicated that excellent site survey data exist for the leg provided that POLARSTERN achieves most of its cruise objectives. H. Beiersdorf (FRG) indicated that due to severe ice conditions, POLARSTERN has only been able to collect less than 400 km of multi-channel seismic data on its current cruise. SOP had proposed Kennett (URI) and Fuetterer (Polar Inst.-FRG) as co-chiefs and SOHP had concurred. T. Francis proposed P. Barker (UK) and H. Beiersdorf proposed K. Hinz (BRG, FRG). It was agreed that the co-chief scientists team should consist of one geophysicist and one sedimentologist/paleoceanographer.

The following motion was proposed by Francis (UK), to resolve the staffing problem, and seconded by Shipley (UT):

PCOM Motion: The PCOM recommends the team of Barker (UK) and Futterer (FRG) be suggested to TAMU as co-chief scientists for Leg 113.

Vote: 5 for, 1 against, 8 abstain

Discussion of Leg 113 plans indicated that while the SSP was generally satisfied with the site survey data, it has however, requested that a piston core be taken at Site W4 and that heat flow studies be conducted at Site W10. TAMU indicated that W4 may be covered with pack ice during operations and a contingency for this site is needed. Garrison pointed out the need for an ice picket vessel.

NSF estimated that an ice picket boat can be chartered for approx.$700 K for 60 days and TAMU indicated that Requests for Proposals (RFP) will be sent for bids. Discussion then focused on other ships that may available in the Antarctic at less expensive prices. T. Francis suggested that a British vessel may be available.

TAMU also indicated that problems exist for the Weddell Sea objectives of the SOP as approved by PCOM. These problems center the development of a detailed cruise plan in a 7 month time frame and the inclusion of logging into the science plan. In considering an alternative for W4 it was the consensus of PCOM that, since W10 has a high SOHP rating as an alternative, does not appear to have safety problems and appears to be predominantly ice-free at the time of the cruise, W10 be a contingency to W4 and further the PCOM agreed that the logging program suggested by DMP for Leg 113 be included into the general science plan.

Leg 114 (Atlantic Sub-Antarctic)

It was noted that NSF has funded J. LaBreque to carry out site surveys using the R/V POLAR DUKE in Sept-Oct. 1986.

PCOM agreed to recommend that the Science Operator choose co-chiefs for this leg from SOP and SOHP recommendations (P. Ciesielski- Univ. of Fla. and J. LaBreque- L-DGO) together with the unsuccessful names from Leg 113. Other possible names suggested were K. Hsu, J. Behrandt (USGS), B. Tucholke (WHOI), R. Stein (on DSDP Leg 91).

587 MEDIUM RANGE PLANNING (INDIAN OCEAN 1987/88)

Review of proposed drilling in the Indian Ocean:

Southwest Indian Ridge (SWIR)

There was discussion of the scientific objectives of SWIR drilling including the optimum alignment of holes and the difficulties of conducting oblique seismic experiments (OSE) in SWIR. It was noted that SWIR (drilling plus geophysical experiments) represents the highest LITHP priority for the Indian Ocean. It was noted that this leg is dependent on site surveys being obtained. PCOM considered plans for the Indian Ocean in light of the above reviews and noted that it is NSF policy to devote site survey funds (in FY 87) to West Pacific targets. NSF stated that, in FY87, there are unlikely to be any additional funds for Indian Ocean site surveys as the NSF priority is for West Pacific surveys. Funds for FY86 appear to be fully committed. To be successful, at this stage, our Indian Ocean site survey program must be highly competitive, in scientific terms, with proposals for the West Pacific.

Neogene Package

In discussing the Neogene Package, as proposed by W. Prell (Brown Univ.) and included in the IOP program, it was the consensus of PCOM to approve the program as proposed with the caveat that the drilling program may require more than 1 leg. Detailed planning is dependent on site surveys, to be conducted by Prell, with GLORIA data on the distal Indus Fan being done by Kidd (IOS).

Mascarene Basin/ Fossil Ridges

PCOM considered this proposal to be of lower priority than other proposals in the Indian Ocean. Furthermore, this proposal was thought to have significant difficulties in terms of site surveys.

PCOM Motion: In view of the difficulty of obtaining site surveys for this leg and its lower scientific priority, the Planning Committee recommends that the Mascarene Basin/Fossil Ridges program be eliminated from the planning schedule.

Proposed by Robinson and seconded by Honnorez

Vote: 15 for, 0 against, 0 abstain

Red Sea Program

After discussing the program suggested by the Red Sea Working Group, it was the consensus of the PCOM to accept the proposed scientific program, with the following change: Site 1B in the Nereus Deep should be a single bit hole with no re-entry.

It was noted that France was obliged to pospone a site survey program using SUROIT and that there could be political problems in obtaining clearances and safeguarding the ship in the Red Sea.

Kerguelen-Antarctic Margin (Prydz Bay) Program

The PCOM reiterated its October 1985 decision that the ship schedule be arranged around a normal port stop. The PCOM asked TAMU to develop and present at the next meeting a straw schedule with the Prydz Bay program and intermediate portcalls at Reunion or Mauritius Is. included. The PCOM agreed that Prydz Bay objectives (endorsed by SOP and SOHP) and the tectonic basement objectives in N. Kerguelen (proposed by IOP and TECP) are the highest priorities for these two legs.

Broken Ridge/90°East Ridge

Difficulties in obtaining site surveys for 90°E ridge were noted. PCOM accepted the priorities for this leg as proposed by IOP and SOHP. The PCOM requested that T. Francis (UK) obtain and present at the next meeting a schedule for DARWIN. Francis indicated during discussion that DARWIN may be available for site survey operations or 90°E. It was also the consensus of PCOM that the Broken Ridge program be endorsed as proposed.

Intraplate Deformation Program

PCOM endorsed the program as proposed with some reservations on the science, specifically the origin of upward flow of water in surface temperature-depth profiles and the ability to date the onset of deformation. The program was referred to TECP and IOP for further comment. TAMU also suggested that the seismic data be examined by PPSP.

Argo-Exmouth

The PCOM generally approved the proposed plan but expressed concern that the use/success of a re-entry cone in the proposed program be assessed by the Science Operator, DMP and the proponents. This concern was expressed as the Argo/Exmouth program is one of the highest priorities of the eastern Indian Ocean and that, as currently planned, there may be insufficient time in one leg to complete the prime objectives.

Rodriguez Ridge/Mascarene Plateau and Otway Basin Programs

These programs have been proposed as additional legs by IOP. The PCOM agreed that the previously discussed programs are more scientifically interesting legs and have a much higher priority. Some doubts were expressed as to the scientific merit of Otway Basin margin drilling. PCOM agreed not to include these proposals in the Indian Ocean program at this stage.

In planning the Indian Ocean program, it was the consensus of the PCOM to devise potential alternate legs for SWIR due to potential site survey problems and for Red Sea drilling to avoid potentially unsolvable political problems. The alternatives that were presented were an additional Neogene package leg, a deep stratigraphic hole in the Somali basin and 1 leg dedicated to the Makran. After discussing these options, the PCOM voted on the following motion as proposed by Robinson and seconded by Kastner:

PCOM Motion: The PCOM requests that IOP, TECP and SOHP consider alternatives for the Indian Ocean Drilling program and that they do this with a view that the Indian Ocean might be exited sooner than originally planned. Specifically, TECP should consider SWIR vs. Makran and SOHP should consider the additional Neogene leg vs. a Somali deephole.

Vote: 13 for, 0 against, 2 abstain

TAMU requested that PCOM develop a first-order ranking of SWIR and Red Sea alternatives at this meeting so that ship planning may begin. In responding to this request, PCOM passed the following motion, proposed by Robinson and seconded by Honnorez:

PCOM Motion: If Southwest Indian Ridge and the Red Sea programs are eliminated from Indian Ocean planning activities, the next priority for the first leg in the Indian Ocean will be the Neogene Package.

Vote: 14 for, 1 against, 0 abstain

588 LONG-TERM PLANNING (PACIFIC OCEAN 1989-)

Overall Time in the Pacific Ocean

It was suggested that the time of circumnavigation, as suggested by COSOD, imposes an unnecessary contraint that should be removed. This action, it was further suggested, would allow the scientific objectives to constrain the amount of time in the area. It was the consensus of the PCOM that the panels (WPAC, CEPAC and thematics) should develop 3 lists of objectives/ themes/priorities (short range, medium range and long range) developed in 1, 1 1/2 and 2 year time frames for the Pacific. It was agreed that it is essential for the chairmen of the thematic panels, the Pacific regional panels, SSP and DMP to meet prior to the May PCOM to liaise on Pacific planning problem Discussion was closed by the following motion, proposed by Hayes and seconded Beiersdorf:

PCOM Motion: WPAC, CEPAC, SOP and the thematic panels should develop a scientific program for the Pacific Ocean under the initial time constraint of a total of three years for this entire region with the time being partitioned approximately equally between the western Pacific (the general area mandated to WPAC) and the remainder of the Pacific (including the Bering Sea and far Southern Pacific). This time constraint and its division are tentative and subject to revision in consideration of subsequent scientific arguments from the panels.

Vote: 14 for, 1 against, 0 abstain

589 PANEL MEMBERSHIP

Panel Rotations

It was the consensus of PCOM that the panels should propose a rotation scheme for membership (noting that non-US members are not required to adhere to the rotation) and should suggest possible replacements and additions to ensure as complete a disciplinary cover as possible. PCOM will decide on rotations and new membership at its May meeting following the above input from the panels.

Panel Chairmanships

PCOM agreed to the following names:

SOHP- R. Garrison (UC-Santa Cruz)
L. Mayer (Dalhousie Univ.)

LITHP- D. Walker (L-DGO)
A. Saunders (Leicester Univ.)
J. Sinton- (Hawaii)
R. Detrick- (URI)
K. Macdonald- (UCSB)

The PCOM Chairman will appoint new chairmen from the above lists according to availability and in discussion with appropriate PCOM members.

PCOM Liaisons

The following changes in PCOM/panels liaisons were made:

TECP- add P.Robinson (Canada)

SSP- N. Pisias (OSU) replaces P. Robinson
T. Francis (UK) replaces H. Beiersdorf

TEDCOM- T. Francis replaces M. Kastner (SIO)

Panel Chairmen's Meeting

PCOM agreed to appoint D. Rea (CEPAC) as chairman of this group. It was agreed that the meeting would be held at OSU prior to the next PCOM meeting. Subjects suggested for the agenda were: global review of thematic objectives of ODP; panel-panel and panel-PCOM communications and improvements to working methods; resolution of Indian Ocean planning conflicts; identification of major objectives of Pacific Ocean drilling; input of geochemical advice; site survey and downhole measurements input.

590 ANY OTHER BUSINESS

Rotation of the JOIDES Office

PCOM was informed that the JOIDES Office will rotate to Oregon State University as of 31 September 1986 and that OSU will be succeeded, in 1988, by the Hawaii Inst. of Geophysics. The non-US members of JOIDES were asked to submit recommendations (with final decisions made by the 5 non-US EXCOM members) for the non-US administrative position in the JOIDES office. With this rotation, D. Caldwell will succeed J. Knauss as the EXCOM chairman and N. Pisias will succeed R. Larson as the PCOM Chairman.

Meeting Schedule

28-30 May 1986 at L-DGO, Palisades, N.Y.

11-15 August 1986 Corner Brook, Newfoundland, Canada

PCOM Chairman Absence in March-April

R. Larson informed the PCOM that he would be on a cruise to the Exmouth Plateau are during March-April 1986. In his absense, he proposed that H. Beiersdorf act as Chairman until 20 March 1986 and that J. Honnorez hold the post until 10 April 1986. Panel meeting approval and proposals will be handled by T. Mayer (JOIDES Office). The PCOM agreed to these arrangements.

Lead Time in Planning

D. Heinrichs (NSF) emphasized that the PCOM should include 1-2 additional years of planning (beginning with the Western Pacific program) into its process at this stage in order to give more focused, concise planning advice to NSF, JOI and EXCOM to enable draft budgets to be prepared. During discussion, H. Beiersdorf expressed his strong dissatisfaction with the initial phases of Indian Ocean planning. R. Larson indicated that Western Pacific planning may be as difficult as that for the Indian Ocean Program but he was confident that a general drilling program will be developed by August 1986.

In closing discussion, the PCOM asked how it could interact with J and NSF in order to have some input into fund allocations and what the deadli was for making constructive suggestions to the program plan for the upcoming year. Heinrichs responded by indicating that in the short term, suggestions could be made at the May 1986 PCOM meeting and that in the long term, suggestions can be made by October of any given year. Heinrichs closed by emphasizing that a program for the western Pacific must be developed by October 1986.

COSOD-2

In responding to a mandate by the EXCOM, given at its Jan. 1986 meeting, the PCOM prepared a draft Terms of Reference for a COSOD-2 meeting (APPENDIX S). Offers to host the meeting were made by T. Francis (for Oxford or Cambridge, England) and by H. Beiersdorf and J-P. Cadet (for Strasbourg, France). The location will be finalized at the May PCOM meeting. The steering committee will consist of 12 members with one member from each of the non-US members plus a chairman. The non-US members were encouraged to confer with their national committees for nominations for membership and US members were asked to consider nominations. In addition USSAC will be asked to serve as a US nominating committee. PCOM will make the final selections. It was suggested that the membership be a mixture of people within and outside of ODP. However, a majority of the membership will consist of those people familiar with ODP. Discussion of the Chairmanship was deferred until the May PCOM. The meeting will be funded by co-mingled funds with travel to be a national responsibility.

Environmental Impact Statement

It was noted that the final statement had been published and this included comments on the draft statement. The concern over biological and ecological input in the final selection of drill sites was noted. PCOM agreed that the final site selection will take due cognizance of biological and ecological concerns and will seek advice from appropriate experts as necessary. However, the PCOM did not see the need to extend the membership of the Pollution Prevention and Safety Panel (PPSP) at this time.

The PCOM thanked M. Kastner for hosting the meeting and arranging the field trip. J. Winterer was thanked for acting as the field guide. W. Nierenberg was thanked for hosting a reception for the PCOM and R. Anderson, M. Zoback and R. Jarrard (Wireline Services Contractor) were thanked for the logging seminar. The meeting was adjourned.

PANEL MEMBERSHIP

- APPOINT KEIR BECKER (PLEASE)
- NEED GLOBAL GEOPHYSICIST TO REPLACE SCLATER : SUGGEST WATTS OR DETRICK
- SUGGEST HONNOREZ TO REPLACE PURDY (OR MAC-DONALD OR DETRICK OR SINTON)

ADDENDUM TO APPENDIX F

LEG 106

- THIS WAS A GREAT SUCCESS: SADLY THIS PERCEPTION DOES NOT EXIST THROUGHOUT THE COMMUNITY.

- RECOMMEND AN ACTIVE AND WIDE PUBLICITY CAMPAIGN

RECOMMENDATIONS FOR 109

- PRIMARY PROGRAM SHOULD CONSIST OF DEEPENING 648BAS FAR AS POSSIBLE GIVEN THAT 11DAYS BE SPENT ON LOGGING 648B AND LOGGING AND DOWNHOLE EXPTS IN 395A

- BACK UP PROGRAM TO BE UNSUPPORTED BARE ROCK SPUD-INS (UBARS) IN SNAKE PIT HYDROTHERMAL AREA AND KANE FZ

- FINAL BACK UP TO BE DEEPENING 418

LEG 111

- RECOMMEND EMPLACEMENT OF BARE ROCK GUIDEBASE ON EPR AT 13N
- CO-CHIEFS SHOULD BE APPOINTED SOONEST SO THEY CAN WORK WITH FRENCH PHOTOS TO PRODUCE SPECIFIC SITE LOCATION
- PREDICTIONS FOR SINGLE LEG PENETRATIONS ARE 150 -300M
- EXPERIENCE GAINED IN WORKING IN HYDROTHERMAL AREA MUST BE GAINED EARLY IN THE PROGRAM
- TEMPORARY HOLE PLUG IS PERHAPS FEASIBLE
- FULL SUITE OF 300C DOWNHOLE TOOLS AVAILABLE
- BACKUPS ARE UBARS IN WELL MAPPED SUPHIDE DEPOSIT AND, OF COURSE, 504B

INDIAN OCEAN DRILLING

- FULL CONCURRENCE WITH RED SEA WG's LITHOSPHERE OBJECTIVES. SPECIFICALLY AGREE WITH LOWER PRIORITY PLACED ON ZABARGAD PERIDOTITE DRILLING

- FULL CONCURRENCE WITH 90E RIDGE PACKAGE PUT TOGETHER BY IOP

- VERY STRONG SUPPORT FOR DICK-NATLAND-STEPHEN-VON HERZEN SWIR UPPER MANTLE-V. SLOW FZ-PHYSICAL PROPERTIES PACKAGE

SWIR DRILLING

- RECOMMEND DEVOTING A FULL LEG TO THESE OBJECTIVES
- SUCCESS OF UBARS IS IMPORTANT COMPONENT OF THIS DECISION
- SEABEAM-PRECISION DREDGING SITE SURVEY IS CRUCIAL
- POSSIBILITY OF BRG DRILLING IF JUSTIFIED BY SITE SURVEY RESULTS
- BACKUP WOULD BE (EXPANDED) FOSSIL TRACE OF RODRI--GUEZ TJ PROPOSAL (NEW) FROM NATLAND ET AL

W PACIFIC DRILLING AND BEYOND

- SWAMPED BY PROPOSALS

- ANTICIPATE PROPOSING (IN THE LONG TERM) THREE TRANSECTS TO ATTACK THE PRIMARY THEMES OF:
    - OPHIOLITE COMPARISON
    - MASS BALANCE
    - MAGMA, HYDRO AND CRUSTAL GEN. PROCESSES
    - EVOLUTION OF FORE ARCS

- THIS TIME AROUND ANTICIPATE NEEDING 4-5 LEGS FOR ONE TRANSECT PLUS A FEW KEY COMPONENTS OF A SECOND.

- OCEANIC PLATEAUS AND HAWAIIAN SWELL ARE IMPORTANT TARGETS BEFORE RETURNING TO E. PACIFIC.

LITHOSPHERE DRILLING

- IF 111 IS EPR, THEN DRILL SHIP WILL LEAVE UNTIL 1991 FOUR OF THE BEST POSSIBLE DRILLING TARGETS FOR ADVANCING OUR KNOWLEDGE OF THE EARTHS CRUST
- -648B- -418- -504B- -EPR-
- NO LOGISTICAL, TECHNICAL OR FINANCIAL REASON EXISTS FOR THIS: THIS IS PURELY A PLANNING DECISION

DRAFT

JOIDES EXECUTIVE COMMITTEE MEETING
Maryland Inn
Annapolis, Maryland
April 29-30, 1986

DRAFT MINUTES

Members:
J. Knauss (Chairman) - University of Rhode Island
A. Berman - University of Miami
B. Biju-Duval - IFREMER (France)
J. Bowman - NERC (United Kingdom)
D. Caldwell - Oregon State University
H. Durbaum - BGR (Federal Republic of Germany)
M. Friedman - Texas A&M University
D. Hayes (for B. Raleigh) - Lamont-Doherty Geological Observatory
R. Heath - University of Washington
C. Helsley - University of Hawaii
M. Keene - EMR (Canada)
A. Maxwell - University of Texas
T. Nemoto - Ocean Research Institute (Japan)
J. Orcutt - Scripps Institution of Oceanography
D. Spencer (for J. Steele) - Woods Hole Oceanographic Institution
J. Stel - European Science Foundation Consortium

Guests:
J. Briden - United Kingdom
L. Dmitriev - USSR
J. Goormaghtigh - ESF-ODP Consortium
W. Hutchison - Canada
K. Kusahara - Japan
D. Maronde - Federal Republic of Germany
B. Munsch - ESF-ODP Consortium
N. Pisias - Oregon State University
E. Seibold - ESF-ODP Consortium

Liaisons:
R. Anderson - LDGO/Wireline Logging Services
J. Baker - Joint Oceanographic Institutions Inc.
D. Heinrichs - National Science Foundation
P. Rabinowitz - TAMU/Science Operator
R. Larson - URI/Planning Committee Chairman

National Science Foundation:
G. Brass
R. Buffler
G. Gross
W. Merrell
A. Sutherland

Joint Oceanographic Institutions Inc.:
J. Clotworthy
T. Pyle
D. Rucker

JOIDES Office:
D. Keith

J. Knauss (EXCOM Chairman) convened the 29-30 April 1986 meeting of the JOIDES Executive Committee held at the Maryland Inn in Annapolis, Maryland.

CALL TO ORDER AND SIGNING OF THE EUROPEAN SCIENCE FOUNDATION CONSORTIUM MEMORANDUM OF UNDERSTANDING

The meeting was divided into 2 sessions, a joint session with the ODP Council, held on the morning of 29 April, and a business session which began that afternoon, after the joint session. The joint session was co-chaired by D. Heinrichs (NSF) and J. Knauss and included the signing of a Memorandum of Understanding by the European Science Foundation Consortium.

The signing ceremony was presided over by W. Merrell (NSF) and E. Seibold (ESF). During the opening remarks, Merrell commented on the successes of the first year of the Program and noted that the ESF Consortium was the last of the candidate members to join ODP. Merrell commended J. Stel and B. Munsch (ESF) for their efforts in coordinating the 12 member countries of the consortium into an organized body and applauded E. Seibold for his leadership and support during this effort. Seibold indicated that the signing of the MOU with the ODP is the fulfilment of a dream for many European scientists which hopefully would aid in the building of bridges between nations, eventually including the eastern bloc nations, through the development of personal relations between scientists.

The ceremony was concluded with the presentation of a gift plate from ESF to JOIDES, the signing of the MOU, and the passing of a resolution welcoming the ESF to the Ocean Drilling Program.

EXCOM Motion: The EXCOM wishes to express its appreciation to the members of the European Science Foundation consortium for their persistent efforts and continued interest in the ODP and extends congratulations on their membership. The EXCOM wholeheartedly wishes to welcome the ESF into the ODP family of scientists.

(proposed by J. Bowman and seconded by A. Maxwell)

Vote: 15 for, 0 against, 0 abstain

1. JOINT SESSION WITH THE ODP COUNCIL

In opening the joint session, Knauss introduced and welcomed T. Nemoto as the new Japanese EXCOM representative, J. Briden as the new United Kingdom EXCOM representative (after this meeting) and N. Pisias as the new Planning Committee Chairman (as of 1 October 1986).

ADOPTION OF THE AGENDA

The agenda, as presented to the membership, was unanimously approved with no amendments.

NATIONAL SCIENCE FOUNDATION REPORT
(APPENDIX A)

G. Gross, on the behalf of the NSF, welcomed both the UK and ESF to the ODP. The UK was included as their MOU signing occured during the interim between the January 1986 EXCOM and this meeting.

Membership

In reporting on the status of membership by the USSR, Gross indicated that an invitation to join ODP was sent to the USSR Academy of Sciences and, as yet, there had been no formal response to this invitation. However, informal contacts suggest that the Academy is actively considering membership.

Budgets

Gross indicated that the FY 1986 ODP budget remains at $32.5 M with a $20.0 M contribution from the US and a $12.5 M contribution from the non-US members (based on 5 international members). D. Heinrichs indicated at this time that the ESF membership is too late to affect the budget for FY86 but will impact on FY87. Further, NSF has presented to JOI, Inc. an upper target figure for FY 87 of $36 M (based on 6 international members) with a minimum level of $34 M.

In discussing the Gramm-Rudman-Hollings legislation, Gross noted that the overall NSF budget was reduced by 4.3%. However, the ODP and other high priority items were protected from reductions at this time. Gross further noted that reductions are a possibility in FY87 but NSF is hopeful that the ODP will continue to be protected.

Gross closed the report by stating that the NSF is pleased with the progress that ODP has made in its programs and in the development of new technologies. He further stated that the NSF strongly supports the long-term drilling program and is looking forward to COSOD-2.

JOINT OCEANOGRAPHIC INSTITUTIONS REPORT

J. Baker opened the JOI, Inc. report by noting that during 1985 there were 30 JOIDES meetings held with half of those occuring in the 5 member countries. In continuing his report, Baker introduced the newest members of the JOI Office to the EXCOM. They are Dr. Tom Pyle (formerly of NOAA and ONR) who is the Director of the ODP for JOI and and Curt Schneider who is the head of the Contracts section. Baker indicated that JOI has distributed to the EXCOM a draft ODP brochure for comment and final version will be completed after comments are received at JOI. In closing, Baker announced that a one day symposium, sponsored by the National Academy of Sciences, on the technology of ocean drilling will be held at the Marine Technology Society meeting on 26 September 1986 in Washington, D.C.

SCIENCE OPERATOR REPORT

P. Rabinowitz began the TAMU Report by briefly reviewing the major objectives and highlights of Legs 100-108. As a part of the presentation, Rabinowitz showed a portion of videotape of Leg 106 highlights which included deployment of the drilling guidebase, the bare-rock spud-in, a typical drill bit re-entry, and drilling near a hydrothermal black smoker chimney.

Legs 107 and 108

In reporting on the most recently completed cruises since the January EXCOM meeting, Rabinowitz stated that Legs 107 (Tyrrhenian Sea) and 108 (NW Africa) were very successful. In reviewing their objectives, Rabinowitz pointed out that for Leg 107 (with K. Kastens of LDGO and J. Mascle of France as co-chiefs) three themes were addressed: 1) back-arc basin expansion during seaward migration of the fore-arc area during subduction processes, 2) the timing and rate of extension and subsidence during rifting of a passive continental margin, and 3) the establishment of deep water "type" sections for chronologic studies. Leg 107 drilled a total of 7 sites to achieve passive margin (Sites 652, 653, and 656), deep basin (Sites 650, 651, and 655) and stratigraphic "type"(Site 653) objectives. Preliminary results suggest that the Tyrrhenian Sea is a rapidly evolving, young oceanic basin (1-3 my in age) that has developed in a western to southeastern direction through time. Drilling (Site 654) sampled rocks with characteristics that are transitional between continental and oceanic lithologies and which suggest that the crust was stretched during the rifting process. Drilling (Site 653) also recovered two complete stratigraphic sequences for correlation purposes.

The objectives of Leg 108 were paleoceanographic and paleoclimatic in nature and had as co-chief scientists, W. Ruddiman of LDGO and M. Sarnthein of the FRG. Leg 108 drilled 27 holes at 12 sites (Sites 657-668) and collected a record four thousand meters of cores. The cruise was terminated sooner than planned due to an illness within the shipboard party. Preliminary evaluation of the data is underway.

Future Cruises

Rabinowitz reported that staffing is complete for Legs 109-111, is in the final stages for Leg 112 and has been started for Legs 113 and 114. TAMU is presently awaiting permission to drill from France (for Martinique) and Barbados for Leg 110. Permission has been requested from Peru (for Leg 112). TAMU is also negotiating for an ice support vessel for Leg 113 (Weddell Sea).

Manager of Science Operations

Rabinowitz also reported that in November, 1986, the present Manager of Science Operations- Robb Kidd will return to the United Kingdom and will be replaced by Dr. Audrey Meyer, presently Assistant Manager of Science Operations. As a result of this move, ODP/TAMU will soon advertise for a replacement to fill the assistant manager post. This position will be filled in October/November 1986.

In closing the Science Operator Report, Rabinowitz reported that a co-chief scientist workshop was recently held in New Orleans. The purpose of the workshop was to bring together the co-chief scientists from past ODP cruises for constructive review and criticism of the program. The workshop resulted in forty recommendations that are being studied by the Science Operator.

WIRELINE LOGGING SERVICES OPERATOR REPORT

Anderson indicated that Schlumberger continues to be very excited with its association with the ODP and that this association provides an excellent opportunity for the testing of Schlumberger technologies in a non-oil and gas environment. Continuing his report, Anderson reviewed the logging results from Legs 104 and 105. Logs from Leg 104 show a cyclicity in the volcanic material that is produced at hard/soft lithologic boundaries by altered volcanic products and lava flow units in contact with sedimentary units. Further, a synthetic seismogram based on the logging data yielded seismic reflections that were similar in phase and frequency to those actually encountered by MCS profiles across the site. On Leg 105, logging data indicated a cyclicity in the resistivity and sonic logs whose spectrum suggested Milankovich climatic cycles. The success of their detection was the result of the high sedimentation rate for the area. Drilling showed the cycles to consist of montmorillonite-rich, pre-rift lacustrine (Messinian-age) material. Interlayered between the cycles were calcium-sulfur rich dessication deposits. These chemical compositions were used to produce a series of synthetic seismograms of the stratigraphic section. Anderson indicated that the ability to detect this cyclicity with the logging data is a significant achievement for the ODP.

Future Cruises

Leg 109

On Leg 109, the gamma spectroscopy tool (with a Californium atomic source) will greatly enhance the geochemical data suite as it will be able to detect 10 minerals.

Leg 111

On Leg 111, the cryogenic germanium crystal tool will be included in the logging suite and will contain the ability to measure 20 elements. This information will used to detect lanthanum (La), scandium (Sc) and vanadium (V) concentrations with depth in the section.

Presently, the Borehole Research Group (BRG) is investigating ways to purchase higher resolution tools (specifically, a dipmeter for determination of bedding dip at different intervals) for use in the Program. A small version of this tool can be made available for use in the ODP but modification is required. Because Schlumberger is unwilling to construct this tool for use in the ODP the BRG will ask the Office of Naval Research (ONR) for the funds needed to build/purchase the tool, which will become a standard logging tool in the program, and will be kept on the drillship.

Discussion:

During discussion, the question was asked as to what is the effect on the logging data of motion that cannot be damped out by the wireline heave compensator? Anderson indicated that an accelerometer is available from the oil industry to determine and correct for downhole motion and that obtaining such a tool is a future priority. Presently, it is not known how the motion is affecting the tools downhole. It was also asked if it were known how well the heave compensator worked on drillships that operate in only a few hundred meters of water. Anderson answered that since the wireline heave compensator has only been deployed on RESOLUTION there is no way to compare data. Anderson was also asked that if the vertical motion is unknown, how much confidence is there in data that yields, for example, resistivity information if the vertical motion is unknown. He indicated that the confidence level is high because this information is weighed against the input of other variables (such as bench marks within the formation).

Wireline Logging Workshops

The Borehole Research Group is planning to conduct a series of two day workshops on downhole experimentation in Japan, England, France and Germany. The first day will cover topics such as the application of scientific methods to the logging data with emphasis on seismic stratigraphic, paleoclimatic and paleoenvironmental implications. The second day will cover the development and progress of downhole measurements programs in each country.

MEMBER COUNTRY AND GUEST REPORTS

Federal Republic of Germany

D. Maronde began his report by welcoming the ESF into the ODP. He noted that the past sixteen months were very good for the FRG as German scientists had participated as co-chief scientists in two very successful cruises (Legs 104 and 108); the FRG had hosted two JOIDES meetings (the June 1985 PCOM meeting in Hannover and the September 1985 EXCOM meeting in Bonn) and there was an open ship day for RESOLUTION in Bremerhaven during this past summer. Maronde further reported that participation in the ODP continues to provide a stimuli for the interaction with other FRG research groups. This has led to the development of more results from DSDP Leg 73 data; members of ODP-FRG met with seventy scientists in Bonn to discuss research opportunities; a workshop on black shales resulted in 2 proposals; and the ODP was represented at the October 1985 meeting of the Second Conference on Scientific Continental Drilling. The Deutsche Forschungsgemeinschaft (DFG) plans for the period 1987-1990 are presently under discussion and Maronde indicated that the ODP will probably be a high priority item. Maronde ended his section of the report by saying that a new research vessel METEOR had been launched in March 1986 and would be available for site survey work.

H. Durbaum continued the report by indicating that in 1987 there would be 50% more proposals sent to the ODP and that they would cover physical properties of deep sea sediments, fossil bacteria studies, weathering of deep sea basalt using tracer elements and include analyses of Leg 108 cores and a geophysical survey of mid-Atlantic fracture zones. In reporting on the results of the POLARSTERN site survey cruise, Durbaum indicated that 6300 km of multichannel seismic data (MCS) were collected and that half this information was processed at sea. As a result of this cruise, 13 potential drillsites for Leg 113 were located for consideration by the Southern Oceans Panel (SOP). Durbaum indicated that scientists at the Wegener Polar Inst. were disappointed that an FRG scientist was not selected to fill a co-chief scientist slot on Leg 113. In commenting on the joint FRG-France Red Sea/Gulf of Suez MCS/submersible program, Durbaum indicated that clearance problems had occurred.

In responding to a request, made at the January 1986 EXCOM, for nominations for the non-US administrative position at the JOIDES Office, the FRG nominated Dr. Michael Wiedicke of the Bundesanstalt fur Geowissenschaften und Rohstoffe (BGR). This nomination has been discussed and approved by the other non-US partners.

France

B. Biju-Duval reported that France wished to express its welcome to the ESF on becoming a member of the ODP which continues to be the major geoscience research program in the country. The French ODP Committees (Executive and Scientific), which considerd French participation to be very valuable, are extremely impressed by the first year's results and are pleased with the excellent cooperation between the different partners. This had been noted by the new director of INSU at the very successful RESOLUTION portcall in Marseilles, who observed that most of the geoscience laboratories in France are actively involved in the ODP.

Biju-Duval indicated that the budget for 1987 had been prepared and presented in February 1986 for approval. Further, the results will known by summer of this year. Biju-Duval said that because of the quality of the program there is every reason to be confident that funding levels will remain steady, in spite of the governmental change. For 1986, the ODP Budget represents 1/4 of the total budget request. The total amount for the different institutions is approximately FF 5.5 M with FF 1.2 M for ODP-JOIDES structure (ODP French working groups and workshop participation), FF 2.5 M for sea operations directly related to ODP, FF 0.4 M for technology development, and FF 1.25 M for science support at CNRS and ORSTOM. These contributions should also be viewed in light of severe reductions in the Science Budget as CNRS, ORSTOM, INRA, INSERM and others have been asked to reduce their total budgets (including international programs) by 10%. INFREMER, on the other hand, has not been affected by the budget reductions.

Biju-Duval reported that in 1985, the French completed an MCS survey of the Tyrrhenian Sea in preparation for Leg 107 and a series of regional surveys in the Pacific during the circum-navigation by CHARCOT. In 1986, the French hope to conduct site surveys in the hydrothermal area near DSDP Site 504B, along the Peru margin and along the New Hebrides island arcs. Tentative plans also include areas in the Indian Ocean and in the Red Sea, once the clearance problems are resolved.

In discussing the Red Sea clearance problem, Biju-Duval said that the Red Sea program initially consisted of a 2 leg MCS cruise in the northern Red Sea/Gulf of Suez area and a 2 leg submersible program in the southern Red Sea. At the beginning of this year, both Egypt and Saudi Arabia denied clearance permission at both locations. At the last minute, permission was granted by

Egypt to operate in the Gulf of Suez. The cruise consisted of a two-ship seismic experiment with some ocean bottom seismogram (OBS) experiments. During the cruise, members of the Egyptian security service boarded one of the vessels and impounded all the magnetic data tapes. Although scientists within and outside of Egypt have tried to persuade the security service to return the data, there has been no progress, the situation is very difficult and the outcome is unclear. Also, at this time, Saudi Arabia has not granted permission to operate in the Red Sea. IFREMER is now considering the fate of those programs and even if permission is granted by Egypt and Saudi Arabia, there is no guarantee that these programs will occur as France does wish to find itself once again in a similar situation.

In the area of technological development, the French have conducted studies on drillhole re-entry with the Nadia shuttle, which will be handled by submersible. However, although its development has advanced, sea trials have unfortunately been delayed. In the meantime, development continues on the magnetic susceptibility tool and in the area of downhole temperature measurements. Because of the age of the French oceanographic research fleet, IFREMER and the government are reviewing plans for refitting the research fleet with state-of-the-art equipment. Current plans call for the construction (in 1986-87) of a large (approx. 85 m) vessel for interdisciplinary use. This vessel would be followed by a new ship (in the 1990's) for the fishery sciencies and a new ship (approx. 100 m) for the geosciences which would incorporate dynamic positioning, a central moon pool, and include light drilling and re-entry capabilities.

Canada

M. Keen reported that Canada wanted to join the long line of wellwishers in welcoming the ESF to the ODP. Since the last EXCOM meeting, the Site Survey Panel has met at the Pacific Geoscience Center, Sydney, B.C. which will also host the Central and Eastern Pacific Panel in June and the Executive Committee in October. PCOM will meet in Cornerbrook, Newfoundland in August. Recently, the Canadian ODP Council met with oil interests in an attempt to increase the interests of the Canadian mining and oil industry in the ODP. The Council is promoting a large publicity program in order to increase program awareness. Currently, the Council is forming a Canadian equivalent to JOIDES and plans are being developed for central and eastern Pacific programs. In closing, Keen noted that Canada wished to nominate R. Price to the COSOD-II Steering Committee and that in spite of financial problems, an increase in funding for ODP is expected.

Japan

T. Nemoto reported that Japan also wished to welcome the ESF to the ODP and that Japan has recently established the DSDP/ODP Paleontological Reference Center for diatoms in the National Science Museum at Tokyo. Nemoto indicated that the center will coordinate the exchange of paleontological data for the ODP. On March 12-13, 1986 at the Ocean Research Institute, a domestic scientific conference was held in which 70 scientists met to discuss drilling proposals and site survey plans, particularly in the area around Japan. At the time of this meeting, a site survey cruise was being conducted in the Sea of Japan (on R/V Hakuho-maru with K. Kobayashi as chief scientist). Nemoto reported that the Japan-France trench survey (KAIKO project) was very successful. Because of that success, the KAIKO Steering Committee is now convening the International KAIKO Conference on Subduction Zones to be held at Tokyo and Shimizu, Japan on 10-15 November, 1986. The conference will be global in scope and will focus on subjects related to drilling on active margins.

United Kingdom

J. Bowman began the report by welcoming the ESF to the ODP and announcing that this is his last EXCOM meeting as he will be taking a seat on the UK ODP Council. He then introduced J. Briden as a his successor to EXCOM. Bowman closed his section of the report by commenting on the successful Marseilles portcall and thanking TAMU and France for arranging the event. Briden indicated that an ODP Coordinating Committee had been established with the same membership as that during the days when the UK had observer status. Membership is presently being revised and the most notable changes are individuals who were previously alternates to JOIDES committees moving to membership positions. At this time, Briden noted that T. Francis is the UK PCOM representative.

Briden indicated that the UK is assisting in conducting ODP site surveys as CHARLES DARWIN is scheduled for cruises in the Red Sea, the Mascarene Plateau and the Makran in support of ODP. The schedule will become more firm within the next 12 months.

European Science Foundation Consortium

J. Stel thanked the membership for their past support and efforts in helping the ESF realize its membership in ODP. Stel noted that presently there are twelve countries in the ODP consortium and a management structure has been proposed with two committees (Management and Science) as the basis of organization. An ODP-ESF Secretariat will be established probably based at the location of the Chairman of the Science Committee. The draft will decided on at the next ESF Consortium meeting in June 1986 when panel and committee memberships will also be decided. Due to the number of members in the ESF Consortium, there is clear agreement that consensus is the rule and that voting will be a rare procedure.

In closing, Stel stated that present membership of ESF Consortium consists of Belgium, Denmark, Finland, Greece, Iceland, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland, and Turkey. B. Munsch added that Austria is presently pursuing membership efforts. The ESF showed a 30 minute videotape that aired on Dutch television which included information on the ODP and scenes from Leg 105 as narrated by J. Stel (in Dutch).

United States

J. Orcutt reported that through the US Science Advisory Committee (USSAC) funding has been made available for a number of workshops to be held in the coming year. These are a So. Pacific workshop at the Univ. of Miami, a seamount drilling workshop at L-DGO, a workshop on the measurement of physical and mechanical properties will be held at Cornell Univ., a workshop on Gulf of California drilling will be held in Mexico and a So. Atlantic drilling workshop will be held at WHOI. A report from each workshop will be distributed to the appropriate JOIDES panels. In an effort to publicize the timing and nature of the workshops and improve the flow of information to the community, USSAC will sponsor a regular column in EOS that will contain a synopsis of drilling activities and a schedule of JOIDES meetings and USSAC workshops.

At this point in the presentation, it was suggested that publicity be opened up through the publication of USSAC meetings and workshops in a journal of world-wide distribution, possibly the JOIDES Journal. It was the consensus that these announcements be sent to the JOIDES Office with sufficient lead time for publication. It was further suggested that the as the JOIDES Journal has a relatively closed distribution the establishment of an ODP Bulletin Board on Telemail together with publishing in EOS may effectively reach a greater number of individuals.

As a part of its duties, USSAC sponsors regional syntheses of data and currently spends $1.4 M per year on this development. In addition to USSAC support, the US (through NSF) sponsors regional and site specific surveys. Those of interest to ODP are a survey of the SW Indian Ridge by Dick et al. (WHOI), supplemental funding to J. Curray (SIO) to survey the northern portion of the 90 E Ridge, supplemental funding to W. Prell (Brown Univ.) for site surveys of the Neogene package sites, funding to J. LaBreque (L-DGO) for a So. Atlantic survey, to J. Mutter (L-DGO) for a survey of the NW Australia Plateau and funds to J. Weissel (L-DGO) for a survey of the Indian Ocean Intraplate Deformation Zone and the Broken Ridge area.

USSR

L. Dmitriev thanked the EXCOM for its invitation to attend the meeting. He indicated that although there is no USSR official position on membership his attendance at this meeting was of importance. In closing, he informally indicated that a membership decision could be made by early 1987.

After the Member Country and Guest Reports section, D. Heinrichs adjourned this portion of the meeting.

2. JOIDES Executive Committee Business Session

MINUTES OF THE PREVIOUS MEETING, 6-7 JANUARY 1986 (MOLOKAI, HAWAII)

The EXCOM unanimously approved the final minutes of the January 1986 meeting.

REPORT OF THE JOI PERFORMANCE EVALUATION COMMITTEE

J. Baker reported that the final version of the report had been received from the Committee in March and had been referred to the sub-contractors for their responses, which had not yet been received. The report of the PEC will be distributed to EXCOM in the near future. In summary, the PEC Report indicated that the committee was generally pleased with the progress of the program and recommendations were made for JOI and JOIDES. A comprehensive response from JOI will soon be prepared and distributed to the EXCOM, PCOM and NSF for comment and a full discussion is planned for the October 1986 EXCOM in Vancouver, B.C.

FY 87 BUDGET AND FY 87 PROGRAM PLAN

J. Baker indicated that the FY 87 Program Plan was developed in concert with the subcontractors and had been distributed to EXCOM members. The Program Plan consists of three sections: accomplishments, proposed reductions and the budgets of JOI, TAMU and L-DGO as needed to achieve COSOD and JOIDES objectives. In constructing the Program Plan, JOI attempted (based on a target figure recommendation from NSF) to develop a target budget with justifications, a program of impact if the target budget was not achieved and a higher budget if additional funds became available (see Table 1).

TABLE 1 - TARGET BUDGETS

(in millions)

	FY86 operations	FY87 low budget	FY87 target	FY87 high budget
JOI	1.43	1.47	1.56	1.66
L-DGO	2.50	2.60	2.75	2.89
TAMU	32.00	30.20	31.70	33.60
	-----	-----	-----	-----
Totals	35.90	34.30	36.00	38.10

TABLE 2 - TAMU OPERATIONS

(in millions)

	FY86 operations	FY87 low	FY87 target	FY87 high
Headquarters	1.76	1.66	1.79	1.79
Sci. Services	3.08	3.19	3.63	3.71
Eng.+ Drill.	4.60	2.90	3.51	5.20
Tech.+Logistics	3.32	3.04	3.25	3.25
Sci. operations	1.00	1.02	1.12	1.12
Drilling ops.	18.20	18.38	18.38	18.38
	-----	-----	-----	-----
Totals	32.00	30.18	31.69	33.57

TAMU FY 87 BUDGET BY TASK

	target budget ($M)
Ship Operations	21.27
Shipboard Science	2.51
Shorebased Science	2.73
Engineering Develop.	1.22
Core Curation	0.86
Publications	1.30
Headquarters	1.79

Total	31.69

Discussion of the TAMU Operations Budget:

P. Rabinowitz indicated that the differences between the FY 86 operations budget and the FY 87 target budget includes increases in Science Services (due to increased publications staffing and the opening of the Gulf Coast Core Repository), in Science Operations (due to an increase in personnel), and Drilling Operations (due to increased staffing of the SEDCO crew). Reductions occurred in Engineering and Drilling (due to cost reductions associated with the hard rock guidebase and drilling) and in Technical and Logistical Support (due to a personnel transfer into Science Operations). Rabinowitz further indicated that the increased costs for FY 87 Drilling Operations are based on historical averages for FY 86 and the fact that with the proposed schedule for RESOLUTION in FY 87, there is more transit time which will lead to a significant increase in fuel consumption. The ship will be in a part of the world where the fuel prices are higher. Rabinowitz also noted that Request for Quotations for publications had been issued and but there were no responses. The costs for publications for FY 87 include the publishing of the Part A volumes and start-up for the Part B volumes. When asked to comment on the FY 87 increase (20-25%) in computer services, Rabinowitz indicated that the costs were the result of equipment purchases that totalled $170 K.

Rabinowitz stated that TAMU was asked by JOI to reduce its budget by $1.5 M and in order to comply with that request a 15% across-the-board decrease was applied to non-fixed costs (e.g. Sci. Operations, Tech./Logistics, Science Services and Headquarters) and non-payroll costs. These reductions resulted in a cutbacks in publications and in engineering development and drilling hardware purchases. Shipboard operations (in Drilling Operations) was not reduced as TAMU tried to maintain the integrity of each cruise. Rabinowitz closed by saying that a very viable scientific program could be conducted at the lower level but a first-class program is in the target budget.

EXCOM Consensus: In light of the proposed cuts to publications and engineering development, it is the consensus of the EXCOM that publications, since it is critical to the success of the program, be made a first priority item that should be fully implemented at this time. Further, TAMU is further advised that the low budget level may be a long-term reality and not a short-term problem. EXCOM suggested that other choices for reductions are possible (e.g. in the SEDCO drilling crew, in the scientific staff or postponing engineering developments).

Several members indicated that they wished to see a breakdown of the low budget and that without this information it may not be possible for the EXCOM to make a decision on the Program Plan at this time. Furthermore, it was stressed that a decision needs to be made before the October 1986 deadline and that maybe the EXCOM needs to convene a meeting in June or July to act on the budget. EXCOM then requested that JOI develop a proposal with detailed low budget figures that reflect a long-term problem. Baker indicated, at this time, that the target budgets presented were what the subcontractors were asked to develop. The subcontractors were asked to only generally consider low budget figures. Rabinowitz then asked as to when will the real target number be known? Baker indicated that the contribution from the foreign partners is known and totals $15 M, the NSF contribution is unknown and could be $17, 19 or 21 M. Further, the timing of a decision is unknown until the 1987 budget is passed in the US Congress (this could be as late as November 1986). In response to this discussion, G. Gross (NSF) indicated that ODP should probably plan on a $19 M contribution withthe $21 M contribution a possibility but not a probability. R. Heath (Univ. of Washington) countered that the $19 M figure may be a short-term figure but there is no evidence to indicate that it should be considered for the long-term.

L-DGO WIRELINE LOGGING SERVICES OPERATIONS BUDGET-TABLE 3

(in thousands)

	FY86 operations	FY87 low	FY87 target	FY87 high
Headquarters	960	948	1,068	1,208
Schlumberger	1,444	1,487	1,510	1,510
Stanford U.	47	112	119	119
Masscomp	49	52	52	52
	-----	-----	-----	-----
Totals	2,500	2,600	2,750	2,890

Discussion of the L-DGO Budget:

R. Anderson indicated the Schlumberger subcontract represents the largest single committment of the Borehole Research Group and that the 4% cost increase by Schlumberger scheduled for October 1986 is the first since the inception of the Program. In addition the difference of $30 K between the low and target figures for Schlumberger are for additional work on the Wireline Heave Compensator. Anderson also indicated that the Masscomp computer service contract could be terminated but that it is cost effective to maintain.

WIRELINE LOGGING SERVICES BUDGET BY TASK- TABLE 4

at L-DGO: (in thousands)

Item	FY86	Change	Total
Salaries	360	+45	405
Equipment	140	-30	110
M	50	+9	59
Travel	46	+28	74
Computers	65	+9	74
Others	53	+11	64
Overhead	244	+40	248
		+112	

at Stanford Univ.:

Item	FY86	Change	Total
Salaries	24	+16	40
Equipment	0	+25	25
Travel	5	0	5
Overhead	18	+32	50
		+73	

In discussing the line items, Anderson indicated that the Borehole Research Group is presently working at a minimal staffing and that if personnel were reduced there would be no guarantee of a continous presence by L-DGO logging scientists on RESOLUTION. Under Equipment in the L-DGO budget, funds are to solve problems with the Wireline Packer ($140 K) and $132 K for new equipment. Originally this money was targeted for the AMOCO packer for Leg 110, but the packer development has been cancelled by AMOCO. To fill this void for Leg 110, the BRG has negotiated with Schlumberger for a Repeat Formation Tester (RFT) to sample porefluids. For the development of new tools the BRG will go outside the ODP to the Office of Naval Research (ONR) to obtain funds (approx. $500 K) to purchase a dipmeter to measure the downhole bedding dip. Equipment costs not associated with the wireline packer are for routine logging services. Proposed changes in logging services are a change in the mud program which was blamed for causing bridges in ODP drillholes and to develop, using permanent equipment FY86 and FY87 funds, a sidewall entry sub to physically break the bridges. In this budget $30 K has been asked for steel to build the sub. Anderson noted that 22% of all ODP drillholes have been affected by bridges which is caused by swelling of clays due to the freshwater drilling mud. The increase in travel reflects $11 K for the foreign logging schools and travel to meet RESOLUTION. $10 K has been budgeted for logging truck services to test ODP equipment before it goes to sea, since there are no back-up tools. In discussing the low budget figures, Anderson again emphasized that the Borehole Research Group is working at a bare minimum and indicated that the most that can be reduced would be $15 K by deferral of payment on the AMOCO packer and delay payment to Schlumberger into FY 88. Anderson closed by stating that the BRG has no control on the overhead figures at Columbia or Stanford Universities.

<u>EXCOM Consensus</u>: The L-DGO budget should remain in the program plan at proportions as now proposed and that budgets should remain at levels no lower than $2.75 M. EXCOM endorses approaching the ONR for funding the dipmeter and spending the Permanent Equipment FY 86 and FY 87 funds for development of the Sidewall Entry Sub.

JOI MANAGEMENT BUDGET-TABLE 5

	FY 86 operations	FY 87 low	FY87 target	FY87 high
Headquarters	468	446	512	547
Corp. Budget	563	632	637	642
JOIDES Office	208	213	223	268
Data Bank	167	178	188	200
	-----	-----	-----	----
Total	1,429	1,470	1,560	1,657

(in thousands)

Discussion of the JOI Budget:

J. Clotworthy indicated that JOI has taken steps to assure that ODP pays only for the time spent on ODP contracts. He noted that when there is spare time on ODP contracts, JOI personnel work on other contracts (such as DOSECC) but that ODP is first priority. If JOI is to operate on the low budget figures then one slot at the JOI or JOIDES Office (other than the non-US adminstrative post) may have to be eliminated. JOI examined the costs of moving the JOIDES Office from URI to OSU and found that they are not a major factor as provision has already been made for this item. On examining proposed funding for data processing equipment at OSU, JOI hopes to reduce that figure from $15 K to $10 K.

COSOD-2

COSOD-1 cost $75 K and those costs were divided among the establishment of a secretariat ($25 K), printing costs ($25 K) and travel costs ($25 K). For COSOD-2, travel is not co-mingled as each each country pays travel of its attendees and printing is no problem as it will occur in FY 88. The location of the secretariat is unknown but should be accomodated within target figures.

Overhead

Clotworthy indicated that the difference between FY 86 and the target is due mainly to office rent. JOI has negotiated a 10 year lease with the Brookings Inst. at rates during 1986 which were comparable to that at the previous location in the National Academy of Sciences and which resulted in 4 months free rent. Therefore FY 87 reflects the full yearly rent. Discussion indicated that NSF understood the major increase in overhead to be attributed to benefits and salaries.

Site Survey Data Bank

The target budget for the Data Bank reflects a $12 K increase requested by the Site Survey Panel and increased costs at L-DGO. The low budget reflects cost growth only and the high budget includes a part-time position.

EXCOM Consensus: It is agreed that the Site Survey Databank be budgeted at acceptable minimum levels as recommended by the Klitgord Report.

EXCOM Consensus: It is the general feeling of EXCOM that the JOI budget is unrealistic and that the subcontractors were misled into believing that the shortfall need be for one year only. The EXCOM suggests that JOI accept the low budget figure as a continuing budget from FY 87 on and that if additional funds become available or if a seventh country joins ODP, then that will be regarded as a windfall. In the meantime, a level of $34 M ($19 M-US and $15 M-non-US) is the budget figure for FY 87. Further JOI and the subcontractors should develop a program plan that assumes this steady state without postponing or deferring items into the future.

Discussion among EXCOM members indicated that again there was no evidence that the $19 M contribution is a realistic figure and that the low figures represent the extreme downside of the budget. NSF indicated that a $34 M budget is probably too pessimistic and that $36 M is too optimistic. The EXCOM did agree, however, that JOI should present a program plan with budgets in August 1986. The EXCOM agreed that an EXCOM Subcommittee meet in early summer (June/July) to review budget plans. The subcommittee will be composed of R. Heath, H. Durbaum and M. Keene.

JOIDES OFFICE - NON-US STAFF MEMBER

At the January 1986 meeting, the non-US partners were asked to present nominations for the non-US administrative staff position at the JOIDES Office. The FRG, after discussion with the other foreign partners, agreed that Dr. Michael Wiedenke should fill the post. Dr. Wiedenke has spent the last 5 years working with Dr. Helmut Beiersdorf in coordinating ODP-FRG activities. He has been involved on several SONNE cruises between 1981-1985 and has worked on various marine geological projects.

SHIP'S CLEARANCES

J. Baker indicated that UNOLS has decided to distribute a questionaire on clearances to universities and others in order to produce a more effective mechanism for getting permission to operate in foreign waters. Baker suggested that JOIDES could follow this lead and perhaps take stronger action, such as hiring a person at JOI or elsewhere whose primary responsibility would be to handle clearances.

During discussion of this suggestion, it was noted that given the recent French/ German events in the Gulf of Suez and with the best of efforts, there is no guarantee of success. Further, as RESOLUTION ventures farther away from US and European ports, it is indeed possible that these problems will magnify. Therefore is was agreed by EXCOM that JOI and NSF should do all they could to minimize the problems associated with obtaining clearances. In closing discussion, it was suggested that the hiring of a person to exclusively handle clearances could follow the UK example, where a similar person works out of a headquarters location.

PLANNING COMMITTEE REPORT- 21-24 JANUARY 1986
(LA JOLLA, CA)

R. Larson began the PCOM report by announcing that the JOIDES Office has produced another special issue of the JOIDES Journal-ODP Safety Guidelines. Larson divided the planning phase of his report into 3 sections- Short term planning (which covered the next twelve months and includes Legs 109-114), Medium-range planning (the Indian Ocean) and Long-range planning (the Pacific Ocean).

Short-Term Planning

Larson indicated that short-term planning remains basically unchanged since the January meeting. Leg 109 in now in progress and has as its prime objectives are the deepening of the hole established at Site 648B and to log (for 7 days) DSDP Site 395A. The back-up plan will default first to drilling in the Kane transform and then to the Snake Pit hydrothermal area. Leg 110 remains unchanged and has as its prime target the drilling and logging and hydrogeology of the decollement zone of the Barbados forearc. The back-up plan is a series of single bit sites above the decollement. Leg 111 will deepen and log DSDP Hole 504B and will 5 days of double APC/XCB cores in the vicinity of 504B for a Neogene/Quaternary paleoceanographic and paleontologic reference section and for geochemical studies. Leg 112 is not yet fully organized. The leg will address TECP and SOHP objectives and presently may have some safety problems and engineering considerations in the shallower areas along the margin. Leg 113 is unchanged and J. Kennett (URI) and P. Barker (UK) are designated as co-chiefs. SOP will now have to evaluate the recently collected 6300 km of MCS data from the FRG for site selection. This leg will require an ice picket boat. Leg 114 has paleoceanographic objectives and will contain a transect from the lower latitudes of the South Atlantic to 40-50^{o}S lat. Site surveys are planned by J. Labreque on the R/V POLAR DUKE in September/October 1986 and on the R/V CONRAD later in October 1986.
R

Discussion:

During discussion of Leg 113/114, it was asked if it is realistic to expect that PCOM would shift 113 objectives to 114 if problems developed on 113? Larson indicated that given the prioritization of the two legs, he believes it would be done if necessary.

Medium Range Planning (Indian Ocean Planning)

The schedule generally remains unchanged from the Hannover PCOM meeting, June 1985. The only changes that have occurred are the SW Indian Ridge was expanded to a full leg while the Fossil Ridges program was eliminated from planning due to a lack of enthusiasm by LITHP, who preferred the former. Kerguelen 1 and 2 have three primary work areas: a northern area with TECP objectives, a southern area and Prydz Bay with paleoceanographic objectives. The site survey problems for the Indian Ocean will be solved with the Neogene site survey conducted by W. Prell (Brown U.), No. 90^{o} E conducted by J. Curray (SIO), So. 90^{o} E, Broken Ridge, and Intraplate Deformation conducted by J. Weissel (L-DGO), SW Indian Ridge conducted by Dick et al. (WHOI), and Leg 114 conducted by J. LaBrecque (L-DGO). These surveys in conjunction with those by DARWIN for the Makran and Mascarene areas covers all bases for Indian Ocean planning.

Planning for the Red Sea poses a special problem, especially in light of the recent inability of the France/FRG to obtain clearances to work in the area. However, a sufficient amount of data does exist within the global community which, if made available, can be used to construct a drilling program if clearances are solved and politics are not a problem.

Discussion:

Several EXCOM members felt that given the problems that the US is having in that section of the world and given there is a high degree of volatility at this time, perhaps the Program is best served if RESOLUTION did not operate in Red Sea waters. On the other hand several other members felt that the Red Sea has some unique problems (e.g. hot brines) and that a decision to operate there should be delayed for a period of 6 months. The Science Operator indicated that TAMU is willing to wait the six months, but noted that the number of problems (e.g. logistics) greatly increases. An alternative was suggested which would ask the PCOM to construct a Plan A and a Plan B. Plan A would eliminate the Red Sea from the schedule now and replace it with an alternative. Plan B would retain the Red Sea on the present schedule, but identify an alternative program that could be put in its place six months from now. It was asked if the Red Sea were eliminated, what would take its place. Larson answered that the Somali Basin, Makran and a second Neogene package programs were all viable alternatives to replace Red Sea and the legs would be adjusted around the Monsoon season. A straw vote taken among the membership indicated that the EXCOM favored Plan B.

Vote: Plan A - 5
Plan B - 10
(1 abstain)

Knauss suggested that NSF confer with the State Department and that a report be made to the PCOM and EXCOM.

Long Range (the Western Pacific)

As a basis for planning the PCOM has agreed to a provisional allocation of 3 years of operations to the region with time equally divided between WPAC and the remainder of the Pacific. The thematic and regional panels were asked to identify high priority areas and to develop programs for 1.5 and 2 years. Those programs will be discussed at the May PCOM meeting. The total time is still tentative and will include an effort to drill the East Pacific Rise hydrothermal site. This may require extending the Pacific program. In any case, this will bring to a close the first circumnavigation in late summer of 1991.

JOIDES Panel Structure

Following an evaluation of the panel structure by PCOM, the thematic and regional panels were left in place but changes occurred in how their jobs are done. Under the revised system, thematic panels define thematic objectives in a geographic region, this advice is forwarded to the regional panels who develop a drilling program which address thematic goals, this program is sent back to the thematic panels for review and comment and finally, the drilling program is sent to the PCOM.

Panel Chairmen's Meeting

In a effort to improve lines of communications between the panels, the PCOM has decided that a yearly meeting separate from that with the PCOM is appropriate. The first of these meetings was held this spring at Oregon State University and hosted by N. Pisias. Pisias reported that the meeting was successful and the chairmen agreed with PCOM proposed 3-step, idea-flow process.

The chairmen indicated that JOI-USSAC workshops are very useful and that results of these should reported to thematic panels and proposals sent to the JOIDES Office. The chairmen did note that problems exist with the intra-panel liaisons. The chairmen urged that they be reimbursed for actual expenses related to JOIDES instead of the present $1000/yr grant. The chairmen also requested that the JOIDES Office take responsibility for minuting the panel meetings or that a strong liaison sytem be developed. In closing, Pisias indicated that the chairmen also requested that planning occur far enough in advance to satisfy the various national funding agencies and to provide opportunity to plan beyond a particular region.

Panel Membership

Discussion deferred until the outcome of ESF membership.

COSOD-2

The PCOM has established a Terms of Reference and a Steering Committee will be chosen at the May meeting from a list of nominations from all member nations. Current plans are to convene the meeting in July 1987 with a report, published with co-mingled funds, will be due out 6 months later. Suggested venues were Cambridge, UK; Kiel, FRG and Strasbourg, France. B. Munsch reported that it was agreed that the meeting should occur during the first week in July in Strasbourg at the Palais Des Congres which can seat 350 participants. Meeting participants will be housed in student residences and at the Holiday Inn.

Discussion:

In discussing the selection of the steering committee members and chairperson by the PCOM, it was stressed that the chairman be willing to commit at least 6 months to the project (with financial assistance as a possibility) and that it is important that a person of international repute be chosen. The EXCOM further requested that the PCOM recommendations be circulated to EXCOM members by mail for comment before the October EXCOM meeting.

Technology and Engineering Development

Larson indicated that he has been working with the TEDCOM in order to identify and outline problems of technology and engineering but not for solutions. For solutions, Larson suggested that TAMU or others may have to contacted. Larson has requested that TAMU develop a report on a slimline riser system (with rudimentary blowout capabilities) for deep sedimentary and igneous deep hole objectives and to overcome hole cleaning problems. In addition, Larson requested a TAMU report on geothermal drilling at greater than 300 deg. C. Both requests were identified as problems not solvable with current industrial technology. Moreover, the impetus to develop these new technologies is lacking due to the current oil and geothermal financial condition.

In closing the PCOM Report, Larson indicated that the PCOM will meet 28-30 May at L-DGO and on 11-15 August in Corner Brook, Newfoundland. Also, as of 1 October, the JOIDES Office will be located at Oregon State University with Nicklas Pisias as the Planning Committee Chairman.

WRITTEN REPORTS FOR EXCOM MEETINGS

In responding to a request by several EXCOM members, after the last meeting, that a brief written report with viewgraphs and other literature presented at the meeting be prepared by the liaisons and that this information be distributed at the meeting or included in the pre-meeting meeting package, the members agreed. The EXCOM also suggested that the reports highlight action or problem items and be used in combination with the minutes of the meeting in preparing post-meeting reports. It was mentioned that often the minutes arrive too late to attend to immediate action items and that the minutes could be modified to reflect discussion only.

PARTICIPATION OF THIRD WORLD SCIENTISTS

The JOIDES Office reported on the results of approaches made to a variety of international agencies. Positive responses had been received from IOC (in terms of travel funding to enable Third World scientists to attend meetings and to join RESOLUTION), SCOR and from IUGS. The latter organizations will be of assistance in providing better communication with the worldwide scientific community. Support from the World Bank and the petroluem industry is most unlikely at this time. In discussion, J. Bowman suggested that agencies in the ODP member countries such as the Overseas Development Administration (ODA) in the UK could be source for obtaining funds for participation.

OTHER BUSINESS

JOIDES Office Archives

It was the consensus of the EXCOM that the JOIDES Office arrange with the JOI Office for the latter to archive 1-2 file drawers per JOIDES Office.

ODP Sampling Strategy

B. Biju-Duval suggested that JOIDES panels should consider the impact of the present sampling strategy on the long-time goals of the program. He personally feels that the present policy is not in the best interest of the program and that any revision to the strategy should examine the roles of the co-chief scientists, the scientific party and the JOIDES structure.

Geology and Geochemistry of Upper Mantle Heterogeniety

L. Dmitriev gave a brief presentation on upper mantle heterogeniety based on geochemical studies of mid-ocean ridge basalts. In closing, Dmitriev stressed that more drilling is needed along the Mid-Atlantic Ridge in order to increase the amount of information necessary to resolve the problem.

FUTURE MEETING ARRANGEMENTS

15-16 October 1986 in Vancouver, B.C. - EXCOM only
28-30 April 1987 in Washington, D.C. - EXCOM and ODP Council

EXCOM agreed to reserve 6-7 January 1987 as a contingency in case an EXCOM meeting is needed.

During the close of the meeting, the EXCOM thanked J. Knauss for his leadership during the past 2 years. The EXCOM also expressed its gratitude to R. Larson, A. Mayer, D. Keith and M. Burdett for their support.

Appendix A

NSF Report
JOIDES EXCOM/ODP Council Meeting
Annapolis, Maryland

Introduction

The National Science Foundation is pleased to officially welcome Japan, the United Kingdom, and the European Science Foundation Consortium to the Third Annual Meeting of the International Council for the Ocean Drilling Program. They join Germany, France and Canada as full members. The Ocean Drilling Program, NSF and JOIDES will benefit from the knowledge and interaction of the scientists from all member countries. NSF is especially pleased with the broadening of ODP participation among the 12 ESF member countries.

USSR Status

An invitation to initiate discussions for membership in the Ocean Drilling Program was sent to USSR Academy of Sciences in October 1985. No formal response has yet been received. However, the NSF understands that the Academy is actively reviewing scientific and administrative considerations. Dr. Leonid Dmitriev is attending the EXCOM meeting as an observer. He may provide additional information.

FY 1986 Budget

The budget for the joint program costs of the Ocean Drilling Program in FY 1986 remains at $32.5 million. This is the amount projected last year at this time and identified in the final program plan for 1986. The source of the funds is:

U.S. National Science Foundation	$20.0 million
Five International Members	12.5 million
	$32.5 million

The Unted States Government adopted a budget deficit reduction act, known as the Gramm-Rudman-Hollings or GRH bill, late in 1985 that reduced the NSF budget overall by 4.3 percent. ODP along with several other high priority research areas within NSF were protected from budget reductions. This required concurrence from the U.S. Congress and recognized the strong international commitment to the program. It demonstrates the strong U.S. commitment to ODP.

FY 1987 Program Plan and Budget Request

A major agenda item for the JOIDES Executive Committee at this meeting is to review, evaluate, and advise the NSF on the FY 1987 program plan developed by the Joint Oceanographic Institutions, Inc. (JOI). This includes activities of JOI Headquarters, the Science Operator, Texas A&M, and the logging program at Lamont-Doherty Geological Observatory.

In meeting the FY 1986 operating budget of $32.5 million, it was recognized that full, long-term support levels for the publication of the scientific results of the ODP and the desired level of engineering support for future technological developments could not be met. All immediate needs were met.

For planning purposes, the NSF provided JOI with a maximum target figure of $36.0 million for FY 1987 program costs. This was based on an assumption of six international members and modest growth in NSF support. JOI was requested also to develop a program plan to include all essential operations for 1987 at a minimum level of $34.0 million--or a $2.5 million increase over 1986. Any "enhancements" over the $36.0 million level were to be clearly identified and justified in terms of benefits to the ODP.

The assumption of a sixth international member joining in 1986 has been met--the European Science Foundation Consortium. Their contribution will affect the FY 1987 budget but is too late to be included in the FY 1986 budget. The status of the NSF FY 1987 budget is less clear. The GRH Budget Deficit Reduction Act is still in effect. This may result in additional reductions in NSF funds in FY 1987 and the Ocean Drilling Program might not be protected at that time.

NSF is commited to maintaining an effective and efficient program in scientific ocean drilling together with our international partners. Adequate support for essential ODP operations will be maintained. JOIDES EXCOM, with appropriate consultation and advise from the Planning Committee, must provide guidance on program requirements and priorities for increased scientific and technological activities.

The range of possible budget levels the FY 1987 Program Plan was requested to address is realistic. These are:

U.S. National Science Foundation	$19.0 million
Six International Members	15.0 million
	$34.0 million

NSF meets its basic commitment to the Ocean Drilling Program. International member contributions remain at FY 1986 level.

U.S. National Science Foundation	$19.0 million
Seven International Members	17.5 million
	$36.5 million

NSF and seven International members support the Ocean Drilling Program.

You have received copies of the FY 1987 program plan which provides a good basis for discussion and review. Unfortunately, copies of the draft program plan mailed to the EXCOM and ODP Council did not include a budget analysis by task as agreed by JOI at the September EXCOM meeting. And several of the financial tables have errors. JOI will provide the promised task analysis and corrected tables as part of their presentation of the FY 1987 program requirements and priorities.

Summary

The eight drilling legs completed by ODP have been successful. The scientific results are exciting. The new technology applications were successful and will allow new scientific studies. The plans for 1987 and beyond demonstrate and document continuing opportunities for global scientific advances. The upcoming COSOD-II conference in Europe will provide increased focus for the program and identify additional scientific opportunities. The NSF continues to support the strong long-term, international Ocean Drilling Program extending the past scientific successes.

JOIDES Panel Chairmen Meeting
PANCHM-86
3 - 4 April, 1986
College of Oceanography
Oregon State University

Abbreviated Minutes

The meeting of the Chairmen of the JOIDES advisory panels (PANCHM) was held April 3 and 4, 1986, at the College of Oceanography, Oregon State University. Those attending included: J. Austin (ARP), G. Claypool (PPSP), L. Mayer (SOHP), N. Pisias (PCOM), D. Rea (CEPAC, chairman), M. Salisbury (DMP), R. Schlich (IOP), and B. Taylor (WPAC). Scheduled attendees R. Detrick (LITHP), J. Kennett (SOP), and A. Mayer (JOIDES) were trapped in Denver by the April 2-3 snowstorm and could not get to the meeting. D. Cowan (TECP), J. Peirce (SSP), J. Jarry (TEDCOM), and D. Appleman (IHP) were not able to attend.

We were disappointed by the circumstances that kept two panel chairmen and the JOIDES representative in Denver, but prior personal conversations between attendees and strandees revealed them to be of like mind to those at the meeting on most issues, so we continued in confidence and checked with them by telephone afterwards.

The meeting began with a brief presentation of the concerns expressed by PCOM as to the efficacy of panel-to-panel, especially thematic-to-regional, communication and the nature of panel-to-PCOM communication.

Most of the first morning was taken up by a discussion by each panel member of how their panel functioned and what particular problems had been encountered. We all have some problems with liaison between thematic and regional panels. The effectiveness of inter-panel liaison depends, in all cases, upon the liaison person and the effort that person makes to attend all pertinent meetings. In regard to panel responsibilities, the panel chairmen agree with PCOM that thematic panels should identify important global themes and objectives and that regional panels should, using submitted proposals and their knowledge of major regional problems and the thematic guidelines, attempt to construct a drilling program that would best meet the combined set of objectives.

Five additional categories of problems other than liaison/communication and regional/thematic relationship surfaced during these discussions. They included: the fact that PCOM is slow (or unresponsive) in acting upon requests for changes or additions in panel membership; that PCOM does not provide feedback to panels as to the scientific, political, or logistical rationale for actions that are contrary to panel recommendations; major topics such as geochemistry and tectonic evolution of ocean basins are being poorly covered by the present operational mode of the panels; a general concern with the flow of paper, especially minutes and supporting documents around the advisory system; and a concern that JOIDES-JOI is not doing enough to enhance the flow of information to the broad community of earth scientists.

Reports and recommendations attached to these minutes discuss the method of thematic-regional interaction, methods for the improvment of liaison, and the problem of important topics not being covered. As to the other problems, the PANCHM group urges PCOM to complete panel staffing and restaffing at their May meeting and to respond more rapidly to panel requests for additional or altered membership. Several panels have had staffing requests pending for up to a year. The paper flow problem is a bit fuzzy but there is a concern that JOIDES needs to send more things to more places. The flow of information to the broader earth science community is seen as a matter for concern. Most geologists do not understand the difference between DSDP and ODP, how to approach the project for information or samples, or how to volunteer for panel service or for shipboard scientific parties. The PANCHM group also perceives a need for more PR as other major projects such as DOSECC move to the forefront of science news. One suggestion is that JOI place exhibits at GSA, AGU, AAPG, SEPM, etc. meetings as well as special meetings such as the Circum-Pacific conference in Singapore this summer.

The next topic discussed was the nature and possible redundancy of efforts in proposal review and planning. An important aspect of this is the establishment of guidelines for the timely submittal and review of proposals. We were able to agree on the following timetable:

Guidelines for ODP Proposal Submission

Proposal Category	Time	IOP	WPAC	CEPAC
Immature & Idea				
Drilling Proposals (basic) & definition of Thematic Objectives	X-36 Mo.		9/85	3/87
Drilling Proposals (funded surveys)	X-24 Mo.	5/85	9/86	3/88
Mature Proposals	X-6 Mo.	11/86	3/88	9/89
Regional Drilling Starts.	X	5/87	9/88(?)	3/90(?)

Table A. Guideline times for when various proposal categories will be accepted for consideration, i.e. after 9/86 only drilling proposals with funded or in hand survey data will be considered by WPAC.

The usefulness of the JOI-USSAC workshops in the planning process was recognized by the PANCHM group. We urge workshop convenors to present the results of their meetings in a dual manner. First, a thematic presentation in the COSOD sense subdivided according to the purview of the three thematic panels. The second part of the report should contain a series of drilling proposals complete with site forms, seismic profiles, etc. A further suggestion is that the JOI supported workshops be given a title of international flavor so that interested scientists from the Partner Nations can more readily obtain money from their governments to attend "this important international meeting".

The last discussion of the first day concerned more specifics of the multiple liaison problems.

The second day began with a discussion of the PANCHM reaction to the set of notes prepared by A. Mayer and sent to Oregon State by telemail (A. Mayer was still in Denver) from the JOIDES office. Our first reaction is that permanent liaison members should remain full voting members of both of their panels in order to be fully effective in their job. Panels in the off years, such as ARP, should reduce the frequency of meetings to every 9 months, or so, but retain strong thematic ties to enhance the long-term planning effort for that region. The thematic-regional liaison is important at all stages of planning and should not be removed or reduced.

The next discussion was a broader examination of those topics not now well covered by the panel present structure such as geochemistry, tectonic evolution of ocean basins, physical and geotechnical properties and the inadequacy of Resolution underway geophysics. A report on this topic is attached.

Under the heading of broad scale planning, the PANCHM considered alternate drilling packages for the Indian Ocean with attached results. We moved on to consider how well ODP had approached and achieved the several COSOD objectives. PANCHM concluded that ODP had been successful in this matter in the context of objectives posed for each leg. Our report on this discussion is attached.

To facilitate short and long term planning and smooth the functioning of the panels, PANCHM urge that JOI be asked to reimburse actual expenses to panel chairman as they commonly exceed the $1000 now alloted. Most chairman have to make up the difference now from their own research funds.

Finally, PANCHM found this meeting to be very valuable on a number of levels from formal discussions on the agenda items to informal discussion on liaison problems, panel staffing, etc. We strongly urge PCOM to authorize a PANCHM meeting every summer and also just prior to the normal annual (January) PCOM meeting. It is of overriding importance that all thematic panels be represented, and we regret their absence at this meeting.

PANEL STRUCTURE & DRILLING PROGRAM EVOLUTION

It was the consensus of the PANCHM that the present (pre-January PCOM directive) panel structure is not working well. Frustration and disillusionment have resulted from problems associated with poor inter-panel communication (see liaison discussion), redundancy of efforts and inappropriate review requirments (i.e. thematic panels being requested to prioritize programs that include other thematic panels' interests). We believe that these problems could be greatly reduced if a single, prioritized list of drilling targets for a given region, representing the interests of all the thematic panels, could be presented to PCOM.

A minority of those in attendance felt that the best means of achieving a coherent prioritized list is to formally re-organize the panel structure and eliminate the thematic/regional dichotomy (i.e. Arthur/Leinen memo). The majority felt that this goal could be met within the existing structure if the following procedure could be followed:

1 - The thematic panel develops and provides to the regional panel a prioritized list of region-specific thematic objectives with generic "type" examples for each priority (i.e. tectonic setting - accretionary wedge or depositional environment - carbonate platforms, etc.). This procedure is critically dependent on strong liaisons between the thematic and regional panels (see liaison discussion). The thematic panels should receive copies of all relevant proposals, but should not be responsible for prioritizing proposals within the regional framework.

2 - The prioritized list of regional objectives is passed on to the regional panel which reviews and prioritizes the relevant proposals submitted by the scientific community in the context of the thematic objectives. The regional panel also tries to consolidate proposals that can logistically be combined and identifies any region-specific problems that may have been overlooked by the thematic panels. A "strawman" list of prioritized drilling objectives and locations is constructed that, as completely as possible, incorporates the highest priorities of the thematic panels.

3 - The "strawman" list is then evaluated by the thematic panels to determine whether it reasonably meets their major objectives. Then, if necessary, a meeting is held of all three thematic chairmen and/or their representatives and a subset of the regional panel. The "strawman" list of sites is discussed and finalized. This list is then passed on to PCOM.

The PANCHM unanimously recommends that the above described procedure be adopted, but that its effectiveness be carefully evaluated at our next meeting.

LIAISON

The PANCHM consider effective liaison between regional and thematic panels not only desirable but essential. After a review of individual panel experiences over the first 2 years of ODP operations, PANCHM concluded that the present system has been only intermittently operative. When it has worked successfully, its success has depended solely upon the desire and motivation of the individual liaison.

Therefore, PANCHM propose the following scheme for improving the present structure. However, PANCHM may consider more fundamental changes at its next meeting if these suggestions do not resolve the problem.

1 - PANCHM wants the present ODP policy of having single members of thematic panels to attend regional meetings as full-voting members to continue.

2 - PANCHM considers that members of regional/service panels should also serve as liaisons at thematic panel meetings on an ad hoc basis as needed, and with prior approval of the respective chairmen. A representative from DMP should attend one meeting per year of the thematic and regional panels.

3 - Joint scheduling of pertinent thematic and region panels (e.g. WESTPAC/TECP) should be arranged approximately 24 months prior to scheduled drilling in order to optimize a coordinated thematic approach to the regional schedule. The JOIDES office should also arrange for partially overlapping meetings of thematic and pertinent regional panels as much as possible in order to enhance further inter-panel communications.

4 - As needed, and with the science operator's approval, PANCHM felt that TAMU staff scientists could be used as a means of effective information transfer between regional and thematic panels. These liaisons would be non-voting, and would not necessarily replace the normal liaison structure already described.

PANEL SHORT COMMINGS

PANCHM recognized that several areas are not being adequately covered in the present panel structure:

1 - GEOCHEMISTRY. Although a number of geochemists are scattered throughout the panels, a critical mass exists in none, including SOHP which has geochemistry as part of its mandate. As a consequence, organic and inorganic chemistry have no forum for debate in JOIDES and the program is adrift in terms of planning for sampling clathrates, recommendations for geochemical studies, industry and academic sampling programs and shipboard and downhole geochemical instrumentation. PANCHM considered establishment of a working group under SOHP to address this problem, but was reluctant to endorse panel proliferation. Instead, we recommend that: 1) an inorganic geochemist be permanently added to SOHP which already has two organic chemists on the panel, 2) that SOHP conduct an expanded debate of these questions at its next meeting, with the help of invited guests, and 3) that if these measures provide inadequate or ephemeral that a geochemical service panel be created.

2 - HISTORY OF OCEAN BASINS - Plate kinematic studies are also falling through the cracks. PANCHM reminds TECPAN that this is part of their mandate (item 4.2, Panel Mandates) and recommends that plate kinematic modelers be added to the panel at the next rotation

3 - PHYSICAL/GEOTECHNICAL PROPERTIES. A similar problem exists in the areas of physical properties and geotechnical studies (only one physical properties scientist and no geotechnical specialist currently serve in the panel structure). PANCHM considered the setting up of a working group answerable to DMP to: 1) advise TAMU on shipboard instrumentation, 2) foster input from the geotechnical community, 3) foster log/physical properties correlation, 4) monitor the data base and 5) educate the community, but decided to await the recommendation of the USSAC physical properties workshop being held in June, 1986, before proceeding further.

4 - UNDERWAY GEOPHYSICS. The underway geophysics capabilities of the Resolution need to be improved. TAMU is responsible for solving these problems but SSP should be assigned responsibility for oversight.

5 - DMP MANDATE. The DMP mandate should be expanded to reflect its dual service/thematic (geophysics) advisory role.

6 - SOHP. A clastic sedimentologist should be added to SOHP.

INDIAN OCEAN

Indian Ocean: Potential Alternatives to SWIR and Mascarene Fossil Ridge, Red Sea and Ninetyeast Ridge

The Indian Ocean Panel prepared at its San Francisco Meeting (12-14 December 1985) a set of drilling program summaries for the Indian Ocean drilling in 1987-1988.

- Southwest Indian Ridge
- Mascarene Fossil Ridge
- Red Sea
- Neogene Package
- Kerguelen Gaussberg Ridge (north and south)
- Mascarene Plateau
- Midplate deformation
- Ninetyeast Ridge
- Broken Ridge
- Exmouth Plateau + Argo Abyssal Plain
- Otway Basin

These summaries included objectives, specific sites to meet objectives, details of each site and site survey requirements.

The PCOM at its last meeting (La Jolla 20-22 January, 1986) commented as follows:

- The Southwest Indian Ridge program needs at least a complete leg and is dependent on site survey (SeaBeam);

- The Mascarene Basin fossil ridge program should be eliminated from the planning schedule for lack of site survey (SCS);

- The Red Sea program still needs completion of site survey and may be jeopardized by politics;

- The Ninetyeast Ridge needs site surveys (southern part) which are still not planned (proposal now submitted for this work);

- The Mascarene Plateau and Otway Basin program are of low priority and are not included in the Indian Ocean program.

PANCHM considered the possible alternative program as suggested by PCOM: Makran
Neogene extension
Somali deep hole

SOHP proposed as first priority the Somali deep hole, and second the Neogene extension.

TECP (February Meeting) gave its 1st priority as Makran.

PANCHM chose not to rank these alternatives.

IOP will consider the new situation created by PCOM at its

July meeting. The chairman proposes to consider as possible alternative programs (without ranking):

- Mascarene Plateau (site survey status identical to Makran);
- Mascarene Fossil Ridge (if site survey still possible);
- Somali Deep Hole (if MCS survey data synthesis is prepared);
- Davie Ridge (dependent on submission of a revised drilling proposal with new synthesis of site survey data.

HOW WELL ARE COSOD OBJECTIVES BEING APPROACHED AND ACHIEVED BY ODP?

To date all legs have been successful in meeting some of their objectives and most of these objectives were formulated in the framework of COSOD. Nevertheless we recognize some problems with ODP results to date:

1 - Leg 107 is not regarded as having addressed primary COSOD objectives in the best way/place. It is seen as a politically motivated exercise.

2 - Primary objectives have often been incompletely realised because of compromises between disparate objectives and/or too many objectives for a leg. The result has occasionally been insufficient time to accomplish the most important scientific objectives. As presently construed, the drilling schedule delays completion of some primary COSOD objectives, especially lithosphere objectives, by several years.

3 - Achieving some objectives is still limited by significant problems in drilling and recovery of carbonates and sands, and by logging difficulties associated with the collapse of open holes.

ODP Planning by incremental regional time blocks undermines our ability to meet COSOD objectives. The longer the overview the better chance we have of doing the best science. Our feeling is "Slow down and do things right".

EXECUTIVE SUMMARY
TECTONICS PANEL MEETING

19-21 February 1986
University of Miami, Florida

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1) INDIAN OCEAN DRILLING

In the event that targets either in the Red Sea or on the SW Indian Ocean ridge fracture zone cannot be drilled as planned, TECP recommends the following:

a) If the Red Sea cannot be drilled, we endorse drilling in the Makran accretionary prism.

b) If the SW Indian Ocean ridge fracture zone cannot be drilled, we endorse drilling in fracture zones along the central Indian Ocean ridge (assuming that an appropriate proposal is forthcoming and that site-survey data are adequate).

2) LEG 112 PERU MARGIN

We endorse drilling proposed sites 3 and 6 or 7 along the southern (Lima Basin) transect, and sites 14 and 17 along the northern (Yaquina Basin) transect. Both sites 8 and 14 are designed to penetrate the apparent westernmost extent of continental basement. We recommend #14 because the top of basement is a strong reflector on seismic record Peru 2 and there is apparently no BSR. On the seismic record through #8, the top of basement may lie very near the BSR. We recommend logging all holes. The five shallow HPC sites proposed for both the northern and southern transects have no obvious interest from a tectonic standpoint. We encourage R. von Huene to prepare a back-up drilling plan along the "old" seismic line Peru-3 to the north.

3) WESTERN PACIFIC THEMATIC ISSUES

The major thematic problems we want to see addressed by Western Pacific drilling, and our suggestions for specific areas are:

a) Arcs and forearcs: Structural and volcanic evolution
. Best target areas: Izu-Bonin-Mariana arc systems; possibly Tonga

b) Collision and accretion: If and how material is transferred from one plate to another
. Best target areas: Ontong-Java; d'Entrecasteaux Ridge; Louisville Ridge; Okushiri Ridge (Japan Sea).

c) Back-arc basins: Rifting of arc lithosphere
. Best target areas: Bonin-Mariana systems; Coriolis trough; Lau basin

We estimate that 7-1/2 to 9 legs will be required to address these objectives satisfactorily.

JOIDES Tectonics Panel Meeting
Rosenstiel School of Marine and Atmospheric Science
University of Miami, Florida
19-21 February 1986

Panel members present:	Darrel Cowan (USA), Chairman
	Keir Becker (USA)
	Rene Blanchet (France)
	John Ewing (USA)
	David Howell (USA)
	Jeremy Leggett (UK)
	Bruce Marsh (USA)
	Kazuaki Nakamura (Japan)
	Robin Riddihough (Canada)
	Jeff Weissel (USA)
In attendance:	G. Brass (NSF)
	D. Hussong (PCOM)
	R. Kidd (ODP)
	M. Max (for P. Vogt)
	J. Natland (WPAC liaison)
Absent:	K. Hinz
	P. Vogt

AGENDA

1. Minutes of previous meeting
2. Reports from liaisons and guests
3. Appointment of liaison to April ARP meeting
4. Indian Ocean: alternate drilling targets
5. Leg 112 Peru margin
6. Western Pacific: thematic objectives and drilling plans
7. Thematic objectives in central and eastern Pacific
8. Next meeting
9. Panel membership and rotation

MINUTES

The meeting began at 9:45 a.m.

The panel welcomed the return of Jerry Leggett representing the United Kingdom, which recently rejoined ODP.

1. MINUTES OF THE PREVIOUS MEETING

The minutes of the last meeting were approved without changes.

2. REPORTS FROM GUESTS AND LIAISONS

2.1 PCOM

Hussong reviewed the January PCOM meeting in La Jolla, where PCOM discussed the panel structure and proposed that COSOD-II be held in July 1987, probably in Europe. The likely target for Leg 111 is Site 504B. Indian Ocean drilling is in a state of flux largely due to the lack of required site surveys. PCOM asks that we consider alternate drilling plans, including an early departure from the Indian Ocean, in case one or more of the approved legs collapses.

2.2 ODP

Kidd summarized recent results from Leg 107 (Tyrrhenian Sea). ODP asks that TECP be as specific as possible regarding upcoming drilling targets.

2.3 NSF

Brass emphasized that site surveys should be proposed and completed with as much lead time as possible before drilling. In response to Cowan's concern that site surveys have an inordinate influence over what actually gets drilled, Brass answered that ideally there should be more areas surveyed than will be drilled so that we can select drilling targets from a larger group of surveyed areas than is presently typical. Brass will step down as program director in September and be replaced by Buffler.

2.4 WPAC

Nakamura and Natland said that, for the meeting immediately following ours, WPAC wants our thematic priorities.

2.5 Packers

Becker updated us on engineering developments concerning packers. A rotatable drill-string packer is being built and will be ready for Leg 110 (as will a conventional straddle packer that requires re-entry). AMOCO has slowed down their development of the wireline packer, and it appears that the first version to emerge will not be ideal in that it will require re-entry and an exclusive pipe trip for deployment.

3. APPOINTMENT OF LIAISON TO APRIL ARP MEETING

Cowan said that Jaime Austin, ARP chairman, has requested that TECP send a liaison to their upcoming meeting in Barbados on 21-23 April. After privately receiving expressions of interest from two panel members, Cowan decided to nominate Howell as a one-time liaison.

4. ALTERNATIVE DRILLING PLANS FOR THE INDIAN OCEAN

Cowan read excerpts from a letter from Roger Larson asking TECP to propose alternative drilling plans in case drilling in the Red Sea and on the SW Indian Ocean Ridge (SWIOR) is impossible due to either the lack of site surveys or political instability. The potential alternatives he listed were: a Somali Basin deep hole, Makran, a second Neogene leg, and an early departure from the Indian Ocean for the Pacific.

4.1 Fracture zones

Cowan asked Natland, who is a proponent of drilling on SWIOR fracture zones, to review this drilling target and also to explain his belief that many of the same objectives could be achieved on the central Indian Ocean Ridge. In response to questions about why drilling is better than dredging, Natland replied that we need a section of crust that ideally would include both gabbro and ultramafic rocks so we could observe their contact relations. Natland pointed out that the Indian Ridge is an appropriate place to drill because it is a very slow spreading ridge and it appears from dredge hauls that gabbro and ultramafic rocks are abundant. He feels that drilling on the central ridge could be planned on the basis of geophysical surveys conducted for Leg 24; additional site surveys may not be necessary. He will prepare a proposal for this target only if the site survey for SWIOR is not funded.

4.2 Makran

Leggett reviewed, once again, his proposal for drilling this accretionary prism. The major advantages include: an opportunity to determine the distribution of deformation across a margin and in slope basins using shallow (450 m maximum) holes; good drilling conditions in a section dominated by mudrock and at sites devoid of slumps; and a chance to tie into an on-land prism where he and Platt have documented Pliocene and younger deformation. A site survey cruise to acquire deep-tow seismic, piston cores, and refraction data, is planned for November 7 to December 7. Possible disadvantages include: the presence of gas hydrate; a concern that the Makran may not be representative of accretionary prisms in general because massive shortening occurs within the prism and not just at its toe; and the chance that sedimentation has been too rapid to allow adequate dating of deformation and uplift.

4.3 Recommendations

We decided on Wednesday to postpone formulating an alternate plan until after we had discussed Western Pacific targets (agenda item 6) the following day. At that time, Brass reminded us that neither the

Red Sea nor SWIOR fracture zones had been eliminated yet, so our recommendations are cast as contingencies. We voted on the following alternatives: Makran, C. Indian Ocean fracture zones, or leave the Indian Ocean early for the Pacific. Cowan asked that Leggett and Natland not vote because they are active proponents.

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RECOMMENDATIONS TO PCOM:

A) If drilling proposed in the Red Sea cannot be carried out:

9 TECP members favor drilling Makran
0 favor leaving early for the Pacific

B) If drilling proposed in SWIOR fracture zones cannot be carried out:

6 TECP members favor drilling Central IOR fracture zones
3 favor Makran
0 favor leaving early for the Pacific

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A long discussion then ensued about the probability that our thematic objectives in the Western Pacific would in fact all be addressed by drilling. A motion was made stating in essence that if the Red Sea or SWIOFZ collapses, and if PCOM's forthcoming Western Pacific drilling plan did not adequately address our objectives, TECP would recommend leaving the Indian Ocean early. The motion was defeated.

5. LEG 112 PERU MARGIN

Larson asked TECP to recommend specific drill sites and drilling programs for this leg. Using seismic lines and SeaMARC II images, Hussong summarized the drilling proposed for Leg 112. Along the southern transect (Lima Basin); proposed sites include: (a) five shallow HPC sites on the shelf to address paleo-oceanographic objectives; (b) #3, a deepened HPC site; (c) #6 or 7 to determine stratigraphy, subsidence history, and nature of basement; (d) #8, to sample the westernmost metamorphic basement accessible with the drill. On the northern transect (Yaquina Basin), proposed sites are: (a) five additional HPC sites; (b) #14 into continental basement near its contact with an accretionary prism; and (c) #17 into landward-dipping reflectors within the prism.

Hussong noted that estimated drilling time for these sites exceeds the time presently allocated for the leg. In addition, he and Cowan mentioned that Roland von Huene has reprocessed line Peru 3 and feels that the boundary between the accretionary prism and continental crust is imaged better than on line 2 (where site #14 is located). Von Huene would like TECP to endorse his continued efforts to propose alternate sites (not completely new replacement sites) in case of drilling problems or unsatisfactory recovery from sites along Peru 2. Von Huene had notified

Cowan by phone that it would be extremely difficult for him to attend this meeting to explain his proposal, so he sent instead a brief write-up and copies of Peru 2 and 3 for each panel member.

After discussing the proposed drilling plans and objectives, TECP reached a consensus that the attraction of drilling along both the southern and northern transects is overwhelming, but at least one site (#8) and possibly several of the HPC sites could be deleted to assure that the remaining holes both reach their objectives and are properly logged.

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RECOMMENDATIONS AND ENDORSEMENTS:

- We recommend drilling proposed sites #3 (deep), 6 or 7, 14, and 17. All holes should be logged as recommended by DMP.

- Both sites #8 and 14 are designed to penetrate the westernmost continental crust as interpreted on seismic records. We recommend drilling #14, rather than 8, because the top of basement is much better imaged seismically (a strong reflector) on Peru 2. Also, the BSR may be only slightly deeper than top basement at #8.

- We encourage von Huene to develop his alternate back-up sites along reprocessed Peru 3 and to obtain further site-survey data if possible.

- The ten proposed HPC sites have no obvious importance from a tectonic standpoint.

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6. WESTERN PACIFIC: THEMATIC OBJECTIVES AND DRILLING PLANS

On Wednesday, Cowan had distributed excerpts from a letter by Roger Larson dated February 4, 1986. This letter summarized the discussions at the January PCOM meeting concerning the panel structure and the interactions among thematic and regional panels and PCOM. In essence, TECP should concentrate on evaluating which thematic objectives can best be addressed in specific geographic areas, such as the Western Pacific. We should de-emphasize the numerical ranking and prioritization of individual proposals. The panel was happy about the new guidelines, especially since it had set sail on a more "thematic" course at its last meeting in Tokyo.

On Thursday morning, the panel divided into three groups to discuss thematic issues in the Western Pacific and to recommend specific drilling targets. Groups one and two met together and were joined occasionally by drifters from group three. Group one reviewed arcs and forearcs; two, processes of collision and accretion; and three reviewed marginal basins. The entire panel reconvened as a whole after lunch, whereupon Marsh, Howell, and Weissel summarized the morning's deliberations.

The following sections contain very brief summaries of not only the key thematic problems identified by each group, but also the best places to address them with the drill. A more complete presentation and justification will appear in a TECP Position Paper to appear before the May PCOM meeting.

6.1 Arcs and Forearcs

The "arc" group identified nine thematic problems in this general category. Those that can be attractively addressed by drilling in the Izu-Bonin-Marianas region are: (a) the structural and volcanic evolution of arcs, including the inception, timing, and periodicity of arc activity, and processes of magma transport; (b) the nature of the basement in the forearc; (c) the chemistry and budget of fluids; and (d) the dynamics of seamount offscraping and diapirs in the forearc.

6.2 Processes of Collision and Accretion

This group generated a list of types of collision (e.g. continent with volcanic arc) and boundary conditions (e.g. angle of convergence). Also, it specified six problems that could reasonably be solved with the drill: whether or not, and how, parts of a colliding mass are added to the upper plate (accreted); the timing of collision (read largely from the sedimentary record); changes in physical properties and strain attending collision and accretion; vertical tectonic response; larger-scale deformational effects; and thermal (diagenetic or metamorphic effects). Drilling targets are: Ontong-Java Plateau colliding with Solomons (we recognized that there is as yet no proposal satisfactorily addressing this target); d'Entrecasteaux Ridge; Louisville Ridge; and incipient obduction in Japan Sea (Okushiri Ridge).

6.3 Marginal Basins

This group noted that marginal basins are in different stages of development (rifting, early, mature) and different settings (back-arc, rifted continent, trapped crust). It also posed several fundamental thematic problems that in theory can be approached by drilling. For example, are arc lithosphere and continental lithospher rifted by the same processes? How is the timing of spreading (inception and cessation) related to convergence and plate kinematics? The thermal regime and composition of crust of diverse ages are important parameters. Drilling in relatively simple systems to especially address early-stage rifting of arc lithosphere could profitably be targeted in the Bonins, Coriolis Trough, Mariana Trough, and the Lau Basin.

After each group presented its recommendations regarding thematic issues and drilling targets, the panel discussed how best to convey them to WPAC and PCOM. Several members expressed concern about important problems or targets that did not receive a group's endorsement. Leggett and Nakamura, for example, reminded us that the Nankai Trough offers an opportunity to drill an exceptionally well-surveyed accretionary prism dominated by terrigenous clastic, rather than pelagic sediments. Cowan tried to elicit an endorsement for passive-margin problems in the South China Sea. Weissel raised the important question of whether we should justify at this time our negative decisions -- why we left Nankai, for example, off our list. In the spirit of PCOM's new guidelines on panel activities, we decided that the most significant information we could give now to WPAC and PCOM is a list of the global thematic objectives that we feel can be best addressed in the W. Pacific, accompanied by a list of what we feel are the best drilling targets.

We also made very approximate estimates of the number of legs we feel are necessary to address our objectives adequately. We realize that in many cases, one or more legs in a single arc system, for example, can address several objectives.

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RECOMMENDATIONS TO PCOM & WPAC:

Listed below are our principal thematic objectives in the W. Pacific, our suggestions as to appropriate drilling targets, and our estimates of required legs in an optimum drilling program:

. Arcs and forearcs

1) Izu-bonin-Mariana	2 legs
2) Tonga	1

. Collision and accretion

1) Ontong-Java (large plateau)	1-1/2
2) D'Entrecasteaux (aseismic ridge)	1-2
3) Louisville Ridge (seamount chain)	<1-1
4) Japan Sea (obduction)	<1-1

. Marginal basins

1) Bonin	(included in above)
2) Mariana	(included in above)
3) Lau Basin	1
4) Coriolis Trough	(included in above)
TOTAL LEGS REQUIRED	7 to 9-1/2

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7. THEMATIC OBJECTIVES IN CENTRAL & EASTERN PACIFIC

Looking ahead, our next major task will be to specify our overall thematic objectives in this geographic area. In order to provide CEPAC with a <u>very preliminary</u> idea of our thematic interests from a global perspective, Cowan simply asked each panel member to identify key issues and, if known, places to drill:

Nakamura:	Age and origin of trapped crust in a marginal basin; Bering Sea
Riddihough:	Above, plus evolution of spreading systems and transforms in N. Central Pacific
Weissel:	Thermomechanical behavior of oceanic plates; evolution of the Hawaiian moats
Howell:	Transcurrent margins
Natland:	Fracture zones; E. Pacific and Nova Canton trough
Marsh:	Comparing geochemistry of sediments on descending plate with that of related arc; Aleutians
Blanchet:	Ridge-trench interactions; Chile triple junction
Cowan:	Factors responsible for seaward vs. landward vergence in accretionary prisms; Cascadia (British Columbia-Wash.-Ore.)

We estimate that about seven legs would be required to address these problems adequately.

8. NEXT MEETING

We propose to meet next in Seattle at the University of Washington on Thursday and Friday, 5-6 June. Cowan will host the meeting and a one-day field trip in the San Juan Islands on 4 June.

9. PANEL MEMBERSHIP & ROTATION

PCOM requested that panel members begin rotating off according to the guidelines in the official panel mandates (panel members are appointed for three years, and about one-third of the members should rotate off each year). Cowan distributed a form inquiring about each members plans for rotation and soliciting names of possible replacements. He will review the responses and forward recommendations to PCOM.

The meeting adjourned at 11:30 a.m. on Friday, 21 February.

Executive Summary
Sediments & Ocean History Panel Meeting

(Boulder, Colorado, April 21 & 22, 1986)

1. **Leg 111:** SOHP PRIORITIES

   1 - Double HPC to refusal at downwelling site in vicinity of 504B but in water depth no greater than 504B
   2 - Double HPC of top 100 m at 504B
   3 - SOHP recommends inclusion of planktonic foram and radiolarian biostratigraphers in Leg 111 scientific party.

2. **Leg 112:**

SOHP endorses recommendations of Seuss for paleoceanographic sites with the following modifications (see Appendix I for details):

   1 - the addition of Sites 2A, & 3A.
   2 - the replacement of Site 4 with Sites 4A & 4B
   3 - the HPC coring of upper 100 m at Site 6

Our overall priorities are as follows:

Sites 3, 1, 5, 3A, 2, 2A, 4A, 4B, 6, 10, 11, 9, (12 & 13)

We also recommend that: a site be drilled outboard of the Peru trench to serve as reference section for Nazca plate (Langmuir proposal) and at least one site with high organic carbon content be triple HPC cored and preserved frozen for geochemical studies.

3. **Leg 113:** PRIORITIES

   W1, W2, W4, W10, W7, W5, (W6 & W8)

4. **Leg 114:** PRIORITIES

   SA8, SA2, SA3, SA5W

We stress the importance of drilling both eastern and western parts of transect and request permission to invite LaBrecque to next SOHP meeting to discuss Leg 114 sites in context of SOHP objectives.

5. **INDIAN OCEAN PROGRAM:** ALTERNATIVE LEGS (see Appendix II for details)

   1 - SOHP ranks DST 1 (Somali Basin Deep Hole) as highest alternative priority. We recognize inadequacy of site surveys and will see if new surveys can be picked up.

   2 - If now surveys are available for DST-1, we recommend two full legs be spent for a deep hole at Site 241

   3 - If (1) or (2) is impossible, we recommend that PCOM explore means of shifting extra time to Argo-Exmouth program or leave Indian Ocean early.

   4 - If impossible to leave Indian Ocean early, we recommend drilling of Neogene II package.

   5 - SOHP does not believe that 90°E Ridge program can meet paleoceanographic objectives.

6. **WPAC**

SOHP applauds WPAC panel's use of thematic guidance in generating a 'straw man' WPAC program. We endorse their 9 - Leg program and place the following priorities on the paleoceanographic legs:

1. Great Barrier Reef
2. Sea of Japan
3. S. China Sea
4. Bonin Plateau (probably CEPAC)
5. Sulu Banda Sea

7. **CEPAC**

SOHP's highest priority in CEPAC is comparison of high latitude vs low latitude sequences with respect to paleoclimate, sealevel, and global ocean fluxes.

Priorities:

1 - Bering Sea
2 - Ontong Java/Bonin or other edifaces
3 - Old Pacific
4 - Guyots and Atolls

8. PANEL ROTATION AND MEMBERSHIP:

SOHP will rotate off four members in 1986

Lancelot	replaced by Schaaf (France)
Takayanagi	replaced by Saito (Japan)
Ruddiman	recommend - Warren Prell, Sy Schlanger, Andre Drexler
Seuss	recommend - Walter Dean

in addition we request the addition of two members:

Inorganic chemist - Bob Garrison
Clastic Sedimentologist - Bill Normark, Sandy Shor, Dave Bottjer, Hans Nelson

9. NEXT MEETING

April 20, 21 - Ann Arbor, to coincide with CEPAC meeting.

DRAFT

Draft Minutes of Sediments and Ocean History Panel Meeting

(Boulder, Colorado, April 21 & 22, 1986)

86/379

In attendance:

M. Arthur	T. Saito
R. Embley	N. Shackleton
W. Hay	S. Gartner
Y. Lancelot (22 April only)	A. Mayer (21 April only)
L. Mayer (Chairman)	R. Garrison
Meyers	A. Palmer

1. <u>Opening Remarks and Approval of Minutes of January SOHP meeting</u>

Minutes of previous meeting approved as submitted.

2. <u>NSF Report</u>

Tony Mayer announced ESF will soon be joining IPOD, making ODP financially secure at last. Panels will add appropriate new members. USSR may also soon be joining IPOD.

3. <u>PCOM Report</u>

Steve Gartner (PCOM). Leg 111 will be either 504B or EPR. XCB coring of upper sediment sequence is included in plans for 504B. Shackleton points out that probably only the top 100 m have adequate preservation for paleoceanographic study and hence only the top 100 m need double coring.

SOHP RECOMMENDATION

SOHP recommends double HPC to 100 m at Site 504B <u>plus</u> double HPC at a downward convection location (such as 505) to the limit of HPC. This package would satisfy SOHP's interest and portions of Mottl's proposal, and should not take more than 3 days.

Priorities: 1) double HPC to refusal at downwelling site in vicinity of 504B but in water depth no greater than 504B
2) double HPC of top 100 m at 504B

SOHP further recommends planktonic foram and radiolarian biostratigraphers be in the Leg 111 scientific party.

Leg 113 has had Co-Chief problems, now resolved (Kennett & Barker)
Leg 114 - Cieselski and LaBrecque as Co-Chiefs

In Indian Ocean, Neogene package is approved, even though it may need more than 1 leg. Mascarene Ridge is omitted. Red Sea leg has logistical/political problems. Southwest Indian Ridge is short on site surveys. Kerguelen/Antarctic Margin has 2 legs planned with a port call separating them. Broken Ridge/90 East Ridge still requires site surveys but has been endorsed on scientific content. Argo/Exmouth Plateau is one of highest priorities in eastern Indian Ocean.

Alternates - additional Neogene package
Somali deep site — instead of Red Sea and Southwest India Ridge
Marcran plateau

4. <u>ODP Report</u> (A. Palmer) - Legs 107 & 108 (successful!)

5. Status of Leg 112

Leg 112 prospectus draft from E. Suess raises questions about ability of HPC to penetrate possible dolomite layers.

Priorities of Suess: # 3, 1, 5, 2, 4, 10, 11, 9, 12, 13 (in order)
Estimated drill/leg times are:

Site 3	3/1 days
1	1.5/0
5	1.5/0
2	1.5/0
4	1.5/0
10	1.5/0
11	11.5/0
9	1.5/0
contingency	2/0
steaming	2/0
total	18.5

SOHP RECOMMENDATION

Sites 2, 3, 4, and 5 are in, or close to, present O_2 minimum (around zero). Slightly deeper sites in addition to these might be in core of glacially-lowered O_2 minima. SOHP recommends adding three sites downslope from 3, 2 and 4. These sites have higher priority than sites 10, 11, and 9 in the northern transect.
Proposed additional sites:
3A - line Y7308, 250 m water depth, 0515 (upslope from 3)-200 m HPC
2A - 350 m water depth -200 m HPC
4A & 4B - replace 4, 300 m and 400 m water depth to straddle O_2 minimum zone -200 m HPC

Priorities of SOHP are in the following order:
Sites 3, 1, 5, 3A, 2, 2A, 4A, 4B, 6, 10, 11, 9, (12, 13?)

Sites 3A, 2A, and (4A & 4B) add 600 m HPC (4.5 days coring) to the program.

Site 6 should be HPC cored to examine downslope relocation of sediments from areas under upwelling maximum (upper 100 m).
SOHP also recommends that Roland von Hune consider a site outboard of the Peru Trench that can serve as a Reference section for the Nazea Plate (re:Langmuir proposal)

The SOHP reiterates that the paleoceanographic objectives of Leg 112 are amongst our highest priority global objectives (see Appendix I).

One site is usually inadequate to detect and understand paleoclimatic, paleooceanographic, and sea level effects upon sediment accumulation under upwelling zones. Paired, transect sites are needed, even if some might be in areas which might have incomplete records during low stands, as long as deeper sites contribute to the transects. For Leg 112, both onshore/offshore and north/south transects will give evidence of spatial and temporal changes in this type example of upwelling.

At least one site having sediments rich in organic carbon should be triple HPC cored for a frozen, intact hole dedicated for geochemical study.

6. Discussion of Leg 113 (Bransfield Strait)

SOHP reiterates its strong interest in Site WB-10. New information from the latest Polar Stern cruise about thermal alteration of young sediments adds to the previous reasons for this interest. Transect W6-W8 may lack paleoceanographic information due to paucity of carbonates, and this is a concern. Site survey results suggest incomplete ocean history records at these proposed sites. SOHP feels that these sites should be of low priority and that Maud Rise sites would yield more information (W1 and W2). Site W4 is still high priority even though ice could be a problem.

SOHP Priority order: W1&2, W4, W10, W7, W5, (W6 & W8)

Weddell Sea sites rank above all South Atlantic transect sites.

7. Leg 114

Site surveys for SA7, 8 & 9 are inadequate, but these surveys may be picked up by LaBrecque. Drilling both western and eastern parts of this overall transect are equally important. Absence of either part seriously weakens the value of this leg. SOHP priorities remain as stated in minutes of January La Jolla meeting: SA8, SA2, SA3, SA5W. LaBrecque should attend next SOHP meeting to discuss Leg 114 sites in context of SOHP objectives.

Objectives include:

1. Initiation of proto AABW/tectonic control on bottom flow
2. Paleogene onset of carbonate deposition/surface water flow
3. High-latitude paleohistory/paleoclimate

8. Indian Ocean Program

An overview was presented by A. Mayer. All proposed legs, except the Red Sea, have a good chance of having site survey data. PCOM has charged SOHP to rank Neogene II vs Somali Basin proposals.

The Neogene I package now contains 1 to 3 sites on the Oman Margin, 2 sites on the Owen Ridge, and 1 site on the Indus Cone. Deletion of the "hominid sites" is questioned, although time constraints seem to require it.

SOHP Priorities: 1. Oman Margin
2. Owen Ridge
3. Indus Cone
4. Gulf of Aden

The Somali Basin Deep Stratigraphic Test (DST), the first of a series of deep holes proposed by SOHP (see Deep Stratigraphic Tests proposal) has continually ranked extremely high on SOHP Indian Ocean priorities. The justification and specifics of this program is outlined in Appendix II.

A search of existing site survey data in the Somali Basin has revealed that there is not adequate site survey data at our first choice for the site (DST-1) where the section is approximately 2500 m thick. The only suitably surveyed site is at the location of DSDP Site 241 which shows more than 3500 m of section in 4300 m of water. The ability to drill this thickness of section is questionable (see Appendix II).

SOHP RECOMMENDATION:

Despite these problems, SOHP still ranks the Somali Basin Deep Hole objectives higher priority than the Neogene II objectives and makes the following recommendations:

1. That all efforts be made to see if site survey is possible near DST-1

L. Mayer/Lancelot - Telex Schich
A. Mayer - speak to Pierce and French rep at Site Survey meeting

If a site survey is possible, DST-1 is our highest priority as Indian Ocean <u>alternate</u> site.

2. If a site survey is impossible, we request 2 legs be dedicated to drilling at Site 241. Sarg and Arthur will visit with TAMU engineers in late May to discuss logistics of this and all deep holes.

3. If Somali Deep Hole proves impossible, we recommend that PCOM explore means of shifting available time to the Argo-Exmouth program to ensure the recovery of complete sections in this region.

4. If logistical considerations dictate that any extra Indian Ocean time made available cannot be shifted to Argo-Exmouth or the Pacific programs, we recommend that the Neogene II package be drilled.

In discussing the Neogene II package, SOHP discussed whether the Neogene II objectives (carbonate production and chemistry; evolution of deep and shallow circulation) could be met in the 90E Ridge program.

Despite the claim in the 90° E Site summaries and watch-dog report that the proposed sites will meet these objectives, SOHP believes that the 90E depth transect cannot meet our paleoceanographic objectives because:
1 - the sites are too deep (3500-4700 m)
2 - there will probably be poor preservation
3 - cementation may be a problem
4 - slopes are very steep, hiatusus
5 - HPC's have not been proposed for all sites

Unless these problems are addressed we <u>do not</u> consider the 90E depth transect to be of paleoceanographic value.

9. <u>Report on Panel Chairmen's Meeting</u>

L. Mayer reported on PANCHM meeting. The SOHP endorsed the recommendations of the PANCHM and look forward to their acceptance.

It was also pointed out that the ability to meet many of the COSOD objectives is dependent on the improvement of technical capabilities (riser drilling, recovery of sands, cherts etc.).

10. <u>Panel membership</u>

SOHP will begin rotation by replacing 4 members in 1986 and establishing rotations through 1988. We also have made recommendations for the <u>two</u> new positions recommended by the PANCHM and for an ESF representative.

Suggested ESF reps:
1 - Hans Thierstein - nannos
2 - I. Premoli-Silva - planktonic forams
3 - J. Verbeck - nannos
4 - M. Sarti

New positions
1. Organic Geochistry: R. Garrison
2. Clastic Sedimentologist - 1. Bill Normark
- 2. Sandy Shor, Dave Bottjer, Hans Nelson

See Appendix III for rotation schedule

Recommendations for 1986 replacements:

Lancelot	-	Andre Schaaf	(French choice)
Takayanagi	-	T. Saito	(Japan choice)
Seuss	-	W. Dean	
Ruddiman	-	W. Prell, S. Schlanger, A. Droxler	

11. Liasons with other panels

SOP	Shackleton
IOP	Hay
CEPAC	Walt Dean (if approved)
WESTPAC	Sarg
ARP	Meyers

12. Workshops

A JOI-USSAC Workshop on South Atlantic is planned in November. The organizer is Jamie Austin (ARP).

13. WPAC Panel Report

The SOHP reiterates that its major global themes are:

1. Neogene-Quaternary high-resolution sealevel, paleoclimatic, bio-magnetochemostratigraphic records, global oceanic fluxes (carbonate, organic carbon, etc,), and land-sea interactions
2. Cretaceous-Neogene high-latitude paleoceanography-paleoclimatology and biotic evolution
3. Mesozoic-Cenozoic sea level changes, seismic stratigraphy, major global unconformities and global mass balances — deep stratigraphic tests. **This is one of our major themes for the entire PROGRAM!** Detailed proposal for additional sites is available.

We believe that many of these objectives can be addressed in several areas of the WPAC:
1 - In mixed carbonate/siliclastic province in a passive margin setting (e.g. Great Barrier Reef). Specific SOHP objectives addressed by drilling in this region include:

1 - Sea level controls on sedimentation,
2 - the effect of plate motions and subsidence cycles on sedimentation and paleoceanography,
3 - understanding of tectonic cycles in relation to sea level cycles,
4 - changes in paleoclimate related to plate position and the effect on sedimentation,
5 - slope/basin sedimentation - fans and lowstand deposits,
6 - basin fill history,
7 - Late Paleogene-Neogene paleoceanography,
8 - diagenetic history in a stratigraphic framework, and
9 - comparison of the history of a continental margin and an isolated plateau (Queensland Plateau).

2 - An isolated back arc-basin (e.g. Sea of Japan). Specific SOHP objectives are:

1 - sedimentary response to back arc tectonics
2 - sedimentary response to intensified upwelling
3 - history of organic carbon and productivity in a restricted basin - analogs to Cretaceous and Mesozoic
4 - effects of salinity changes on flora and fauna
5 - monitor of Asiatic continental climate and dust flux
6 - record of volcanism versus climate
7 - water mass history relative to sill depth

3 - A young passive margin with a thick sedimentary section (e.g. S. China Sea). Specific SOHP objectives include:

1 - ties between tectonism and eustasticy
2 - early opening and subsidence history for approximately 30 m.y. old basin
3 - development of passive margin basin facies
4 - history of oxygenated basin

SOHP views these three settings as a linked package. The examination and comparison of the sedimentary record in these three very different sedimentary basin environments provides a unique opportunity to evaluate the role of global sea level changes in controlling the sedimentary record.

4 - Additional themes that may be addressed in WPAC are: the drilling of oldest (Cretaceous) crust (e.g. Bonin Plateau) and the examination of a tropical silled basin (e.g. Sulu-Banda Sea). SOHP ranks these themes (using the already presented regional programs as:

1. Great Barrier Reef
2. Sea of Japan
3. S. China Sea
4. Bonin Plateau (probably CEPAC territory)
5. Sulu-Banda Sea

SOHP applauds the WPAC Panel for its use of thematic guidance in generating a 'straw man' drilling program. The 9-leg WPAC package proposed by the WPAC Panel acceptably addresses the major SOHP themes. They have demonstrated that the system can work.

14. South Pacific and Antarctic Workshop

Yves Lancelot reported on the USSAC South Pacific and Antarctic Margin Workshop (SPAM) in Gainsville. Our impression is that the sedimentary objectives developed at the workshop appear somewhat unfocussed, however, we look forward to the report.

The SOHP encourages these workshops as a means of opening up the theme development and site selection process to the whole community. We hope that they are well advertised (internationally) and open to all.

15. CEPAC Report - Lancelot

Drilling proposals have been grouped into packages and ranked as such. These CEPAC rankings are listed in their minutes. Rankings of earlier packages were blended with these newer packages to give 9-leg and 12-leg CEPAC drilling programs, also in their minutes.

In context of SOHP first priority global objectives, SOHP sees as major CEPAC problems:

1. high latitude vs low latitude comparison (Jurassic to Neogene)
   e.g. Bering Sea and Ontong-Java Plateau packages
   (depth transect on Ontong-Java Plateau)
   - Bonin Plateau is also a good location -

2. sea level influence on sedimentation processes
   e.g. Guyots and Atolls

Ranking of packages according to SOHP objectives:

1. Bering Sea (high latitude section)
2. Ontong-Java/Bonin (low latitude sections) or other edifaces

3. Old Pacific
4. Guyots and Atolls

Our most critical needs are:

1) a complete section from high latitude
2) low latitude Paleogene (particularly early Eocene and up) sections

16. Next Meeting

October 20 & 21 in Ann Arbor - to coincide with CEPAC meeting.

Appendix I

PCOM May 28 - 30

Peru Margin

Drilling on the Peru Margin for paleoenvironmental purposes is crucial to the understanding of a number of fundamental paleoceanographic and sedimentologic problems. The response of coastal upwelling systems, paleoproductivity and fluxes of organic matter and other biogenic components to global changes in climate and sealevel is, and has been a highest priority of SOHP. The sites outlined in Table 1 and shown on Figure 1 are designed to optimize recovery of the most continuous Quaternary and possibly older sequences in the region of strongest wind-driven upwelling and consequent high biologic productivity and relatively intense midwater oxygen minimum zone. The Peru margin drilling for paleoenvironmental purposes will provide an opportunity to test models for important sedimentary processes including:

1) The nature and origin of organic-carbon rich sediments - The Peru margin is a "type" example of a province for a potential hydrocarbon source beds. The important problems to be attacked in this regard include examination of the relative effects of high productivity, water depth and "deep-water" oxygen content (and their coupling) on the flux and preservation of marine organic matter, and early diagenesis of organic material.

2) The formation of "modern" phosphorites - The Peru margin is the "type" example of a modern phosphogenic province. Popular models couple organic-phosphorus flux and early diagenesis in upwelling zones with periodic activity of currents and/or lowering of wavebase concurrent with sealevel changes as a mechanism for the winnowing and concentration of phosphatic grains and bioclasts to form economic deposits.

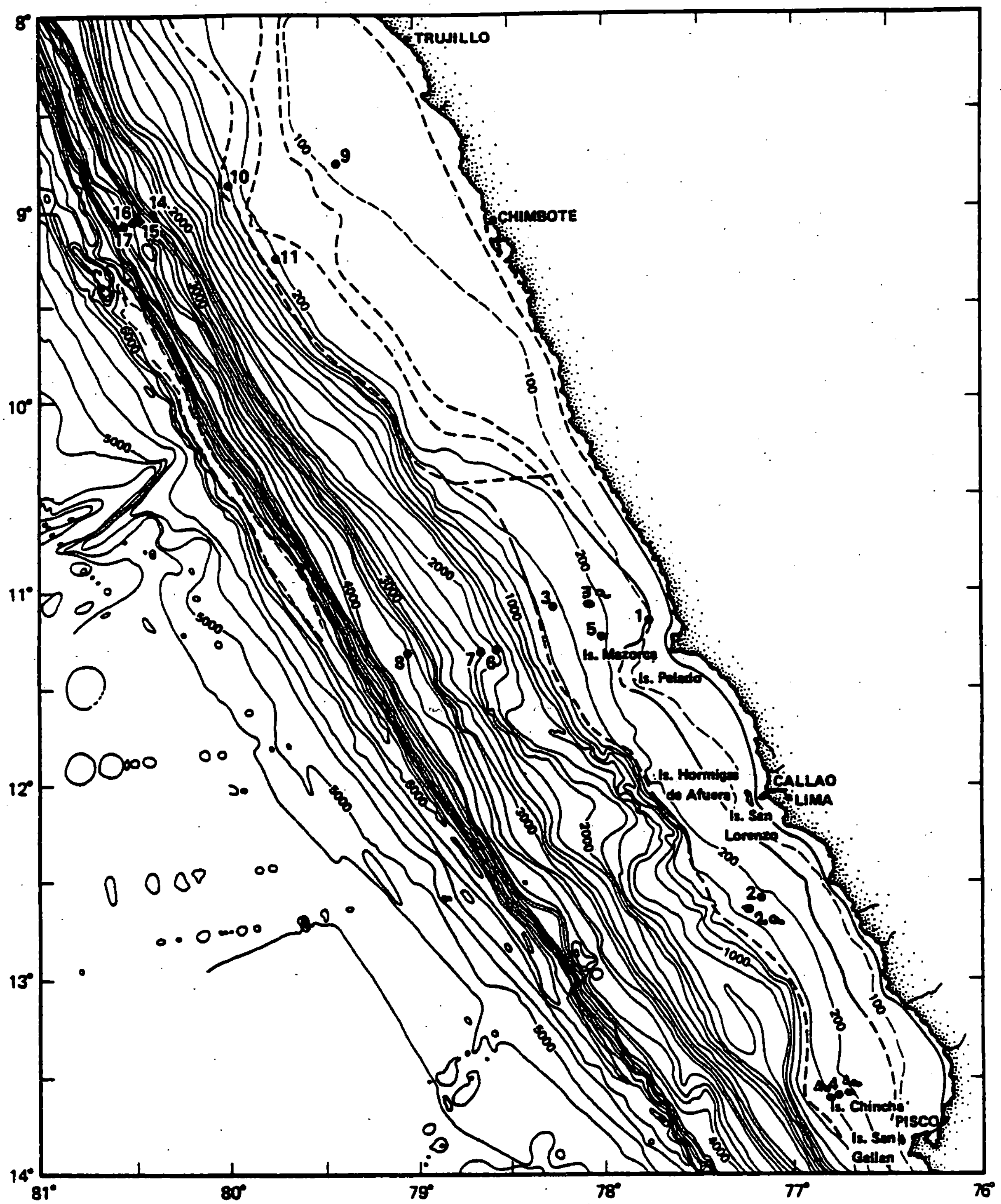
3) The "dolomite problem" - The Peru margin is possibly the best place to examine the formation of authigenic carbonates, particularly dolomite, in anoxic sedimentary pore waters. The mechanism(s) of dolomite formation are of intense interest to the sedimentologic community. The pore water chemistry and timing of formation of dolomite are of particular importance.

4) The interaction of sealevel and climate changes on ocean circulation and the resultant stratigraphic and chemical-biogenic flux records - The Peru margin is an area of concentrated mass flux of organic carbon and biogenic silica. How important is this mass flux in a global context? How much has this varied with time in response to global paleoceanographic factors?

These important problems require a transect approach, both in terms of the latitudinal and depth framework. The most intense part of the oxygen-minimum zone (OMZ) lies generally between 150 to 450 m depth along the Peru margin, but the intensity of oxygen deficits and depth distribution vary somewhat along the margin. In time, the thickness and intensity of the OMZ may have changed in response to changes in upwelling rate and oxygen supply to shallow, intermediate water masses, and the position of the OMZ would probably have changed with Quaternary sea level changes. Thus, we emphasize that each location on the margin must have depth offset sites such that the record of changes can be understood in a depth framework.

Likewise, sites in shallower water (90-200 m) may not have continuous records of sedimentation because of winnowing and erosion during lowstands of sealevel. Yet, these nondepositional or lag intervals are of great interest because of the models for the origin of economic phosphorites. Therefore, depth transects at several places on the margin are in order. Upwelling and high productivity vary spatially along the margin, and upwelling centers possibly shifted latitudinally in response to glacial interglacial changes in prevailing wind stre[illegible] and direction. Our specific recommendations are outlined below.

Figure 1.



8°
9°
10°
11°
12°
13°
14°
81°
80°
79°
78°
77°
76°
TRUJILLO
CHIMBOTE
CALLAO
LIMA
PISCO
Is. Mazorca
Is. Pelado
Is. Hormigas de Afuera
Is. San Lorenzo
Is. Chincha
Is. San Gallan
100
200
1000
2000
3000
4000
5000
6000

Table 1

Peru NR. 1: 11° 09.8'S 77° 49.7'W,
Water Depth: 150 m, Soft Sediment Thickness: 0.045 SEC
Penetration: 200 m HPC 2X

Peru NR. 2,2A: 12° 37.1'S 77° 10.3'W,
Water Depth: 277 m, 350 m Soft Sediment Thickness: 0.040 SEC
Penetration: 200 m HPC 2X

Peru NR. 3: 11° 05.0'S 78° 16.0'W,
Water Depth: 460 m, Soft Sediment Thickness: 0.020 SEC
Penetration: 600 m HPC 2X and Rotary

Peru NR. 3A: 11° 05.0'S 78° 02.0'W,
Water Depth: 250
Penetration: 200 m HPC 2X

Peru NR.4A,4B: 13° 36.0'S 76° 46.5'W,
Water Depth: 300 m, 400 m, Soft Sediment Thickness: 0.045 SEC
Penetration: 200 m HPC 2X

Peru NR. 5: 11° 15.4'S 78° 01.0'W,
Water Depth: 233 m, Soft Sediment Thickness: 0.060 SEC
Penetration: 200 m HPC 2X

Peru NR. 9: 08° 46.5'S 79° 25.3'W,
Water Depth: 91 m, (Is It Possible To Drill That Shallow?)
Soft Sediment Thickness 0.065 SEC
Penetration: 200 m HPC 2X

Peru NR. 10: 08° 52.0'S 79° 59.0'W,
Water Depth: 415 m, Soft Sediment Thickness: 0.020 SEC
Penetration: 200 m HPC 2X

Peru NR. 11: 09° 15.0'S 79° 44.7'W,
Water Depth: 229 m, Soft Sediment Thickness: 0.030 SEC
Penetration: 200 m HPC 2X

PRIORITIZATION:

Sites: NR 3, NR 1, NR 5, NR 3A, NR 2, NR 2A, NR 4A, NR 4B, NR 6, NR 10, NR 11, NR 9 (NR 12, NR 13)

SOHP RECOMMENDATION

SOHP recommends that at least one site that has sediments rich in organic carbon be triple HPC cored with a frozen, intact section preserved for geochemical studies.

Table 2.

SOMALI BASIN DEEP HOLE

A deep site in the Somali Basin is considered an extremely important objective by SOHP in order to examine the Late Jurassic through Recent history of sedimentation along the east African margin, and for investigation of the seismic-stratigraphic signature of relative sea level changes. The site is recommended to be located on or near seafloor of Chron M25 age (Callovian-Oxfordian), giving us another sequence on nearly the oldest Jurassic crust in the Indian Ocean. The site would be a conjugate to the proposed high priority Exmouth Plateau-Argo Abyssal Plain transect (AAP-1 is located on anomaly M25), and would allow us to contrast the depositional history, margin subsidence patterns, sea level changes and paleoceanography of a thickly sedimented margin (Somalia) versus a starved passive margin (NW. Australia) of the same age. In addition, the formation of the Somali Basin probably allowed the first major exchange of water masses between the high latitude southern Ocean-South Atlantic and equatorial Tethys through the late Jurassic and early Cretaceous.

A) Questions to resolve through deep drilling:

1. Timing of rifting of Madagascar and separation from Africa and initial development of a narrow longitudinal seaway; subsidence and first deep-water exchange with southern ocean.
2. "Oldest" Tethyan crust preserved intact (with perhaps exception of northern Somali Basin).
3. Problem of gateways, ammonite evolution and faunal exchange between high and low latitudes; possible intensified deep circulation in mid-Cretaceous (inferred from seismic records).
4. Site of accumulation of sediment lost from Africa during Cretaceous rifting and uplift of South Atlantic margin.
5. Constrain age and volumes of evaporites in deep basin along margin.
6. Climatic evolution of east Africa and timing of east African uplift (in Neogene).
7. Premonsoonal climates of the western Indian Ocean region
8. Black shale events (are they manifested there and what is their character) of the Jurassic and Cretaceous.

B) Global Objectives:

1. East-west tilt of Africa during rifting and opening of S. Atlantic Ocean; applicability of Vail onlap-offlap curve (comparison with NW Australian margin which has different freeboard history but roughly the same paleolatitude.
2. Mid-latitude (equatorial) long-term climate record.
3. Reference section for Indus cone--tectonics vs. sea level effects on sediment supply

Requirements for location

1. Crustal age, anomaly M25.
2. Off thick evaporites, but at or close to feather edge of evaporite strata to enable dating and seismic correlation.
3. Total sediment thickness of no more than about 2.5 km to allow penetration and recovery during normal-length drilling leg; water depth of less than 4.5 km--total depth to basement of less than 7 km. We would argue that such a test of the drilling platform should be made; we do not yet know whether drilling to depths greater than 1.5 km is feasible, and the opportunity to test the Resolution's capabilities should be made early in the program because many more such deep-drilling proposals will be made.
4. Oblique seismic experiment and complete logging.
5. Case deeply to improve hole conditions and likelihood of reaching basement ?

The optimal location is near but to northeast of DSDP Site 241 (see Figs. 1-4; sequence is probably too thick at Site 241). Examination of available seismic and other data (source: M. Coffin, 1985, PhD Dissertation, LDGO) (see attached Figures) suggests that if further site surveys are not possible, an alternate Site along multichannel Line 81 (Figs. 5 and 7), but probably on anomaly M23 (Oxfordian-Kimmeridgian) crust meets the sequence thickness-water depth criteria above.

Appendix II

Somali Basin

The SOHP reiterates that a deep stratigraphic test (DST) in the Somali Basin remains a high priority behind Prydz Bay-Kerguelen and the Neogene Package I. The reasons for drilling the Somali Basin DST are enumerated in Table 2. However, we also recognize that the following points should be made.

1) Adequate site surveys are not available for the site favored by SOHP, where sediment thickness is about 3 km on anomaly M25; while we are pursuing all available avenues for site survey work, it is not likely that such multichannel surveys can be completed.

2) The fallback option is DSDP Site 241 where multichannel crossing lines are available. However, the sediment thickness is at least 3.75 km (3.5 sec @ 2.5 km/sec. avg. veloc.) above M25 basement (data in Coffin, 1983). The water depth is ca. 4125 m and total drillstring length would be 7875 m. We estimate a minimum of 112 days required for drilling (considering at least 5 r.t. for bit change, casing runs, and recovery of 395 cores with attendant wireline times). In other words, the proposed drilling would consume at least 2 normal legs, which appears to be too long.

3) The weather is apparently not a problem; the compilation of Choi & Merrill (1985) suggests that during June, July and August (2^{o}S, 46^{o}E), the mean winds are 14-16 knots and wave heights average 1.5 - 2.0 m, well within tolerances for drilling.

In view of the objectives of the Somali Basin DST, we argue that unless a committment is made to penetrate the entire sequence, the drilling will not be worth attempting. Therefore, SOHP recommends a 2 leg program devoted to Somali Basin, or none at all.

In the event that drilling in the Somali Basin is not possible, we recommend the following strategy:

1. That PCOM explores means of shifting available time to the Argo-Exmouth program to ensure the recovery of the complete section in this region.

2. If logistical considerations dictate that any extra Indian Ocean time made available cannot be shifted to Argo-Exmouth or Pacific programs (i.e. leave the Indian Ocean earlier), we recommend that the Neogene II Package (see Prell document) be drilled.

Appendix III

Name	Affiliation	Specialty	Year Off	SOHP Suggested Replacement
Arthur	URI	Paleocean.	1987	
Embley	NOAA	Sed Process.	1988	
Hay	U. of Colorado	Sed Proc-Paleo.	1987	
Lancelot	France	Sed/Strat.	<u>1986</u>	Andre Schaaf (chosen by France)
Mayer (Chairman)	Canada	Seis Strat/PP	1988	
Meyers	U. of Mich.	Org Geochem.	1988	
Sarg	Exxon	Strat/Carb	1988	
Sarnthein	Germany	Paleoclimate	1987	
Shackleton	England	Paleo, isotopes	1989	
Suess	OSU	Biogeochem.	<u>1986</u>	Walter Dean
Ruddiman	LDGO	Strat.	<u>1986</u>	Warren Prell, Sy Schlanger, Andre Drexler
Takayanagi	Japan	Plank. forams	<u>1986</u>	T. Saito (chosen by Japan)
Tauxe	SIO	Paleomag.	1987	
Garrison	UCSC	Inorg. Geochem.	1989	

LITHOSPHERE PANEL MEETING

10-11 April 1986
University of Washington, Seattle

EXECUTIVE SUMMARY

(1) **LEG 109 MAR/KFZ**

(a) LITHP considers logging of DSDP 395A a primary scientific objective of Leg 109, not just a backup program. We recommend 395 be logged regardless of the progress made in drilling Site 648.

(2) **LEG 111**

(a) LITHP expresses great disappointment that one of the highest priority COSOD objectives, drilling a hydrothermal system on the EPR, will not be carried out on Leg 111 and will thus be delayed until at least the early 1990s.

(b) We recommend 504B be drilled on Leg 111 regardless of the progress made at Site 648 on Leg 109.

(c) If drilling at 504B must be terminated early, LITHP recommends a back-up program of shallow crustal drill holes around 504B and feasibility testing of unsupported bare-rock spud-in on the nearby Galapagos Spreading Center.

(3) **INDIAN OCEAN**

(a) LITHP recommends an entire leg be devoted to drilling on the SWIR. Proponents of drilling on SWIR (Dick, Natland, Stephen, Von Herzen) are encouraged to prepare a revised drilling proposal for discussion at the next LITHP meeting.

(b) LITHP again endorses drilling on 90E Ridge and recommend that holes on the Kerguelen Plateau be drilled down and into basement.

(c) Although LITHP strongly supports drilling in the Red Sea, if this area cannot be drilled for political reasons, we recommend the drillship leave the Indian Ocean early for the Western Pacific.

(4) **WESTERN PACIFIC**

(a) The major thematic problems LITHP would like to see addressed in the Western Pacific are:

1) Geochemical evolution of back-arc basin crust.
2) History of arc magmatism.
3) Forearc basement composition and vertical tectonics.
4) Geochemical mass balances at convergent margins.
5) Ophiolite comparison.

- these problems must be addressed at more than one arc-trench system.

(b) A minimum of five legs are required to meet lithospheric objectives in the Western Pacific: 2 legs in the Mariana/Bonins (forearc), 1 leg in both the Lau Basin and Japan Sea (back-arc basins, marginal seas) and 1 leg devoted to drilling reference holes into basement seaward of the Mariana and Izu-Bonin trenches (geochemical mass balance).

(5) **CENTRAL/EASTERN PACIFIC**

(a) LITHP interests in the Central/Eastern Pacific include:

1) Magmatic processes and their temporal and spatial variation at mid-ocean ridges.
2) Hydrothermal processes at both sedimented and sediment-free and mid-ocean ridges.
3) Deeper structure of the oceanic crust including pillow lava-dike and layer 2/3 boundaries.
4) Mid-plate volcanism seamount formation and plate flexure.
5) Origin of oceanic plateaus.
6) Origin of Jurassic Quiet Zone and vertical distribution of magnetization in oceanic crust.
7) Mantle heterogeneity.

- these thematic interests have not been prioritized and until that is done it is premature to construct detailed drilling scenarios for this area.

(b) Some LITHP objectives in the Central and Eastern Pacific (e.g., ridge crest drilling) will require a substantial commitment of drilling time including multiple legs to the same area if they are to be adequately addressed. ODP planning by arbitrary, regional time blocks before drilling priorities and requirements have been established undermines our ability to meet these COSOD objectives.

(c) A joint LITHP/CEPAC working group of 5-6 people should be established to carefully consider drilling strategies, locales, and technological requirements for rise axis/hydrothermal drilling in the eastern Pacific.

(6) **PANEL MEMBERSHIP**

(a) Appoint Keir Becker who can also act as liaison to DMP.

(b) Appoint Rodey Batiza to replace Ken Macdonald and Marcia McNutt or Tony Watts to replace John Sclater.

(c) Need ore petrologist - suggest Larry Cathles.

(7) **MISCELLANEOUS**

(a) LITHP is preparing a "White Paper" describing its broad thematic interests and the role drilling can play in answering specific scientific questions.

(b) Next LITHP meeting tentatively scheduled for July 29, 30th in Corvallis (alternative site Woods Hole).

Minutes

The meeting began at 8:45 a.m. in the Marine Science Building at the University of Washington. Present were: C. Auroux (ODP), R. Buffler (NSF), J. Delaney, R. Detrick (Chairman), J. Hawkins, C. Langmuir, M. Leinen, J. Malpas, R. McDuff (PCOM), N. Petersen, M. Purdy, A. Saunders. LITHP members not present were: T. Fujii, T. Juteau, K. Macdonald, and J. Sinton.

1. REPORTS

1.1 PCOM

Russ McDuff reviewed the January PCOM meeting in La Jolla where PCOM discussed the panel structure and proposed that COSOD-II be held in 1987. The stated purpose of COSOD-II is to review the geological objectives of ODP and the requirements for future technical development. J. Orcutt is organizing a conference steering committee. PCOM decided against a major change in the JOIDES panel structure at this time, but felt inter-panel communication needed to be improved and duplication of effort between regional and thematic panels eliminated. To improve communication, PCOM endorsed the idea of an annual panel chairmen's meeting (PANCHM), the first to be held in Corvallis, April 3-4.

Purdy expressed dismay that his statement to PCOM that "none of the primary lithospheric objectives will be achieved in the foreseeable future if planning priorities remain unchanged" elicited no response. He also expressed concern that the PCOM minutes do not reflect these comments or his recommendations regarding logging 395, EPR, or SWIR drilling.

Indian Ocean drilling is still in a state of flux due to lack of site surveys and political problems. PCOM asks that we consider alternative drilling plans including early departure from the Indian Ocean. PCOM endorsed drilling 504B on Leg 111 over EPR, but considered the possibility of returning to 648 if drilling on Leg 109 is very successful.

1.2 PANCHM Meeting

Detrick reported that he was stranded in Denver by a Spring snowstorm and missed the first PANCHM meeting. Minutes of that meeting indicate the PANCHM agreed with PCOM that thematic panels should identify important global themes while regional panels concentrate on proposal review and construction of a drilling schedule. Four other problems identified were (1) PCOM's unresponsiveness in acting on requests for changes or additions in panel membership; (2) major topics such as geochemistry and tectonic evolution of ocean basins are poorly represented by present panel structure; (3) flow of paper, especially minutes and supporting documents around the advisory system; and (4) concern about publicizing ODP in the broader community of Earth scientists.

Detrick will communicate LITHP perspective on these and other issues to D. Rea by letter for inclusion in PANCHM report.

1.3 NSF

Buffler reported that ESF will join the program effective 1 June 86. This should improve the USSAC funding picture. Dick's SWIR site survey will be funded; scheduled for later this year on CONRAD. Other work in the Indian Ocean either funded by ODP or split funded with MG&G include Weissel's proposals on intraplate deformation and Broken Ridge, and Curray's work on Northern 90E Ridge. Sclater proposal on southern 90E Ridge pending. Bonatti Red Sea proposal declined along with MacKenzie's Broken Ridge seismic proposal. June 1st deadline for 1987 site survey work in Pacific.

2. LEG 109

LITHP expressed concern that logging of 395 was still considered a back-up program for drilling at 648. LITHP has **repeatedly** recommended that logging 395 is of much greater scientific merit than a few more meters of penetration at 648 and it should be an integral component of Leg 109. The term "substantial progress" in the PCOM recommendations regarding Leg 109 is ambiguous and could result in no logging of 395. LITHP recommends 395 be logged **regardless** of the progress at 648.

A policy for hard rock description developed by Leg 106 scientists was submitted to LITHP for approval. C. Langmuir and J. Hawkins will review.

3. LEG 111

LITHP members expressed their great disappointment that the EPR will not be drilled on Leg 111 and that this drilling will be postponed to 1990 at the earliest. The panel still believes the need to gain technical and engineering expertise with a second bare-rock guidebase deployment and hydrothermal drilling outweigh the short term scientific benefits of drilling 504B. The possibility of reprogramming Leg 111 to the MARK area to continue deepening 648 was considered by LITHP to be completely unrealistic given the logistics involved in advance planning and staffing. Scientifically, LITHP favors 504B or EPR over a third leg on the MAR.

4. INDIAN OCEAN

LITHP was pleased to hear that the SWIR site survey will be funded and that the PCOM recommended at its last meeting that an entire leg be devoted to SWIR. An alternative proposal to drill the CIR without a site survey submitted by Natland and Fischer was therefore shelved. There appears to be some confusion regarding drilling plans for SWIR since several generations of proposals exist. The panel urges the proponents of SWIR drilling (Dick/Natland/Stephens/Von Herzen) to prepare a brief prospectus on SWIR before the next PCOM meeting.

There is apparently still some concern about drilling in the Red Sea and whether or not operational permits will be granted. If the Red Sea cannot be drilled, LITHP recommends the drillship leave early for the western Pacific. LITHP endorses 90E Ridge drilling again and urges that any drilling on Kerguelen continue down to and into basement.

5. WESTERN PACIFIC

5.1 General Discussion

Jim Hawkins presented an excellent overview of the major scientific problems at western Pacific arc-trench-backarc basin systems. These include (1) geochemical evolution of back-arc basin crust and hydrothermal processes, (2) the history of arc magmatism, and (3) the nature of igneous basement in forearcs and their vertical tectonic history. He emphasized the importance of looking at more than one arc-trench system and focussing on the important processes, rather than concentrating on a single geographic transect.

Of particular interest in back-arc basins is the temporal and spatial relationship of MORB, back-arc basin and island arc basalts. In the Lau Basin the arc to back-arc and back-arc to MORB transitions in the evolution of this basin have been mapped out in a general way by dredging. The merits of dredging vs. drilling in addressing this problem were extensively discussed by the panel as well as different drilling strategies (a single reentry hole vs. a large number of limited penetration pogo holes). The consensus was that drilling is an effective tool for defining the early opening history of back-arc basins and the basement composition at the margins of the basin. It is also essential in getting at the vertical stratigraphy of igneous activity. Extensive pre-drilling dredging and Sea Beam surveying will be useful in choosing specific drilling targets. The Lau Basin is an attractive target because of the extensive survey work already completed there. The Bonin Basin and possibly the Coriolos Trough are interesting as examples of the early stages of back-arc basin spreading. Sediment ponds of sufficient thickness exist close to the center of the Lau Basin so that bare-rock drilling will not be required.

Several important problems were identified in the forearc region that can only be attacked by drilling. These include the nature of igneous basement, the vertical tectonics of the forearc region, and the history of arc magmatism. Another attractive drilling objective is the large diapiric structures identified in both the Bonin and Mariana forearcs. Both the Bonin and Mariana forearcs offer important drilling targets and because of the variability in structure and tectonic history, LITHP strongly recommends both be drilled.

Another aspect of drilling at convergent margins championed by Charlie Langmuir is the establishment of reference holes on the incoming plate which include as complete recovery as possible of the entire sedimentary section and substantial penetration into basaltic basement (>100 m). Knowledge of the composition of subducted crust is critical for models of arc petrogenesis and for a general understanding of mantle and crustal evolution. For example, there are substantial chemical differences between recent lavas erupted in the Mariana and Izu-Bonin arcs that may be related to differences in the chemical composition of the sediments and crust being subducted. A reference hole seaward of each arc-trench system studied will provide the constraints needed to begin to examine this geochemical mass balance. LITHP strongly endorses this aspect of drilling at convergent margins.

5.2 Specific Recommendations

Margaret Leinen reviewed the 6, 9, and 12 leg scenarios developed at the last meeting of the WPAC panel. The thematic interests mentioned above are well-represented in their proposed program. LITHP also strongly endorses drilling in the Lau Basin, in the Mariana-Bonin forearc and in the Japan Sea. Drilling in the Coriolos Trough of the Vanuatu (New Hebrides) arc may also be of interest to LITHP as an example of early back-arc basin development, but more information is needed on the geochemistry of the lavas from this basin and their similarity with the Bonin Trough. LITHP does not highly rate Sulu-Banda, South China Sea, or Nankai Trough drilling.

LITHP believes a **minimum** of 2 legs is required in the Mariana-Bonin areas to achieve lithospheric objectives. In the 6-leg WPAC scenario we thus favor a second Mariana-Bonin leg over Sulu-Banda. A leg (or parts of 2 legs) is required to drill reference holes seaward of the Izu-Bonin and Mariana trenches (a proposal for this drilling will be submitted by Langmuir et al. in the very near future). LITHP rates this effort very highly, above Nankai Trough/South China Sea or Japan Sea in the WPAC 6-leg scenario. Finally, at least 1 leg should be dedicated to the Lau Basin.

In summary, a minimum of 5 legs is required to meet lithosphere objectives in the western Pacific. They are (in order of priority):

Mariana-Bonin	2 legs
Lau Basin	1 leg
Reference Drill Holes	1 leg
Japan Sea	1 leg

- if a sixth leg is available LITHP favors Vanuatu (Coriolos Trough).

6. CENTRAL/EASTERN PACIFIC

The panel did not have time for extensive discussions of lithospheric interests in the central and eastern Pacific. Based on a brief discussion the following problems were identified (in no particular order):

(1) Magmatic processes and their temporal and spatial variation at mid-ocean ridges.
(2) Hydrothermal processes at both sedimented and sediment-free mid-ocean ridges.
(3) Deeper structure of the oceanic crust including the pillow lava-dike and layer 2/3 boundary.
(4) Mid-plate volcanism, seamount formation, plate flexure.
(5) Origin of oceanic plateaus.
(6) Origin of Jurassic-Quiet Zone and vertical distribution of magnetism in oceanic crust.
(7) Mantle heterogeneity.

Some lithospheric objectives in the central and eastern Pacific (e.g. ridge crest drilling, hydrothermal processes) will require a substantial commitment of drilling time including multiple legs in the same area. It is unlikely we will be able to attack all the problems listed above and a careful prioritization of these objectives will be necessary before detailed drilling scenarios for the central and eastern Pacific can be realistically constructed. LITHP plans to begin this process at its next meeting in July. It is important that sufficient time is allowed in the planning process for these thematic objectives to be fully developed.

Both CEPAC and LITHP have a strong interest in drilling at spreading centers in the eastern Pacific. We propose that a joint LITHP/CEPAC working group of 5-6 people be established to carefully consider drilling strategies, locales, and technological requirements for rise axis/hydrothermal drilling.

7. LITHP WHITE PAPER

Following on a suggestion may by Andy Saunders at the last LITHP meeting, a significant amount of time was spent by the panel discussing a LITHP White Paper. This report has two principal objectives (1) to describe the broad thematic interests of the LITHP and (2) to describe the role drilling can play in answering specific scientific questions of lithospheric interest. After much discussion it was finally decided to prepare a short (10-15 page) preliminary report identifying the major problems of lithospheric interest and including for each problem:

- a brief outline of the problem
- simple cartoons illustrating the discussion
- a brief summary of what is known (or expected)
- how the problem can be attacked by drilling (or drilling in concert with other techniques)

The panel agreed on the following content for the report: (names in parentheses indicate author):

1. Oceanic Spreading Centers
   a. Evolution in time and space of magmatic processes at MOR (Saunders, Langmuir)
   b. Deeper structure of oceanic crust including pillow lava-dike and layer 2/3 boundary; magnetism of oceanic crust (Purdy, Petersen)
   c. Hydrothermal processes at MOR (Delaney)
2. Aging of the Lithosphere
   a. Mid-plate volcanism including seamounts, plateaus, etc., (Sinton)
   b. Low temperature alteration of oceanic crust and age-dependent variation in physical properties (Stuadigel)
3. Convergent Margins
   a. Geochemical evolution of back-arc basin crust and history of arc magmatism (Hawkins)
   b. Forarc basement structure and tectonics (Hawkins)
4. Geochemical mass balances (Langmuir)
5. Mantle heterogeneity (Schilling)
6. Ophiolite model (Malpas)

- problems 4, 5, and 6 are global in nature and can only be addressed by understanding the geological processes involved in 1, 2, and 3.

John Malpas agreed to assemble this document provided each individual sends him their section before May 12th.

8. PANEL MEMBERSHIP

The panel approved the following rotation schedule for LITHP membership

4/86 Marcia McNutt (MIT) or Tony Watts (L-DGO) to replace John Sclater

9/86 Rodey Batiza (Northwestern) to replace Ken Macdonald

9/86 Julian Pierce (U.K.) to replace Andy Saunders

1/87 John Mutter (L-DGO) re replace Mike Purdy

6/87 Jim Gill or Bob Stern to replace Margaret Leinen

6/87 Jill Karsten (UW) to replace John Sinton

6/88 Hawkins, Langmuir, Hawkins replaced

6/89 Detrick institutionalized

- in addition the panel reiterates its desire to have Keir Becker appointed to the panel (also to act as a liaison to DMP). The panel also recognized the need for the appointment of an ore petrologist, e.g. Larry Cathles (EXXON).

9. FUTURE MEETINGS

The next meeting of LITHP is scheduled for July 29 and 30 in Corvallis, OR (back-up site is Woods Hole). The following meeting is tentatively scheduled for January 6, 7, 1987 in the U.K. to occur in conjunction with the conference on Magmatism in the Ocean Basins January 8, 9, and 10.

The LITHP meeting was adjourned at about 4:00 p.m. on April 11th.

WPAC MINUTES

Errata:

Page 6 para. (c), line 7/"correspondence" (typo)

para. 4, final sentence/replace with:
"SOHP views this as an excellent place for passive margin study, in a mixed carbonate/clastic setting similar to many ancient analogs in the geological record."

Minutes
Western Pacific Panel Meeting
February 24-26, 1986
RSMAS, University of Miami

Contents

Western Pacific Panel Meeting
February 24-26, 1986
Summary

The principal business of the meeting was to reconcile the thematic priorities of the Lithosphere, Tectonics, and Sediment and Ocean-History Panels with existing proposals and the Western Pacific Panel's previous recommendations, made at the August, 1985 meeting. The results are set out in Table 1 (overpage), which assigns priorities on the basis of 6-, 9-, or 12-leg options, and gives a summary of panel endorsements. Strong emphasis is given programs in island arcs, forearcs, and back arcs, with targets in the Bonins, Vanuatu, and the Lau Basin. These have strong thematic support from several panels.

Mixed thematic and regional objectives are the basis for the recommended programs in the Banda-Sulu region and for the Japan Sea. The Great Barrier Reef is the principal thematic objective of SOHP in this region. Thematic objectives are the basis for the recommended programs in the South China Sea (passive margin evolution) and at Nankai (accretionary problems). WPAC gives these higher thematic priority than TECP, which preferred more emphasis on collisional problems. However, the data sets and proposals dealing with the particular collisional problems favored by TECP (Ontong-Java Plateau and the Louisville Ridge - Tongan collision) <u>are not adequate</u> to formulate a drilling program.

The rationale for specific recommendations concerning programs and time allocations is spelled out in item 5 of these minutes.

WPAC also evaluated existing, pending, and proposed survey information and prepared some preliminary schedules for a 9-leg program commencing in 1988. To minimize transit, the preferred order is South China Sea, Japan Sea, Nankai, Bonins, Bonin-Mariana, Sulu-Banda, Great Barrier Reef, Vanuatu, Lau Basin. An early departure from the Indian Ocean is desirable to avoid the high-latitude winter problems in the Japan Sea (and Nankai Trough).

The rationale for a suggested rotation of panel membership (Appendix 1) is provided under item 10 of these minutes.

Table 1

Area[1]		Program Length (#Legs) 6	9	12	Thematic Blessings	Relevant Proposals	Site Survey Needs	Present Data Workup	Cruises Planned
Lau Basin	(8)	1	1	1	LITHP, TECP, Hawkins' workshop	HTB 189	zero-age survey	Integrate 5 recent cruises	--
Bonin-Mariana	(1) (13)	1	2	2	LITHP, TECP, Hawkins' workshop	83,171 /172	more MCS	JNOC MCS needed	ORI 7/86 Taylor MC proposal ALVIN '87
Vanuatu	(6)	1	1	2	LITHP, TECP, Hawkins' workshop	187 190	more MCS	recent cruises	French MCS proposal
Sulu-Banda	(3)	1	1	1	SOHP, (TECP)	27,82 131,154	digital SCS (Banda)	✓	French MC proposal Silver SC proposal
Great Bar. Reef	(-)	0	1	1	SOHP, Carbonate Wkshop	206	✓	recent cruise	--
Japan Sea	(1)	1	1	1 1/2	SOHP, TECP= obduction	51+ JTB	✓	recent cruise	ORI 4-5/8 Shinkai'8
S. China Sea	(3)	?	1	1 1/2	SOHP	46,147 194,216	✓	recent cruises	--
Nankai	(5)	?[1]	1	1		50 128/F	✓	JAPEX MCS needed	ORI 12/86 Shipley 2-ship pro
Sunda	(10)	0	0	?		80 127	more MCS	x	Gloria 87/88
Manila Trench	(15)	0	0	?[1]		218	Taiwan MCS migrate MCS	x	Taiwan MC '86
Zenisu	(9)					163 177	more MCS		ORI 8/86
Sulu Transect	(-)					27,48 82	more arc MCS		French MC Proposal
Tonga Transect	(8)					26, 67	more MCS		
Downhole Experiments	(17)				DMP	155	site-specific surveys		

Notes
1. Numbers in parentheses give WPAC ranking at August 1985 meeting; dash means no equivalent proposal at that time.
2. Palawan (48/D) dropped from consideration: very deep targets, safety problems. Okinawa (7) dropped from consideration: low thematic panel interest, politica problems.
Ontong Java not considered: no proposal.

1. INVOCATION, CAST OF CHARACTERS

The meeting was convened at 9:10 a.m. on February 24 in the Dean's Conference Room of the Rosenstiel School of Marine and Atmospheric Sciences, University of Miami, by Chair Brian Taylor. Present were Taylor, Silver, Schluter, Rangin, Hesse, Recy, Audley-Charles, Ingle, Leinen, Sarg, Nakamura, and Natland, with Taira and Hayes from PCOM, Garrison from ODP, and Brass from NSF. Present for portions of the meeting were host Keir Becker, representing DMP, and former panel member Langseth, representing kSP.

2. NEW MEMBERS

The panel welcomed the return of UK representation in the person of Mike Audley-Charles. His alternate is Dave Cronan. Also present for the first time was Rick Sarg, liaison with SOHP.

3. REPORTS

A. ODP: Lou Garrison reported the results of Leg 105 in the Labrador Sea, noting particularly the excellent performance of the vessel and heave compensator during high seas and heavy winds. He also reported on the successful installation of a bare-rock guide base at Site 648 on the Mid-Atlantic Ridge during Leg 106, televised re-entry, coring with a mud motor, and unsupported bare-rock spud in, attempted several times during that Leg. He discussed the development of a mini re-entry cone, to be tested on a forthcoming leg. Then he presented the results of Leg 107 in the Tyrrhenian Sea, during which the Sardinian passive margin was drilled, and ultramafic rocks cored in the Tyrrhenian Sea Basin. Leg 108 is to core sites along the western African margin for paleoceanographic and paleoclimatic objectives.

B. PCOM: Dennis Hayes reported the deliberations of the January PCOM meeting, noting especially concerns about panel strucuture, inter-panel communications, and an orderly rotation of panel members. As paraphrased from a letter to the panel chairman by Roger Larson (Feb. 2, 1986), PCOM envisions a three-step process for each geographic area of planning:

a. First, thematic panels should specify the overall thematic objectives that can best be achieved in this geographic area; these objectives in a particular area are evaluated from a global perspective
b. Second, the relevant regional panel defines a specific drilling program <u>based on</u> and <u>within</u> the thematic constraints set forth by the thematic panels
c. Third, the proposed drilling program is reviewed by the thematic panels who comment on its adequacy in meeting thematic objectives
d. PCOM evaluates input from regional and thematic panels and finally plans a drilling program

Thematic panels should seriously de-emphasize the review of all specific drilling proposals and concentrate on long-term world-wide planning. Regional panels' prioritization of specific proposals and their subsequent proposed drilling programs will serve as initial screening processes for thematic panel review.

A new type of meeting was promulgated, wherein all the panel chairs would reason together. The first of these is to be held April 3 and 4 in Corvallis. The Indian Ocean legs are uncertain, and may succumb to political and site-survey problems. In this case, JOIDES RESOLUTION may leave the Indian Ocean early. Present plans call for approximately 3 years of drilling in the Pacific, to be divided roughly equally between the western Pacific and all points east. PCOM requests WPAC to develop a tentative 9-leg WPAC drilling program at this meeting, with 6- and 12-leg options. A second COSOD meeting is in the works, to be held next spring or summer, probably in Europe. J. Orcott (SIO) is the U.S. contact to volunteer to serve on the steering committee.

C. SOHP: Rick Sarg reported on the overall objectives of SOHP, and their preferences in the western Pacific. The three principal objectives concern:

1) response of sedimentation to fluctuations of sea level and subsidence, and to tectonic processes;
2) sedimentation in oxygen-deficient oceans, as a function of sea-level changes, variations in the carbon budget, etc.;
3) sedimentation on deep continental margins (the composition, lithology, and chemistry of sediments deposited in lower-slope regions).

Priorities in the western Pacific are 1) the Great Barrier Reef; 2) the Japan Sea; 3) the Bonins; 4) the South China Sea; and 5) the Banda and Sulu Seas.

Other Pacific objectives include the Bering Sea, sedimentation in the oldest parts of the Pacific Basin, atoll drilling, and the Ontong-Java Plateau.

D. LITHP: Margaret Leinen reported on behalf of LITHP. Their interests in the western Pacific are in:

1) magma processes and hydrothermal activity in backarc environments;
2) evolution of forearc crust and volcanics;
3) global mass balances (from a petrological and geochemical perspective, does what goes down a trench emerge in arc/backarc lavas?).

The first two have implications for ophiolites,. Pertaining to the third, the Chair noted receipt of a letter from Charlie Langmuir requesting that reference sites with significant basement penetration be cored adjacent to each arc system targeted in the western Pacific. Leinen and Langmuir are to prepare a specific proposal for such drilling for LITHP.

Specific areas of LITHP interest in the western Pacific are the Bonins and Mariana arc/backarc systems, the Tonga arc and Lau Basin, the Okinawa Trough, and the Coriolis Troughs. LITHP requests advice from WPAC concerning differences among these places, but notes a preference for geochemically simple systems (i.e. oceanic rather than continental arcs). LITHP is also aware of the unusual aspects of the Valu Fa "magma chamber" occurrence in the Lau Basin (andesites, failure to discern methane or other evidence for geothermal activity there).

E. TECP: Nakamura and Natland reported the results of the just-concluded meeting of TECP the previous week. TECP recognizes three global tectonic problems which can be best addressed in the western Pacific:

a) The evolution and constitution of arcs and fore-arc basement; the process of rifting in and near arcs; vertical tectonics in arcs

b) The origin and evolution of back-arc basins, including nascent and more highly evolved examples

c) The tectonics of collisions in the broad sense: The arrival of seamounts, aseismic ridges, plateaus, and continental plates and microplates at active convergent margins, and the possible accretion of these terranes. Natland presented a typewritten synopsis of the objectives of TECP in all these areas, and their summary recommendations, noting especially differences in their preferred targets and those recommended by WPAC at its August meeting. Broad correspondednce in targets for arc and backarc drilling exists between TECP and WPAC priorities, but TECP does not place high priority on either Nankai or the South China Sea, nor much priority on the Okinawa Trough (like LITHP, preferred simpler oceanic arcs). It wants more effort on collision problems, such as at the Louisville Ridge-Tongan forearc and the Ontong-Java Plateau--Solomon Islands.

There was much discussion on all these matters, later crystallized in a revision of WPAC recommendations which incorporated the interests of all the thematic panels, plus assessments of existing proposals. Panel sentiment was well summarized by Gary Brass who quoted the Regional Panels' mandate to "help thematic panels translate their broad thematic programs into concrete regional drilling plans" BUT ALSO TO "identify regional problems not covered by thematic panels," and, added Taylor, to respond to proposal pressure.

4. NEW PROPOSALS

The Panel then took up new proposals received since the last meeting. These included a proposal to drill near Papua New Guinea and the Bismarck Sea (forearc flood basalts and potential hydrothermal activity associated with an arc magma chamber), a Korean proposal to drill in the southern Japan Sea (Tsushima Straits), a revised South China margin propoal, summarized at the meeting by Hayes, a proposal to investigate the two-stage opening of the South China Basin, summarized by Rangin, a Manila Trench-to-Taiwan arc-continent collision proposal (S. Lewis et al.) and a proposal to drill an 85Ma passive margin setting in the Fairway Basin of the Lord Howe Rise, summarized at the meeting by Recy. Rick Sarg also provided an explanation for SOHP objectives for their highest priority in the western Pacific, the Great Barrier Reef-Queensland Plateau. SOHP views this as a good place for a carbonate platform study, one that is not deformed, yet has a clastic component similar to those in the geological record (ancient analogs abound!). The specific objectives are

1) late Paleogene/Neogene sea-level history
2) sea-level effects on sedimentation in a mixed epiclastic-carbonate regime;
3) plate motions tied to paleoclimate
4) tectonic cycles (lab to study cycles enhanced globally);
5) the comparative geological history of a continental margin with drowned reefs (Queensland Plateau), and active reefs;
6) sediment diagenesis; and
7) periplatform ooze cycles, their tie to sea-level fluctuations, which may be global (cf. Bahamas and edge of the Queensland Plateau).

The complete list of drilling proposals submitted to WPAC by February 24 is attached as Appendix 2.

This concluded the first-day's session.

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5. REVISED WPAC DRILLING PROGRAM

The second day's session was almost wholly devoted to reconciling the thematic priorities of the Lithosphere, Tectonics, and Sediment and Ocean History Panels with existing proposals and the Western Pacific Panel's previous recommendations, made at the August, 1985 meeting. The specific task set by PCOM was to recommend drilling programs for 6, 9, and 12 legs. The results are set out in Table 1, which gives the number of legs to be apportioned among the various programs under the three options, plus a summary of principal panel endorsements.

The list is divided into two principal groupings: those dealing largely with tectonic and lithospheric priorities, separated by the Great Barrier Reef (which is the principal priority of SOHP in the region) from those of mainly WPAC priority. The group of four above the GBR consists of objectives and targets which not only can be done well in the western Pacific, but can only be done in the western Pacific. The first three of these have strong thematic endorsements from LITHP and TECP, and are highly regarded by WPAC (Lau Basin, Bonins/Marianas, and Vanuatu). The fourth of these (Sulu-Banda) is a regional thematic problem (trapped marginal basins and fragmentation of those basins), but it has a strong endorsement from SOHP (silled basins and closure of the Pacific-Indian seaway) and has the advantage of sound proposals and a good foundation of survey data. WPAC advocates this program because the Sulu-Celebes-Banda area is a critical link between the Australian-Indonesian-Philippines collisions.

Below the Great Barrier Reef on the list is a group of which each has either strong regional or thematic interest, or both, but none of them have the out-and-out thematic endorsement of other panels. Of these, those which appear strongest on the basis of existing proposals, survey information, and thematic or regional interest are the Japan Sea, the passive-margin problem in the South China Sea, and the accretionary-wedge problem at Nankai. The problem of arc-continent collision may potentially be well addressed in the Manila Trench-Taiwan and the Sunda/Sumba areas, but the proposals for both of these areas now focus on the accretionary-wedge problem more than arc-continent collision. These conclude the list of programs allocated any time under the 6-, 9-, or 12-leg formats in Table 1.

Below these in Table 1 are a series of four unranked alternates, which could be incorporated into the program at the 12-leg level if one of the more highly ranked programs is not done for any reason. These are the Zenisu collision zone of Japan, a transect of holes across the Sulu Basin, Sulu arc, and Celebes Sea, a Tonga arc-forearc transect, and the four-plate downhole-instrumentation proposal off Japan.

Finally in Table 1 are programs excluded or dropped from consideration for lack of an adequate proposal or a combination of survey/political complexities. These include the Okinawa Trough, and a deep Palawan objective (both discussed below), and two collision-related problems strongly endorsed by TECP, the Ontong-Java Plateau, and the Tongan forearc-Louisville Ridge collision zone. Concerning collision-related problems, WPAC considered that only one of the three programs advocated by TECP, namely the collision zone of the d'Entrecasteaux Ridge with Vanuatu, has an adequate proposal and suite of survey data on which to plan a drilling program. There is no existing proposal to drill on the Ontong-Java Plateau proper, as advocated by TECP, and there is no site-specific proposal to drill the lower slope of the Tonga Trench to ascertain the mechanism or even verification of Louisville Ridge seamount accretion.

The apportionment of time under the 6-, 9-, and 12-leg formats proceeded in the following way. The first four regions on the list (above the Great Barrier Reef), and the Japan Sea (below it) should be allocated one leg apiece in a minimal (6-leg) western Pacific Program. One of the South China Sea passive-margin program or the Nankai accretionary program should have the remaining leg, but the Panel left it for future thematic/regional/survey considerations to judge which. In a 9-leg program, all 7 of these objectives plus the Great Barrier Reef should receive time, with an additional leg allocated to the multi-thematic Bonin/Marianas forearc-diapirs-arc-backarc complex of problems (including a deep penetration hole in at least one of these settings). This latter we believe is in accord with the strong thematic endorsement of this region from LITHP and TECP, as well as WPAC's thematic assessment.

In a 12-leg program, WPAC considers that additional time should be added to certain programs, rather than adding many additional programs. A leg should be added to the Vanuatu program (allowing time for both the collision problem and Coriolis trough backarc problem, as well as the arc-reversal problem, to be addressed). A half-leg addition apiece would ensure full value from the Japan Sea and South China margin programs. One additional program should be added, concerning the arc-continent collision problem at either Manila-Taiwan or Sunda-Sumba.

In reaching the above series of recommendations, some very specific endorsements and deletions require amplification.

1). The Great Barrrier Reef is a special category in that it is the foremost priority in the region for one panel (SOHP), but has no other thematic endorsements. The proposal at this stage is adequate as to sites proposed, but is weak in thematic documentation, which was provided at our meeting orally by Rick Sarg.

2). The Okinawa Trough was deleted from further consideration because the existing proposal calls for several very deep holes, additional site survey is required but probably will not happen, and there are political (EEZ-type) problems. The entire program seems too much to justify, and is not likely to happen. Apart from WPAC's interest, thematic endorsements are weak (both LITHP and TECP prefer simpler oceanic arc-backarc systems).

3). The South China Sea program endorsed here combines both the passive-margin objectives, and some of the targets in the basin. Lack of TECP endorsement was discussed extensively. WPAC concluded that the margin problem here offered a unique opportunity to evaluate subsidence/flexure/

thermal models of passive margin evolution, and asks TECP to consider this again in light of the recently submitted proposal by Hayes and others.

4). The Nankai proposals endorsed here include a combination of those dealing with the physical processes accompanying development of a decollement, and the more regional pattern of deformation associated with the entire accretionary complex. Advantages are that this may be the only place where a decollement can be reached in a turbidite sequence, and a truly superior set of MCS and other survey information has been obtained. Lack of endorsement by TECP (and their preference for Makran) is surprising. WPAC requests TECP to re-evaluate Nankai carefully in terms of their global perspective on accretionary problems, giving due weight to the survey information available, and the likelihood that coring/recovery and other technical advantages of JOIDES RESOLUTION will radically improve drilling results at Nankai compared with previous experience.

5). The Manila-Taiwan (newly submitted) and Sunda-Sumba proposals were evaluated particularly with regard to the thematic problem of arc-continent collision. TECP's recommendations focused on collisions involving seamounts, aseismic ridges, and large oceanic plateaus, but did not deal specifically with arc-continent collisions, which are as well represented in the western Pacific as the other types. WPAC asks TECP why arc-continent collisions are not more conspicuous in their thematic priorities. The two sets of proposals dealing with this problem actually focus more on deformation processes and fabric development in accretionary wedges. They need some re-direction. WPAC asks TECP to evaluate the existing Manila trench and Sumba proposals with respect to Nankai and other accretionary complexes in terms of thematic priorities. Silver, meanwhile, with a contribution from Audley-Charles, will revise the proposal for Sunda to focus more on the collision aspect. Regarding the Manila-Taiwan proposal, the tie to Taiwan is exciting, geophysical work to make that tie stronger is anticipated, and needs to be factored into a revised proposal. WPAC requests that this be done by Lewis, Hayes, Suppe et al. WPAC expects that one full leg will be needed to do either Manila-Taiwan or Sunda/Sumba.

6). Proposals concerning the possible overthrust of an arc onto a continental margin in the Palawan-Sulu Sea region were discussed. The problem has no thematic endorsement from other panels, hence has to be advocated from a regional perspective only. Excellent survey data exist, but the heart of the proposal concerns a very deep hole (>2,200 m) to penetrate an entire accretionary complex and reach a hoped-for carbonate platform. Given the restricted-basin setting of this hole, safety problems are such that a riser would probably be required for this drilling. Moreover, the presumed deep carbonate reflector on existing MCS data does not have the impedance contrast expected (although time-equivalent clastic sedimentary rocks are not precluded). WPAC finally considered this too dubious a prospect to endorse, with no one (in a vote) in favor of the 2-km deep hole proposed at SULU-1. As for the broader-brush Sulu transect (other, shallower holes across the Sulu arc and into the Celebes Sea), this was split out from SULU-1 and placed as a possible alternate in Table 1.

7). A similar status was accorded the Zenisu project, which consists of drilling a complex arc-like ridge colliding with Japan (and causing Recent, even contemporary, deformation in the central part of Honshu). The principal objective is timing of deformation. Others include 1) evaluation of a new, nascent, subduction zone in the collision region; 2) the physical properties of deformed sediments; 3) the timing of tilting with respect to accretion; 4) the nature of the Zenisu Ridge; and 5) the transition in crustal types along the ridge (approaching Japan), and the different responses of those crustal types to collision. An ancillary objective is the history of the Kurishio current. WPAC asks TECP to give a reading on Zenisu. The principal argument for going there is that there appears to be an intracrustal thrust related to subduction, i.e. a thematic objective.

8). The Downhole-instrumentation project involves 4 holes, serviceable from Japan, perhaps even hardwired to Japan, to monitor plate deformation and seismicity in an area of multi-plate interaction. All four holes would have to be drilled substantially into basement. WPAC endorsed this as an alternate, provided a site-specific proposal can be generated, incorporating some of the sites (or proximity to sites) in the Nankai and Zenisu programs. An option (suggested by Langseth) is that a one-hole operation be considered as a start-up for this project.

9). Specifically concerning TECP's endorsements, WPAC emphasizes that most of the collision problems they favored cannot be approached at the present time through drilling, not only because pertinent proposals do not exist, but because present survey information does not lend itself to preparation of such proposals. Specifically, an adequate survey program for the Ontong-Java collision would have to include careful imaging of the sea-floor in the collision region (Sea-Beam or SeaMARC), as well as extend MCS coverage from the Plateau into the Solomon Islands region. Similarly, deformation (uplift) of the Tongan forearc, or portions thereof, by seamount accretion, would have to be documented more fully by a careful survey, including extensive dredging of relevant portions of the trench slope. Apart from that, there is little assurance that drilling into seamounts in a trench-slope setting is technically feasible, or would prove much.

Partly in place of such objectives, WPAC argues that outstanding thematic problems can be addressed in the South China Sea and at Nankai, and requests that TECP reconsider these, and in light of the above comments concerning inadequacy of proposals and surveys dealing with collision processes. (Point, Game, perhaps Set. Match still pending.)

10. One additional matter came to a vote. The question was, Should the Great Barrier Reef program be removed from the 9-leg format in order to include the presently proposed drilling at either Manila-Taiwan or Sunda-Sumba? The vote was: in favor, 2; opposed, 6; abstain, 4. Motion denied.

This concludes the summary of deliberations pertaining to Table 1.

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6. SITE SURVEY PANEL AND ODP DATA BANK

The only other item considered during Day 2 was a presentation by Mark Langseth concerning site surveys and the Site Survey Panel. Mark outlined SSP priorities and procedures, the role of individual panel members as "assessors", the place of the ODP data bank, and of SSP in supervising or at least monitoring input and output from the Data Bank. A more "activist" role for SSP was outlined, in comparison with times past. Mark specified that contacts are needed to be designated by WPAC for each identified Leg or program. Now is the start-up time for SSP and ODP Data Bank involvement with western Pacific objectives.

This prompted discussion concerning WPAC's immediate tasks, beginning next meeting. These will involve much more emphasis on site-by-site evaluation, and a focus on survey data. Interactions among site proponents, assorted panels, and potential cruise co-chief scientists will take place, and final site recommendations will have to be made. Mark urged that WPAC not get into the position of synthesizing survey data; rather the emphasis should be on the evaluation of pre-filtered data for the selection of optimum sites.

This concluded the second day's session.

7.DOWNHOLE INSTRUMENTS, LOGGING, EXPERIMENTS

The third day's session was devoted to a thorough presentation by Keir Becker concerning downhole instruments, logging, and experimental tools, evaluation of existing and pending site surveys for the program outlined in Table 1, suggestions for a drilling schedule for the 9-leg option of Table 1, and some housekeeping matters.

Becker's presentation resulted in much interested discussion, and the realization that other things will and should be done besides coring in the Western Pacific. The Panel thanked Keir for his presentation and for graciously hosting our meeting.

8. EVALUATION OF SITE-SURVEY STATUS

A synopsis of existing, pending, and proposed site-survey information is included in Table 1. Existing coverage seems adequate to support drilling programs through most of the 9-leg option. Additional surveys would be useful in the Bonins, Vanuatu, Banda Sea, near Taiwan, and in the Sunda-Sumba region. A site-specific survey (not to mention a proposal) will be necessary to target a bare-rock re-entry guide-base in any of the arc or backarc targets preferred by LITHP. Most bodies of survey data need to be entered into the ODP Data Bank. Results of recent cruises of 5 institutions in the Lau Basin need to be integrated, and an updated drilling proposal for the Lau Basin needs to be prepared before the next WPAC meeting. Additional cruises will provide information for the Bonin/Marianas diapirs, the Japan Sea, Nankai, the region near Taiwan, and the Zenisu collision region. Additional proposals are promised for the Bonins forearc (Taylor, MCS), Vanuatu (French MCS), the Banda Sea (Silver; digital SCS), Nankai (T. Shipley; 2-ship experiment), and Sunda-Sumba-Timor (GLORIA survey of Wetar Straits, possibly too late in 1988).

9. SOME TENTATIVE SCHEDULES

Possible schedules for the 9-leg program were considered, with due attention to high-latitude winter monsoons (Dec.-Feb. in South China and Japan seas), and typhoons (late July-Sept. in north, late Dec.-Feb. in south). Early departure from the Indian Ocean (western Pacific drilling to begin in May, 1988), as well as western Pacific drilling beginning in September, 1988, was considered. In all cases, the preferred order (to minimize transit) was South China Sea, Japan Sea, Nankai, Bonins, Bonin-Mariana, Sulu-Banda, Great Barrier Reef, Vanuatu, Lau. An early departure from the Indian Ocean is desirable to avoid the high-latitude winter problems in the Japan Sea (and Nankai Trough). Given possible schedule interactions with objectives in the western Central Pacific (atolls, Cretaceous guyots, old ocean crust, volcanogenic sediments, etc.), we carried this exercise no further.

10. ROTATION OF PANEL MEMBERSHIP

The Panel considered the rotation of its members. Each panel member was requested to supply the chairman with his or her preferred time to rotate off the panel, together with suggestions for his or her replacement. All the U.S. members provided specific times and suggestions for their replacements, whereas almost all of the foreign members deferred decisions to their national ODP panels, and none present volunteered to rotate off this year. Nevertheless, several guidelines for panel membership replacement were agreed on:

a) The panel should have a liason with each of the thematic panels
b) The panel should have a broad cross-section of thematic expertise, with at least 2 petrologists, 2 sedimentologists/ paleooceanographers, 1 structural geologist and 1 member familiar with downhole instruments/experiments.
c) As our panel evaluations will become increasingly site specific, familiarity with primary data sets will be an important asset for panel members.

The chairman incorporated these guidelines into his preferred schedule of panel rotation (see Appendix 1), which was developed following the meeting.

11. ASSIGNMENTS FOR DRILLING-PRIORITY SUMMARIES

At PCOM's request, WPAC is to provide short summaries (with location maps) of the Table 1 sequence of priorities. Those responsible for write-ups are 1) Lau Basin - Natland; 2) Bonins/Marianas - Taylor; 3) Vanuatu - Recy; 4) Sulu and Banda - Silver; 5) Great Barrier Reef - Sarg; 6) South China Sea - Hayes; 7) the Japan Sea - Nakamura; 8) Nankai - Taira; 9) Manila-Taiwan - Hayes and Lewis; 10) Sunda-Sumba - Silver; 11) Zenisu - Rangin; 12) Downhole Experiments - Natland; 13) Sulu Transect - Rangin and Schluter; 14) Tonga - Natland; with Ingle contributing sections on SOHP objectives in the Sulu, South China and Japan Seas. The write-up is to provide a table of sites, site locations (lat., long.), water depths, sediment thickness, anticipated basement penetration, and type of hole (HPC, re-entry, etc.). Deadline of write-ups to Taylor is March 15.

12. FUTURE MEETINGS

Given the scheduled or planned sequence of TECP, LITHP, and PCOM meetings, plus the April meeting of panel chairs, WPAC reluctantly gives up its August meeting in Singapore in favor of an earlier (June 19-21) meeting in Chambery, Hanover, or Kingston, R.I. (URI), in diminishing order of preference, and a meeting following AGU in San Francisco (December 13-15).

13. SINGAPORE POSTER SESSION

The panel reaffirms the importance of maintaining and increasing communications with scientists and government representatives of countries in whose waters/region we wish to drill. To this end, the Circum-Pacific Congress to be held in Singapore in August provides an excellent opportunity, and a WPAC poster display there remains a high priority. A rapidly diminishing rump group of WPAC members who did not have to catch planes discussed the contents of the poster session. Reduced seismic sections and other figures that could illustrate key drilling themes and sites were requested to be brought to the June meeting. These could be located with respect to a large map of the region and combined with posters of the drill ship, etc., to form the poster display. The guides to the Ocean Drilling Program (yellow book) and Lab Stack should be made available for hand out at the Singapore meeting.

At 4 p.m., Chair Taylor adjourned this meeting of the Western Pacific Panel.

(Minutes prepared by J. Natland)

Action List

1. LITHP requests WPAC to spell out differences among backarc systems in the Bonins, Marianas, Tonga-Lau, and Coriolis Troughs.

2. Sarg is to follow up with Australian proponents and SOHP panel concerning preparation of a more focussed, thematically justified Great Barrier Reef proposal.

3. Taylor is to contact Darrel Cowan, TECP Chair, with request to reconsider the South China Sea, Nankai and Zenisu proposals.

4. Hayes is to contact S. Lewis, J. Suppe, et al., concerning shifting emphasis of Manila-Taiwan proposal from the accretionary problem to the arc-continent collision problem.

5. Silver is to work with Audley-Charles to shift emphasis of Sunda-Sumba proposals to the problem of arc-continent collision.

6. Taira is to request proponents of downhole instrumentation proposal to provide a revised proposal giving detailed site specifications, and ideally making use of sites in other possible programs (Nankai, Shikoku Basin, Zenisu Ridge, etc.).

7. Taylor is to assign contacts on WPAC and/or among proponents to work with Site Survey Panel and the ODP Data Bank.

8. Taylor is to write to the 5 institutions with recently acquired data in the Lau Basin, requesting that they integreate their results and a revised Lau Basin proposal, in time for our June meeting. Natland is to act as prod.

9. Panel members are to prepare short write-ups, giving principal objectives of each drilling program in Table 1, together with a site location map, and a table of site data. Assignments are 1) Lau Basin - Natland; 2) Bonins/Marianas - Taylor; 3) Vanuatu - Recy; 4) Sulu-Banda - Silver; 5) Great Barrier Reef - Sarg; 6) South China Sea - Hayes; 7) the Japan Sea - Nakamura; 8) Nankai - Taira; 9) Manila-Taiwan - Hayes and Lewis; 10) Sunda-Sumba - Silver; 11) Zenisu - Rangin; 12) Downhole Experiments-Natland; 13) Sulu Transect - Rangin and Schluter; 14 Tonga - Natland. Deadline is March 15.

10. Taylor is to write to Roger Larson requesting that our next meeting be held in Chambery on June 19-21. The second choice of location is Hanover. The third choice is URI.

11. Involved parties get items to Taylor concerning Singapore poster session by June meeting.

Appendix 1: Chairman's recommended schedule of WPAC membership rotation.

5/86 1) Roy Hyndman (P.G.C.; member at large) or other downhole specialist to replace M. Langseth (12/85).
2) Kensaku Tamaki (ORI, Japan, Marine Geophysics) to replace H. Kagami as Japanese representative.
3) Rick Sarg (Exxon, seismic and carbonate stratigraphy) to become SOHP liason.
4) Steve Scott (U. Toronto, Canada, Economic Geology) to replace R. Hesse.

9/86 5) Jim Gill (U.C.S.C., Petrologist) or other arc specialist (Bob Stern, U.T. Austin) to be added to panel and to become LITHP liason on Margaret Leinen's replacement in 1987.

1/87 6) Greg Moore (U. Tulsa; MGG, structure) to replace E. Silver --alternates Steve Lewis (LDGO) or Neil Lundberg (Princeton)

4/87 7) Bob Thunnel (S. Carolina) or M. Lagoe (U.T. Austin), paleo-oceanography, sedimentologist, to replace J. Ingle
8) Margaret Leinen to be replaced as LITHP liason. New U.S. member?
9) Kazu Nakamura to be replaced as TECP liason.

9/87 10) Don Tiffin (CCOP/SOPAC) or Neville Exon (BMR) to replace J. Recy as SW Pacific member-at-large.

1/88 11) Claude Rangin to be replaced as French representative
12) Hans Schluter to be replaced as German representative
13) Jim Natland to be replaced by U.S. petrologist (e.g., Jim Hawkins, SIO)

4/88 14) Mike Audley-Charles to be replaced as British representative
15) Brian Taylor to be replaced as chairman

Appendix 2

JAPAN SEA AND TRENCH (NORTHERN REGION)

REGION	PROPONENT	NUMBER
Japan Sea Tectonics	Tamaki et al.	51/D
Japan Trench (TTT)	Ogawa/Fujioka	132/D
Hokkaido Forearc	Seno et al.	144/D
Japan Sea (Ryukyu Arc)	Ujiie	145/D
Japan Sea (Toyama Fan)	Klein	146/D
Sagami Trough	Ogawa et al.	148/D
Japan Sea Active Spreading	Kimura et al.	149/D
Japan Sea Mantle Plume	Wakita	151/D
Japan Sea Downhole	Suyehiro et al.	155/F
Japan Sea Massive Sulphide	Urabe	156/D
Japan Sea Paleoceanography	Koizumi	157/D
Japan Sea and Forearc Sediments	Matsumoto/Minai	158/D
Japan/Kurile Trench	Jolivet et al.	164/D
Japan Sea Opening	Tatsumi et al.	166/D
Japan Sea Sediments (SiO_2)	Iijima et al.	168/D
Japan Trench Forearc	Otsuki	174/D
Japan Trench Inner Wall	Niitsuma/Saito	175/D
Japan Trench Triple Junction	Niitsuma	176/D
Japan Sea (Tsushima Basin)	Chough, et al.	198/D

NANKAI TROUGH TO MARIANAS

REGION	PROPONENT	NUMBER
Okinawa Transect	Letouzey et al.	29/D
Nankai Trough	Kagami/Taira et al.	50/D
Izu-Bonin Transect	Okada/Takayanagi	83/D
(Nankai) Fabric	Karig	128/F
Ryukyu Arc	Ujiie	145/D
Downhole Transect	Kinoshita et al.	159/F
442B Downhole	Kinoshita et al.	161/F
Zenisu Ridge	Rangin et al.	163/D
Shikoku Basin	Chamot-Rooke/Le Pichon	165/D
Okinawa Trough	Uyeda et al.	167/D
Bonin System	Taylor	171/D
Mariana Backarc	Fryer	172/D
Zenisu Ridge	Taira et al.	177/D
Nankai Trough	Shiki/Miyake	178/D
Daito Ridges	Tokuyama et al.	179/D
Kita-Amami Basin	Shiki	180/D
Ogasawara Forearc	Ishii	181/D
Northern Marianas	Flower/Rodolfo	HTB

INDONESIA - PHILIPPINES (CENTRAL REGION)

REGION	PROPONENT	NUMBER
Sulu Sea/Negros Trough	Rangin	27/D
South China Sea	Letouzey et al.	28/D
Sunda Straits	Huchon et al.	42/D
South China Sea	Hayes et al.	46/D
Manila Trench	Lewis/Hayes	47/D
Palawan	Hinz et al.	48/D
Eastern Banda Arc	Schluter et al.	49/D
Sunda/Banda Arc	Karig/Moore	80/D
Sulu Sea	Thunell	82/D
Sumba Transition Zone	Reed et al.	127/D
Banda Sea	Silver	131/D
South China Sea	Wang et al.	147/D
Banda/Celebes/Sulu Seas	Hilde et al.	154/D
South China Sea	Liu et al.	194/D
South China Basin Axis	Pautot et al.	216/D
Manila Trench/Taiwan	Lewis et al.	218/D

NEW ZEALAND TO PAPUA NEW GUINEA (SOUTHERN REGION)

REGION	PROPONENT	NUMBER
New Hebrides	Recy et al. (ORSTOM)	25/D
Tonga/Kermadec	ORSTOM	26/D
Southwest Pacific	Falvey	43/D
Solomon Sea	Milsom	52/D
Tonga/Lord Howe Rise	Falvey et al.	67/D
Australasia Super Proposal	Crook et al.	126/D
Northern New Zealand	Eade	130/D
Valu Fa Ridge, Lau Basin	Morton et al.	170/D
Papua New Guinea/Bismarck Sea	Exon et al.	184/D
New Hebrides	Taylor/Lawver	187/D
Tonga/Lau	Stevenson et al.	189/D
Vanuatu Collision	Fisher et al.	190/D
Solomon Intra-arc Basin	Vedder/E[illegible]s	191/D
Great Barrier Reef	Davies et al.	206/D
Northern Lord Howe Rise	Mauffret/Mignot	217/D
Lau Basin	Hawkins et al.	HTB

CEPAC Minutes

CEPAC met at the Scripps Institution of Oceanography on February 24 and 25, 1986. Regular members in attendance included: R. Chase, J. Francheteau, P. Johnson, H. Jenkyns, Y. Lancelot, J. Mammerickx, D. Rea, D. Scholl, J. Sinton, and U. von Stackelberg. D. Cowan could not come and H. Sakai represented Japan in place of H. Okada. Non-voting attendees were D. Hussong (PCOM) and E. Taylor (ODP).

1. Liaison Reports

Liaison reports were presented by members with overlapping responsibilities. E. Taylor (ODP) briefed CEPAC on the achievements of Legs 106 and 107 and the goals of Legs 108-113, advised us of the ODP Co-chiefs' meeting scheduled for late March in New Orleans, and urged the panel to conduct the long-term planning urged by PCOM and ODP. We had no NSF representative so D. Rea reported information received from R. Buffler by telephone the previous week: the U.S. Science-ODP budget would not be seriously impacted by present cutbacks; no new news about ESF or USSR joining the project; and G. Brass will be leaving NSF-ODP, R. Buffler will become the Program Director and NSF is looking for a new Associate Program Director for the ODP office. D. Hussong reported on the January PCOM meeting. Information pertinent to CEPAC included; the general concern about interpanel communication, responsibilities of thematic and regional panels and the present panel structure; the announcement of a meeting of the panel chairmen in early April to discuss (!) and resolve (?) those problems; the state of Indian Ocean planning which may free up time for Pacific, WPAC and CEPAC, work; and that CEPAC was to suggest drilling plans designed to last 12, 18, and 24 months. Y. Lancelot reported on SOHP deliberations. SOHP has established a list of priority objectives in the CEPAC area as follows: 1) Bering sea paleoceanography, 2) Old west Pacific,

3) Ontong-Java/equatorial Pacific, 3 (tie)) Atolls and guyots, 4) California margin, and 5) Pacific plateaus. D. Hussong reported the results of the recent TECP meeting. TECP has defined three important global problems: collision zones, nature and basement of arcs and forearcs (not accretion problems), and marginal seas and back-arc basins. TECP is greatly interested in the Makran; topics of interest in the Pacific include the Chile triple junction, Ontong-Java collision zone, plate flexure, the Nova-Canton trough, and translational margins. J. Sinton reported that LITHP is not yet seriously considering Pacific problems as they are concerned with difficulties of the Indian Ocean scheduling. LITHP is particularly concerned with panel responsibilities and communications difficulties. D. Rea reported on the last USSAC meeting. That group is doing well in its responsibilities to oversee expenditures on U.S. ODP-related science support, adequately on advance planning and engineering development, and is concerned that the site survey funding authority it thought it had will revert to the NSF-ODP office.

2. Peru margin drilling

In response to a specific request from the PCOM chairman, CEPAC once again reviewed the Leg 112 Peru margin drilling program. Information on the upper slope sites, to be drilled for purposes of studying the Quaternary upwelling record and the geochemistry of dolomite formation was not available to us. D. Hussong presented the details of the lower slope objectives and the seismic profiles. CEPAC also received a request to approve alternate sites along a third MCS line lying about 240 mi. to the north. The panel approved the upper slope objectives in general, the lower slope primary and secondary sites as specified, and the choice of the northerly alternatives. CEPAC noted, however, that two drilling days from an already shortened cruise would have to be used in transit if the Resolution went to the alternate sites to the north. The report to PCOM/Larson on Leg 112 is attached.

3. Workshop results

Results of workshops dealing with Pacific-related objectives were presented briefly. Reports from INPAC and NORPAC workshops have been widely distributed; the Carbonate Banks, Atolls, and Guyots report and Black Shales report are in draft form. CEPAC looks forward to learning the results of workshops on the South Pacific, Gulf of California, and on seamounts all to be held later this year.

4. Presentation of preliminary proposals

The final 2 1/2 hours of the first day was spent in presentation and discussion of preliminary drilling proposals new to CEPAC as of 2/24/86. Discussions revolved around considerations of the merit or importance of the problem, whether it was of local, regional, or global importance, how it may or may not fit with COSOD objectives, etc. Proposals discussed were:

I.D.	Proposal (authors)
161 F	Downhole magnetics and hydrogeology (Kinoshita, Kobayashi, Furuta)
3 E	Flexural moats flanking Hawaii (Watts, Detrick, Brocher)
182 E	Sounder Ridge, Bering Sea (Taira)
192 E	Baranoff Fan, Gulf of Alaska (Stevenson, Scholl)
195 E	Bering Sea Palaeoenvironment (Sancetta)
199 E	Pelagic sediments of the subarctic gyre (Janecek, Morley, Sancetta)
202 E	Evolution of Northern Marshall Islands (Schlanger)
203 E	Central Pacific Guyots (Winterer, Natland, Sager)
207 E	Tectonic evolution of Bering Sea & Aleutian R. (Rubenstone)
210 E	Yakutat continental margin, G. of Alaska (Armentrout, Lagoe)
211 B	Deep Stratigraphic Tests (SOHP)
212 E	Northern and central California (Greene)
213 E	Central Aleutian subduction-accretion (McCarthy, Scholl)
214 E	Central Aleutian forearc, french-slope break (Ryan, Scholl)

Upon conclusion of the discussion of proposals CEPAC adjourned for the day and spent a delightful evening at the Winterers'.

5A. Proposal ranking

The second day CEPAC began the task of ranking proposals and constructing drilling plans as requested. After discussion of the basis upon which to rank individual proposals (good/bad science?, good/bad proposal?, local/COSOD?, etc.)

CEPAC decided to combine the recently received proposals listed above with the 7 viable preliminary proposals received in 1984 and 1985 and construct from them 14 drilling packages. The seven other proposals are:

I.D.	Older proposals included in/as CEPAC Leg-packages
4 E	Tuamotos (Okal)
8 E	Chile triple junction (Cande)
37 E	Costa Rica margin (Shipley et al)
75 E	Gulf of California (Becker et al)
76 E	EPR 13^{o}N (Francheteau, Hekinian)
142 E	Ontong Java plateau (Mayer, Berger)
153 E	Southeast Pacific paleoceanography (Hays)

Proposal 161F, for downhole magnetometer and hydrogeology work was endorsed in concept by CEPAC but not considered further because of the immediacy of Leg 111 where these experiments are already planned at 504B.

CEPAC felt much more comfortable ranking the resulting drilling packages than the individual proposals. Each package was ranked from 1 (best) to 4 by each panel member. The packages, average score, and ranking are as follows:

Drilling package	proposal(s)	average score	rank
EPR 13^{o}N zero-age crust	76E	1.1	1
Bering paleoenvironment	182E, 195E, 21B	1.4	2
Atolls and Guyots	202E, 203E, 4E	1.5 (1.46)	3
Old Pacific, Jurassic & volcanism	211B	1.5 (1.50)	4
North Pacific paleoenvironments	199E	1.7	5
Hawaii moats & flexure	3E	1.7	5
Chile 3-junction & paleoceanography	8E, 153E	1.8	7
Ontong-Java carbonates	152E	2.0	8
Gulf of California	75E	2.3	9
Bering tectonic evolution	207E	2.9	10
Aleutian convergence	213E, 214E	3.0	11
Costa Rica convergence	37E	3.2	12
California margin	212E	3.4	13
Gulf of Alaska	210E, 192E	3.5	14

6. Pacific region drilling suggestions

CEPAC then used this ranking and the prioritization of drilling themes established at the September meeting to construct 12, 9, and 6-leg drilling scenarios requested by PCOM. The more highly ranked themes not represented in the list of drilling packages above and considered in this effort include:

Theme	Ranking as of 9/85
Juan de Fuca sedimented ridge axis	2 (of 22)
Superchron plate rearrangements	3
Oregon-Washington convergence zone	5
Emperor core, paleolatitude shifts	8 (tie)
Juan de Fuca, simple linear ridge	8 (tie)
Pacific plateaus	12 (tie)
EPR 20°S, ultrafast spreading	17

The panel tried to make a realistic assessment of the time required to do a complete job of any drilling package, and to determine where multi-objective holes could resolve more than one important problem. These are the results:

2-year, 12-Leg drilling program	
EPR 13°N	3 Legs
Bering Sea Mesozoic/Cenozoic paleoenvironment	1 Leg
Atolls and Guyots	1 Leg
Old Pacific	1 Leg
North Pacific paleoenvironment/superchron plates	2 Legs
Juan de Fuca sedimented ridge	1 Leg
Chile triple junction & paleoceanography	2 Legs
Hawaii moats and flexure	1 Leg

After further discussion, CEPAC dropped the 3 Legs devoted to the Chile triple junction and southeastern Pacific paleoceanography and to Hawaii flexure studies to form the 1.5 year, 9-leg program:

1.5-year Pacific drilling program	
EPR 13°N	3 Legs
Bering paleoenvironment	1 Leg
Atolls and guyots	1 Leg
Old Pacific	1 Leg
N. Pacific paleoenvironment/paleoplates	2 Legs
Juan de Fuca sedimented ridge	1 Leg

CEPAC had difficulty coming to grips with the possibility of being faced with only one year of CEPAC-area drilling. Discussions became heated and the possibility of significant dissention appeared. CEPAC wants to emphasize to the readers of these minutes that the concept of a single year of Pacific drilling is completely inappropriate to the great international interest in the region.

As CEPAC is requested to present a one-year program, the following is offered:

1-year program of Pacific drilling	
EPR 13°N	3 Legs
Bering paleoenvironments	1 Leg
Atolls and guyots	1 Leg
Old Pacific	1 Leg

A final note on this topic: 13°N has always received the highest priority in CEPAC rankings; the panel emphasizes this by placing it first in all three programs; we believe 3 Legs are required to "do it right," to complete the L-shaped configuration of holes required for 3-dimensional studies.

7. Membership

CEPAC discussed membership rotation under the guidelines of rotating 1/3 of the membership (4 people) every year. Three members volunteered to leave in 1986, D. Cowan (by telephone), P. Johnson, and J. Sinton. All non-U.S. members are up for review this spring and two or three expect to be replaced, so CEPAC will lose the required four persons, perhaps more. To replace these people, CEPAC requests appointments from the following specialties: Cenozoic paleoceanography and biostratigraphy (J. Morley, C. Sancetta, G. Keller); igneous rocks (R. Batiza, J. Natland), and Mesozoic stratigraphy (W. Dean, S. Schlanger, W. Sliter). CEPAC felt that it would like to know who in the community would be interested in serving on our panel, other than those few people who have made contact with individual CEPAC members and suggested that the JOIDES journal publish a request for volunteers.

D. Rea advised the panel that, pending completion of discussions with his university, he would be moving to the NSF Climate Dynamics program, Atmospheric Sciences Division, and would be required by NSF to relinquish the CEPAC chairmanship during his stay in Washington, estimated to be 15 months. After some discussion CEPAC decided to hold off designating an interim chairman until after the members rotated this summer. D. Scholl volunteered to act as chairman in a temporary capacity until all is resolved.

8. Panel liaison and communications

The last agenda item was a discussion of the present effectiveness of and means of improving the JOIDES advisory structure, a matter of concern to many and the subject of the upcoming panel chairmen meeting. Opinions were varied. Suggestions included abolishing the present thematic-regional-service structure and starting again, increasing liaison by having more overlapping membership, holding joint meetings of two or more panels, downgrading the regional panels to working groups that report to the thematic panels. Other concerns voiced were that ODP was not paying enough attention to COSOD objectives, that not enough ship time was allotted to complete priority objectives, and that too many parochial objectives had been included in the program. CEPAC has become aware that one important difficulty within the JOIDES advisory operation is that people don't do their homework, a problem that seriously hinders information transfer.

9. Future meetings

Times of the next CEPAC meeting, June 9 and 10, at Pacific Geoscience Center, Sidney, B.C., Canada, was confirmed, and the fall meeting was tentatively scheduled for 20-21 or 27-28 October at the University of Michigan.

SL/3.V.

Objectives for Leg 112, Peru Margin

ODP Leg 112 has a series of objectives on the upper slope and another group on the lower slope. The upper slope objectives include 8 APC-only sites (Table 1) to sample Plio-Pleistocene sediment for studies of the upwelling record, dolomite formation and geochemistry. The APC sites are all high priority. It was felt that the pattern (sites Peru #1-5) in the 11°-12°S region were of somewhat higher priority because the sediment depositional lens in this region is better defined and less reworked (more siliceous). The seaward hole in the 11°-12°S pattern (Peru #3) might also be continued using rotary drilling down to a major unconformity which is seen throughout this portion of the margin and may be in the early Paleogene or even of Mesozoic age. We also support drilling a 3-site APC pattern near the 9°S survey area (3 of sites Peru #9-13). The sediment lens is less well-defined here, and is probably somewhat reworked (more calcareous) and thinner.

Three major holes and one alternate site are situated on the lower slope in the 11°-12°S region to determine its subsidence and flexural history.

The deepened APC site Peru #3 will likely penetrate the deepest part of the Lima Basin section, and should provide the upper tie-point for a reconstruction of vertical motions. The metamorphic basement at this site is probably on the order of 2 km down, so is not a target. This site should be the first of this set to be drilled.

The next site to approach might be Peru #6. The first 600 m of this site will penetrate a lens-shaped Neogene sediment wedge that is the deeper portion of strata that have been dredged at the seabottom yielding dolomicrites ranging back to upper Miocene in age. A deeper sediment wedge pinching out landward will then be penetrated down to about 750 m sub-bottom, and is expected to provide the earliest Neogene and probably much of the Paleogene history of the margin. Parallel bedded sediments beneath this wedge are expected to be Paleogene, underlain by possible Mesozoic sediments beneath the unconformity that hopefully was sampled at Peru #3. The metamorphic basement at Peru #6 is interpreted to lie at a sub-bottom depth of 1500 m, so is not a likely target.

An alternative to Peru #6 is Peru #7 (if #6 is unsuccessful). The latter site has somewhat different objectives, so a decision to drill here might likely be made on the basis of the results of #6. The shallower Neogene sediment wedge at Peru #7 has pinched out while the underlying Paleogene/Neogene wedge has thickened. The deepest (Mesozoic?) sediments and metamorphic basement are also shallower at #7, making them a more feasible target. Basically, Peru #6 is a better target for the shallow history, Peru #7 would sample the older history.

The seaward target site of the 11°-12°S region (Peru #8) is targeted to sample metamorphic basement as close to the trench as is felt to be a feasible target. The cores should yield the older basal sediments of the distal edge of the Lima Basin, and should provide samples of the metamorphic basement.

No BSR is observed at sites Peru #1-7, but the deeper targets are below the depth of the BSR noted at similar water depths in nearby areas. The basement at Peru #8 is above the BSR.

The second objective, to be approached on the lower slope at the 9°S region, is an investigation of the truncation history of the Peru margin. A series of four sites (Table 1) were identified in the 9°S region to study the truncated seaward margin of the continent. In the 11°-12°S region the edge of the continent is observed to dip beneath seaward-dipping reflectors, so cannot be a target. In the northern area the apparent accreted sediments are represented by landward dipping reflectors which trend beneath the edge of the continent. Unfortunately the actual continent/accretionary wedge contact is too deep to penetrate and may be hard to interpret if only sampled at the top. This contact (Peru #16) was therefore made a secondary objective. The prime objectives are to go where the seismic structure seems to definitely show drillable continental crust (Peru #14) and where near-seabottom landward dipping reflectors suggest the oldest accreted sediments (Peru #17). Peru #15 can be considered an alternative to #14, which was favored of the two because it will penetrate sediments which can be traced to the deeper part of the Yaquina Basin (possibly lower Eocene or older).

A series of alternate sites (Table 2) that would also permit study of the margin truncation process lie along a recently reprocessed line at 5.7°S, over 200 miles north of the 9.2°S drilling area. These sites were suggested by von Huene, a Leg 112 Co-chief scientist, as only alternative drilling locations and then only if appropriate crosslines are run this spring. CEPAC recommends approval of the alternate sites because co-chief scientists need flexibility if things start going wrong, but notes that two days would have to be added to leg transit time and removed from on-site time if the Resolution were to go to 5.7°S.

R. von Huene's write-up of the alternate sites follows.

The major tectonic target on Leg 112 is the juncture between truncated continental crust and the frontal accretionary complex. This objective is presented in the JOI proposal by Hussong and others where tectonic sites are located on seismic section Peru-2. Those objectives may be more clearly defined on seismic section Peru-3 because of the relatively greater clarity of the image. If the CHARCOT can provide a supplementary site survey for assessment of safety, the proposed sites on Peru-3 will be presented as alternates to those on Peru-2. The already reprocessed data of Peru-2 and a section from the HIG site survey are presently being processed again on the USGS DISCO to see if the proposed objectivees can be further clarified.

The two sites on continental crust (P3-A and -B) are located to reach rock of possible Eocene age. From exposures onshore and exploration and wells nearby, the Eocene sediment has the characteristics of sedimentary shelf deposits. Site A may allow sampling of Paleocene rock. The slope deposits above the Eocene rock should contain a series of benthic foraminiferal fauna sufficient to establish the proposed history of subsidence of the continental crust.

The two sites (P3-C and -D) on the accretionary complex (presumed from the characteristic landward dipping reflections) are located to sample the oldest accreted sediment. If successful, such samples would help bracket the time of a change in the tectonic environment from erosion to accretion. This date is important to relate to the history of Andean uplift and volcanism (plutonism). Site C allows maximum penetration whereas site D provides a sequence of slope deposits to trace, through benthic foraminiferal assemblages, the uplift history of accreted materials. The 800 m of proposed penetration may be optimistic considering the average depths in DSDP holes on accreted materials, but a 500 m hole should provide definitive data.

Table 1. Summary of Proposed Target Sites

Site	Location	Water Depth,m	Penetration,m	Days Drilling time	Primary Objective
1*	11°30'S, 78°20'W	150	150	2xHPC, 1	Paleo oceanography upwelling, geochemistry
2*	11°32'S, 78°50'W	250	150	2xHPC, 1	same as 1
3*	11°05'S, 78°16'W	460	600	5	same as 1, Paleogen unconformity
4*	13°32'S, ———	325	200	2xHPC, 1	same as 1
5*	11°00'S, ———	325	200	2xHPC, 1	same as 1
6**	11°15'S, 78°36'W	2010	800–1100	10	mid slope subsidence
7*	11°12'S, 78°40'W	2215	1100	10	mid slope subsidence
8**	11°16'S, 79°03'W	3825	600	5	continental edge
9–13*	8°40'S, 79°48'W	200–800	150–200	10	same as 1 (3 sites)
14**	9°10.8'S, 80°44.6'W	2875	700	8	margin transition
15*	9°14.5'S, 80°52.5'W	4005	600	7	"
16*	9°15.2'S, 80°54.8'W	4200	900	10	"
17**	9°17.6'S, 81°00.6'W	4400	700	10	"

*First priority
**Highest priority

Table 2. Proposed alternate sites, Peru-3 seismic section

General data

Location	water depth–m	target penetration–m	days on site	tentative hole number
5.66°S 81.48°W	1400	1000	6	P3–A
5.66°S 81.59°W	2400	1000	7	P3–B
5.66°S 81.62°W	3200	800	6	P3–C
5.66°S 81.65°W	3040	800	6	P3–D

Note
Locations from map by Shepherd and Moberly
Water depths ±150 m
All holes should be logged with sonic, E-log, neutron-density, caliper, and hi-resolution temperature tools. In-situ pore-pressure tool should be deployed to refusal at 150m to 200m intervals.

SITE SURVEY PANEL
EXECUTIVE SUMMARY
APRIL 22-25, 1986

PACIFIC GEOSCIENCE CENTRE, INSTITUTE OF OCEAN SCIENCES
SIDNEY, B.C., CANADA

1. The site survey Data Standards matrix was rearranged and amplifying language added to support it.

2. The SSP recommends that scientists chiefly responsible for site surveys normally be invited to post-cruise meetings in order to encourage collaberation between site survey and drilling scientific activities.

   The SSP reiterates its support for the inclusion of a synthesis of site survey data in Part A of the ODP Proceedings. Part A manuscripts on site survey work should be submitted pre-cruise whereever possible. Interpretation of the survey data in light of the drilling results should be included in Part B.

3. Duennebier and Jones will form an Underway Geophysics Committee to work with TAMU to investigate the current underway geophysics capability on the RESOLUTION, to define the options for solving the problems identified and to make recommendations for or against upgrading equipment.

4. The SSP has assigned watchdogs to all WPAC drilling proposals being actively considered.

5. The status of site surveys for upcoming legs through the Weddell Sea was reviewed.

   a) Barbados N: site survey data are adequate for Leg 10.
   b) 504B: site survey data are adequate for Leg 11.
   c) Peru Margin: The data package for the paleo-environmental sites which was available to the SSP before the meeting was totally unsatisfactory. Todd Thornburg of OSU came to the meeting on short notice in the absence of the Co-Chief Scientist. All shallow penetration sites have adequate site survey data except Site 11. Detailed approach surveys by the RESOLUTION will still be needed to detail complex shallow stratigraphy which is often faulted and to position drill sites appropriately.

      The data package for the tectonic objectives arrived late. SSP believes all necessary data for the prime sites are available. Alternate sites on Line 3 are not adequately supported by data.

      SSP will attempt a final assessment prior to PCOM if possible.

d) Weddell Sea

- W1, W2 and W4 have adequate site survey data once POLARSTERN data processed and available.
- W3 does not have adequate site survey data.
- W5, W6, W7, W8 should have adequate site survey data upon receipt of new data from Barker, expected in early May. (Has been received).
- W9 does not have adequate site survey data.
- W10 status unclear until we know site location relative to available data. Heat flow recommended for shipboard science program. (Barker has clarified situation with Data Bank).
- W11 site survey data are adequate except for lack of velocities to estimate sediment thickness. A crossing line on site approach is needed for stratigraphic resolution.

6. The Sub-Antarctic and SWIR site surveys are now funded but won't be completed until late October, 1986. A special committee of SSP will have to meet in December to assess these data.

7. Indian Ocean

The status of site surveys for all drilling packages is summarized in Appendix H. Collecting the Red Sea data in one place for preparation of a data package for assessment seems to be an elusive goal. This is the prime problem at the moment with respect to Indian Ocean surveys.

8. Next meeting is tentatively planned for November 4-6, 1986 at Vellefranche - sur-Mer.

ACTION ITEMS

SSP MEETING, APRIL, 1986

ACTION: Peirce send copy of new matrix to Brass at NSF and ask that it be sent to reviewers for information when site survey proposals are sent out. Mayer to arrange publication.

ACTION: Brenner write to ODP members and JOIDES institutions asking them to supply index maps of above data coverage at specified scale.

ACTION: Langseth get USSAC to appoint SSP alternates.

Peirce write Munsch to encourage early appointment of ESF member and alternative.

ACTION: Duennebier and Jones will form an Underway Geophysics Committee to work with TAMU to investigate the current underway geophysics capability on the RESOLUTION, to define the options for solving problems identified and to make recommendations for or against upgrading equipment. An initial report shall be made at our next meeting.

ACTION: Peirce write to Schlich to have Mauffret invited to Strasbourg meeting as liaison. Jones is alternative choice if Mauffret can't attend.

ACTION: Brenner send relevant proposals to all SSP watchdogs. Watchdogs prepare brief synopsis for discussion at next meeting. Bring overhead and handouts of site locations being considered.

Peirce write Taylor to encourage appointment of WPAC watchdogs. Also ask that Mauffret be invited as liaison to WPAC meeting June 19-21 in Chambery, France.

ACTION: Duennebier send ASAP the HIG bathymetric overlays to the Data Bank.

Brenner prepare ASAP a complete data package for final assessment by Mauffret. Items relating to tectonic objectives are particularly critical.

Mauffret complete final assessment of tectonic objectives. In particular check for BSR on migrated Peru Line 13 and assess severity of slumping at Sites 15, 16 and 17. Telex Peirce/Larson with conclusions in mid-May, prior to PCOM meeting. Complete written detailed final assessment and send to Peirce/Brenner/Mayer/TAMU.

__ACTION:__ Brenner telex Peirce/Mayer/Weigel with status after Barker visit. Brenner will ask Barker whether velocity data available at W11 (answer is no) and clarify status of W10. Send new data to Weigel ASAP.

Weigel attend SOP meeting, obtain copies of POLARSTERN data, complete final assessment, and telex final conclusions to Peirce/Larson, before PCOM meeting if possible.

__ACTION:__ Peirce write La Brecque emphasizing desirability of crossing lines, particularly at sites for deeper penetration. Also emphasize short time frame for data review. Copy letter to TAMU, JOIDES, PPSP, Weigel.

__ACTION:__ Peirce write Dick highlighting SSP recommendations.

__ACTION:__ Brenner compile a summary of available data covering Natland sites ASAP. Send to JOIDES, copy to Peirce, Langseth.

__ACTION:__ Peirce write to Cochran asking him to get GLORIA data for the Data Bank.

__ACTION:__ Peirce write Cochran and emphasize the need for getting PDR records to Data Bank.

Brenner find out what cores exist and if geotechnical properties can be measured.

Many sites in the Red Sea are supported by adequate data, but virtually none of it resides in the Data Bank. __If these data are not forthcoming very soon, the SSP will be forced to recommend cancellation of plans for Red Sea drilling__.

__ACTION:__ Brenner telex Peirce if all Red Sea data not in Data Bank by May 21. If necessary, Peirce telex Larson (copy Cochran) to put pressure on member countries at PCOM meeting to produce data very soon or risk losing the Red Sea leg.

__ACTION:__ Peirce write Prell letter in late June asking for a site survey synopsis for Neogene I and II. This must be ready well in advance of our next meeting, and assessment must be completed by our next meeting.

Weigel send SONNE's track chart to Data Bank as soon as Ittekot cruise over.

ACTION: Jones will become the watchdog, replacing Duennebier. Jones to find out status of heat flow planned. Also get White to prepare a cruise plan for site surveys so SSP can have some idea at the next meeting what data we can expect to have available.

Brenner put together a 3.5 kHz track chart.

ACTION: Duennebier write Duncan outlining site survey requirements, copy to Peirce, Jones.

ACTION: Peirce write Schlich a reminder. Peirce prepare written assessment for the next meeting.

ACTION: Suyehiro write Stagg, copy to Peirce, to encourage reprocessing of Line 21 at Prydz Bay with decon. Ask for update on status of Australian S. Kerguelen data.

ACTION: Kidd contact Weissel regarding long life transponders and the problems of returning to the same spot again. Close technical coordination between TAMU and LDGO/UTA is needed.

ACTION: Weigel get detailed report on RIG SEISMIC cruise for Wong to present at next meeting.

ACTION: Duennebier to reply to Wilcox after PCOM with update on priority.

ACTION: Peirce write to Rea to invite Duennebier to attend CEPAC meeting as liaison. Peirce will be alternate if Duennebier not available.

ACTION: Kidd ensure SSP represented at riser engineering workshop.

OCEAN DRILLING PROGRAM
SITE SURVEY PANEL MINUTES
Pacific Geoscience Centre
Sidney, B. C. Canada
22-25 April, 1986

PRESENT:	*John Peirce	(Chairman, Canada)
	*Fred Duennebier	(USA)
	*John Jones	(UK)
	*Marcus Langseth	(USA)
	*Alain Mauffret	(France)
	*Kiyoshi Suyehiro	(Japan)
	*Wilfred Weigel	(Germany)
	Carl Brenner	(ODP Data Bank)
	Tim Francis	(PCOM Liaison)
	Rob Kidd	(TAMU)
	Tony Mayer	(JOIDES Office)
GUESTS:	Mark Brandon	(PGC)
	Ron Clowes	(UBC)
	Earl Davis	(PGC)
	Roy Hyndman	(PGC)
	Todd Thornburg	(OSU)
	Chris Yorath	(PGC)
ABSENT:	None	

1. PRELIMINARY MATTERS

Roy Hyndman welcomed all to the Pacific Geoscience Centre.

The minutes from the Tokyo meeting were approved without changes.

All action items from the last meeting were completed or work is being done on them.

2. REPORTS

2(A) PCOM Report (Francis)

ESF will sign MOU at EXCOM. Nordic countries are 50%. Others include Italy, Switzerland, Netherlands, Bèlgium, Spain, Turkey, Greece. Bernard Munsch in Strasbourg is the coordinator for ESF.

The Indian Ocean schedule is still very uncertain due to site survey deficiencies and clearance problems, particularly in the Red Sea. An MCS site survey cruise on SUROIT was cancelled because of clearance problems. TECP and SOHP have been asked to comment on their priorities for various alternatives for the Indian Ocean schedule if currently planned legs have to drop out.

Panel structure was debated at length at PCOM and at a meeting of panel chairman. No changes planned to structure, but proposal flow changed somewhat to give thematic panels more input and to attempt to have one synthesized recommendation of drilling plans go to PCOM.

The COSOD II meeting will be in Strasbourg, July 6-8, 1987.

2(B) JOIDES Report (Mayer)

The new JOIDES Journal Safety Guidelines was distributed.

The JOI Performance Evaluation Committee report has been sent to JOI.

Nick Pisias (OSU) will be next PCOM Chairman, starting in October. Tony's replacement not yet appointed, but there is a short list of candidates.

ESF membership will generate some extra funds but much of these are likely to be used to build up the drilling consumable supplies which have been drawn down to very low levels. FY-87 budget will be approx. $36 million.

USSR membership moving ahead, but still politically uncertain.

NSF deadline is June 1, 1986 for proposals for site surveys for the Pacific for calendar year 1987 ship time in order to make the August UNOLS meeting.

2(C) Science Operator's Report (Kidd)

Leg 107 obtained good results detailing the southeasterly migration of back arc crustal development in the Tyrrhenian Sea.

Leg 108 tested successfully in mini-re-entry cone and the sidewall-sub for logging. All sites planned by the Co-Chiefs were drilled.

Co-Chief Scientists named are:

Leg 111	Becker/Sakai
Leg 112	von Huene/Suess
Leg 113	Barker/Kennett
Leg 114	La Brecque/Ciesielski

A memo from Elliot Taylor regarding geotechnical work on piston cores taken for re-entry was discussed.

The Site Survey Data Standards matrix was revised and amplifying language added to support it.

Principal changes include:

(a) Details regarding geotechnical work on piston cores required for re-entry.
(b) Addition of "bare rock drilling" and "aseismic ridges, oceanic plateaus and seamounts" columns.
(c) Addition of "crossing seismic lines" and "near bottom seismic" rows.
(d) Simplification of many categories of old matrix.

The revised matrix is attached as Appendix A. It will be published in the June JOIDES Journal.

ACTION: Peirce send copy of new matrix to Brass at NSF and ask that it be sent to reviewers for information when site survey proposals are sent out. Mayer to arrange publication.

Part A publications are proceeding on schedule for 12 months post-cruise, although early legs are behind. Part B publication still uncertain.

There was considerable discussion on this topic. ODP policy is to publish the site survey results in Part A. Interpretations using the drilling results must be deferred to Part B, but two manuscripts may be submitted at the same time. Once a manuscript is accepted, an author is free to publish elsewhere.

MOTION: (Langseth/Duennebier)

The SSP recommends that scientists chiefly responsible for site surveys normally be invited to post-cruise meetings in order to encourage collaboration between site survey and drilling scientific activities.

The SSP reiterates its support for the inclusion of a synthesis of site survey data within Part A of the ODP Proceedings. Part A manuscripts on site survey work should be submitted pre-cruise whenever possible. Interpretation of the survey data in light of the drilling results should be included in Part B.

Passed 6 for, 1 abstention.

The video from Leg 106 was shown and received with great interest.

2(D) ODP Data Bank (Brenner)

Activity for the first half of FY-86 is continuing at the same level as in 1985. (Appendix B).

Data Bank has started to put together a world scale map showing swath bathymetry (SEABEAM) coverage. After discussion, the Data Bank is encouraged to complete this map and extend the project to include GLORIA and SeaMARC II coverage.

ACTION: Brenner write to ODP members and JOIDES institutions asking them to supply index maps of above data coverage at specified scale.

2(E) Panel Membership (Peirce)

At the request of PCOM a panel membership rotation plan was discussed. As both US members are new to the panel they were not included. The following changes are planned.

W. Weigel to be replaced by K. Wong (Hamburg) in the summer of 1986. Weigel will continue to be watchdog for the drilling packages assigned to him.

J. Jones will be replaced by R. Kidd in December, 1986 after the fall SSP meeting.

A. Mauffret will be replaced in summer, 1987.

ACTION: Langseth get USSAC to appoint SSP alternates.

Peirce write Munsch to encourage early appointment of ESF member and alternative.

2(F) PANCHM Meeting (Mayer/Peirce)

The minutes of the meeting were reviewed.

Of particular interest to SSP was the comment about the SSP assuming oversight responsibility for the underway geophysics lab on the RESOLUTION.

Current underway geophysics is noise limited by ship's hull turbulence to site approaches at low speed. TAMU investigating towed 3.5 kHz fish and has consultant trying to find better hull locations for transducers.

Several people expressed strong support for serious consideration of an underway seismic system as many of RESOLUTION tracks will cover sparsely tracked areas. Collette at Utrecht has experience with seismic from freighters. The French have a special high speed streamer.

ACTION: Duennebier and Jones will form an Underway Geophysics Committee to work with TAMU to investigate the current underway geophysics capability on the RESOLUTION, to define the options for solving problems identified and to make recommendations for or against upgrading equipment. An initial report shall be made at our next meeting.

2(G) Ship Schedules

Modified ship schedules are attached as Appendices C, D, E, and F.

France: Mascarene Fossil Ridge survey cancelled. Red Sea cruises on standby pending clearance resolution. Two additional MCS cruises in WPAC planned for 1987 (Sulu Sea and Vanuatu), but final funding not yet approved. Also possible MCS cruise in Nauru Basin.

Germany: The new METEOR will be in northern Indian Ocean for non-geophysical work from March - July, 1987. Some 3.5 kHz, gravity and SEABEAM coverage could be obtained if critical needs identified.

UK: New DARWIN and other NERC ship schedules attached.

USA: New CONRAD schedule attached. Dick cruise to SWIR now funded for Sept./Oct., 1986. La Brecque will do eastern Sub-Antarctic immediately following on CONRAD. Western Sub-Antarctic will be done on POLAR DUKE prior to that.

The Sclater add-on proposals for Bengal Fan bottom navigated heat flow and southern Ninetyeast Ridge are still being considered at NSF. Decision due by next PCOM meeting.

Updated ship schedules are now available on telemail. Contact JOIDES Office for details.

2(H) IOP (Peirce)

Briefly reviewed IOP planning and safety problems on Exmouth Plateau.

ACTION: Peirce write to Schlich to have Mauffret invited to Strasbourg meeting as liaison. Jones is alternative choice if Mauffret can't attend.

2(I) SOHP (Mayer)

Larry Mayer (Dalhousie) is new chairman. Briefly reviewed items discussed at SOHP meeting. Their priorities for Indian Ocean alternatives are Somali deep hole, Argo/Exmouth deep hole, followed by targets in the Pacific. SOHP would support Neogene II, should the ship remain in the Indian Ocean for its present allotted time.

2(J) WPAC (Langseth)

Brief overview of reduced list of drilling proposals. See further discussion below.

WPAC will assign individuals as contacts for each drilling package to work with our watchdogs on site survey assessments. WPAC responsive to the need to get data into Data Bank.

SSP watchdogs were assigned to the WPAC drilling packages as listed in Appendix G.

ACTION: Brenner send relevant proposals to all SSP watchdogs. Watchdogs prepare brief synopsis for discussion at next meeting. Bring overhead and handouts of site locations being considered.

Peirce write Taylor to encourage appointment of WPAC watchdogs. Also ask that Mauffret be invited as liaison to WPAC meeting June 19-21 in Chambery, France.

A new Japanese "Telephone Book" of proposals will be out this summer containing revisions to the existing proposals. ORI is continuing to negotiate with JNOC for access to selected MCS.

Langseth reviewed the essential elements of the drilling proposals, concentrating on those which we did not discuss in Tokyo.

3. SITE SURVEY ASSESSMENTS

3(A) Barbados North (Brenner/Lanseth)

The Data Bank has synthesized French and US SEABEAM data into one map with integrated track chart overlays.

Final navigation of Line 128 moved the line about 1.5 miles relative to earlier plots of its location. Sites originally proposed on oblique crossings are no longer exactly on crossings. PPSP has been asked to review the new information.

A heat flow profile near the prime sites shows an increase in heat flow over the accretionary wedge and evidence for water flow. A similar southern profile near the alternate sites shows a decrease in heat flow over the accretionary wedge and no evidence of water flow. There is also a BSR near the alternate sites.

There is no high resolution SCS in the area but this deficiency is not considered critical in light of the previous drilling data available.

The site survey data are adequate for Leg 110.

3(B) 504B

The site survey data for Leg 111 are adequate.

3(C) Peru Margin

The positions of the paleo-environmental (PE) sites have all been adjusted to have at least 40-60 m of sediments above a presumed dolomitic limestone reflector.

Shallow water depths and currents will be an operational problem. TAMU engineers feel that they can position the ship adequately in shallow water but they are concerned that piston coring in shallow water may not work properly. They will have a report ready by the next PCOM.

SOHP priorities on this leg are, in descending order: 3, 1, 5, 3A, 2, 2A (slightly deeper than 2), 4A, 4B (at 300 and 400 m), 10, 11, 9.

TECP priorities in this leg are, in descending order: 3, 6 or 7, 14, 17.

The SSP began discussion of the Peru margin on Wednesday and made these recommendations:

Recommendation: The data package available to the SSP supporting the PE sites is totally unsatisfactory.

The data package supporting the tectonic objectives arrived at the Data Bank late, making assessment difficult. However, SSP believes that all necessary data are now available.

In response to the dearth of data supporting the PE sites, SSP invited Todd Thornburg (OSU) to come on Friday to our meeting with the OSU Data. We were indeed fortunate that Todd was so close and able to come. The minutes below on this item are from Wednesday's discussion on the tectonic objectives and Friday's discussion on the PE objectives and combined into a single integrated flow.

The OSU data included an integrated index map showing the seismic lines and data type relevant to Leg 112. In general there is good to excellent 3.5 kHz data. The resolution of the older SCS data is excellent, often resolving very closely spaced faults which are not seen on the 3.5 kHz data because they do not quite reach the surface.

The attached figure shows the proposed location for site 5 and demonstrates why SCS is essential to position drilling sites even if the proposed penetration is only 200 m.

In addition to the US MCS data, several commercial MCS lines in the area are available, at least in blue line form.

Site 1 (150 m W.D., 150 m T.D.)

High quality SCS, but multiple obscures deeper section. Nearby available commercial MCS provides control on deeper section.

Sites 2, 2A (250 m W.D., 150 m T.D.)

Positioned near crossing 3.5 kHz lines. Good SCS 25 km away shows unfaulted section.

Sites 3, 3A (450 m W.D., 600 m T.D.)

The sites are located on a single HIG MCS line. There is an available crossing commercial MCS line 20 km downslope, as well as HIG MCS line 22 which the SSP did not see. An OSU SCS crosses a few km upslope from the site. It shows high resolution details of sedimentary structure, but basement is not visible because of the water bottom multiple.

The site survey data for these sites are adequate from a scientific perspective for both PE and tectonic objectives. However, the site lies in an updip position structurally and crossing MCS data do not exist. These factors may be a concern to the PPSP.

Sites 4, 4A, 4B (300-400 m W.D., 320 m T.D.)

Sites are positioned on a single 3.5 kHz line. Good SCS 18 km away shows complex stratigraphy without faulting.

Site 5 (325 m W.D., 200 m T.D.)

Very high quality SCS (see attached figure) shows complex stratigraphic details and frequent small faults which reach to within 50 m of the water bottom. These are not visible on 3.5 kHz data.

Sites 6 and 7 (800-1100 m W.D., 200-2215 T.D.)

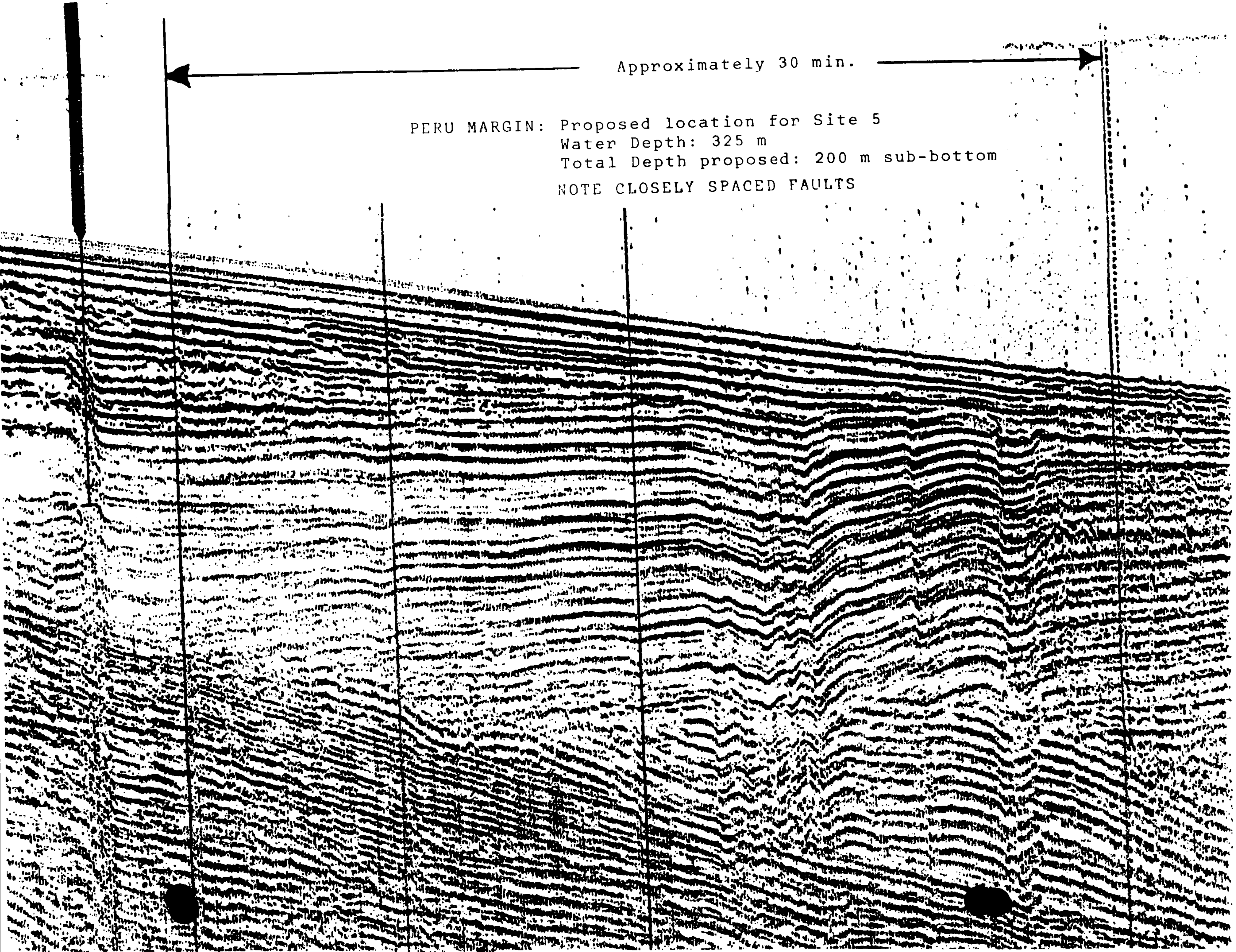
Data are adequate to support scientific objectives. However, SSP notes that sites appear to be near a canyon, which could cause drilling problems. TAMU and Co-Chiefs need to consider carefully how this circumstance will affect recovery.

Site 8 (3825 m W.D., 600 m T.D.)

MCS line 13 is now migrated and there are crossing lines.

Sites 9 - 11 (200-800 m W.D., 150-200m T.D.)

Site 9 is located on a 3.5 kHz line paralleled by nearby SCS and MCS. SCS shows complex intrastratal deformation below 120 m sub-bottom which may frustrate the scientific objectives.


Approximately 30 min.
PERU MARGIN: Proposed location for Site 5
Water Depth: 325 m
Total Depth proposed: 200 m sub-bottom
NOTE CLOSELY SPACED FAULTS

Site 10 is located on a 3.5 kHz line in a small sediment pond. Adjacent high quality SCS and available commercial MCS show highly complex reverse faulted stratigraphy. A careful survey on approach will be needed to find the sediment pond.

Site 11 is located on a single 3.5 kHz line between two MCS lines 15 km away on either side. The MCS lines show complex faulting and no straight forward line to line correlation. No SCS exist in the area.

Site survey data at Site 11 are not adequate because of the structural complexity in the area. The only possibility of correcting the site survey deficiencies here will be on the Charcot cruise in July, 1986, if they are willing.

Sites 14, 15, 16, and 17 (2875-4400 m W.D., 600-900 m T.D.)

At Sites 15, 16 and 17 some evidence of slumping was seen on the SeaMARC mosaic, but bathymetry maps are needed to fully assess this situation. The HIG SeaMARC bathymetry maps are now completed and are reported to be excellent. Apparently there is no need for French SEABEAM data on Lines 1 and 2.

Alternate Sites, Line 3

These sites can not be adequately documented without crossing MCS lines or an MCS survey. Good swath bathymetry is also needed.

Peru Summary:

All of the PE sites will require crossing SCS surveyed by the RESOLUTION on site approach in order to ensure high quality SCS records which are positioned accurately with respect to the drill sites. These data will be necessary to understand the details of local stratigraphy and structure as well as to position the drill sites appropriately.

Many important details regarding the tectonic objectives have yet to be assessed. The prompt cooperation of all involved will be needed in order to complete this task prior to the May PCOM meeting.

ACTION: Duennebier send ASAP the HIG bathymetric overlays to the Data Bank.

Brenner prepare ASAP a complete data package for final assessment by Mauffret. Items relating to tectonic objectives are particularly critical.

Mauffret complete final assessment of tectonic objectives. In particular check for BSR on migrated Peru Line 13 and assess severity of slumping at Sites 15, 16 and 17. Telex Peirce/Larson with conclusions in mid-May, prior to PCOM meeting. Complete written detailed final assessment and send to Peirce/Brenner/Mayer/TAMU.

Brenner specify to Thornburg the data formats needed for all OSU data relevant to Leg 112. These data must be sent to Data Bank ASAP for Safety Review to go ahead on schedule.

Thornburg send OSU data ASAP.

Peirce write Claypool/Rea outlining details of SSP review.

3(D) Weddell Sea

W1, W2, W4: Adequate data available once POLARSTERN data processed. Weigel will complete assessment once these data are available.

W3: POLARSTERN did not collect additional data. Present data are not adequate for drilling.

W5, W6, W7, W8: Barker expected to deliver final MCS to the Data Bank next week. Expect adequate data available then.

W9: Present data are not adequate for drilling.

W10: Prime alternate site and SOHP priority. Adequacy of data unclear until we know site location(s) relative to available data. No heat flow was done on POLAR DUKE.

Recommendation: SSP recommends that heat flow measurements be added to the shipboard science program at W10 as young volcanics are visible on SCS.

W11: SCS data from Barker have excellent penetration but poor resolution. Data quality is adequate for site objectives except that no velocities are available to estimate sediment thickness. A crossing line on site approach is necessary to improve stratigraphic resolution.

ACTION: Brenner telex Peirce/Mayer/Weigel with status after Barker visit. Brenner will ask Barker whether velocity data available at W11 (answer is no) and clarify status of W10. Send new data to Weigel ASAP.

Weigel attend SOP meeting, obtain copies of POLARSTERN data, complete final assessment, and telex final conclusions to Peirce/Larson, before PCOM meeting if possible.

4 SITE SURVEY PRELIMINARY ASSESSMENTS

4(A) Sub-Antarctic (Weigel)

La Brecque will do western half on POLAR DUKE and eastern half on CONRAD, finishing in late October, 1986. CONRAD will have SEABEAM, 3.5 kHz, high resolution SCS, coring, gravity and magnetics. POLAR DUKE has same but no SEABEAM.

SSP will need to schedule a special review of these data, perhaps in December, 1986, at LDGO.

ACTION: Peirce write La Brecque emphasizing desirability of crossing lines, particularly at sites for deeper penetration. Also emphasize short time frame for data review. Copy letter to TAMU, JOIDES, PPSP, Weigel.

4(B) SWIR (Langseth)

Dick site survey proposal has been approved for September/October, 1986, on CONRAD. SEABEAM on one fracture zone to define offset length. Also SCS, 3.5 kHz, heat flow, coring, gravity and magnetics.

Sites need to be chosen on sediment ponds clearly visible on 3.5 kHz.

Recommendation: All proposed site locations should have piston cores to support possible re-entry. A 3.5 kHz pinger on the coring and/or heat flow wire should be used as much as possible to resolve small scale structures of the sediment ponds (e.g. large talus blocks).

SSP will have to schedule a special assessment review, perhaps in December, 1986 at LDGO.

ACTION: Peirce write Dick highlighting SSP recommendations.

Natland proposal for Central Indian Ridge F.Z. drilling.

There appears to be adequate data to support drilling in sediment ponds. It is less certain that the sites proposed on benches and peaks are adequately documented.

ACTION: Brenner compile a summary of available data covering Natland sites ASAP. Send to JOIDES, copy to Peirce, Langseth.

A DARWIN Gloria cruise is scheduled for May, 1987, to the Indian Ocean Triple Junction. This could provide supporting data to the Natland sites syn- or post-cruise.

4(C) Mascarene Fossil Ridge (Langseth)

No new data. Schlich no longer plans site survey.

4(D) Davie Ridge (Mauffret)

New French drilling proposal being prepared, but it will be too late for consideration.

4(E) Somali Basin (Langseth)

Deep stratigraphic test at 0°40'S, 47°05'E in 4300 m water with 2600 m estimated penetration from SOHP proposal. DSDP 241 is a possible alternative.

No MCS exists although there is a grid of MCS south of the proposed site. There is an outside chance of the MARION DUFRESNE doing MCS, and SOHP in talking with Schlich in this regard.

Site survey needs include crossing deep penetration seismic profiles (MCS or SCS, preferably digital) which images basement well and good velocity information. Also need a piston core, with geotechnical properties measured for re-entry purposes, at the proposed location.

4(F) Red Sea (Mauffret)

No new data received by the Data Bank, but considerable progress made in identifying what data are available where.

Currently no sites in the Red Sea are adequately documented to consider site assessments. In many cases all that is needed is some organizational effort and willingness of site proponents to contribute data.

1) Site 1A 17°-18°N Axial Trough

Bathymetry, gravity and magnetics, are adequate. Amount of MCS available unclear. Need high resolution SCS. Darwin may do analog airgun SCS across deep. Cochran reportedly has access to 3.5 kHz data. Russian diving in area; photography might be useful (T. Juteau is a contact for this).

Data are currently inadequate for site assessment. Need to obtain high resolution SCS and to see 3.5 kHz to evaluate sediment thickness. Refraction would be useful, but not necessary. Cores not needed as no re-entry planned.

ACTION: Peirce write to Cochran asking him to get GLORIA data for the Data Bank.

2) AII Deep

No longer being considered. No discussion.

3) Nereus Deep

Don't know how many cores Bonatti has or whether they are in good enough shape for physical properties measurements.

Bonatti reportedly have necessary data to estimate sediment thicknesses.

ACTION: Peirce write Cochran and emphasize the need for getting PDR records to Data Bank.

Brenner find out what cores exist and if geotechnical properties can be measured.

4) Bannock Deep

Adequacy of bathymetry hard to assess without seeing maps. Need to check thickness of sediments carefully. Additional lines planned by DARWIN in August.

5) Mabahiss Deep

Need crossing SCS line at site MA 3A. Data are inadequate to support basement objectives at MA 3B. It is not clear that MCS data would improve matters in this regard even if they were available.

6) Shaban Deep

It is difficult to estimate sedimentary thicknesses with geophysical techniques in this unusual environment. Data are as adequate as we can expect.

7) Main Trough, 24°W

SEABEAM desirable, but not considered essential. There are sufficient data available at this site.

8) Zabargad Island

No site survey data are available. No longer being actively considered.

9) Port Sudan Delta

Needs either data made available from the Red Sea Commission or a survey by Darwin along the lines suggested by Cochran to White. SCS is necessary and 3.5 kHz is desirable (but no 3.5 kHz on Darwin).

Many sites in the Red Sea are supported by adequate data, but virtually none of it resides in the Data Bank. <u>If these data are not forthcoming very soon, the SSP will be forced to recommend cancellation of plans for Red Sea drilling</u>.

ACTION: Brenner telex Peirce if all Red Sea data not in Data Bank by May 21. If necessary, Peirce telex Larson (copy Cochran) to put pressure on member countries at PCOM meeting to produce data very soon or risk losing the Red Sea leg.

4(G) Neogene Package I and II (Suyehiro)

SSP anticipates that all necessary data will be obtained on upcoming CONRAD, SONNE (no 3.5 kHz) and DUFRESNE cruises, but details of survey plans unclear to us. Prell's CONRAD cruise finishes in mid-June, 1986. Kidd will put a GLORIA swath through selected sites on the Indus Fan in January - February, 1987.

ACTION: Peirce write Prell letter in late June asking for a site survey synopsis for Neogene I and II. This must be ready well in advance of our next meeting, and assessment must be completed by our next meeting.

Weigel send SONNE's track chart to Data Bank as soon as Ittekot cruise over.

Recommendation: The SSP is unable to comment on the site survey adequacy of Neogene II as there is no mature proposal available.

4(H) Makran (Duennebier)

Active margin environment, but only shallow penetration. DARWIN cruise by White in November, 1985.

Kidd will have a GLORIA cruise on DARWIN in January/February, 1987. <u>Some sites are in slump prone areas, so these data will be essential</u>.

Existing MCS only covers inboard half of the area. Additional MCS will be done in the area by White but will not be processed before the drilling begins. <u>Although MCS is normally required for drilling on active margins, the SSP believes that it is not essential in the case of the Makran to have MCS in advance of drilling as the proposed penetrations are shallow and as regional MCS will be available post-cruise</u>.

<u>There is a need for high resolution SCS</u>. A water gun (or small chamber airgun if water gun not available) should be used on the DARWIN survey. There will be no 3.5 kHz on DARWIN, which is unfortunate.

There is an OBS refraction line being planned. An airgun source is likely to be more effective than explosives for this experiment.

Heat flow would be very valuable, but is not essential.

ACTION: Jones will become the watchdog, replacing Duennebier. Jones to find out status of heat flow planned. Also get White to prepare a cruise plan for site surveys so SSP can have some idea at the next meeting what data we can expect to have available.

Brenner put together a 3.5 kHz track chart.

4(I) Mascarene Plateau (Duennebier)

Present data limited to sparse, good quality SCS. Sediment thickness is 200-300 m.

Sites fall into new aseismic ridges and oceanic plateaus environment.

Need high resolution SCS and a decent bathymetric postage stamp and sediment isopach maps over each site, approximately 25 km x 25 km with line spacing no greater than 5 km. If sites have paleo-environmental objectives they should be positioned away from slopes to avoid slumping.

Duncan/Baxter cruise on DAWRIN scheduled for March, 1987, so Mascarene Plateau can not come very early in Indian Ocean drilling.

ACTION: Duennebier write Duncan outlining site survey requirements, copy to Peirce, Jones.

4(J) North Kerguelen (Peirce)

No change in status. Schlich promised in December to arrange sending core descriptions and legible velocity data from French MCS. As he has been at sea, no progress.

ACTION: Peirce write Schlich a reminder. Peirce prepare written assessment for the next meeting.

4(K) South Kerguelen/Prydz Bay (Sayehiro)

Prydz Bay assigned higher priority by PCOM than South Kerguelen.

No change in S. Kerguelen data status as surveys currently underway.

Japan will not be sending a ship to Prydz Bay in late 1986.

The BSR-like reflector is a bubble pulse problem associated with the large 500 cu in airgun used. Processing with decon should help.

ACTION: Suyehiro write Stagg, copy to Peirce, to encourage reprocessing of Line 21 at Prydz Bay with decon. Ask for update on status of Australian S. Kerguelen data.

4(L) Ninetyeast Ridge/Intraplate Deformation (Peirce)

Curray is currently surveying the Northern Ninetyeast Ridge site at 6°N on CONRAD.

Slater has an add-on proposal to survey the southern Ninetyeast Ridge sites on Weissel's two CONRAD legs. Slater also has an add-on proposal to do bottom navigated heat flow at the deformation sites on the Bengal Fan. The proposal includes long-life transponders to enable the RESOLUTION to get the drill string back to the same exact location coordinates as used for the heat flow.

For the Ninetyeast Ridge basement sites the SSP recommends a SCS grid, 3.5 kHz, refraction (sonobuoy), magnetics and gravity. For the paleo-environmental sites, crossing SCS and 3.5 kHz lines and SEABEAM are recommended.

Recommendation: The SSP reiterates its position that bottom navigated heat flow is necessary to drill the fault plane targets at sites BF-3 and 4. However, it should be noted that the Intraplate Deformation proposal is still viable without these sites.

ACTION: Kidd contact Weissel regarding long life transponders and the problems of returning to the same spot again. Close technical coordination between TAMU and LDGO/UTA is needed.

4(M) Broken Ridge (Langseth)

Weissel cruise on CONRAD appears to have site survey requirements well in hand.

4(N) SE Indian Ridge (Duennebier)

No longer under consideration. No discussion.

4(O) Argo/Exmouth (Weigel)

Peirce reviewed Claypool's letter outlining safety problems at sites EP-5 and EP-1 and N. Exon's reply to a telex on the same subject. Exon will try to document a new, off-structural position for site EP-1. EP-5 seems undrillable without a riser.

Peirce has also received a paper copies of data over sites EP-3, 4, and will forward to Data Bank shortly.

Further discussion deferred until next meeting.

ACTION: Weigel get detailed report on RIG SEISMIC cruise for Wong to present at next meeting.

4(P) Otway Basin (Duennebier)

Possibility of Australian work in September/October, 1986 if priority assigned to drilling proposal rises. More seismic is needed and can be easily obtained if priority rises.

Peirce has received well completion reports for CLAM and PRAWN exploration wells and will forward same to Data Bank shortly.

ACTION: Duennebier to reply to Wilcox after PCOM with update on priority.

6. CENTRAL/EAST PACIFIC

Time did not allow any discussion on CEPAC objectives.

Ron Clowes (UBC) and Chris Yorath (PGC) presented an abbreviated overview of the Canadian Lithoprobe work on Vancouver Island and the recent MCS data acquired over the accretionary prism west of Vancouver Island. They made a strong case for underplating as a major process in continental accretion.

Earl Davis (PGC) discussed the systematic mapping being done on the Juan de Fuca Ridge. Of particular interest was the utility of having both SEABEAM for high resolution bathymetry and SeaMARC II for reflectivity control.

Some members of the SSP also discussed the MCS line across the Juan de Fuca which has an excellent image of the Moho as well as a possible magma chamber. Alternative explanations for the high amplitude reflector under the axial valley include density inversions due to hydrothermal effects in a sealed system.

The next CEPAC meeting is June 9-10 at PGC.

ACTION: Peirce write to Rea to invite Duennebier to attend CEPAC meeting as liaison. Peirce will be alternate if Duennebier not available.

6(B) Riser Drilling Requirements

Not discussed at this meeting.

ACTION: Kidd ensure SSP represented at riser engineering workshop.

7. FUTURE MEETINGS

Next meeting tentatively planned for November 4-6, 1986, in Villefranche. Tentative agenda attached. No guests yet identified. An additional day may be needed.

A subset of SSP may need to meet at LDGO in December to review Sub-Antarctic and SWIR data newly collected. At the same time any loose ends from the Red Sea remaining from the November meeting could be picked up.

The following meeting is tentatively scheduled for Hawaii in early 1987.

8. CLOSING REMARKS

This was the last SSP meeting for Wilfred Weigel, Tony Mayer and Rob Kidd, all of whom have contributed inmeasurably to the success of the SSP during their tenure.

While Wilfred will be leaving the panel, we hope that we will retain his services and experience as an alternate. In particular we are indebted to him for his analysis of the site survey status of the Weddell Sea and Sub-Antarctic drilling proposals.

Tony Mayer came to the JOIDES Office with a specific mandate to help the SSP become more effective. His broad perspective of ODP as a whole, his keen perception of what PCOM needed from the SSP and his amazing ability to produce whatever piece of paper someone else couldn't find has contributed in a very major way to the increased effectiveness of the SSP.

Rob Kidd came to the SSP from TAMU with a desire to increase the communication between the Science Operator and the panel. He has been articulate in expressing the needs of the Operator and effective at digging out answers to the SSP's operational questions.

Recommendation: The SSP has found the input of the representatives from the JOIDES Office and TAMU invaluable in trying to fulfill its role of assessing the site survey needs of the entire drilling program. The SSP considers it essential that an informed representative of the JOIDES Office and a senior member of TAMU's Scientific Staff attend every meeting of the Site Survey Panel. Ideally, one person at JOIDES and at TAMU should be assigned as SSP liaison rather than having a rotating assignment.

The SSP also thanked Todd Thornburg for his effort in attending our meeting on very short notice. His presentation of the data supporting the shallow objectives on the Peru margin was excellent and timely. Given the failure of the site proponents to supply the Data Bank with the necessary data, the viability of Leg 112 would have been seriously threatened without Todd's efforts.

The SSP thanked Earl Davis and Roy Hyndman for hosting the meeting at the Pacific Geoscience Centre. The SSP also thanked Mark Brandon, Ron Clowes and Chris Yorath for organizing the Lithoprobe discussion and the ill-fated field trip, which unfortunately had to be cancelled at the last minute for several reasons.

SITE SURVEY DATA STANDARDS

TARGETS	A	B	C	D	E	F	G
X = Required R = Requirement for Re-entry H = Requirement for High Temperature Targets ( ) = Desirable ( )* = Desirable, but May be Required in Some Cases	PALEO-ENVIRONMENT (SHALLOW PENETRATION)	PASSIVE MARGINS	ACTIVE MARGINS	OCEAN CRUST WITH THICK SEDIMENT COVER	OCEAN CRUST WITH THIN SEDIMENT COVER	BARE ROCK DRILLING	ASEISMIC RIDGES, OCEANIC PLATEAUS OR SEAMOUNTS
1. Deep Penetration SCS	(X)	(X)	X or 3	X or 3	X or 3		(X)*
2. High Resolution SCS	X	(X)	(X)	(X)	X	X	(X)
3. MCS, Including Velocities		X	X	X or 1	X or 1		(X)*
4. Crossing Seismic Lines or Survey Grid	(X)	X	X	X	(X)	(X)	(X)*
5. Seismic Refraction		(X)	(X)*	X	(X)	(X)	(X)*
6. 3.5 kHz	X	(X)*	(X)*	X	(X)*	X	(X)
7. Multi-beam Bathymetry	(X)*	(X)*	X or 8a	X	X or 8b	X	(X)* or 8a
8. Side Scan Sonar a) Shallow Source b) Deep Towed Source	(X)*	(X)*	X or 7		(X) X or 7	(X) X	(X)* or 7
9. Heat Flow		(X)*	(X)*	(X)	(X), H	(X), H	(X)
10. Magnetics & Gravity		(X)	(X)	(X)	(X)	X	(X)
11. Coring a) Paleo-environmental b) Geotechnical	X	(X) R	(X) R	R	R,H		R
12. Dredging					(X)*	(X)*	(X)
13. Photography					(X)*	X	(X)
14. Current Meter (For Bottom Shear)	(X)*	(X)*	(X)*				(X)*

AMPLIFYING COMMENTS TO SITE SURVEY DATA STANDARDS - MATRIX

The TARGETS categories across the top of the matrix describe broad categories of drilling objectives. Individ 1 sites with multiple objectives may need to meet the requirements of two TARGET categories. Frequently sites will have shallow objectives (TARGET A), deeper sedimentary and/or basement objectives (TARGETS B, D or E).

TARGET A - Generally APC/XCB penetration.

TARGET B - Greater penetration than a few hundred meters on a passive margin.

TARGET C - Greater penetration than a few hundred meters on an accretionary wedge, fore arc or sheared margin.

TARGET D - Greater penetration than a few hundred meters in a deep ocean environment. Often includes basement penetration.

TARGET E - Sediment thicknesses of less than a few hundred meters in a deep ocean, ridge crest or fracture zone environment. Often includes basement penetration.

TARGET F - Bare rock drilling, usually on zero age crust.

TARGET G - Elevated features above the ocean floor. Widely varying sediment thicknesses. Sediment slumping may be a problem on flanks. Basement often an objective.

The techniques include commonly used geophysical and sampling techniques.

1) Deep penetration SCS - Large source Single Channel Seismic

2) High resolution SCS - Watergun Single Channel Seismic or small chamber airgun in some situations. Digital acquisition preferred, but usually not necessary.

3) MCS and velocity - Multi-Channel Seismic including velocity determination (stacking velocities, and semblance plots when accurate depths are critical). Velocity analysis to determine sediment thickness over proposed sites.

4) Crossing lines - A seismic grid and/or crossing lines over the proposed site. The density of the seismic grid required depends on each particular situation.

..../ 2

5) Refraction - Sonobuoy or Ocean Bottom Seismometer refraction profiles, Expanding Spread Profiles or wide angle refraction profiles.

6) 3.5 kHz - High frequency data for near bottom high resolution to resolve small scale features and give some indication of sediment type.

7) Multi-beam bathymetry - SEABEAM or SeaMARC II bathymetry or equivalent. In some cases the greater resolution of SEABEAM may be required. Areas where slumping may occur should have multi-beam bathymetry and/or side scan sonar.

8) Side Scan Sonar - The reflectivity image of side scan sonar is often needed to interpret multibeam bathymetric data.

   a) Shallow - Side scan sonar sources towed near the surface, e.g. SeaMARC II, GLORIA.

   b) Deep - Side scan sonar sources flown near the bottom, e.g. Scripps Deep Tow, French SAR, SeaMARC I.

9) Heat Flow - Pogo type profiles or piston core heat flow measurements in detail appropriate to the scientific problem.

10) Magnetics and Gravity - Regional magnetics should be available on any location for which the magnetic age of ocean crust is important. Gravity is seldom an absolute requirement; but should be obtained on any profiles for which subsidence studies are planned. SEASAT derived gravity information often complements the regional magnetic picture.

11) Coring - Cores should be taken near all paleo-environmental sites for stratigraphic control.

All re-entry sites should be supported by cores, core descriptions and geotechnical measurements (see below for specific list). The two limiting factors for re-entry operation are:

1) Sufficient sediment thickness to set the re-entry core (more than 30 m).

2) Ability to wash through the sediment section.

The benefit of geotechnical information for re-entry operations is that wash-in capabilities are tied to formation strength. The manner in which geotechnical information is to be used within ODP will most likely evolve as the geotechnical data base is studied in the context of increasing experience in re-entry operations.

At present (1986), the following measurements of geotechnical properties on fresh piston cores are recommended as part of each site survey package for a re-entry site:

1) Penetrometer Strength
2) Vane Shear Strength (Natural and Re-molded)
3) Bulk Density
4) Water Content
5) Atterberg Limits (Liquid and Plastic)

Gradient and maximum and minimum values of the geotechnical properties listed above are also recommended.

For old piston cores, please provide any geotechnical measurements made when the core was fresh. Atterberg liquid and plastic limits should also be measured on old core material as this is one geotechnical observation which is still valid on partially dessicated material.

The above properties should be provided in conjunction with lithology and bedding.

Site proponents should contact the Science Operator (TAMU) for further clarification on the geotechnical requirements for their particular circumstances.

12) Dredging - May be required when basement drilling is included in the objectives.

13) Photography - May be required in TARGET E in the case of hydrothermal areas over sedimented spreading centers.

    Bare rock drilling sites will require extensive bottom photography, such as ANGUS coverage.

14) Current meters. Information on bottom currents will be required when bottom shear might be a problem. Shallow water sites may need tidal current information as well.

ODP DATA BANK ACTIVITY, FY 1986, first half

Data Supplied (FY 86, first half)

U. S.		#
ODP		13
LDGO		5
WHOI		5
URI		4
UT		2
DSDP		2
SIO		1
TAMU		1
OSU		1
HIG		1
UW		0
Other U.S.*		10
	Total U.S.	46

Non-U.S.		
France		5
FRG		4
UK		1
Canada		1
Japan		1
ESF		0
Australia		0
Other **		1
	Total non-U.S.	13
	Total Requests	59

* a) requests filled for panel members or site proponents fron non-JOI institutions
  b) requests filled for panels (such as PPSP)
  c) requests filled for post cruise studies by non-JOI members of a site survey team

** PPSP (one package to each non-U.S. country)

Data Supplied, By Project (FY 86, first half)

	#	%
Planning for Proposal Submission (panel or individual)	9	15%
Site Survey Planning/Evaluation	8	14%
Planning for Drilling	27	46%
Post-cruise studies	13	22%
Other*	2	3%

* includes data supplied for Initial Reports publications

FRENCH RESEARCH VESSELS 1986-1987

SHIP	TIME	AREA	PROJECT	INVESTIGATOR
JEAN-CHARCOT	1 April 86 22 June	Central Pacific	NIXO Nodules SAR	IFREMER
"	29 June 86 29 July	East Pacific Peru Trench	SEAPERC Seabeam High speed SCS (ODP Site Survey)	INSU (Bourgois) IFREMER (Pautot)
"	16 December 86 20 January 87	East Pacific Rise 19° North or 13^{e} North	Hydrofast Seabeam SCS SAR Geochemical Sampling	IFREMER (Bougault) INSU (Francheteau)
"	25 January 87 26 February	East Pacific Easter plate	RAPANUI Seabeam SCS	INSU (Francheteau)
"	2 March 87 28 March	Central Pacific	SEAPEP OBS ODP Polynesie	INSU (Pascal, Francheteau)
SUROIT	27 April 86 05 May	West Portugal	LUSITANIE MCS	INSU (Mauffret)
"	August 86 September	South of France	SAME SAR (Nice)	IFREMER (Auffret)
"	?	Eastern Atlantic	CYAPORC Diving on Porcupine Spur	IFREMER (Auzende) NERC
NOROIT	September 86	Mediterranean Sea	VICOMED Paleohydrology	INSU (Vergnaud-Grazzini
"	?	Eastern Atlantic	DESIFER Deep sea Fan Cap Ferret	INSU (Kremer)
MARION-DUFRESNE	05 August 86 07 September	Indian Ocean	PROFINDUS Deep sea Fan Indus	INSU (Droz)

FRENCH RESEARCH VESSELS 1986-1987

SHIP	TIME	AREA	PROJECT	INVESTIGATOR
ION-DUFRESNE	02 July 86 02 August	Indian Ocean	JASUS Dredging on the Ridge of Amsterdam Island	?
"	15 February 87 15 April	South Atlantic	APSARA Scotia Sea Paleoclimatology Deep coring	INSU (Duplessis
"	1987	Mascareigne fossil Ridge Cancelled. Red Sea dredging and long coring (IFP- ODP Project) Standby		
NAUTILE	June	Eastern Atlantic off Spain	GALINAUT Deep sea diving on Leg 103 area	INSU (Boillot)
"	August 86 September	Central Atlantic	VEMANAUT VEMA F2 diving	IFREMER (Auzend
"	?	South ~~Atlantic~~ Pacific 32° South	Diving	INSU (Francheteau)
CORIOLIS	?	Western Pacific	EVA OBS	ORSTOM (Recq)

APPENDIX D

F.G.R. RESEARCH VESSELS: 1985-1987

Area	Ship	Time	Projekt (target methods)	Investigators
N.W.Africa	POLARSTERN	10/85	Add. site survey sites on penetr. Leg 108 3,5 kHz Seabeam, probl. high resol. seismics	Kiel
Kane, Hayes Fracture Zones	PRAKLA	11/85	Fracture Zones Region of magnetic M-Anomaly	BGR
Weddell Sea	POLARSTERN	12/85-03/86	Ocean/continent transition tectonic evolution; MCS air gun, Seabeam, 3,5 kHz grav/magnetics	BGR
Aegean Sea	SONNE	1986	Crustal structure	Hamburg
Java Sea	SONNE	1986	Coring structure - geol., volcanic history; refl. seismics, grav/magnetics	Hamburg
Red Sea Golf of Aden	METEOR	02/03 1987	Continent/Ocean boundary OBS-seismics, grav/magnetics	Hamburg
Norwegian Sea	VALDIVIA	06/87	Jan Mayen Ridge Structure, corresponding margin	Hamburg
Central North Atlantic	METEOR	1988	Sea mounts, ocean crust; OBS-seismics grav/magnetics MCS	Hamburg
Indian Ocean		SSP not defind		(BGR)

APPENDIX E

RRS CHARLES DARWIN

o.)	Dates From (Ports) To	Days	Operations Area (Science)	Inst/Univ (Principal Scientist)
-	19/12 - 20/12 (Muscat)	5	Fit GLORIA	-
19 -	21/12 - 18/1/87 (Muscat - Seychelles)	28	Arabian Sea (Oceanography)	Miami (1) (Olson)
1987				
20 (23)	21/1 - 18/2 (Seychelles - Mauritius)	28	Indus Cone (Geophysics)	IOS (Kidd/Kenyon)
21 (19)	1/3 - 28/3 (Mauritius - Seychelles)	28	W. Indian Ocean (Geophysics)	London/Oregan (2) (Baxter/Duncan)
22 (20)	2/4 - 29/4 (Seychelles - Mauritius)	28	W. Indian Ocean (Physics)	UCNW, Bangor (Barton/Simpson)
23 (21)	4/5 - 1/6 (Mauritius - Mauritius)	28	C. Indian Ocean (Geophysics)	IOS (Parsons/Searle)
24 (22)	6/6 - 4/7 (Mauritius - Seychelles)	28	W. Indian Ocean (Physics)	UCNW, Bangor (Barton/Simpson)
25 -	7/7 - 4/8 (Seychelles - Muscat)	28	Arabian Sea Oceanography)	Miami (1) (Olson)
26 -	8/8 - 15/8 (Muscat - Muscat)	8	Omani Coast (Oceanography)	Belfast (1) (Savidge)

NOTES

(1) Charter Cruises

(2) Original allocation extended to allow collaboration by US Scientists involved with ODP.

CONRAD

Updated as of 3/86

Ops Schedule for Period
01 Jan 86 - 31 Dec 86

Out of Service Dep: 01 Jan 86 Singapore Arr: 07 Mar 86 Singapore	Maintenance	NSF	
Transit Dep: 08 Mar 85 Singapore Arr: 15 Mar 86 Broome	Transit-Sea Trials	NSF	7
Oceanographic Research Dep: 16 Mar 86 Broome Arr: 15 Apr 86 Pt. Hedland	Mutter MCS2-ship Western Australia	NSF(F)	30
Transit Dep: 17 Apr 86 Pt. Hedland Arr: 22 Apr 86 Jakarta	Transit	NSF	5
Oceanographic Research Dep: 25 Apr 86 Jakarta Arr: 12 May 86 Colombo	Curray Sri Lanka Margin Indian Ocean	NSF(F)	17
Oceanographic Research Dep: 16 May 86 Colombo Arr: 16 Jun 86 Colombo	Prell Oman Margin Coring Arabian Sea	NSF(F)	31
Oceanographic Research Dep: 20 Jun 86 Colombo Arr: 24 Jul 86 Perth	Weissel Heat Flow Central Indian Ocean	NSF(F)	34
Oceanographic Research Dep: 28 Jul 86 Perth Arr: 01 Sep 86 Mauritius	Weissel Broken Ridge ODP Surveys	NSF	35
Oceanographic Research Dep: 05 Sep 86 Mauritius Arr: 09 Oct 86 Capetown	Dick SW Indian Ridge dredging	NSF~~(P)~~ (F)	34
Oceanographic Research Dep: 12 Oct 86 Capetown Arr: 11 Nov 86 Rio	Cande/Fox Equatorial Atlantic	ONR(P)	30
Oceanographic Research Dep: 15 Nov 86 Rio Arr: 20 Dec 86 Recife	Fleming/Fox/Cande South Atlantic	NRL/ONR(P)	35
Oceanographic Research Dep: 26 Dec 86 Recife Arr: 15 Jan 87 Rio	Katz Equatorial Atlantic	NSF(F)	20

APPENDIX G
SSP Minutes - April, 1986

WPAC DRILLING PROPOSALS

Area	WPAC Watchdog	SSP Watchdog	Proposals	Site Survey Status According to WPAC
1. Lau Basin	TBA	Duennebier	JTB, 189	Zero-age survey needed. 5 cruises need integration.
2. Bonin-Mariana	TBA	Duennebier	83, 171, 172	More MCS needed. JNOC MCS needed. Planned: ORI 7/86, Taylor MCS proposal, Alvin '87.
3. Vanuatu	TBA	Mauffret	187, 190	More MCS needed. French MCS scheduled; not yet funded.
4. Sulu Sea	TBA	Mauffret	27, 82	Apparently adequate data. French MCS scheduled; not yet funded.
5. Banda Sea	TBA	Langseth	131, 154	Needs high resolution SCS, Silver SCS proposal.
6. Great Barrier Reef	TBA	Jones	206	Apparently adequate data.
7. Japan Sea	TBA	Tamaki	51, JTB	Apparently adequate data. ORI cruise 4-5/86 Shimkai, '86
8. S. China Sea	TBA	Peirce	46, 147, 194, 216	Apparently adequate data.
9. Nankai	TBA	Suyehiro	50, 128	Apparently adequate data but JAPEX MCS also needed. ORI cruise in 12/86; Shipley 2-ship proposal.

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SSP Watchdog	Proposals	Site Survey Status According to WPAC
Wong	80,127	More MCS needed. Gloria in 87/88(?)
Langseth	218	More MCS and migration needed, esp. from Tawain. Tawain MCS planned in '86.
Mauffret	163,177	More MCS needed. ORI cruise 8/86.
Mauffret	27,48,82	More MCS on arc needed. French MCS scheduled; not yet funded.
Wong	26,67	More MCS needed.
Jones	155	Site specific and experiment specific surveys.

SITE SURVEY PANEL APPENDICES H & I

APPENDIX H

ODP SITE SURVEYS UPDATE

INDIAN OCEAN

J. W. Peirce
May 12, 1986

1. SWIR (Langseth)

Dick site survey proposal has been approved for September/October, 1986, on CONRAD. SEABEAM on one fracture zone to define offset length. Also SCS, 3.5 kHz, heat flow, coring, gravity and magnetics.

Sites need to be chosen on sediment ponds clearly visible on 3.5 kHz.

All proposed site locations should have piston cores to support possible re-entry. A 3.5 kHz pinger on the coring and/or heat flow wire should be used as much as possible to resolve small scale structures of the sediment ponds (e.g. large talus blocks).

SSP will have to schedule a special assessment review, perhaps in December, 1986 at LDGO.

A DARWIN Gloria cruise is scheduled for May, 1987, to the Indian Ocean Triple Junction. This could provide supporting data to the Natland sites syn- or post-cruise.

2. Mascarene Fossil Ridge (Langseth)

No new data. Schlich no longer plans site survey.

3. Davie Ridge (Mauffret)

New French drilling proposal being prepared, but it will be too late for consideration.

4. Somali Basin (Langseth)

Deep stratigraphic test at 0°40'S, 47°05'E in 4300 m water with 2600 m estimated penetration from SOHP proposal. DSDP 241 is a possible alternative.

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APPENDIX H

No MCS exists although there is a grid of MCS south of the proposed site. There is an outside chance of the MARION DUFRESNE doing MCS, and SOHP in talking with Schlich in this regard.

Site survey needs include crossing deep penetration seismic profiles (MCS or SCS, preferably digital) which images basement well and good velocity information. Also need a piston core, with geotechnical properties measured for re-entry purposes, at the proposed location.

5. Red Sea (Mauffret)

No new data received by the Data Bank, but considerable progress made in identifying what data are available where.

Currently no sites in the Red Sea are adequately documented to consider site assessments. In many cases all that is needed is some organizational effort and willingness of site proponents to contribute data.

All sites in the Red Sea fall in Target E in the new Site Survey Data Standards matrix except the Sudanese Delta and Main Trough which are Target A.

1. Site 1A 17°-18°N Axial Trough

Objective is to sample crust in oldest spreading cell of the Red Sea, ideally ages 3 Ma and 5 Ma. Water depth is 1350-1800 m and sediment thickness 100-300 m. Salt flow reported at 5 Ma site.

Bathymetry (no SEABEAM), gravity and magnetics, are adequate. Amount of MCS available unclear. Need high resolution SCS. Darwin may do analog airgun SCS across deep. Cochran reportedly has access to 3.5 kHz data. Russian diving in area; photography might be useful (T. Juteau is a contact for this).

Data are currently inadequate for site assessment. Need to obtain high resolution SCS and to see 3.5 kHz to evaluate sediment thickness. Refraction would be useful, but not necessary. Cores not needed as no re-entry planned.

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2. AII Deep

Metalliferous hot brines (63°C).

No longer being considered. No discussion.

3. Nereus Deep

Cold brines (30°C)

Objective is to drill to basement to study hydrothermal processes.

Water depth is 2300 m with 50 m sediment. Re-entry planned.

Data base appears to be adequate, except perhaps for piston cores for geotechnical measurements. Need to check condition of Italian cores. Need to get accurate assessment of sediment thickness - there is barely enough to spud in. Italian PDR and seismic records need to be sent to Data Bank ASAP.

4. Bannock Deep

Embryonic ocean crust; no hot brines.

Water depth is 1500 m; sediment thickness is about 100 m. No re-entry planned.

Cochran feels that adequate data are available. SSP concurs generally with reservation that adequacy of bathymetry is hard to assess without seeing the maps. Sediment thicknesses must be checked carefully.

5. Mababiss Deep

Objective is to sample basaltic section from northern spreading center at two locations.

Water depth is 1000-1500 m; sediment thickness is 200-400 m.

..../ 4

Need crossing SCS line at site MA 3A. Data are inadequate to support basement objectives at MA 3B. It is not clear that MCS data would improve matters in this regard even if they were available.

6. Shaban Deep

Embryonic ocean crust with cold brines.

Water depth 1500 m; sediment thickness estimated at 100 m. Reflectivity of brine tops makes it difficult to know where sediment top is.

It is difficult to estimate sedimentary thicknesses with geophysical techniques in this unusual environment. Available data are as adequate as we can expect.

7. Main Trough, 24°N

Double HPC to evaporite contact for high resolution biostratigraphy to study climatic changes in Pliociene-Holocene.

Water depth is 1100 m; sediment penetration 250 m.

New sites PQ2 and PQ3 being considered. Original site abandoned because of slumping and nearby cable.

SEABEAM desirable, but not considered essential. There are sufficient data available at this site.

8. Zabargad Island

No site survey data are available. No longer being actively considered.

9. Port Sudan Delta

Same objectives as at Main Trough above.

Water depth is 500 m; sediment penetration 200-300 m.

Data currently available are clearly insufficient.

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Needs either data made available from the Red Sea Commission or a survey by Darwin along the lines suggested by Cochran to White. SCS is necessary and 3.5 kHz is desirable (but no 3.5 kHz on Darwin).

SUMMARY COMMENT ON RED SEA:

Many sites in the Red Sea are supported by adequate data, but virtually none of it resides in the Data Bank. If these data are not forthcoming very soon, the SSP will be forced to recommend cancellation of plans for Red Sea drilling.

6. Neogene Package I and II (Suyehiro)

SSP anticipates that all necessary data will be obtained on upcoming CONRAD, SONNE (no 3.5 kHz) and DUFRESNE cruises, but details of survey plans unclear to us. Prell's CONRAD cruise finishes in mid-June, 1986. Kidd will put a GLORIA swath through selected sites on the Indus Fan in January - February, 1987.

The SSP is unable to comment on the site survey adequacy of Neogene II as there is no mature proposal available.

7. Makran (Jones)

Active margin environment, but only shallow penetration. DARWIN cruise by White in November, 1985.

Kidd will have a GLORIA cruise on DARWIN in January/February, 1987. Some sites are in slump prone areas, so these data will be essential.

Existing MCS only covers inboard half of the area. Additional MCS will be done in the area by White but will not be processed before the drilling begins. Although MCS is normally required for drilling on active margins, the SSP believes that it is not essential in the case of the Makran to have MCS in advance of drilling as the proposed penetrations are shallow and as regional MCS will be available post-cruise.

There is a need for high resolution SCS. A water gun (or small chamber airgun if water gun not available) should be used on the DARWIN survey. There will be no 3.5 kHz on DARWIN, which is unfortunate.

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There is an OBS refraction line being planned. An airgun source is likely to be more effective than explosives for this experiment.

Heat flow would be very valuable, but is not essential.

8. Mascarene Plateau (Duennebier)

Present data limited to sparse, good quality SCS. Sediment thickness is 200-300 m.

Sites fall into new aseismic ridges and oceanic plateaus environment.

Need high resolution SCS and a decent bathymetric postage stamp and sediment isopach maps over each site, approximately 25 km x 25 km with line spacing no greater than 5 km. If sites have paleo-environmental objectives they should be positioned away from slopes to avoid slumping.

Duncan/Baxter cruise on DARWIN scheduled for March, 1987, so Mascarene Plateau can not come very early in Indian Ocean drilling.

9. North Kerguelen (Peirce)

No change in status. Schlich promised in December to arrange sending core descriptions and legible velocity data from French MCS. As he has been at sea, no progress.

10. South Kerguelen/Prydz Bay (Suyehiro)

Prydz Bay assigned higher priority by PCOM than South Kerguelen.

No change in S. Kerguelen data status as French surveys currently underway. Australian MCS should be processed soon. No 3.5 kHz data.

Japan will not be sending a ship to Prydz Bay in late 1986.

The BSR-like reflector is a bubble pulse problem associated with the large 500 cu in airgun used. Processing with decon should help.

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11. Ninetyeast Ridge/Intraplate Deformation (Peirce)

Curray is currently surveying the northern Ninetyeast Ridge site at 6°N on CONRAD.

Sclater has an add-on proposal to survey the southern Ninetyeast Ridge sites on Weissel's two CONRAD legs. For the Ninetyeast Ridge basement sites the SSP recommends a SCS grid, 3.5 kHz, refraction (sonobuoy), magnetics and gravity. For the paleo-environmental sites, crossing SCS and 3.5 kHz lines and SEABEAM are recommended.

Sclater also has an add-on proposal to do bottom navigated heat flow at the deformation sites on the Bengal Fan. The proposal includes long-life transponders to enable the RESOLUTION to get the drill string back to the same exact location coordinates as used for the heat flow.

The SSP reiterates its position that bottom navigated heat flow is necessary to drill the fault plane targets at sites BF-3 and 4. However, it should be noted that the Intraplate Deformation proposal is still viable without these sites.

12. Broken Ridge (Langseth)

Weissel cruise on CONRAD appears to have site survey requirements well in hand.

13. SE Indian Ridge (Duennebier)

No longer under consideration.

14. Argo/Exmouth (Weigel)

The Australians have a fair amount of regional data over the Argo Abyssal Plain and two surveys are scheduled for the first half of 1986. Objective of site survey is to document the oldest possible sediments on unequivocal oceanic crust (M-25).

The Exmouth Plateau is one of the most thoroughly explored passive margins in the world. Site EP-5, at the top of the regional cap of the Exmouth Plateau, was informally reviewed by some members of the Safety Panel, using industry data. It is highly unlikely that a safe location for riserless drilling can be found to test the scientific objectives. See the attached letter from the Chairman of PPSP.

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Sites EP-1C/ID were also reviewed informally by some members of the Safety Panel. While those particular locations were found to be unacceptable, off structure locations which would meet the same scientific objectives appear possible. N. Exon will try to delineate same on a current BMR cruise.

15. Otway Basin (Duennebier)

Possibility of Australian work in September/October, 1986 if priority assigned to drilling proposal rises. More seismic is needed and can be easily obtained if priority rises.

Peirce has received well completion reports for CLAM and PRAWN exploration wells and will forward same to Data Bank shortly.

APPENDIX I

TENTATIVE AGENDA FOR SSP MEETING

November 4-6, 1986

Laboratoire de Geodynamique sous-Marine
Villefranche-sur-Mer
France

1. PRELIMINARY MATTERS

   Introduction, schedules, minutes, etc.

2. REPORTS

   a) PCOM (Francis)
   b) JOIDES Office (?)
   c) Science Operator (A Meyer?)
   d) Underway Geophysics Committee (Duennibier/Jones/Meyer)
   e) Data Bank (Brenner)
   f) SOP Meeting (Wong for Weigel)
   g) IOP Meeting (Mauffret)
   h) WPAC Meeting (Mauffret)
   i) CEPAC Meeting (Peirce)

3. SITE SURVEY ASSESSMENTS

   a) Weddell Sea (Wong for Weigel)
   b) Red Sea (Mauffret)
   c) N. Kerguelen (Peirce)

4. INDIAN OCEAN SITE SURVEY STATUS/PRELIMINARY ASSESSMENT

   a) Sub-Antarctic (Wong for Weigel)
   b) SWIR (Langseth)
   c) Mascarene Fossil Ridge (Langseth)
   d) Davie Ridge (Mauffret)
   e) Somali Basin (Langseth)
   f) Neogene Package (Suyehiro)
   g) Makran (Jones)
   h) Mascarene Plateau (Duennebier)
   i) S. Kerguelen/Antarctic (Suyehiro)
   j) Intraplate Deformation (Peirce)
   k) Ninetyeast Ridge (Peirce)
   l) Broken Ridge (Langseth)
   m) SEIR (Dunnebier)
   n) Argo/Exmouth (Weigel)
   o) Otway Basin (Dunnebeir

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APPENDIX I

5. WESTERN PACIFIC SITE SURVEY STATUS

a) Lau Basin (Duennebier)

b) Bonin-Mariana (Duennebier)

c) Vanuatu (Mauffret)

d) Sulu Sea (Mauffret)

e) Banda Sea (Langseth)

f) Great Barrier Reef (Jones)

g) Japan Sea (Tamaki)

h) S. China Sea (Peirce)

i) Naukai Trough (Suyehiro)

j) Sunda Arc (Wong)

k) Manila Trench (Langseth)

l) Zenisu Ridge (Mauffret)

m) Sulu Transect (Mauffret)

n) Tonga Trausect (Wong)

o) Downhole Experiments (Jones)

6. RISER DRILLING REQUIREMENTS (Meyer/Francis/Peirce)

7. NEXT MEETING

Hawaii?

February or March?

IFREMER/DIT/ISM1 N° 86.44

Paris, May 7th, 1986

REPORT OF THE 2nd TEDCOM MEETING
held in Marseilles (France)
FEBRUARY 17-20, 1986

I. List of attendees

II. Agenda

III. General session

IV. Hot Rock Drilling Session

V. Visit of JOIDES RESOLUTION

VI. Riser Drilling Session

VII. Conclusions

VIII. Closed session.

APPENDIXES :
1/ EDO organization
2/ Priorities
3/ High temperature tools
4/ French equipment manufacturers

I. List of attendees

1.1. TEDCOM members

B. Dennis	Los Alamos National Laboratories
C. Hocott	University of Texas
J. Jarry	IFREMER, Chairman
J. Kasahara	University of Tokyo
J.C. Lamb	B. P.
K. Manchester	Bedford Institute
C. Marx	University of Clausthall
F. Schuh	ARCO

Absentees :

W. Bingman	Shell
T. Gardner	Exxon
M. Newsom	Sandia

1.2. Permanent Observers

J. Delacour	IFP
T. Francis	PLA COM
C. Grassick	Alternate for J.C. Lamb
D. Hammett	SEDCO
B. Harding	TAMU
R. Larson	PLACOM chairman
J. Legrand	IFREMER
A. Sutherland	NSF

1.3. Part-time attendees

G. Baron	IFP
M. Dorel	IFP
C. Mabile	IFP
P. Odru	IFP
J.C. Schawann	ELF
C. Sparks	IFP

II. Agenda

Monday	feb. 17	Afternoon	General session
Tuesday	Feb. 18	Morning	Hot rock drilling session
		Afternoon	Visit of JOIDES RESOLUTION
Wednesday	Feb.19	Morning	Riser drilling session
		Afternoon	Presentation of the French equipment manufacturing industry
Thursday	Feb. 20	Morning	Closed session.

III. General session

3.1. Jean JARRY introduced the meeting by welcoming everybody and announcing the agenda. Then he talked about the goals of TEDCOM as he felt them and as he had listed them in a letter to the members :

<< TEDCOM must be a bridge between Science and Industry. TEDCOM has three main objectives :

. To ensure that engineering and science are properly coordinated, which means that the engineering priorities be coherent with the science priorities, but which means also that the science priorities be compatible with the engineering and budget capabilities.

. To be sure that the project make use of any relevant experience.

. To ensure that the technological aspects of the project be conducted in the best way compatible with the actual budget and that the R & D priorities be sound.

ODP is also an international program in which money, science and technology are to be shared. It is the reason why TEDCOM has a fourth objective :

. To assure that, for each large contract concerning either a purchase of equipment or a development study, consultations are done on a worldwide basis, and that the best technology available from the member countries is used whenever possible.

TEDCOM's role is to help TAMU by bringing the expertise and the knowledge of its members. >>

Then Jean thanked Frank SCHUH who had written a letter in which he gave his views on the ODP engineering approach : "there are two possibilities : this approach is either an aggressive engineering approach, or a field oriented trial and error process. If ODP chooses the second way, TEDCOM's role will become difficult and TEDCOM members will not receive anything in return". Frank explained that the oil companies are interested to participate to TEDCOM because they hope some return. Some companies would be even ready to give some funding. Their experience is enormous and can be very useful to the program, specially in riser drilling. Besides, if TAMU launches large R & D programs using computer analysis, writing softwares or using them can interest different departments of the oil companies.

Alex SUTHERLAND remarked that some other companies could also be interested, for example some contractors and that they would be welcome to make proposals : they could give advice to TAMU, they could push to develop new tools. It was suggested that we publicize more on our requirements, in order to increase the probability of finding people interested and able to solve them. That approach could even trigger proposals and, perhaps, funding. B. HARDING said that he already maintains a very visible profile. Anyway, he always appreciates help from anybody.

3.2. "JOIDES RESOLUTION" first year operations

B. HARDING reported on the first seven legs of ODP (the legs are listed in JOIDES journal) and described the problems encountered.

On leg 106, a hard rock guide base (HRB) was used for the first time, on the mid-atlantic ridge. A series of 10 spud tests was punched, then a hole was drilled at a very low speed : 34 meters drilled in 3 weeks. The drilling was done on the slope of a volcano, 56 meters above the rift Valley and had to be abandoned because the instability of the hole. It is anticipated that, at a greater depth, rock would probably be less fractured.

There were also problems of cuttings staying around the hole, due to its large diameter. When the ship comes back for leg 109, it is proposed to drill using a smaller diameter bit.

3.3. Then Barry described the Engineering Development and Operation Team (EDO) which he manages in the ODP organization. EDO has five engineers (see figure 1) and requires at least one more. When Claude MABILE leaves for FRANCE next summer, two new engineers will be needed :

- a drilling engineer with a mechanical background
- an electronic systems engineer.

It is expected that ODP, with additional money coming from new member-countries fees, will allow E.D.O. to hire a full-time new engineer. The second one could be sent by a member-country (Canada ? Germany ? France again ?...).

3.4. To increase the efficiency of E.D.O., the possibility of hiring consultants or experts for a given period of time was discussed. It could also be useful to have somebody from the industry participating on 1 or 2 legs. AMOCO has already sent a drilling engineer aboard the JOIDES RESOLUTION for one leg ; he gave good advice. However, there is a risk that such people propose too much sophistication.

3.5. Scientific and Technical priorities

Roger LARSON, Planning Committee Chairman, showed on a map the next legs of the ship, as planned. It is a circumnavigation around the world with excursions in latitude from the Arctic to the Antarctic.

The areas planned until 1991 include many different technical problems yet to be solved, such as high temperatures up to 160°C and overpressure zones with risks of collapse.

Roger said that scientists need improvements in coring, mostly in fractured rocks where core catcher jamming can occur. On the other hand, it is sometimes more important to have good logging than good cores (Mid-atlantic ridge).
According to Roger, the question frenquently asked by the science community to TEDCOM is "what can we reasonably get for our money ?"

In order to establish more precisely the technical priorities corresponding to science needs, a technical workshop was held last september in College Station. Unfortunately too few panel chairmen attended. During the meeting, E.D.O. people described the different tools, equipment, systems, as well as the problems met, and the R&D undertaken. At the end of the workshop, a form was given to the attendees. Out of 15 forms distributed, 8 came back filled up, allowing B. HARDING to establish a list of high and medium priorities (table 2). People must be aware that a delay of at least 12 to 18 months is necessary for E.D.O. engineers to designe and built a new tool or new equipment.

3.6. Technical problems review

3.6.1. Bit development

E.D.O. has been in touch with many manufacturers and up until now, R.B.I. has done the best job.

R&D in bit development necessitates active participation of the manufacturer, and the problem is that TAMU is not an important customer, although it can be a regular customer. SMITH and CHRISTENSEN have shown signs of interest. F. SCHUH suggested that an experimental program take place : that could interest manufacturers who might contribute.

Meanwhile, from a practical point of view, TAMU must try as many different bits as possible.

3.6.2. Pressure Core barrel

It must to be redesigned.

3.6.3. Hard rock spudding and drilling

The HRB has been quite successfull and will be used intensively at least until 1988. During leg 109, the goal will be to deepen holes 395 A and 648 B. Drilling in hydrothermal areas will also be tried.

In the case of hard rock drilling, B. DENNIS proposes to use SMITH tungsten carbide bits, which would allow a speed of 11 feet/hour if enough weight were put on the bit. But the problem is that it is not possible to put such weight during the first several decameters of the hole.

3.6.4. Hole problems

In fractured zones with high risk of hole collapses, 9 1/2'' collars are used. More generally the drillstring must always be rotated in order to avoid the string getting stuck. A solution could be to cement but it has to be experimented first.

3.6.5. Hole stability problems

With no riser, normal drilling fluid is water. Sometimes a gel flush is used, but in an open loop situation, there is no recycling and on board the supply is limited. There is no way of knowing the volume of the well and whether the gel has filled it up or not. If swelling occurs, nothing can be done (this happens when formations are saltier than seawater).

3.6.6. T.V.

There are good reports on the high resolution reentry TV, which is used now on a routine basis. Images are so good that it is proposed to use the TV system while drilling. Coupling this TV with an ROV would allow observation of a larger area around the well. E.D.O. will study these possibilities.

3.6.7. Safety

Safety was also discussed. To monitor the methane rate a computer terminal will be placed in the superintendant's office.

3.7. Miscelleanous

3.7.1.
The Continental Drilling Program in the U.S. has some problems similar to ODP's. Contacts could be made in two ways : Firstly, F. SCHUH is already chairman of the Drilling advisory panel for Continental Drilling. Secondly, DOSSEC people could be invited to TEDCOM meetings.

3.7.2.
A. SUTHERLAND underlined the need for more crisscross information between ODP principal investigators and TEDCOM. Technical workshops like the one of september 85 must be encouraged, but would have to be prepared and focused on specific technical problem (see VII. Conclusions).

3.7.3.
A workshop on sampling was proposed, which could deal with core, fluid, and gas sampling.

IV. High temperature drilling session

4.1. LANL experience

Bert DENNIS presented the experience of Los Alamos National Laboratories (LANL) in geothermal drilling, gained through the hot dry rock geothermal energy development program.

Experimental drilling was conducted at Fenton Hill, to a depth of 4752 m where temperature is 320°C (610°F). Two bore holes, inclined at 35° from the vertical were drilled at a distance of 450 m from each other. Hydraulic fracturation created connection between the two holes, permitting fluid circulation which was used to recover rock heat.

During drilling operations, the temperature of the bit was lowered by water circulation : the temperature drop obtained was about 40 %. There was no bit problem due to the temperature.

The problems which LANL had to solve were mostly related to cementing and to motor dynamic seals.

From their experience, LANL engineers have learnt that :

. three types of insulation materials can be used for the logging cable :

TELFZEL	with a max.	temp. of	220°C
PFA	-	-	260°C
TFE	-	-	350°C
MgO sheath	-	- up to	800°C

. One of the most critical components of the downhole instrument package is the cable head which provides the downhole termination of the EM cable (7 conductors).

. The maximum temperature for electronics is 300°C with no cooling, but only if special components are used.

. a variety of high temperature instruments has been developped by LANL, USGS, LBL and JAPEX. Their properties are shown in a document distributed at the meeting by K. MANCHESTER and enclosed in appendix to this report.

4.2. IFP experience

Guy BARON (IFP) presented his experience in geothermal drilling, gained at SAN VITO (Italy). The depth was 2500 m and the max. temperature 419°C. Forced water circulation was used to lower temperature and allow logging. When the circulation was stopped, the temperature rose slowly as a function of time (283°C after 10 hours and 300°C after 42 hours). With forced circulation it was possible to log with standard instruments, but high temperature mud was needed.
Then G. BARON described the SIMPHOR system which is an horizontal well logging system.
Progress has to be made in cementing and in thermal protection of tools and instruments.

4.3. What are the ODP problems ?

They are well described in a paper from A. Mc LERRAN. In fact, in hole 504 B, the max. temperature was 180°C. If drilling in basalt were successful enough to reach 500 meters, the temperature would be 230°C. In the East Pacific, it is possible to meet temperatures of 400 to 500°C.

4.4. Discussion was then focused on all the problems listed in A. Mc LERRAN report.

. Core liners
  No problem if they are made out of steel.

. Tool joints
  Space industry is knowledgeable and TAMU has to contact them.

. SH_2 corrosive effects
  B. DENNIS will investigate the best dynamic seals.

. Bits
  No problem for drilling, but for coring, R&D on adapted bits is necessary.

. Stress and hole convergence
  Do not appear to be affected by temperature

. Vapor blow out
  To assess the probability of such an event, the best way will be to use a computer modele of the heat transfer processes.

In the interest of the program, a list of the components used with their temperature limits has to be established.

V. Visit of the ship "JOIDES RESOLUTION"

After visiting the drill ship, the general feeling of TEDCOM members is that she is "perfect". As far as the design and construction of the ship and the drilling equipment are concerned, it is difficult to envisage any major improvement. Drilling is as robotized as possible and everything looks better and works faster than on the GLOMAR CHALLENGER.

The staff looks very knowledgeable. Ship labour is mainly composed of TCN (Third World Countries Nationals), who are as skilled as any others.

However, as far as the laboratories are concerned, efficiency could still be improved, especially XRF (X-RAY fluorescence meter) and XRD (X-Ray diffractometer). The SCM (Supra Conductivity Magnetometer) is now working, but with some liquid nitrogen consumption problems.

Maintening ship's paintwork costs $ 10,000 a month.

To minimize the consequences of component failures, SEDCO is making a study to know which ones should be stocked on the ship. Another study, of the probability of pipe failure (drill string pipe), is in progress.

BHA (Bottom Hole Assemblies) are controlled regularly to make sure that there are no cracks.

VI. Riser drilling session

Roger LARSON introduced the session by trying to identify the actual problems to be solved. Indeed what are the ODP priorities ? They are different, according to each participating nation and to each group of scientists. Everyone is concerned by the time spent by others on other priorities. If riser drilling is technically and financially possible on some sites corresponding to defined scientific or national priorities, the time needed for such operation could be unacceptable for the other groups if it is too long. Thus, Roger asked TEDCOM to define the boundary time conditions for riser drilling in specific situations (technical, geological, etc.) ?

Then three papers were presented by French oil industry engineers who had participated in the Deep Drilling Program in the Mediterranean Sea (5 700 fsw) in 1982-1983.

6.1. Presentation by Ch. SPARKS (IFP) "Riser Problems"

Charles SPARKS explained that deepwater riser problems can be separated into three groups, depending on whether the riser is connected, in the process of disconnection or hung off the drillship.

Problems associated with the connected riser are the simplest to understand. As water depth increases, static circumferential stresses in the lower riser increase due to differential pressure induced by mud weight. Likewise the top tension, required to maintain the riser profile close to the vertical and to compensate for riser mud weight, increases. This means increased tensioner capacity must be provided. Since tensioners have internal stiffness which is non-negligible, ship heave induces fluctuating axial tension in a riser, which is the principal source of fatigue damage.

Disconnecting a mud-filled riser can be dangerous as the riser accelerates upwards under the effect of the top tension. Recoil preventers have been developed to control this. In the FMP 3000 study, it was proposed to fit the riser with a value at its lower end to control the mud escaping from the disconnected riser and thus limit vertical acceleration.

When a riser is suspended from a drillship, the principal problems are relative angular movement with possible contact between the ship and riser, longitudinal resonance and axial dynamic stresses. To design a system to prevent contact between the riser and moonpool, as SHELL did on the SEVEN SEAS for their world record drillings in 83-84, is complicated and expensive. In the FMP 3000 study, it was calculated that the risk was small and acceptable, in Mediterranean conditions.

It is not clear at what period axial resonance becomes a real problem. This depends largely on the drillship heave transfer function at short periods and on the natural damping in the riser system. Studies carried out by IFP in 1980-81 suggested that risers of up to 3,000 m long, with natural periods of 5 seconds or less, should not resonate when hung off large drillships. It was not possible to say at what period resonance would begin to be a serious problem.

When a long riser is hung off a drillship in storm conditions, axial dynamic stresses are real and large. Fluctuations of 130-380 tonnes were measured in the deep water Mediterranean campaign when 1,200 m of riser were hung off in a storm. Such dynamic loads can be reduced and natural periods shortened by reducing the mass of the riser. This can be done by using new, lightweight materials.

One serious further problem for deepwater risers is that of storage on the deck of the drillship. It is clear that there is no room to store a drilling riser on the "Joides Resolution" in her present state.

6.2. Presentation by P. ODRU (IFP) : "Light materials for risers"

New composite materials bring interesting prospects. A riser entirely made of FRP (fiber reinforced plastics) is not feasible yet, but FRP Choke and Kill lines exist already and the gain in weight is significant (600 tons with a steel riser and composite lines compared to the same riser with steel lines for a 2000 meters drilling capability). For a constant weight, drilling capability can be increased from 2000 to 2500 meters. Use of titanium can also be considered and the figures are shown on this table :

Kill and Choke lines	Riser	Weight in tons
steel	steel	2200
composite	steel	1600
titanium	titanium	700
composite	titanium	650

6.3. Presentation by A. SCHAWANN (ELF) : "Riser instrumentation"

During the two deep drilling operations (1982-1983), risers have been instrumented and data recorded. From the 60 hours of data which have been processed, it is possible to know the typical bending moment distribution and the extreme top tension distribution.

The first conclusions are that the behaviour of the tensioners can be critical and that it is necessary to precisely characterize the transfer function of the riser.

6.4. Why a riser ?

The discussion came back to the very reason of riser drilling in ODP. ODP goal is not to get oil, and everything is done to avoid such eventuality. Blow-out risks are very low, since drilling is stopped as soon as methane traces are noticed. But in many instances, it is necessary to be able to control an upward flow. In other instances, it would be useful to increase the pressure, specially in very deep holes (problems of hole stability).

In these cases, mud drilling will be the only answer, and the question will be "how to use mud without a riser ?" Several solutions are proposed :

a) To use mud stored on the seafloor in an underwater "pillow" tank, and to use also a double-walled "concord" pipe, to minimize the quantity of mud : mud is used for its weight and cuttings are removed through the water flow inside the two-walled pipe. Concord pipes have been used for 20 years in the large diameter wells of the nuclear test sites to reduce the pipe weight ; steel could be used outside and FRP inside.

b) To use a flexible "on the shelf" mud hose

6.5. If using a riser looks necessary in some areas, and that the time needed for riser operation is not compatible with ODP general schedule, B. HARDING suggests to use a second ship, in charge of launching and retrieving the riser (two time-consuming operations). JOIDES RESOLUTION crew would have only to connect and disconnect the riser. Problems related to available space on board would be solved at the same time.

6.6. Roger LARSON thought that the program needed more the TEDCOM members to find new and specific solutions, rather than to propose the heavy oil industry "grocery" used in riser drilling.

VII. CONCLUSIONS

What is the time frame ? And what are the steps ?

In any event, the JOIDES RESOLUTION agenda is already fixed until 1990 ; thus 1991 is the earliest that high temperature drilling and riser drilling may be needed. But planning of the 1990's will take place before, and the planners need to know what will be the possible solutions.

In 1987, a second COSOD conference will take place, in which scientists will discuss the priorities of the next decade. It is necessary to know, for this conference, the answers to the following questions, regarding high temperature and riser drilling technologies.

1) What would be possible, using the state of the art and the "on the shelf" equipment ?

2) What would be possible using modified "on the shelf" technology, assuming that the program is not able to fund R&D for entirely new drilling technology.

3) What would be the operational aspects (time needed for drilling, etc).

To answer these questions, the following is proposed :

a) at its next meeting (fall 1986), TEDCOM will organize itself to prepare three papers (or more) on :

. weight and volume involved in each solution using mud drilling.

. duration of drilling operations.

. R&D required and money involved.

b) These papers will be presented, four months later, at a technical workshop, to a large mumber of concerned scientists, to inform them about the possibilities, the consequences on the general schedule, the risks and the costs involved.

VIII. Closed session

Mr DENNIS
Mr HOCOTT
Mr JARRY
Mr KASAHARA
Mr LAMB
Mr MANCHESTER
Mr MARX
Mr SCHUH

In this 2 hours session, TEDCOM members tried to establish the conclusions of the open meeting.

8.1. TEDCOM goals

Members think that TEDCOM main goal is to help TAMU Engineering and Drilling Operations (EDO) group to fulfill the ODP science objectives.

Since these objectives have to be translated in engineering terms, which is EDO job, and since they are to be dealt with in a time and money frame, a secondary goal of TEDCOM is to bring back to PLACOM and NSF, information about the feasibility of these science objectives and what are the trade-off if any. In other words, TEDCOM secondary goal would be to help PLACOM to redefine some science objectives when it appears that they are not reachable without major alterations of the planning or major budget increases.

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Most TEDCOM members have a large experience in marine or land drilling, marine engineering, and they know well the drilling industry and services industry. They will bring all this knowledge and know-how to be shared by the EDO group. However, ODP uses specific drilling for which oil drilling equipments and methods are not always usable "as is".

Consequently, TEDCOM members think that the best way to implement their goals is to hold meetings in which EDO engineers participate.

Problems will be presented, shared, and fruitful exchanges will take place. But it is reminded that it is not TEDCOM's role to do EDO's job. A periodicity of 8 months looks quite reasonable for such meetings.

But to act efficiently, TEDCOM members need inputs. They ask to get, on a routine basis after each leg, the operational report. In fact, an abstract of these reports would be enough, but to save time and get faster this information, the operational report will be sent as is. TEDCOM members will understand better the problems and will be able to prepare the next meeting in a better way.

During the meetings, EDO will present the science objectives, the problems encountered, the approach to solve them. TEDCOM members will help, trying also to pinpoint the best world equipments, companies and experts needed for such or such particular item.

For the scientists information, the workshop procedure looks good. At the next TEDCOM meeting, TEDCOM will help EDO to preprare such a workshop on riser drilling which could take place in early 1987 during the annual Panel Chairmen meeting.

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Engineering Development tasks undertaken by EDO group are numerous, although quite diverse in volume and importance. Although EDO engineers do a very good job, it seems to TEDCOM members that their number is small, if we take into account that they spend significant time at sea, which is excellent for them to keep in touch with the actual problems.

On the other hand, R&D budget lines look very small in relation to the improvements needed on such or such tool or equipment.

All in all, it is the feeling of TEDCOM that the EDO funding (salaries + outside expenses) is inadequate, with respect to the ambitious technology goals of the Ocean Drilling Program.

8.4. Membership

Members who did not attend the Marseilles meeting will be asked if they can afford to attend the next meeting or if they want to resign and have somebody else to recommend.

Present members think that major oil companies must be represented ; EXXON, SHELL are already there.

AMOCO will be contacted. Mr SILCOX from CHEVRON has retired, but the person he has recommended has to be contacted. Mr HOCOTT wants to present a successor he has to contact first. Mr LAMB (UK) is from BP.

Mr SPARKS (IFP) who participated to the meeting would be welcome as a full member.

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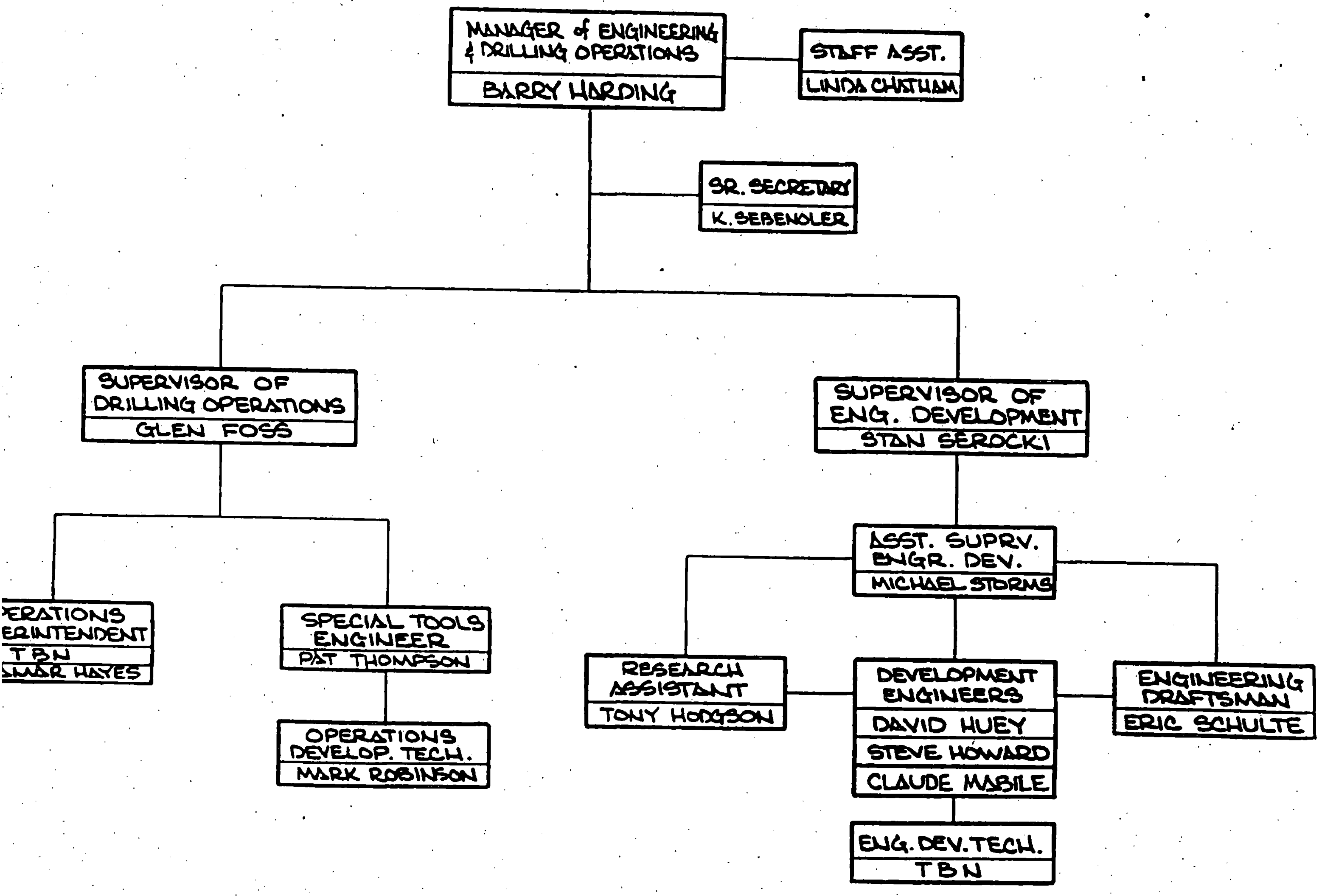

MANAGER of ENGINEERING & DRILLING OPERATIONS
BARRY HARDING
STAFF ASST.
LINDA CHATHAM
SR. SECRETARY
K. SEBENDLER
SUPERVISOR OF DRILLING OPERATIONS
GLEN FOSS
SUPERVISOR OF ENG. DEVELOPMENT
STAN SEROCKI
ERATIONS
ERINTENDENT
TBN
AMAR HAYES
SPECIAL TOOLS ENGINEER
PAT THOMPSON
OPERATIONS DEVELOP. TECH.
MARK ROBINSON
ASST. SUPRV. ENGR. DEV.
MICHAEL STORMS
RESEARCH ASSISTANT
TONY HODGSON
DEVELOPMENT ENGINEERS
DAVID HUEY
STEVE HOWARD
CLAUDE MABILE
ENGINEERING DRAFTSMAN
ERIC SCHULTE
ENG. DEV. TECH.
TBN

Figure 1

T A B L E 2

PRIORITIES ESTABLISHED AFTER THE ENGINEERING WORKSHOP
(College Station, Sept. 1985)

GROUP 1 <u>HIGHER PRIORITY</u>

- Bit development
- Heave compensation compatibility for piston coring
- Hard rock spud system
- High temperature drilling (coring adaptations)

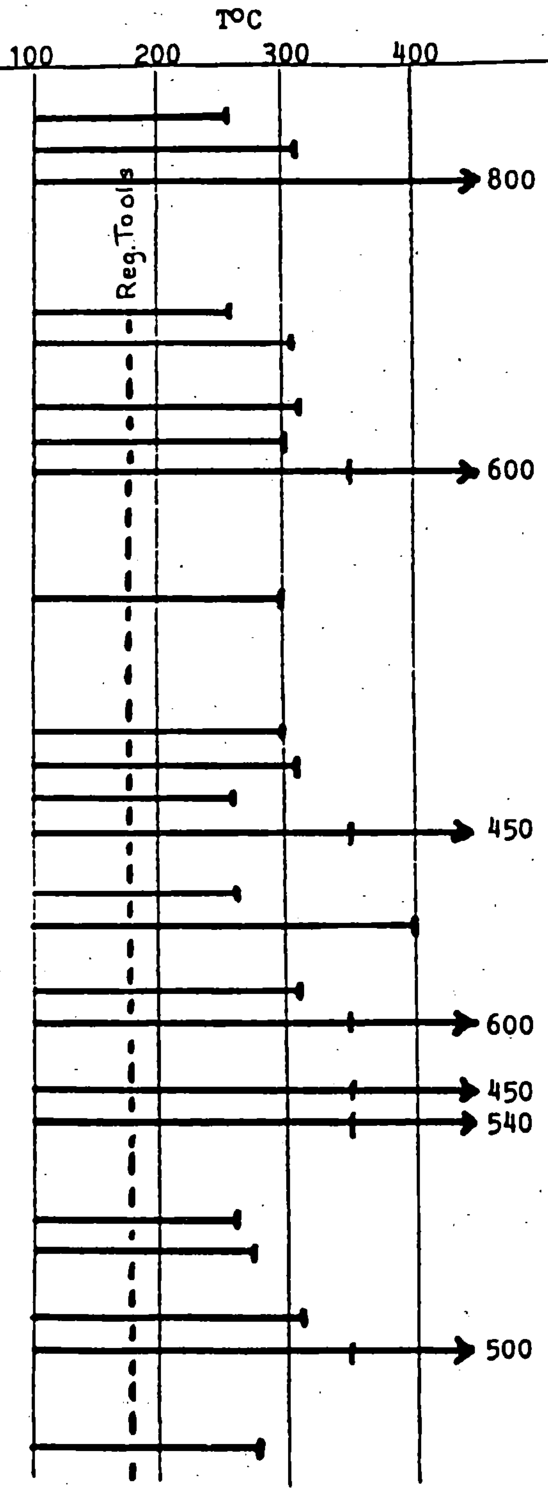
GROUP 2 <u>MEDIUM PRIORITY</u>

- Lockable flapper (flow valve)
- Drill-in casing (compatible with reentry)
- Pressure core barrels (in-situ samplers)
- Drill string dynamics
- Upgrade hydraulic bit release
- Core liner improvements.

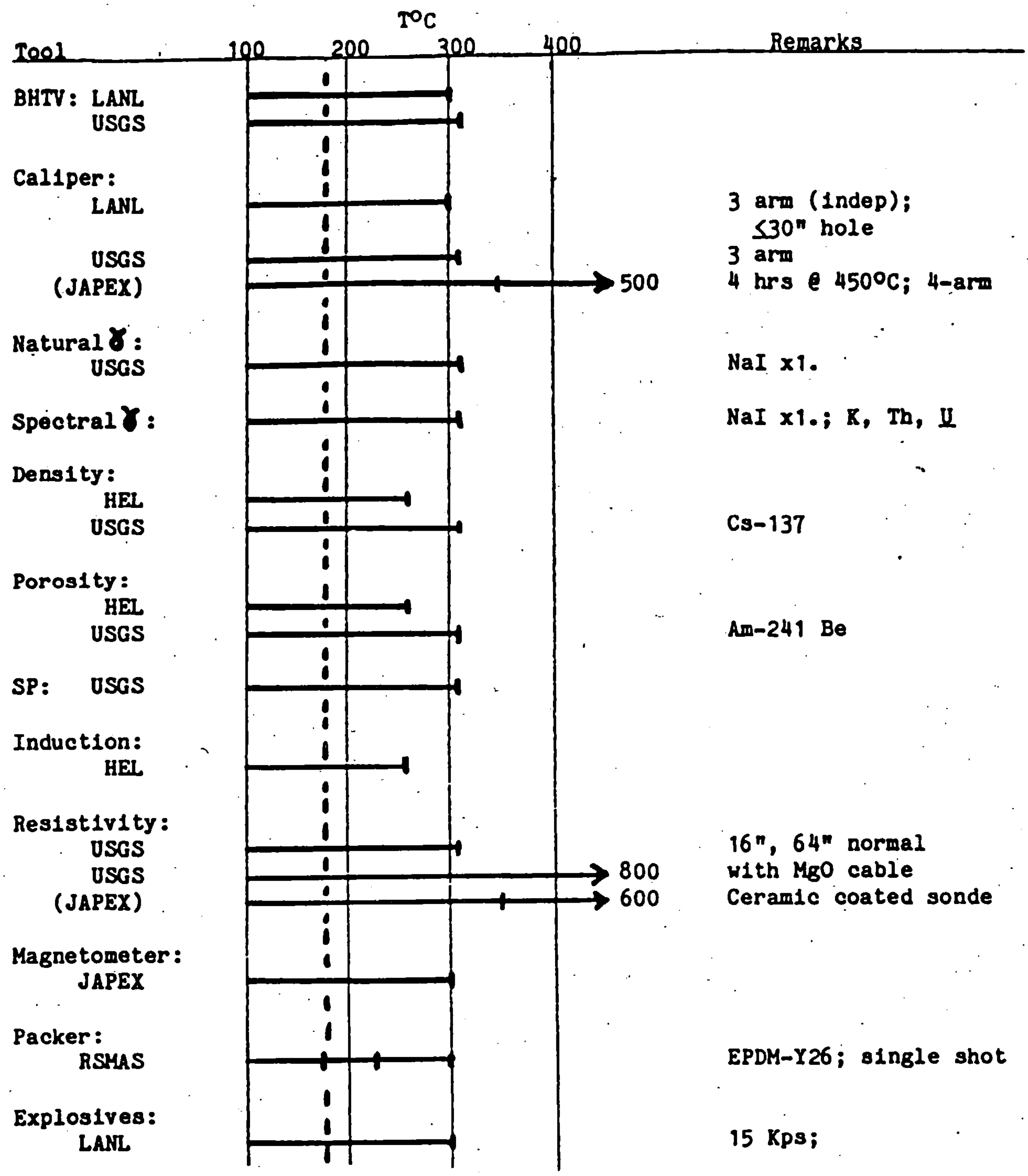
APPENDIX 3

OPERATIONAL HIGH TEMPERATURE TOOLS

$d \leq 3\text{-}1/2"$, $P \geq 7500$ psi



Tool	Remarks
Cable: PSE	
TFE	
MgO	
Flow (Impeller):	
HEL	Plus T
LANL	15 Kpsi; 10-350'/min; plus T, P
USGS	
LBL	10 Kpsi
JAPEX	4 hrs @ 450°C
Flow (Injection):	
LANL	Motor crushes NH_4Br^{82} vial; γ sensors
H_2O Sampler:	
LANL	20 Kpsi; 1x2000cc
USGS	1x500cc
LBL	1x1000cc
(JAPEX)	1 sample
T: HEL	Plus flow
LANL	Strap on; plus collar locator
USGS	RTD device
JAPEX	Pt resistance
P: JAPEX	4 hr; strain guage
(JAPEX)	4 hr @ 450°C; eddy current sensor
Sonic: HEL	
LANL	20 Kpsi; magnetostrictive, 8.5, 17 Khz
USGS	15 Khz, full wave
(JAPEX)	4 hrs @ 450°C; ferrite transducer, receiver
WST: LANL	Triaxial


T°C
Tool
100
200
300
400
Remarks
BHTV: LANL
USGS
Caliper:
LANL
3 arm (indep);
≲30" hole
USGS
3 arm
(JAPEX)
500
4 hrs @ 450°C; 4-arm
Natural γ:
USGS
NaI x1.
Spectral γ:
NaI x1.; K, Th, U
Density:
HEL
USGS
Cs-137
Porosity:
HEL
USGS
Am-241 Be
SP: USGS
Induction:
HEL
Resistivity:
USGS
16", 64" normal
USGS
800
with MgO cable
(JAPEX)
600
Ceramic coated sonde
Magnetometer:
JAPEX
Packer:
RSMAS
EPDM-Y26; single shot
Explosives:
LANL
15 Kps;

DIT/ISM1 N° 86.21

Paris, March 15, 1986

2nd TEDCOM MEETING (MARSEILLES - FEB 17-20, 1986

REPORT OF THE CLOSED SESSION

Mr DENNIS
Mr HOCOTT
Mr JARRY
Mr KASAHARA
Mr LAMB
Mr MANCHESTER
Mr MARX
Mr SCHUH

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oOo

United States Department of the Interior
GEOLOGICAL SURVEY
BOX 25046 M.S. 977
DENVER FEDERAL CENTER
DENVER, COLORADO 80225

IN REPLY REFER TO:

Office of Energy and Marine Geology
Branch of Oil and Gas Resources

RECEIVED APR 29 1986
86/345

April 25, 1986

Dr. A. E. S. Mayer
JOIDES Office
Graduate School of Oceanography
University of Rhode Island
Narragansett, RI 02882

Dear Tony:

Site LAF-0 has been reviewed by the Joides Safety Panel and is approved as proposed. After reviewing the new Leg 110 material and discussing the situation with Casey Moore, I recommend that the proposed sites LAF 1, 2, 3, 3A be considered as having JOIDES Safety Panel Approval even though the sites are not located on crossing seismic lines.

The changes in location for these sites appear to be primarily due to the revised navigation for line CEPM 128, with some minor fine-tuning of the locations (especially LAF 1). In terms of the geologic settings for sites LAF 1-3A as reviewed at our meeting in Paris, the new locations do not constitute a safety problem in the sense of being a significant departure from the approved locations. However, the sites are not located at crossing seismic lines, as was originally believed.

Under ordinary circumstances, failure to locate accretionary margin sites on crossing seismic lines is a safety policy problem. In view of the fact that these sediments were drilled on Leg 78A, and because of the limited depth of penetration proposed for sites LAF 3-3A (500-600 m), the safety requirement for crossing seismic lines is less important than drilling in the geologic setting that was reviewed and approved by the Safety Panel. My understanding of the location discrepancies is summarized in an attachment to this letter.

Location uncertainty and change at all stages of the planning process continues to be a problem. The quality of safety advice is diminished by conducting too much of the review process outside of the formal Safety Panel meetings.

Sincerely,

George

George E. Claypool, Chairman
JOIDES Pollution Prevention
and Safety Panel

Copies to: JOIDES Safety Panel
L. Garrison
C. Brenner

Attachment

Summary of apparent location changes for proposed sites, ODP Leg 110

LAF 3 Site approved was SP 1170 on line CEPM 128, at intersection with crossline CRV 001. The revised navigation shifts line CEPM 128 about 2 km to the north. The new proposed location for LAF 3 is at SP 1150 on line CEPM 128. Because of the oblique intersection with line CRV 001, the new location is about 2 km west of the crossing seismic line.

LAF 3A Site approved was SP 930 on line CEPM 128, at intersection with crossline A3. The new proposed location for LAF 3 is at SP 905 on CEPM 128. The new location is now about 2 km west of the crossing line.

LAF 2 Site approved was SP 630 on line CEPM 128, at intersection with crossline A1D. The new location is at SP 610 on line CEPM 128, about 1 km north of the sub-parallel crossing line A1D.

LAF 1 Site approved was SP 410 on line CEPM 128, at intersection with crossline A1E. The new location is at SP 390 on line CEPM 128, about 1 km east of the crossing line.

JOIDES PLANNING COMMITTEE

SHORT-TERM PLANNING

Leg 111 (co-chiefs Becker and Sakai)

1. At its January meeting, PCOM agreed that Leg 111 should be "primarily devoted to the deepening and logging of DSDP Hole 504B." However, should "substantial" progress be made in drilling ODP Hole 648B on Leg 109, PCOM would consider devoting Leg 111 to a third leg on the MAR site. PCOM also recommended that up to 5 days of Leg 111 at 504B be devoted to drilling APC/XCB holes for geochemical and palaeoenvironmental objectives.

2. LITHP recommends devoting Leg 111 to 504B regardless of the level of progress at 648B on Leg 109.

3. SOHP recommends a double APC to refusal at the site of a downwelling limb and in water no deeper than site 504B possibly near site 505. This APC site can address both palaeoenvironmental and geochemical objectives. SOHP also recommends a double APC at site 504B to a depth of 100m. These recommendations should be able to be accommodated within the 3 days allocated by PCOM.

4. LITHP has recommended a back-up program of shallow crustal holes around 504B (Mottle proposal) and testing unsupported bare rock spud-in on the nearby Galapagos spreading center.

5. PCOM agreed to a downhole measurements program as recommended by DMP which included one day for a VSP experiment. Phillips, who will run the experiment, asks for a minimum of 2 days.

6. **PCOM is asked to:**
   i. Confirm deepening 504B as the prime Leg 111 objective
   ii. Approve the SOHP recommendation
   iii. Approve the LITHP back-up recommendation
   iv. Confirm the DMP recommendations with one day for a VSP experiment.

Leg 112 (co-chiefs Suess and von Huene)

1. In January, PCOM asked panels for a further evaluation of this leg.

2. TECP comments are to endorse sites 3 and 6 or 7 on the southern transect and sites 14 and 17 on the Yaquina Basin transect. von Huene is to develop alternate back-up sites on Peru 3 line (most northerly transect) which were not in the original proposal.

3. CEPAC endorsed Sites 1-5, 7, and 9-13 as primary sites and sites 6, 8, and 14-17 as the secondary targets. CEPAC also endorsed the

von Huene northerly alternatives but expressed concern that transit to the latter would eat into drilling time (see CEPAC "watchdog" report).

4. SOHP recommended a series of upper slope sites in priority order (based on a proposal by Suess). These are: 3, 1, 5, 3A, 2, 2A, 4A, 4B, 10, 11, and 9. SOHP has reiterated its view that the palaeoceanographic objectives of Leg 112 are amongst its highest priority global objectives. SOHP has also recommended that von Huene consider a site seaward of the Peru Trench as a reference section for the Nazca plate.

5. SSP commented that data for the tectonic objectives arrived at the Databank late and in disarray making assessment difficult. The data package for the upper slope (palaeoenvironment) sites available before the SSP meeting was totally unsatisfactory. Data were provided to the SSP at its meeting by an OSU representative. Data are generally adequate for the tectonic objectives and for the upper slope objectives. OSU has been asked to pass the relevant upper slope data to the Databank as soon as possible.

   Site 3 which is the highest priority for both sets of objectives has data adequate for both scientific perspectives. It is not on a MCS crossing and there may be some concern by the Safety Panel regarding deep penetration.

   SSP approved the remaining palaeoenvironment sites but asked for a crossing SCS survey by Resolution to finalize site selection taking into account structural complexity shown in supporting data. It was noted that shallow water sites may present a technical difficulty. SSP approved the remaining tectonic site data adequacy.

6. von Huene is away until the end of July surveying the northern transect and Suess is on sabbatical in Europe. A full safety review will be needed in August, which is already very late in the planning process.

7. Clearance is being requested from the Peruvian government which is asking for 5 berths assigned to its observers. Final clearance is dependent on the final drilling plan.

8. PCOM is asked to:
   i. Approve a final drilling plan for Leg 112 including priorities and a division of time between palaeoenvironmental and tectonic objectives to avoid potential conflict (also to delineate back-up options).
   ii. Note the possible safety problem on prime site 3.
   iii. Agree to a safety review in August and to changes which may be required by the Safety Panel.

<u>Legs 113/114</u>

1. Co-chiefs for 113 are Barker and Kennett and for 114 are Ciesielski and LaBrecque.

2. PCOM has agreed that W10 should be a contingency site for site W4; that Weddell Sea sites are of higher priority than South Atlantic Sub-Antarctic and Leg 114 should act as a back-up for the Weddell Sea if circumstances are unfavorable on Leg 113; and that a logging program should be included on Leg 113.

3. A recent proposal from Hinz et al. lists a series of 14 alternatives to sites W4 and W5. Comments from SOP and SOHP are not available at this time.

4. SOP priorities for Leg 113 are:
W1 and W2 (Maud Rise), W4 (Caird Coast), W6-8 (South Orkneys), W5 (Weddell Sea) with W10/W11 as back-ups.

   SOHP priorities for Leg 113 are:
W1 and W2, W4, W10, W7, W5, W6, W8 and then the SA sites in priority order: SA8, SA2, SA3, SA5W.

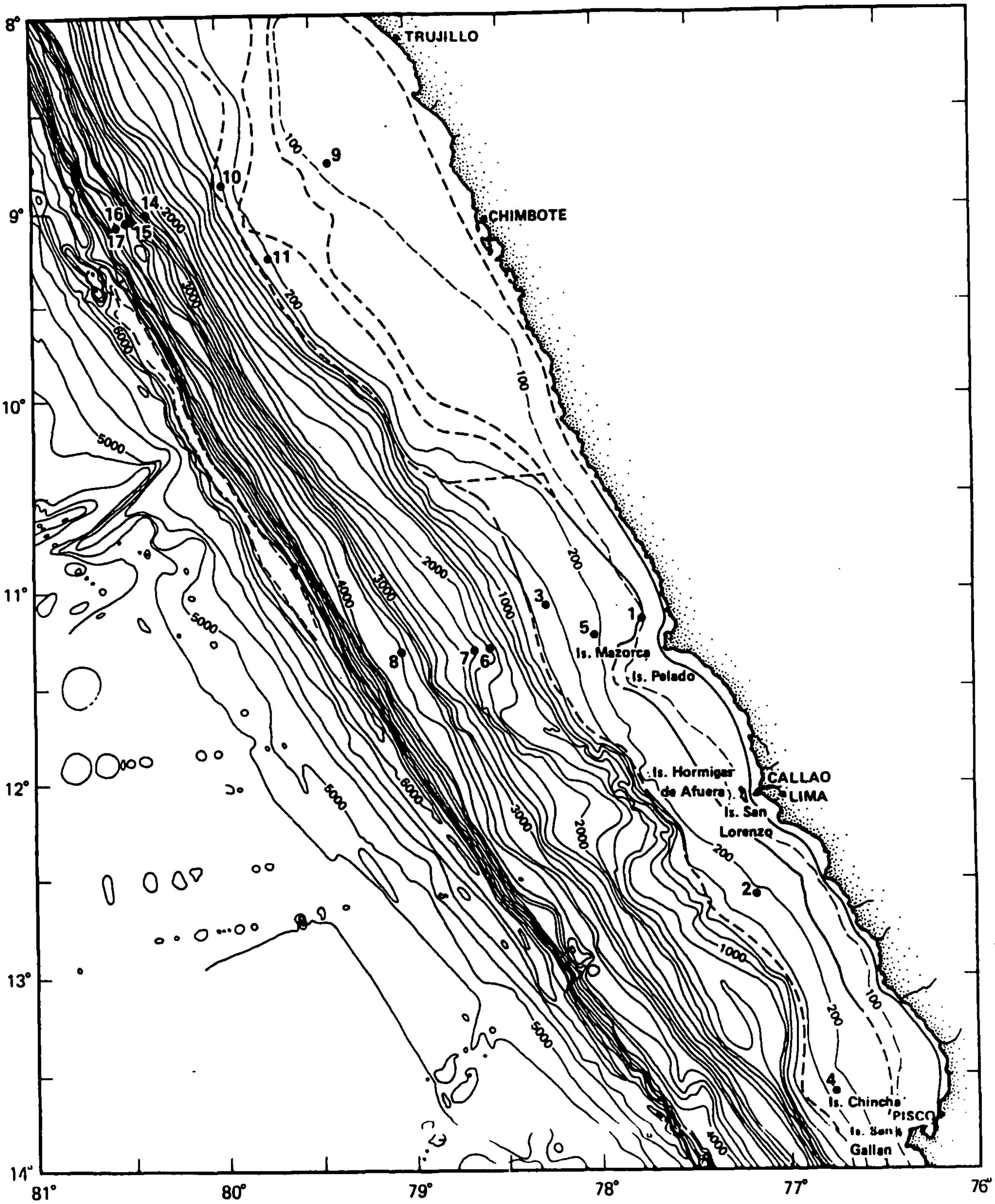
   SSP comments that data are generally adequate except for sites W3 and W9 which are not adequate.

   Recent SOP recommendations are not available at the time of writing.

5. For Leg 114, SSP comments that data will not be available for either SSP or PPSP assessment until early December 1986 for a cruise starting in March 1987. Without these LaBrecque site survey cruises on <u>Polar Duke</u> and <u>Conrad</u>, there is a paucity of site survey data which are not well documented.

6. **PCOM is asked to:**
   i. Treat Legs 113/114 as a combined operation and recommend that all four co-chiefs are involved in the pre-cruise meetings
   ii. Confirm the priority of Weddell Sea sites over South Atlantic Sub-Antarctic sites and decide on the priority order for sites on Leg 113
   iii. Note the late SSP and PPSP reviews in December 1986

A.E.S.M.
May 1986



Location map of proposed Leg 112 sites.

JOIDES PLANNING COMMITTEE

MEDIUM-TERM PLANNING (INDIAN OCEAN)

a. Introduction:

Following the January PCOM meeting, the tentative Indian Ocean schedule is as follows:

1987	May/June	SW Indian Ocean Ridge (SWIR)
	Jul/Aug	Red Sea
	Sept/Oct	Neogene Package
	Nov/Dec	Kerguelen I
	Jan/Feb	Kerguelen II including Prydz Bay
	Mar/Apr	Broken Ridge/Southern 90°E ridge
	May/June	Northern 90°E Ridge/Intraplate Deformation
	Jul/Aug	Argo/Exmouth

At this meeting, PCOM agreed to the options of Somali Basin deep stratigraphic test, Makran; and a Neogene II package to be considered as alternatives to SWIR (should the site survey not be funded) and the Red Sea (in view of political and security problems).

PCOM also agreed to the prospect that an early exit from the Indian Ocean should be considered.

Mascarene Plateau and Otway Basin programs were not specifically eliminated at this stage but are of lower priority than the above program and alternatives.

b. Western Indian Ocean:

SWIR:

1. IOP placed SWIR as a high priority to be combined with the Mascarene basin (fossil ridge). The latter was specifically deleted from the program by PCOM (January 1986).

2. LITHP recommends an entire leg to devoted to SWIR and asked the various proponents to prepare a revised an coordinated proposal (Attachment 1).

3. TECP favoured replacing SWIR by CIR fracture zone drilling if it could not be drilled but placed a high-priority on SWIR.

4. SSP noted that site surveys are funded and data will be available in November. SSP asked specifically for 3.5 KHz data to be included.

Red Sea:

1. IOP has this as a high priority as does LITHP which has put a high priority on drilling hydrothermal systems there and considers Red Sea drilling its highest Indian Ocean priority. TECP views Red Sea as a prime site to study the nature of "transitional crust." SOHP rates Somali Basin and Neogene Package higher priority than Red Sea.

2. TECP has proposed that Makran should replace Red Sea, if the latter is untenable. SOHP favours Somali Basin and Neogene Package II as alternates. All three thematic panels recommend an early exit from the Indian Ocean if alternatives to Red Sea drilling are not viable.

3. SSP has identified gaps in site survey data. These may be filled by Darwin surveys (if clearances are forthcoming) and by attempting to access data held in Italy, France, etc. and by the Red Sea Commission.

4. EXCOM considered the political/security problems of operating in the Red Sea. No significant advice was given to PCOM other than to defer a decision for 6 months.

Neogene Package I:

1. IOP and SOHP rate this as a very high priority. It is clear that there is insufficient time to complete all targets in one leg. SOHP put the Oman Margin/Indus Cone transect (6 sites) as the highest priority with the Gulf of Aden site (principally for hominid evolution) as the next highest priority. The two hominid sites (Gulf of Aden and East African coast) may not be drilled on this leg and would fall into Neogene II.

2. SSP noted that all necessary data will be obtained for the high priority transect using Conrad, Darwin, M. Dufresne, and Sonne during 1986 and January/February 1987. SSP will review this data a.s.a.p. after it is obtained.

Neogene Package II:

1. PCOM suggested a possible Neogene Package II as an alternative to the Red Sea leg.

2. A proposal from Prell for Neogene carbonate sites (Attachment 2) has been received which amounts to 11 days drilling. It is assumed that this leg would also include Mascarene Plateau sites and the hominid sites from Neogene Package I.

3. IOP has not commented on the Prell proposal (next meeting July 86), but did include Mascarene Plateau on its recommended list of targets. SOHP ranks Neogene Package II below the Somali Basin deep hole proposal, but above 90°E ridge drilling.

4. SSP was unable to comment on the Prell proposal which was not available. Site survey for the Mascarene Plateau sites will be obtained from Darwin in March 1987.

Somali Basin Deep Stratigraphic Test:

1. PCOM agreed in January to include Somali Basin DST as a possible alternative to Red Sea or SWIR drilling.

2. SOHP ranks Somali Basin DST as its highest priority in the Indian Ocean after the Kerguelen/Antarctic transect. The proposed site (DST-1) requires a total penetration of 2.6 kms is a water depth of 4300 m. The alternative hole is DSDP-241 which would require an approx. 3.5 kms penetration and 2 legs of drilling.

The JOI Performance Evaluation Committee has recommended a deep test hole early in the program and the Science Operator is also keen to attempt a deep hole at this stage.

3. SSP recommends crossing MCS lines as essential for DST-1, which would then tie in with existing MCS data in the area to give a regional perspective, together with good velocity information and geotechnical data for re-entry. The only prospect for obtaining this data appears to be from M. Dufresne and discussions are underway between the JOIDES Office and R. Schlich. DSDP-241 is an existing MCS cross-lines.

Makran:

1. PCOM agreed in January to include Makran as a possible alternative for Red Sea drilling.

2. TECP has rated Makran as the alternative to Red Sea drilling. IOP did not include Makran in its list of proposed legs (December 1986). A summary of the Makran drilling is given in Attachment 3.

3. SSP noted that there is existing MCS data for near shore sites and that Darwin will complete a site survey cruise in November 1986. Processed MCS data would be available post-drilling but SCS will be available prior to drilling. This is adequate as only relatively shallow penetration is proposed.

Western Indian Ocean summary:

PCOM is asked to:

i. confirm SWIR as a full leg at the start of the Indian Ocean campaign.

ii. decide whether to include the Red Sea drilling in the schedule

iii. decide, if the Red Sea drilling is deleted or this decision is deferred, which alternative (Somali Basin DST; Neogene Package II; Makran) is to be included in the schedule.

iv. confirm Neogene I as outlined.

PCOM is also asked to note that thematic panels recommend that if the Red Sea is deleted and none of the alternatives are included, then Resolution should exit the Indian Ocean earlier than originally planned.

c. Kerguelen I and II:

1. PCOM has agreed to include two Kerguelen legs in the schedule with re-supply at La Reunion. In January, PCOM agreed that the Prydz Bay objectives and the tectonic basement objectives are the highest priorities for these two legs.

2. For Kerguelen-I, IOP has suggested three sites in the northern sector (KHP 1, 3, with 4 as the alternate site, and 5). This would allow for penetration to basement, which is strongly endorsed by TECP. SOHP puts KHP 1 and 3 as high priority sites and has proposed an additional deep water site S8B to the NNE of Kerguelen (on the flanks of SEIR) to complete its latitudinal and depth transects. It should be noted that SOHP views Kerguelen and Prydz Bay as forming a single latitudinal and depth transect. Drilling of the three KHP sites amounts to some 35 days which with S8B and transit would fully occupy one leg.

3. Kerguelen-II has as its highest SOHP and SOP priorities a transect across the Antarctic margin at Prydz Bay formed by sites K1-4. The latitudinal transect would be completed by sites KP12A (K5), KP6, and 10 (K12 and K7), and KP11 (K11). IOP recommends sites KP2 in the central part of the plateau with sites KP10, KP12, KP5, KP6, and KP11. There seems sufficient overlap of panel priorities to produce a leg consisting of Prydz Bay plus the central and southern sites. A watchdog summary of the Prydz Bay objectives (prepared by SOP) forms Attachment 4.

4. It should be noted that exact site locations may change as a result of SOP and IOP reviews of reprocessed Australian data and a recent French site survey.

5. SSP considers data to be generally adequate but these data should be deposited in the Databank.

6. PCOM is asked to:

i. confirm two Kerguelen legs with tectonic and paleoenvironmental objectives.

ii. consider linking the co-chiefs in a similar way to Legs 106/109 and that proposed for Legs 113/114 as weather conditions may result in adjustments to the drilling plan.

iii. note that sites may be revised for the southern sector of the plateau following review of site survey data.

d. <u>Eastern Indian Ocean:</u>

Broken Ridge/Southern 90°E Ridge:

1. TECP ranked drilling on both of these ridges behind the Makran; intraplate deformation; SWIR and the Bengal/Indus fans proposals but ahead of other proposals in the Indian Ocean. LITHP has a high priority for hot spot trace drilling on 90°E Ridge which is placed second only to Red Sea in LITHP priorities. SOHP places 90°E Ridge below Prydz Bay-S. Kerguelen transect; Neogene I; Somali Basin DST; N. Kerguelen-SEIR and Argo/Exmouth in priority although it provides a useful latitudinal transect. IOP ranks both areas of sufficient priority to include in the proposed drilling schedule.

2. SSP notes that site surveys are in hand for Broken Ridge. Proposals to survey southern 90°E are being discussed between Weissel, Sclater and NSF. IF positive, then site surveys will be obtained.

Northern 90°E Ridge/Intraplate Deformation:

1. See above for comments on 90°E Ridge.

2. TECP rates intraplate deformation studies of high priority and this proposal is supported by IOP.

3. SSP comments that site surveys are funded for both northern 90°E Ridge and intraplate deformation. SSP has advised bottom-navigated heat flow as a desirable part of the site survey.

Argo/Exmouth:

1. This proposal ranks highly for both TECP and SOHP and is strongly supported by IOP. IOP proposed four high priority sites (one in the Argo Abyssal Plain; one in each of the northern, central and western parts of the Exmouth Plateau). These high priority sites would take an estimated 50 days drilling time. Low priority sites amount to an estimated further leg's drilling.

2. SOHP supports Argo/Exmouth as part of its worldwide proposal for deep reference sites. Argo/Exmouth is ranked above Neogene-II and 90°E Ridge in order to obtain a complete stratigraphic section of the Indian Ocean basin should the Somali Basin proposal not be accepted.

3. SSP notes that there is more than adequate site survey data to meet the scientific objectives. However, it is also noted that the pre-review assessment by PPSP indicates that the proposed Exmouth Plateau sites are unlikely to receive safety clearance. The proponents are currently investigating possible alternative sites.

Eastern Indian Ocean summary -

PCOM is asked to:

i. note the recommendations of the panels with respect to the proposed drilling legs.

ii. confirm (or otherwise) their inclusion in the schedule, pending site surveys being successfully completed.

iii. note the potentially very difficult safety problem with Argo/Exmouth drilling and to decide whether to include an alternative or to recommend an early exit of the Indian Ocean should this leg prove impossible to carry out.

A.E.S.M.
May 1986

86/388 Attachment 1

Extracts from:-

Ocean Drilling Program
Preliminary Cruise Prospectus

Leg 115

FRACTURE ZONE DRILLING ON THE SW INDIAN RIDGE

Co-proponents:

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May 1, 1986

INTRODUCTION

This is a preliminary prospectus for fracture zone drilling at a large relief fracture zone on the SW Indian Ridge, which presents an integrated drilling program based on the separate proposals for this drilling by Henry Dick, Ralph Stephen and Richard Von Herzen which were formally submitted to the Ocean Drilling Program. Additional material has been drawn from the recent related proposal for fracture zone drilling on the Central Indian Ridge by James Natland and Robert Fisher. It has been drawn up at the request of the Ocean Lithosphere Panel by four of these separate proponents, who met for 3 days in Woods Hole on April 27-29, 1986.

GENERAL OBJECTIVES

The drilling objectives make the necessary combination of those for fracture zone drilling in general with the specific attributes of the very-slowly spreading Southwest Indian Ridge (Fig. 1b). The SW Indian Ridge is the slowest spreading accessible end-member for the development of ocean crust and fracture zones of the worlds major ocean ridges. These characteristics include the highest density of large relief fracture zones with the greatest abundance of ultramafic rocks dredged from the fracture zone system of any ocean ridge system in the world.

Detailed seismic refraction measurements in some fracture zones show that the crustal thickness is considerably thinner (5% or less) than for normal ocean crust, especially at the deep nodal basin near the intersection with the ridge axis. Rocks dredged from slow-spreading ridge fracture zones are

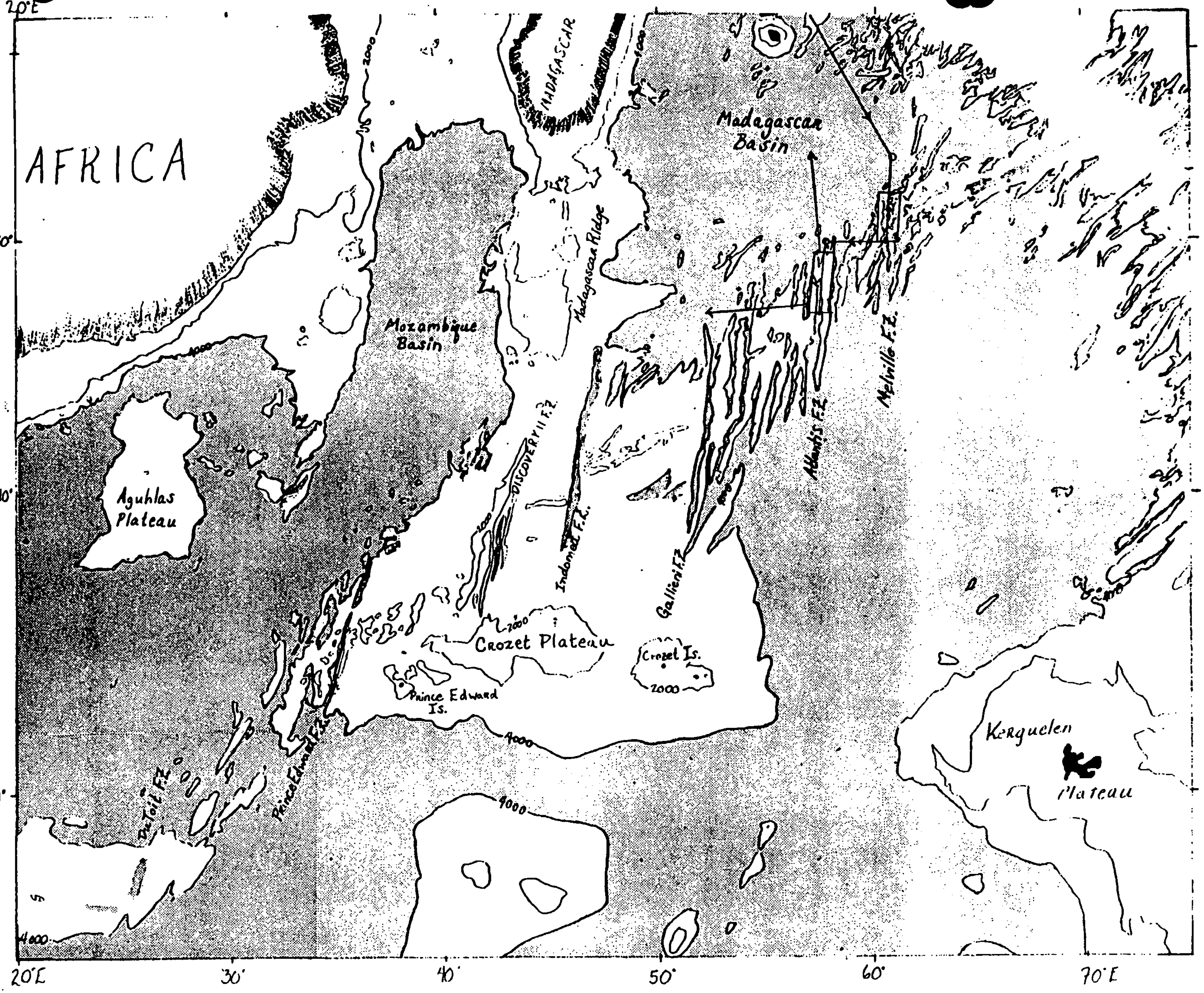

AFRICA
MADAGASCAR
Madagascan Basin
Mozambique Basin
Madagascar Ridge
Aguhlas Plateau
DISCOVERY II F.Z.
Indomed F.Z.
Gallieni F.Z.
Atlantis F.Z.
Melville F.Z.
Crozet Plateau
Crozet Is.
Prince Edward Is.
Prince Edward F.Z.
Du Toit F.Z.
Kerguelen Plateau
2000
4000
20°E
30°
40°
50°
60°
70°E

Figure 1b

commonly altered mantle peridotites. The fracture zones of the SW Indian Ridge represents an extreme end of this spectrum, with altered peridotites constituting over 65% of all the rock recovered in dredge hauls from the 9 fracture zones for which detailed statistics have been collected This abundance of peridotite contrasts sharply to that for typical slow spreading ridge fracture zones where approximately 10 to 15% of the rock recovered is altered peridotite and the fast-spreading East Pacific Rise where it is nearly absent. The very-slow spreading SW Indian Ridge, then, represents the extreme case where little or no crust may be formed along the floor of the fracture zones, which may instead be paved with altered mantle peridotite emplaced tectonically to the sea floor. This appears to be a direct consequence of the very-slow half-spreading rate (0.86 cm/yr) for the SW Indian Ridge, providing additional evidence that ridge tectonics and the formation of ocean crust varies considerably with spreading rate. Thus drilling along the SW Indian Ridge Fracture Zones provides the best opportunity to directly drill into the oceanic mantle and a unique opportunity to examine the evolution of fracture zones at a critical tectonic end member of the development of oceanic fracture zones.

In this prospectus we present generic drilling sites selected on the basis of what is known of ridge/transform tectonics and geology as the optimum locations for drilling (Fig. 3). Final selection of specific drilling sites is deferred to after completion of the site survey which is currently scheduled for 18 Sept. to 22 Oct. 1986, since the data available then will be several orders of magnitude better than at present. Due to considerations of weather and accessibility, we have targeted either the Melville or the Atlantis II Fracture Zone for drilling (Fig. 4). At present there is far more

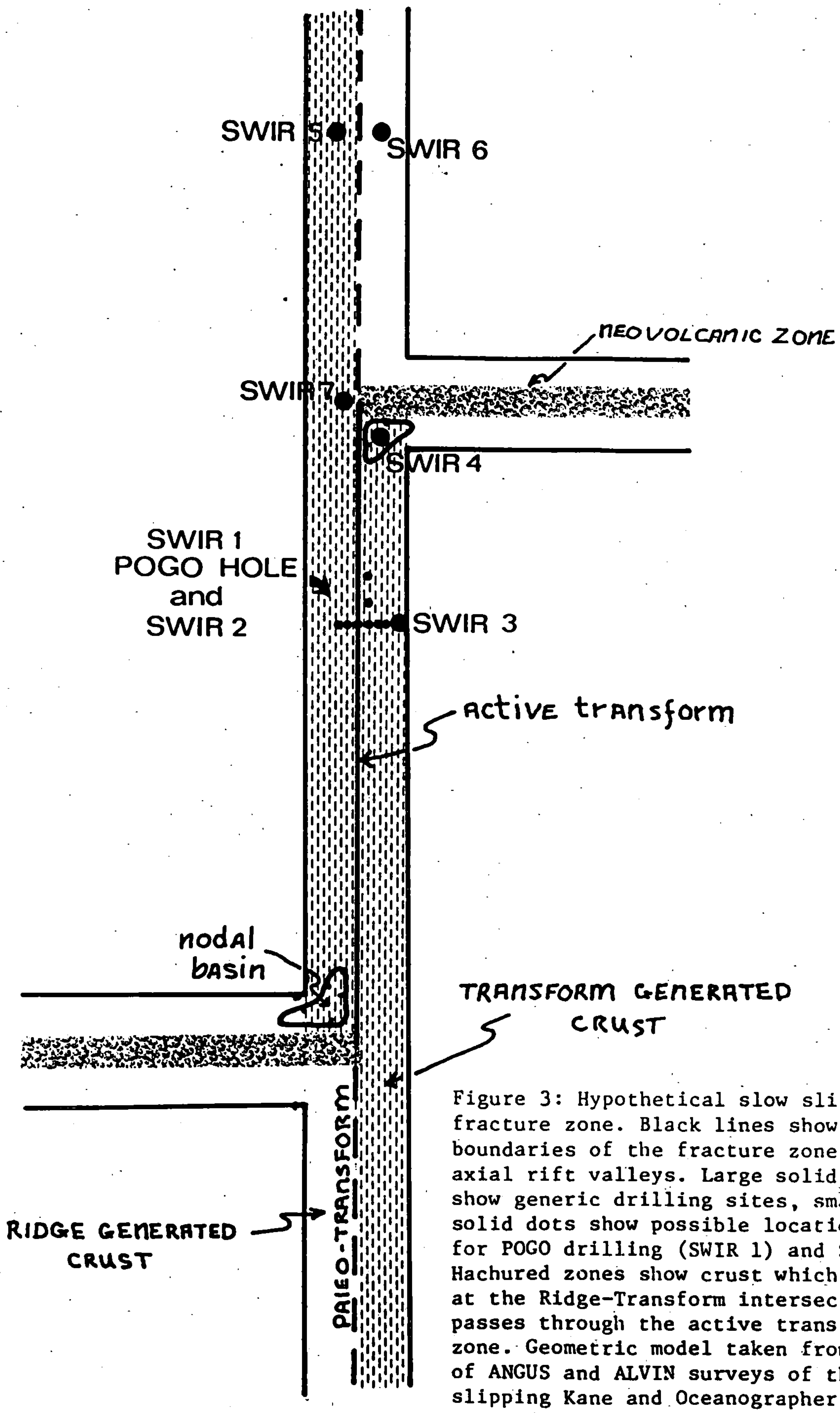


Figure 3: Hypothetical slow slipping fracture zone. Black lines show the boundaries of the fracture zone and axial rift valleys. Large solid dots show generic drilling sites, small solid dots show possible locations for POGO drilling (SWIR 1) and SWIR 2. Hachured zones show crust which originates at the Ridge-Transform intersection and passes through the active transform zone. Geometric model taken from results of ANGUS and ALVIN surveys of the slow slipping Kane and Oceanographer fracture zones (Karson and Dick 1983, 1984, OTTER 1984).

data availble for the Melville Fracture Zone, sufficient to determine that it is a reasonsble drilling target. Available seismic data for the Melville Fracture Zone indicates adequate sediment cover for drilling (30-100 m) both in localized sediment ponds on the floor of the transform and its fracture zone extensions and on sedimented benches on the adjoining transverse ridges in the areas of interest. The Atlantis II Fracture Zone, however, has substantially more relief and appears to be more representative of SW Indian Ridge Fracture Zones in general, and is accordingly the preferred drilling target [illegible].

The general objectives for fracture zone drilling on the SW Indian Ridge include obtaining long cores of petrologically related basaltic, gabbroic and ultramafic rocks in a single fracture zone to establish the vertical stratigraphy and structure of the primary lithofacies in different parts of a transform fault and its fracture zone extensions. In this manner, to establish contact relations among these principal lithofacies, and evaluate the histories of response to stress and geothermal processes at different parts of the transform fault and fracture zone. In particular the high proportion of ultramafic rocks present in dredge hauls from Southwest Indian Ridge fracture zones makes this an unparalled opportunity to evaluate the petrology, structure and physical properties of variably serpenitinized uppermost mantle. We hope to obtain fresh enough material for geochemical studies which are normally precluded by the high state of alteration and weathering of dredged peridotite (e.g. noble gas contents).

The probability of drilling directly into the mantle presents a unique opportunity to directly determine the seismic character of variably serpentinized mantle, particularly its P and S wave velocities and anisotropy, by an oblique seismic experiment in a deep hole drilled into such rocks.

In addition, the drilling may present the first opportunity to examine the thermal structure of the young ocean crust along a fracture zone floor and at its intersection with the rift valley axis. This normally cannot be done in young ocean crust due to the free circulation of water down to 300 m through open fissures and rubble zones in basaltic crust. The unusual property of a 40% volume expansion which accompanies alteration and serpentinization of mantle peridotite on the sea floor, combined with the exceptionally high reactivity of peridotite to sea water at all temperatures below 800°C, implies a very low porosity and permeability for even heavily tectonized peridotites since alteration accompanying tectonism would rapidly seal any cracks or rubble zones.

The general plan for drilling agreed upon by the proponents, thus has as a principal objective drilling a re-entry hole (using a free-fall re-entry cone) into ultramafic rocks in what we view as the most critical region of the fracture zone from a tectonic point of view - the transform fault domain. We have developed a particular strategy for testing the several possibilities for the structure of the transform floor that will allow the optimum target for this site, as outlined below. If the coring at the re-entry site is extremely successful, we propose staying at this location at the expense of devoting coring time to the other objectives. This will allow permeability measurements and the oblique seismic experiment to be conducted in as deep a hole as possible.

If the coring here is less successful, we propose going to as many of the other identified targets as possible to drill up to half a dozen single bit holes with up to 150 m basement penetration apiece. At least one of these should be suitable for the oblique seismic experiment as well. The targets we have selected encompass each of the principal types or segments of crust in an idealized fracture zone-transform fault setting (Fig. 3), with the specific targets to be selected following work-up of site survey data. The generic sites are summarized below and in the site summary sheets.

Past experience with the oblique seismic experiment shows that it is logistically far more sensible to organize such work in concert with a special downhole measurements leg, rather than to try to synchronize arrival of a shooting ship with an uncertain point in a drilling cruise. Here where we are attempting serious drilling in a fracture zone for the first time, the uncertainties associated with drilling will probably be greater than usual. Consequently we recommend that if possible the seismic experiment be deferred to a later mini-cruise in the Indian Ocean program. This should be fairly simple to organize, given that Leg 115 will be the first in an anticipated 18-month drilling campaign in the Indian Ocean, and the drilling area is only about a 3-day trip from Mauritius.

Drilling Time Estimates and Scenarios: In order to make a ball park estimate for drilling times we will treat the Galicia Bank serpentinite drilling as optimistic, and use typical penetration times for old oceanic crustal drilling of 4 m/hr and typical penetrations for a single bit of 145 meters for a successful basement site:

1. 300 m. re-entry hole

300 m. drilling at 4 m/hr.	75 hrs.
3 r/t drill string at 26 hrs. ea.	78 hrs.
retrieval of 33 cores at 2.5 hrs. ea.	83 hrs.
	236 hrs. (ä 10 days)

2. 145 m. single bit hole

145 m. drilling at 4 m/hr.	36 hrs.
r/t drill string	26 hrs.
16 core retrievals	40 hrs.
	102 hrs. (ä 4-1/2 days)

3. Pogo Hole

8 basement penetrations 18 m ea.	36 hrs.
16 core retrievals at 2.5 hrs. ea.	40 hrs.
time to raise string and move ship 150 m 7 times, at 4 hrs. ea.	28 hrs.
time for 16 cores above basement	64 hrs.
R/T drill string	24 hrs.
	192 hrs. (ä 8 days)

Assuming 42 days of operations time and allowing 6 days for the oblique seismic experiment and 4 days for logging we could drill a pogo hole, one 300 meter re-entry hole, and 3 single bit holes in one possible scenario, or one pogo hole and 5 successful single bit sites in another. Time is allowed for HPC (24 hrs.) at one transverse ridge site. This leaves 1-2 additional contingency sites, in the case that drilling at the earlier sites is less than completely successful. Obviously that the amount of time used both for logging and for the oblique seismic experiment will vary with the success of the drilling. In addition, we would have sufficient time to include at least one additional single bit site should the oblique seismic experiment occur on a subsequent mini-leg.

Attachment 2

NEOGENE EVOLUTION OF THE PELAGIC CARBONATE SYSTEM AND DEEP CIRCULATION OF THE EQUATORIAL INDIAN OCEAN

Introduction

A transect of HPC's spanning a wide range of depth on the northeastern flank of the Seychelles' Bank can make substantial contributions to several major problems in the fields of marine geochemistry, deep water paleoceanography, paleoclimatology, surface water paleoclimatology and marine ecology. The key to effectively attacking these problems is to obtain a tightly spaced transect of continuous Neogene sediments over a wide bathymetric range. The requirements for such a transect include:

A. A small geographic area to insure that the pelagic rain to all sites is similar.

B. A wide water depth range so that samples are located both above and within present and past sedimentary lysoclines and span present and past deep water mass boundaries.

C. Location in an area with reasonably high accumulation rates so that high resolution studies are possible.

The northeast flank of the Seychelles platform fulfills these requirements within the tropical Indian Ocean. A series of HPC cores at this location could address the following specific questions and problems.

1. Evolution of the Neogene carbonate system.

How has the carbonate system of the tropical Indian Ocean varied in response to changing climatic boundary conditions, changing glaciation levels, and changing deep circulation? Related questions include, how has surface productivity varied? How do the sediments reflect the variation of productivity and carbonate dissolution? Resolution of these questions requires: that a) gradients of carbonate and noncarbonate fluxes by estimated; b) the top and if possible the bottom of the sedimentary lysocline by established through time; c) the pelagic rain compostiion and rate (input) be known; and d) high resolution chronology be established. Given these variables (which can only be obtained from a bathymetric transect), the dynamic features of the carbonate system can be reconstructed. These reconstructions can be used to constrain models of the carbonate system and thus to test fundamental assumptions on the controls of the carbonate system. For example, if the gradients of carbonate composition and the thickness of the lysocline can be established, then models such as those given in Broecker and Peng can be used to estimate pelagic rain rate and its effect on dissolution.

2. Evolution of Shallow and Deep Water Circulation in the Indian Ocean.

Because the Indian Ocean has a unique geometry (ie. no northern ocean) and a strong monsoonal circulation in the tropical atmosphere and ocean, some of the water masses and circulation patterns are distinctly different from the Atlantic and the Pacific. The evolution of this system can be traced through study of its benthic faunas (reflecting deep water mass changes), planktonic faunas (which reflect surface water circulation), and its vertical and horizontal circulation by comparing the $\delta^{18}O$ and $\delta^{13}C$ gradients in comparison with other sites in the Indian Ocean and in other oceans. Likewise, the variability of the carbonate system (above) also reflects the circulation pattern. Knowledge of the vertical and horizontal patterns through the Neogene would give great insight into the dynamics of both the tropical Indian Ocean and the global ocean. In addition, direct comparison of the equatorial sediments to those of the Arabian Sea monsoonal upwelling sequence (Neogene I) provide a better measure of the temporal and spatial response of the Indian Ocean to past changes in the monsoonal circulation. Again, these objectives can only be accomplished by work within a high resolution-time framework.

The objectives of this Neogene carbonate evolution proposal <u>do not overlap</u> those of the monsoon-Milankovich-mountains proposal (the so called Neogene I package). The objectives of the Neogene I proposal are to 1) relate changes in coastal upwelling off Arabia to changes in solar radiation and other climate boundary conditions, 2) to study variations of the oxygen minima zone sediments on the Oman Margin in the zone of proximal upwelling, and 3) to obtain a Neogene record of Indus Fan growth for paleomagnetic stratigraphy and comparison to terrestrial sequences related to the growth of the Himalayas. Hence, the objectives of the Neogene I and the Neogene II (evolution of carbonate system) programs overlap only in as much as the effects of monsoon circulation are identified in the Equatorial Indian Ocean.

Proposed Sites

A transect of four sites is proposed on the basis of latitude, water depth, and location of suitable sequences of pelagic sediments for HPC sites. At present, adequate single channel seismic data (including cross tracks) exist in the vicinity of all proposed sites. The Indian Ocean Panel (in conjuction with L. Peterson, Miami) should have no trouble in selecting final site locations on the basis of existing data. In addition, the RRS Charles Darwin is scheduled to be in this general area from December, 1986 until August, 1987. We anticipate that the Darwin could easily obtain cross tracks of seismic data in critical areas. Other than a few cross-tracks, we anticipate no additonal survey data are required for selecting these HPC sites. The attached map shows the tracks of availabe seismic data and gives the approximate location of each site.

Below is a brief description of the four sites:

Site 1 will be located on the shallowest part (about 1500 meters) of the Seychelles Ridge on the cross-tracks of Challenger 24 and several Lamont cruises. Depth to basement at this location is less than it was at

Site 237, hence both Peterson (HPC objectives) and Bob Duncan (basement objective) can meet their goals at this location. We anticipate Double HPC to 300 meters and single bit coring into basement (500 meters?) or to bit destruction.

Site 2 will probably be located at about 2500 meters depth on the south side of the Seychelles Ridge in the thick sediment section. Numerous cross-tracks exist in this area. We anticipate double HPC-XCB to 300 meters with no logging.

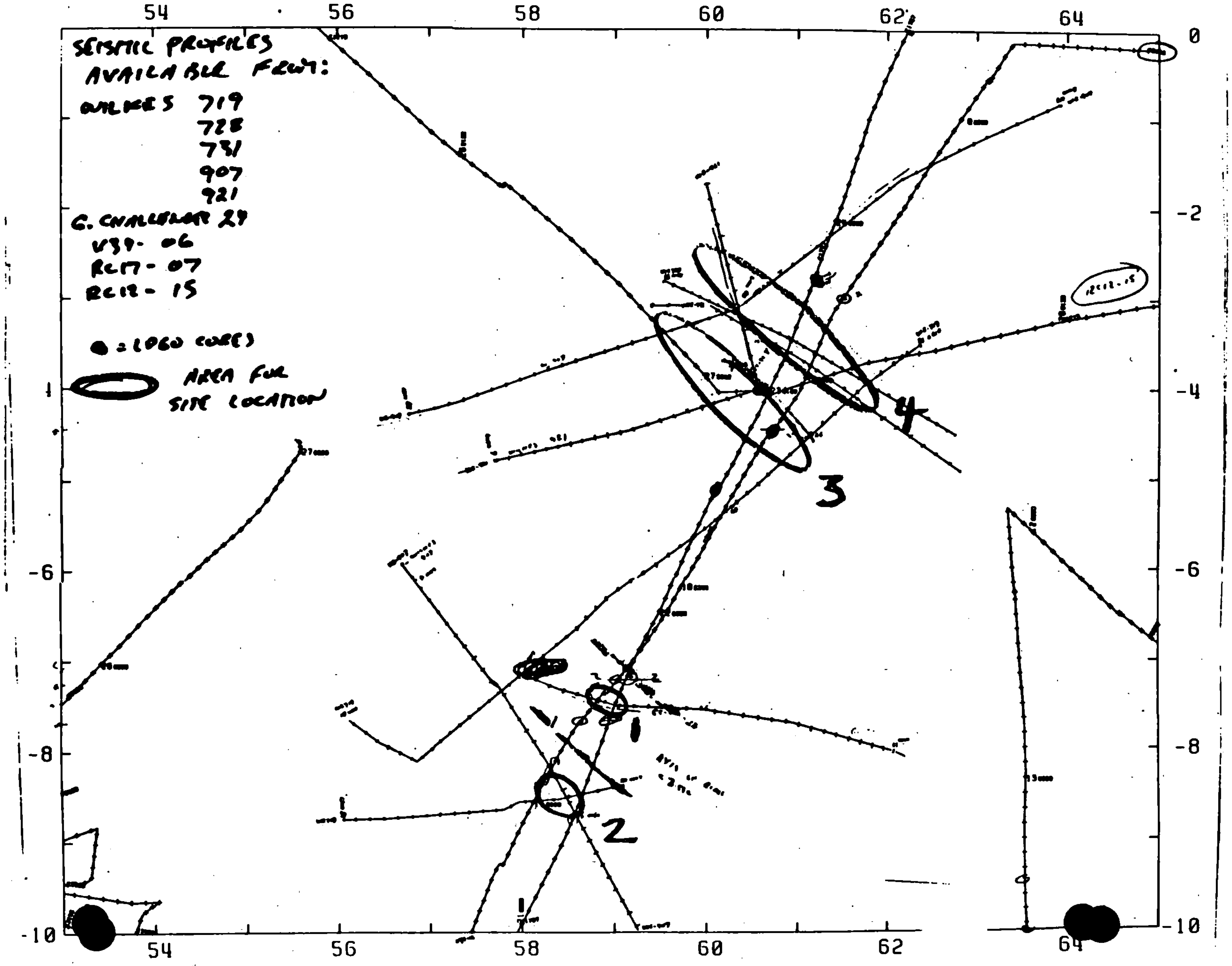
Sites 3 and 4 will be located near 4^{o}S in water depths from 3000 to 3500 meters and from 400 to 4500 meters. Numerous cross-tracks and Lamont piston cores exist in this area to aid final selection of sites location by the Indial Ocean Panel. We anticipate double HPC to 300 meters at both sites.

We estimate that the transect objectives can be met with four double HPC-XCB sites with penetration of about 300 meters plus single bit coring to basement at site carb 1. On the basis of recent TAMU revisions to HPC drilling time estimates (April), this Neogene Carbonate Program will require about 11 days of site time (see table 1).

This depth transect to study the Neogene evolution of the pelagic carbonate system in deep circulation of the equatorial Indian Ocean represents the modern approach to understanding these systems. The program concentrates on depth <u>gradients</u>, which change substantially during the Neogene, and quantitative, high resoultion reconstruction of carbonate, silica, and terrigenous <u>fluxes</u> into the sediment. Such data are needed to constrain models of the carbonate system and can only be obtained within the framework of a depth transect.

TABLE 1

SITE	APPROXIMATE LOCATION	WATERDEPTH	CORE TYPE	PENETRATION	TIME
CARB 1	7°30'S 59°00'E	1500m	DOUBLE HPC/XCB SINGLE BIT	300m (200m?)	1 DAY + 2 DAYS
CARB 2	8°30'S 58°30'E	2500m	DOUBLE HPC/XCB	300m	2 DAYS
CARB 3	4°00'S 60°30'E	3000m to 3500m	DOUBLE HPC/XCB	300m	2.5 DAYS
CARB 4	3°30'S 61°00'E	4000m to 4500m	DOUBLE HPC/XCB	300m	3 DAYS


SEISMIC PROFILES
AVAILABLE FROM:
WILKES 719
728
731
907
921
G. CHALLENGER 29
V39-06
RC17-07
RC12-15
● = LDGO CORES
AREA FOR
SITE LOCATION
1
2
3
4
54
56
58
60
62
64
0
-2
-4
-6
-8
-10

Attachment 3

SUMMARY FOR THE DRILLING PROGRAMME ON THE MAKRAN FORE-ARC, PAKISTAN.

Submitted to JOIDES Office 6 May 1986.

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Scientific rationale

1. In a transect of holes up the lower slope of the Makran active margin, to investigate the rate of accretion and uplift, the processes of deformation, and the patterns of sedimentation.

2. To drill through three decollement thrusts to shallow depths; to sample , and contrast, in-situ fluid pressures and fluid compositions.

3. For the first time in active margin drilling, to combine drilling results from the onshore part of an accretionary complex with data from its exposed TIME-EQUIVALENT onshore portion. Specifically, to compare the Quaternary history of tectonics and sedimentation on the slope and abyssal plain with the Quaternary record, and the record of analogous Neogene processes, preserved in the superbly exposed coastal Makran.

Background

The Makran active margin is the widest currently-subducting fore-arc. In Pakistan, the arc-trench gap measures up to 600 km. The fore-arc basin is now emergent, and some two-thirds of the 400 km wide accretionary complex is exposed in the arid Makran hills of Baluchistan (western Pakistan and eastern Iran). Emergent accretionary complexes on currently-subducting active margins are rare, and usually of very limited area (eg Barbados, Andaman-Nicobar islands, Kodiak island).

Existing seismic data (Cambridge University single-channel profiles and Shell and Marathon multichannel lines, Fig.1) show relatively simple fold-thrust packages of sediment apparently accreted from the abyssal plain (Fig. 2). On the lower part of the slope these form linear ridges of considerable continuity. Behind the ridges, back-tilted, ponded linear slope-basins record the deformation and uplift history of the lower slope. Upslope from the linear-ridge domain lies a terrace indented by submarine canyons, and a narrow shelf.

A cruise of the UK vessel Charles Darwin in November-December 1986 will acquire multichannel seismic data across the proposed sites, and deep-tow seismic data showing detailed sediment stratigraphy. On that cruise we will also shoot a seismic refraction line, and take a suite of piston cores down the margin.

Proposed sites

All sites are off Gwadar, Pakistan. Almost exactly-analogous sites are available off Pasni, Pakistan. Our MCS lines will include both lines C and L of Fig 1. All holes are to be logged. At the three thrust sites (2,3,5) a packer is to be deployed above, below and in the thrust.

MAK 1. A control site 4 km south of the "deformation front" (base of lowest lower slope ridge) on the abyssal plain.
Lat. 24 08' Long. 62 32'
To assess "pre-deformation" structures and physical properties, plus processes and rates of sedimentation on the open abyssal plain.
300 m HPC drilling in 3250 m water depth.
3-4 days on site.

MAK 2. 200 - 400 m north of the "deformation front".
Lat. 24 10' Long. 62 31'
To penetrate the basal thrust; to record fluid pressures and compositions above, below, and in the thrust.
400 m of drilling in 3200 m water depth.
6 days on site.

MAK 3. 8 km upslope, near base of second thrust-fold ridge.
Lat. 24 14' Long. 62 30'
To penetrate the second thrust and determine rate of deformation. To record fluid pressures and compositions above, below, and in the thrust.
400 m of drilling in 2300 m water depth.
6 days on site.

MAK 4. Inboard flank of second fold-thrust ridge.
Lat.24 16' Long. 62 29'
To determine uplift history and the relationship between ponded slope sediment and folded substrate.
350 m of drilling in 2300 m water depth.
6 days on site.

MAK 5. 37 km from base of slope, near base of sixth fold-thrust ridge.

Lat. 24 30' Long. 62 27'
To penetrate the sixth thrust and determine rate and type deformation, plus amount of displacement. To record fluid pressures and compositions above, below, and in the thrust.
400 m of drilling in 2000 km water depth.
5 days on site.

MAK 6. Inboard flank of sixth fold-thrust ridge/outer margin of a "mid slope terrace", north of the linear-ridge lower slope domain.
Lat. 24 31' Long. 62 27'
To determine uplift history and relationship between ponded slope sediment and folded substrate.
350 m of drilling in 2000 km water depth.
5 days on site.

MAK 7. 73 km from base of slope, in the floor of a submarine canyon.
Lat. 24 47' Long. 62 24'
To probe deeper levels of the accretionary complex: to further constrain the overall offshore-onland tectonic profile by dating the rocks, and to investigate structural characteristics of the upper slope. (NB the objectives of this site can be firmed up after acquisition of the Charles Darwin MCS data).
500 m of drilling in 1400 m of water depth.

5 days on site.

Advantages

1.The margin is shallow: the "trench" (more exactly, the base of the slope on the north boundary of the Gulf of Oman abyssal plain) is less than 3.5 km deep.

2. Drilling conditions are expected to be excellent. Seismic velocities are relatively high in near surface sediments, and there is a lack of slumping in 3.5 kHz records across the hangingwall anticlines: both features suggest that tight mudrocks are involved in the folding and thrusting. (The presence of unconsolidated sands has been a problem in trying to address physical properties in other accretionary prisms such as the Nankai Trough).

3. There are several NEW avenues in investigation of accretionary prisms on offer if this drilling is done:
i. It would be the first time that the structural and physical characterstics of a SERIES of linked thrusts had been addressed. (At the time of writing the Barbados Leg 110 plan is to focus on a single deep hole penetrating the sole thrust near the toe. Here we plan to drill through three ramps.)
ii. It would be the first time that a transect had been drilled on an accretionary prism across KNOWN AND SIMPLE structures. (The only other transect on a strictly accretionary margin, off Mexico on Leg 66, involved drilling on a zone of diffuse landward-dipping reflectors whose exact affinities are still the subject of debate).
iii. It would be the first time that a lower-slope transect had been fully married with an upper-slope and age-equivalent onshore record (the original Marathon Oil survey of Harms et al., and the current joint UK-Pakistan work of Leggett and co-workers). The final result would be a profile constrained by offshore drilling (ODP), offshore multichannel seismic reflection and refraction work (1000km of Marathon data from the shelf basins released to Leggett, Shell data already published in Bert Bally's AAPG Atlas, and UK data to be acquired), onland mapping, and onshore- plus offshore- commercial drilling (data available through the Hydrocarbon Development Institute of Pakistan, with whom we are collaborating in the onshore work).

Disadvantages

1. GAS HYDRATE REFLECTORS underlie much of the slope.
But we believe that this problem can be overcome by keeping drilling objectives shallow, above the Bottom Simulating Reflector at the top of the free gas zone, as has been done in this proposal.
2. There is a SHORT LEAD TIME between acquisition of Charles Darwin MCS data, and the proposed ODP cruise.
MCS data will be vital at the time of drilling (though not, we believe, necessarily at the time of deciding to drill). The exact position of the thrust planes cannot, fo course, be determined from the existing single channel data. We plan to approach NERC for money to process our seismic data commercially if there is a need to do so in a hurry. In theory, the necessary data could be processed in 3 months (if full commercial rates are paid).

cc Darrel Cowan, TECP Chairman
Ed Nickless, NERC

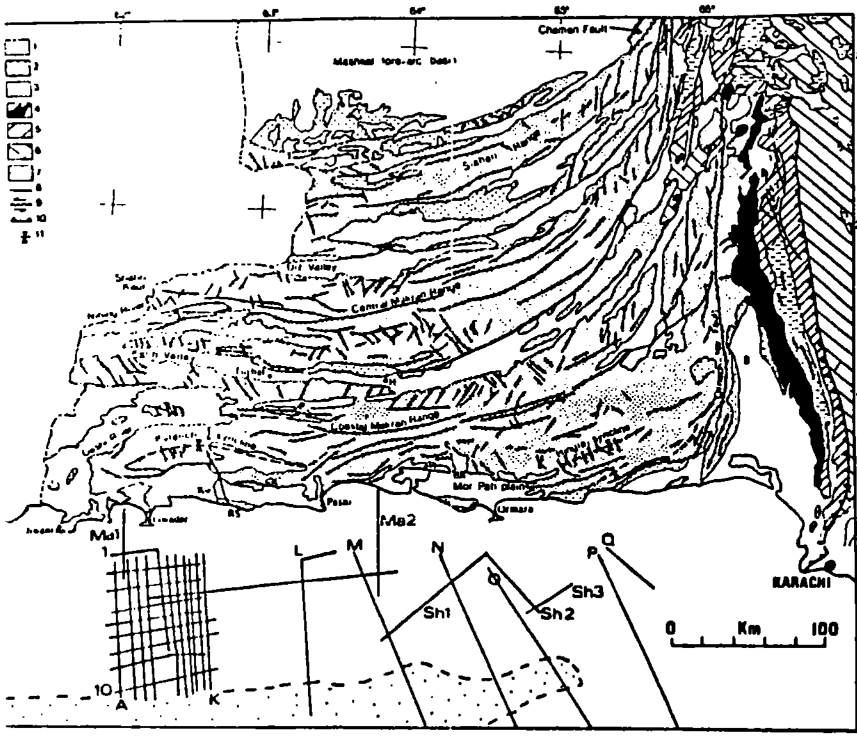


Fig. 1. Tectonic map of southern Baluchistan (after Geological Survey of Pakistan 1:2 million tectonic map of Pakistan) and offshore seismic coverage.
Tectonostratigraphic units: MAKRAN UNITS: 1) Eocene (?)-Pliocene deep-to shallow-marine strata. 2) M-U Pleistocene, continental in north, shallow marine on coast. 3) U.Pleistocene-Recent (intra montane basins and coastal plain). UNITS E OF ORNACH-NAL FAULT (for further details and definitions see Tectonic Map of Pakistan). 4) Ophiolitic rocks. 5) Rocks affected by "late Himalayan" orogeny. 6) Rocks affected by "middle Himalayan" orogeny. 7) "Pre-orogenic" units.
Structural features:
8) Faults (undifferentiated). 9) Principal coastal synclines.
Place names:
B:Bela, BR:Basol River, H:Hoshab, K:Kappar, M:Makola, P:Pidarak, RS:Ras Shahid, T:Talar.
Seismic data currently available:
Ma1,2: Marathon profiles
Sh1,2, 3: Shell profiles
Grid South of Gwadar: Cambridge single channel profiles.
Dashed line is approximate north margin of abyssal plain.

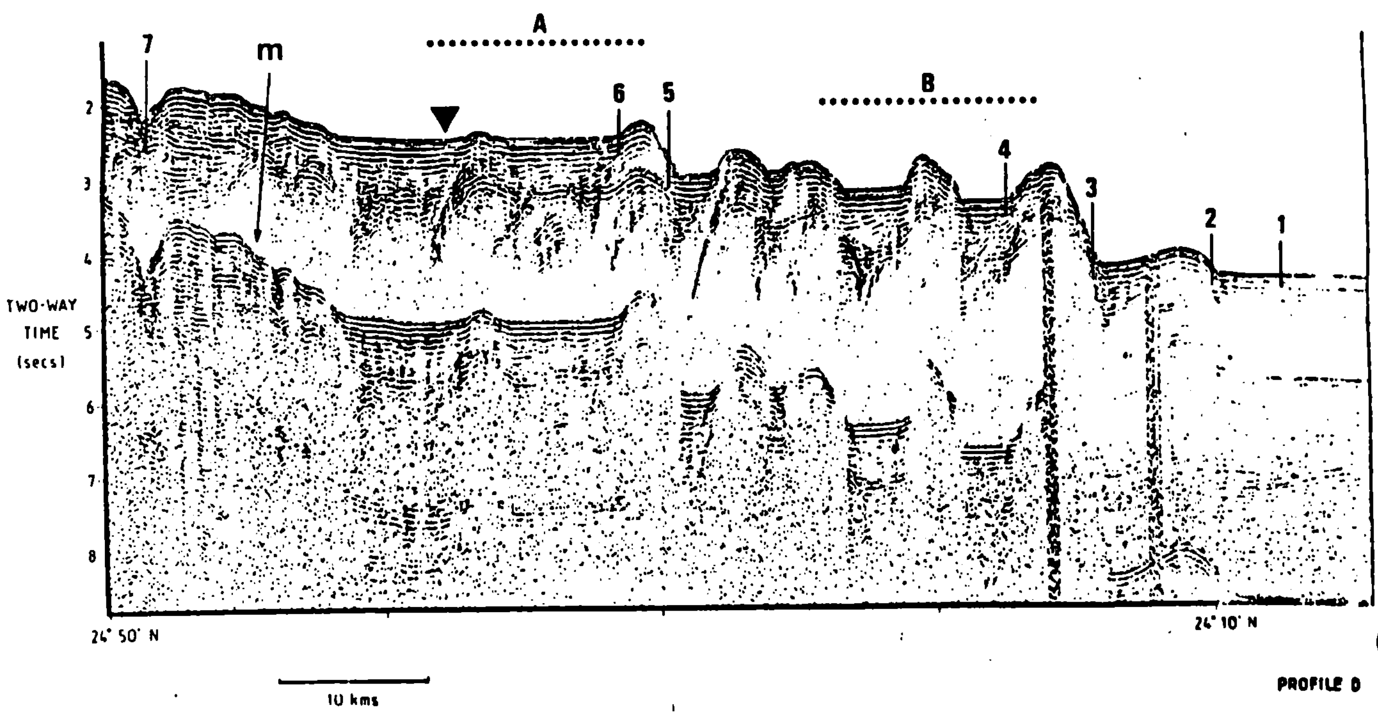


Fig. 2. Cambridge profile D (see Fig. 2 for location) and proposed ODP sites.
M:Multiple. A,B: Detailed enlargements of slope basins in Fig. 5. Inverted triangle: cross-line 5.
Vertical exaggeration at seafloor approximately 7:1.

Attachment 4

86/354

Prydz Bay - Amery Margin

Brief Synopsis of Drilling

Objectives:

The nature, evolution and paleoenvironmental history of the East Antarctic continental margin can be determined by deep sea drilling. The Prydz Bay - Amery Margin region is located in the central south Indian Ocean in a location central to the East Antarctic continent. This region should contain a long-term climatic and paleoglacial record for the central part of the East Antarctic continental mass. The earliest glacial development and ice-sheet accumulation probably occurred in this part of Antarctica. Four sites are shown for the Amery Basin area (Figures 1 and 2; Table 1) which is well located for the major scientific objectives and is usually free of sea ice in the early Austral summer. The following are the major scientific objectives:

1. The climatic and glacial history of Antarctica. The Amery Basin is fed by a major drainage basin of the East Antarctic ice sheet (22%) and may have been the marine terminus of the earliest ice sheet in E. Antarctica. The preglacial climatic record is also to be investigated using the sedimentologic, paleontologic and palynologic record; this record may well span the Jurassic (and possibly older) through the Recent.

2. The age of the glacial erosional event(s) which led to the deepening of the Antarctic continental shelf. This event undoubtedly had a major influence on sedimentation and mode of bottom-water production in the Southern Ocean.

3. The breakup history and environment of Antarctica and India, and subsequent continental margin evolution. The conjugate coast to the Amery Basin area is the region of the Bengal Fan. The early record will also be compared with the early record of the Kerguelen Plateau.

4. The nature of dipping-reflector sedimentary sequences and the paleoenvironmental implications of unconformities.

Drilling Strategy:

Drill 4 sites in dipping reflector sequence. Oldest sequence is shoreward; youngest near the shelf edge. Some stratigraphic overlap is desirable between the 4 sequences, especially since there may be facies differences between the locations. On-location flexibility in the location desirable depending upon drilling results in each site.

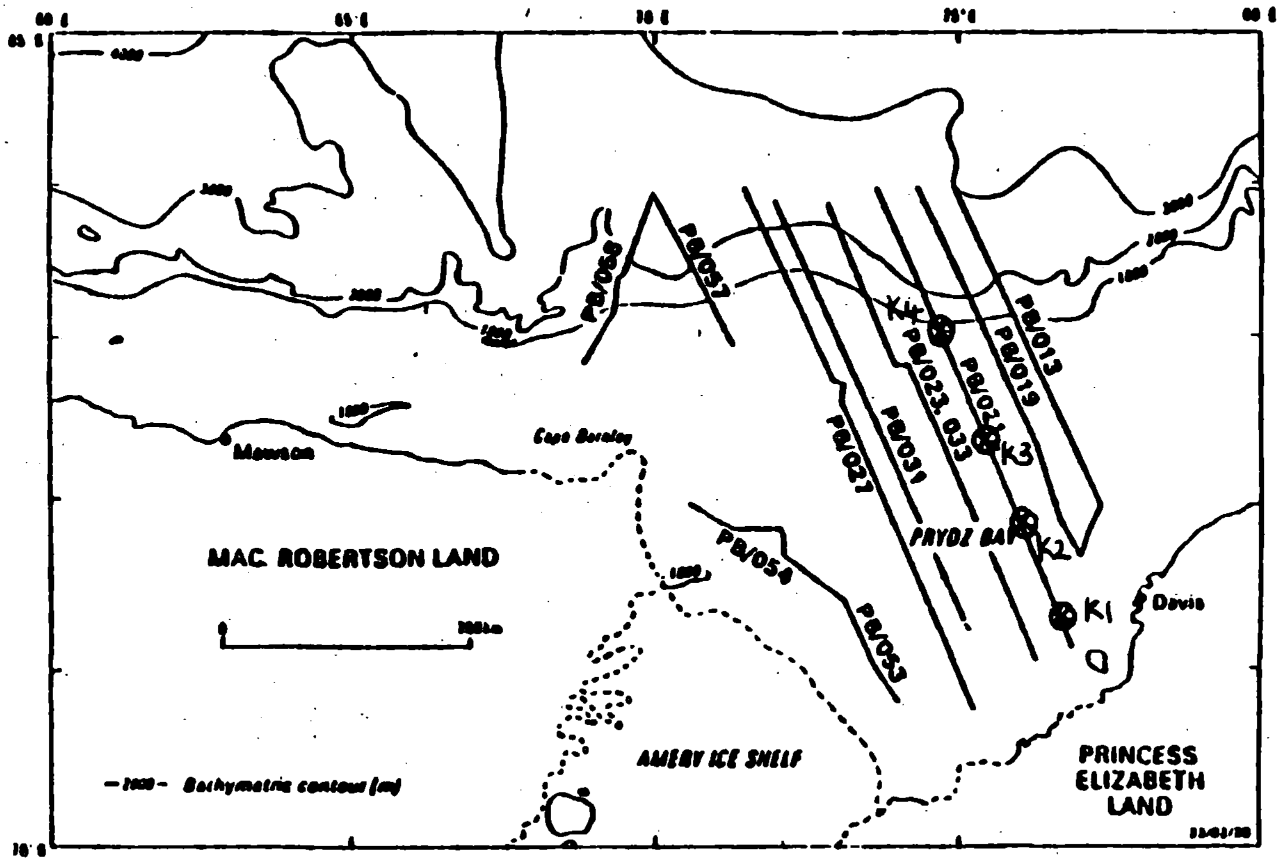


Figure 1. Location of Prydz Bay - Amery Margin sites (K1-K4) on seismic section PB/021. From Stagg (1985).

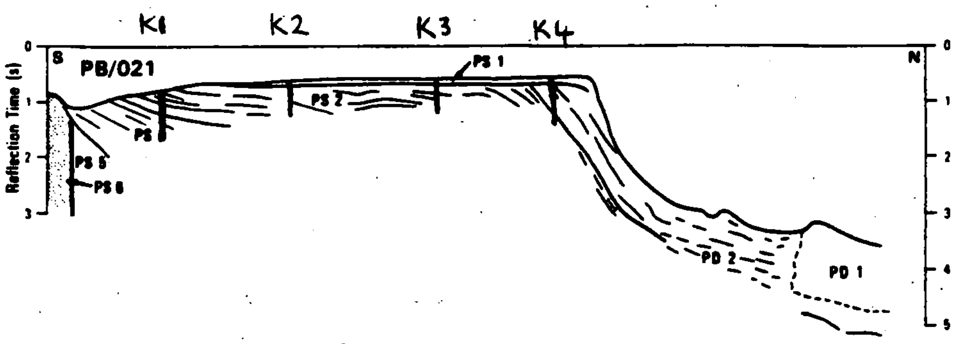


Figure 2. Location of Prydz Bay - Amery Margin sites on line drawings of seismic section PB/021. Entire sequence obtained by drilling 4 sites (K1 to K4) on sequence of dipping reflectors. Seismic data from Stagg (1985).

Table 1. Data for K1, K2, K3 and K4.

			Water Depth	Sediment Penetration
K-1	near oldest sequence	SP 4425 on BMRG Line 21	1.1 sec.	0.8 sec.
K-2	near	SP 4025	0.95 sec.	0.7 sec.
K-3	near	SP 3525	0.8 sec.	0.8 sec.
K-4	near	SP 2425	0.7 sec.	0.6 sec.

JOIDES PLANNING COMMITTEE

LONG-TERM PLANNING (PACIFIC OCEAN 1988-91)

a. West Pacific:

1. Following the PCOM instruction the WPAC has reviewed proposals and has outlined 6, 9, and 12 leg options for a West Pacific campaign, taking into account thematic panel priorities. This outline program with options forms Attachment 1. WPAC has also produced, from its perspective, watchdog reports to cover these legs and this is also given as Attachment 1.

2. TECP has listed its principal thematic objectives in the W. Pacific, together with suggestions as to appropriate drilling targets, and estimates of required legs in an optimum drilling program as follows:

Arcs & Forearcs	
1. Izu-Bonin-Mariana	2 legs
2. Tonga	1
Collision & Accretion	
1. Ontong-Java (large plateau)	1-1/2
2. D'Entrecasteaux (aseismic ridge)	1 to 2
3. Louisville Ridge (seamount chain)	<1 to 1
4. Japan Sea (obduction)	<1 to 1
Marginal Basins	
1. Bonin	(included in above)
2. Mariana	(included in above)
3. Lau Basin	1
4. Coriolis Trough	(included in above)
TOTAL LEGS REQUIRED	7 to 9-1/2

3. The major thematic problems LITHP would like to see addressed in the W. Pacific are:

1. Geochemical evolution of back-arc basin crust.
2. History of arc magmatism.
3. Forearc basement composition and vertical tectonics.
4. Geochemical mass balances at convergent margins.
5. Ophiolite comparison.

*These problems must be addressed at more than one arc-trench system.

A minimum of five legs are required to meet lithospheric objectives in the W. Pacific:

-Mariana/Bonins (forearc)	2 legs
-Lau Basin (back-arc basins)	1
-Japan Sea (marginal seas)	1
-Seaward of Mariana & Izu-Bonin trenches (geochemical mass balance)	1

4. SOHP identified the following global themes as priority in the W. Pacific area:

a. Neogene-Quaternary high resolution stratigraphy and palaeoclimatology
b. Cretaceous-Neogene high latitude palaeoceanography
c. Mesozoic-Cenozoic deep stratigraphic tests ranked as a major SOHP theme for the entire Program.

SOHP has ranked the WPAC packages in the following priority order:

a. Great Barrier Reef
b. Japan Sea
c. South China Sea
d. Bonin Plateau
e. Sulu-Banda Sea

It endorses the WPAC 9-leg proposal which acceptably addresses the major SOHP themes.

5. SSP has commenced its preliminary review of site survey data availablity and needs in the WPAC area. In this area there are likely to be reasonable amounts of existing data, but surveys may well be needed to complete the new data requirements of the Program.

6. **PCOM is asked to:**

i. Note the panels' recommendations.
ii. Decide on the extent to which thematic objectives are met.
iii. Decide on a time within the WPAC proposal allocation for WPAC drilling to meet these objectives.
iv. Agree on an outline program for WPAC drilling which can then be referred to the panels for detailed planning.

b. <u>Rest of the Pacific:</u>

1. Proposals for drilling in this vast geographic area are now received by the JOIDES Office with increasing frequency, especially as a result of workshops. A large number of proposals have been received following the NORPAC workshop although INPAC has only generated one proposal. The workshop an carbonate banks, atolls, and guyots has generated a number of Pacific proposals. Recent and future workshops which are likely to generate proposals cover the South Pacific, Seamounts, and the Gulf of California.

2. CEPAC (in February 1986) has had a preliminary review of proposals and has produced the following ranking:

EPR 13^{o}N zero-age crust
Bering Sea palaeoenvironment
Atolls and guyots
Old Pacific - Jurassic and volcanism
North Pacific palaeoenvironments

Hawaiin moats and flexures
Chile triple junction and palaeoceanography
Ontong - Java carbonates
Gulf of California
Bering Sea tectonic evolution
Aleutian convergence
Costa Rica convergence
California margin
Gulf of Alaska

An outline of tentative 6, 9, and 12 leg programs forms Attachment 2.

3. SOHP sees the following themes as major problems to be addressed in the CEPAC area:

a. high latitude or low latitude comparison (Jurassic to Neogene); e.g. Bering Sea and Ontong-Java Plateau and Bonin Plateau
b. sea level influence on sedimentation processes; e.g. guyots and atolls

SOHP ranked packages (in order of priority) as follows:

a. Bering Sea (high latitude section and deep hole)
b. Ontong-Java/Bonin (low latitude section)
c. Old Pacific
d. Guyots and atolls

SOHP has (at its Jan 86 meeting) also identified the California Margin; Shatsky Rise/Mid-Pacific margins (black shale palaeoenvironments); Juan de Fuca ridge (hydrothermal alteration of sediments); Oregon margin (Cenozoic upwelling); and NORPAC palaeoenvironments as having a SOHP interest. SOHP will hold a joint meeting with CEPAC in October to discuss mutual interests.

4. LITHP has had a brief preliminary discussion of CEPAC objectives and has identified the following problems (<u>not</u> in priority order):

1. Magmatic processes and their temporal and spatial variation at mid-ocean ridges
2. Hydrothermal processes at both sedimented and sediment-free mid-ocean ridges
3. Deeper structure of the oceanic crust including the pillow lava-dike and layer 2/3 boundary
4. Mid-plate volcanism, seamount formation, plate flexure
5. Origin of oceanic plateaus
6. Origin of Jurassic-Quite Zone and vertical distribution of magnetism in ocean crust
7. Mantle heterogeneity

LITHP has proposed that a joint group of LITHP and CEPAC be established to consider drilling strategies for spreading centers in the eastern Pacific.

5. TECP will be considering firm, prioritised thematic guidelines for the CEPAC area at its forthcoming June meeting which will precede the CEPAC meeting by a few days. Strong liaison between these panels will be needed at this time.

6. PCOM is asked to:

i. note the views of CEPAC and the thematic panels and the requirements for drilling in order to meet their objectives.

ii. note the proposed overlapping meetings and working groups between CEPAC and thematic panels.

iii. provide further guidance to the panels.

A.E.S.M.
May 1986

ATTACHMENT 1

86/378

RECEIVED MAY 12 1986

A FIRST PROSPECTUS FOR WESTERN PACIFIC DRILLING

At the February 1986 meeting, the western Pacific Panel formulated a regional drilling program (see below) based on global thematic objectives which may best be achieved in the western Pacific. This report provides summaries of most of the priority drilling legs. Following evaluation by the thematic panels and PCOM, the drilling program and this report will be revised at the June WPAC meeting.

Area[1]		Program Length (#Legs) 6	9	12	Thematic Blessings	Relevant Proposals	Site Survey Needs	Present Data Workup	Cruises Planned
Lau Basin	(8)	1	1	1	LITHP, TECP, Hawkins' workshop	HTB 189	zero-age survey	Integrate 5 recent cruises	--
Bonin-Mariana	(1) (13)	1	2	2	LITHP, TECP, Hawkins' workshop	83,171 /172	more MCS	JNOC MCS needed	ORI 7/86 Taylor MCS proposal ALVIN '87
Vanuatu	(6)	1	1	2	LITHP, TECP, Hawkins' workshop	187 190	more MCS	recent cruises	French MCS proposal
Sulu-Banda	(3)	1	1	1	SOHP, (TECP)	27,82 131,154	digital SCS (Banda)	✓	French MCS proposal Silver SCS proposal
Great Bar. Reef	(-)	0	1	1	SOHP, Carbonate Wkshop	206	✓	recent cruise	--
Japan Sea	(1)	1	1	1 1/2	SOHP, TECP=obduction	51+ JTB	✓	recent cruise	ORI 4-5/86 Shinkai'86
S. China Sea	(3)	?	1	1 1/2	SOHP	46,147 194,216	✓	recent cruises	--
Nankai	(5)	?[1]	1	1		50 128/F	✓	JAPEX MCS needed	ORI 12/86 Shipley 2-ship prop
Sunda	(10)	0	0	?		80 127	more MCS	x	Gloria 87/88
Manila Trench	(15)	0	0	?[1]		218	Taiwan MCS migrate MCS	x	Taiwan MCS '86
Zenisu	(9)					163 177	more MCS		ORI 8/86
Sulu Transect	(-)					27,48 82	more arc MCS		French MCS Proposal
Tonga Transect	(8)					26, 67	more MCS		
Downhole Experiments	(17)				DMP	155	site-specific surveys		

Notes 1. Numbers in parentheses give WPAC ranking at August 1985 meeting; dash means no equivalent proposal at that time.

2. Palawan (48/D) dropped from consideration: very deep targets, safety problems.
Okinawa (7) dropped from consideration: low thematic panel interest, political problems.
Ontong Java not considered: no proposal.

SUMMARY OF LAU BASIN DRILLING

PROPOSALS: THE WPAC PERSPECTIVE

Introduction

At its February meeting, the Western Pacific Panel considered the several proposals extant for drilling in the Lau Basin and accorded such drilling a high priority. The following summarizes what has been proposed for the Lau Basin, and how the Western Pacific Panel currently perceives the objectives of a possible drilling program there.

A total of six sites have been proposed, five of them in "A Science Plan for Drilling in Western Pacific Arc, Trench, and Backarc Systems" compiled by J. W. Hawkins (hereafter Conference Report), and a sixth additional site as a result of a recent cruise by Hawkins in a new proposal which also amplified the objectives of two targets in the Conference Report.

The central problems addressed by the sites are 1) the petrological development of the Lau Basin, particularly the evolution of the basin's basalts from having a significant island-arc geochemical signature to having virtually none at all; 2) the place of silicic magmatism in certain parts of the basin; and 3) backarc geothermal and hydrological processes. The sites proposed are listed in Table 1, together with a summary of their objectives, and their locations are shown in Figure 1.

Petrological Development

The sites proposed to deal with the petrological development of the Lau Basin are LAU-2, on the western edge of the basin, where an angular unconformity in the sediment column may date the opening of the southern part of the basin but where basement also can be reached. Nearer the center of the basin is target L-7, where basaltic rocks having a significant arc-like geochemical signature (Mariana-Trough-type) are expected on the basis of dredge results. Finally, Site L-11 is proposed as a bare-rock site in the central Lau Basin, where basalts having primarily N-MORB characteristics have been dredged. Both Sites L-7 and L-11 are designed to provide the detail of controlled stratigraphy through sequences of these basalt types, to compare with each other and with basalts of the major oceanic spreading ridges.

Silicic Magmatism

One aspect of petrological diversity in the Lau Basin is the occurrence of silicic lavas (andesites and dacites) at three of the targets proposed for drilling. Two of these are evidently in similar structural situations, namely L-12 in the NE Lau Basin, and L-9, Valu Fa Ridge in the southern part of the Basin. Both of the two principal basalt types in the Lau Basin have been dredged near L-12, as well as ferroandesite and dacite. Similar andesite has been dredged from Valu Fa. Both places have been interpreted as types of propagating rifts within the backarc setting. Valu Fa is also the place where a deep magma chamber has been imaged using multichannel seismic techniques. One final target, L-10, Zephyr Shoal, is near the location of a dredged dacite vitrophyre. L-12 is specifically proposed by Hawkins to replace L-10.

Geothermal and Hydrological Objectives

All the sites proposed for drilling in the Lau Basin have explicit or implicit geothermal/hydrological objectives. Hydrothermal sulfides have been dredged near target L-12 (NE Lau Basin) and methane plumes found in the waters above it. Elevated particulate and total dissolvable Mn has been found in the water column above Valu Fa Ridge (L-9), but no methane plumes. However, FeMn crusts up to 10 cm thick coat some of the dredged andesites. Near Site L-10, Zephyr Shoal, high heat flow values have been measured in sediments up to 400 m thick.

With the exception of target L-12, NE Lau Basin, where hydrothermal sulfides have been dredged, none of these has been proposed as a primary target for evaluating backarc geothermal processes.

Deliberations of the Western Pacific Panel

WPAC is cognizant that no fewer than three of the targets proposed for drilling in the Lau Basin are bare-rock targets (L-9, Valu Fa; L-11, Central Lau Basin; and L-12, NE Lau Basin). There is no formal Lithosphere Panel endorsement for any of these as a major bare-rock target at the present time.

Strictly considering the themes outlined above and as stated in the proposals, WPAC views the first, the matter of petrological diversity as reflecting a fundamental change in the composition of mantle sources, to be the best-founded basis for a drilling program in the Lau Basin. Considering that backarc basins are fundamentally basaltic provinces, this question of mantle sources seems more important than questions of derivation of silicic magmas by either shallow magmatic differentiation or assimilation of high-level arc crust or sediments. Moreover, propagating rifts are intrinsically complex places tectonically, and perhaps should be studied in a simpler, oceanic setting before they are approached by drilling in a backarc basin.

The geothermal objectives so far stated are really just incidental to the petrological themes outlined in the Conference Report and the Hawkins proposal. Until a more specific program is formulated and proposed, WPAC will continue to view the geothermal and hydrological aspects of drilling in the Lau Basin as having lower priority than the petrological objectives.

For these reasons, WPAC advocates devoting a single leg to the Lau Basin, to concentrate on targets L-11 (although perhaps a nearby target with a sediment pond would get at the petrological objectives better and more quickly than at a bare-rock site) and L-7, on the western side of the Lau Basin. We note further that a target such as LAU-2, on the far western side of the Lau

Basin, has been strongly endorsed by the Tectonics Panel as a means of determining the mechanism of the early stages of backarc rifting. A transect, involving these and perhaps intermediate targets, is thus recommended by WPAC as the program for a single leg of drilling in the Lau Basin.

The results of four late '85/ early '86 Seabeam and bottom sampling cruises will need to be evaluated before final sites are chosen.

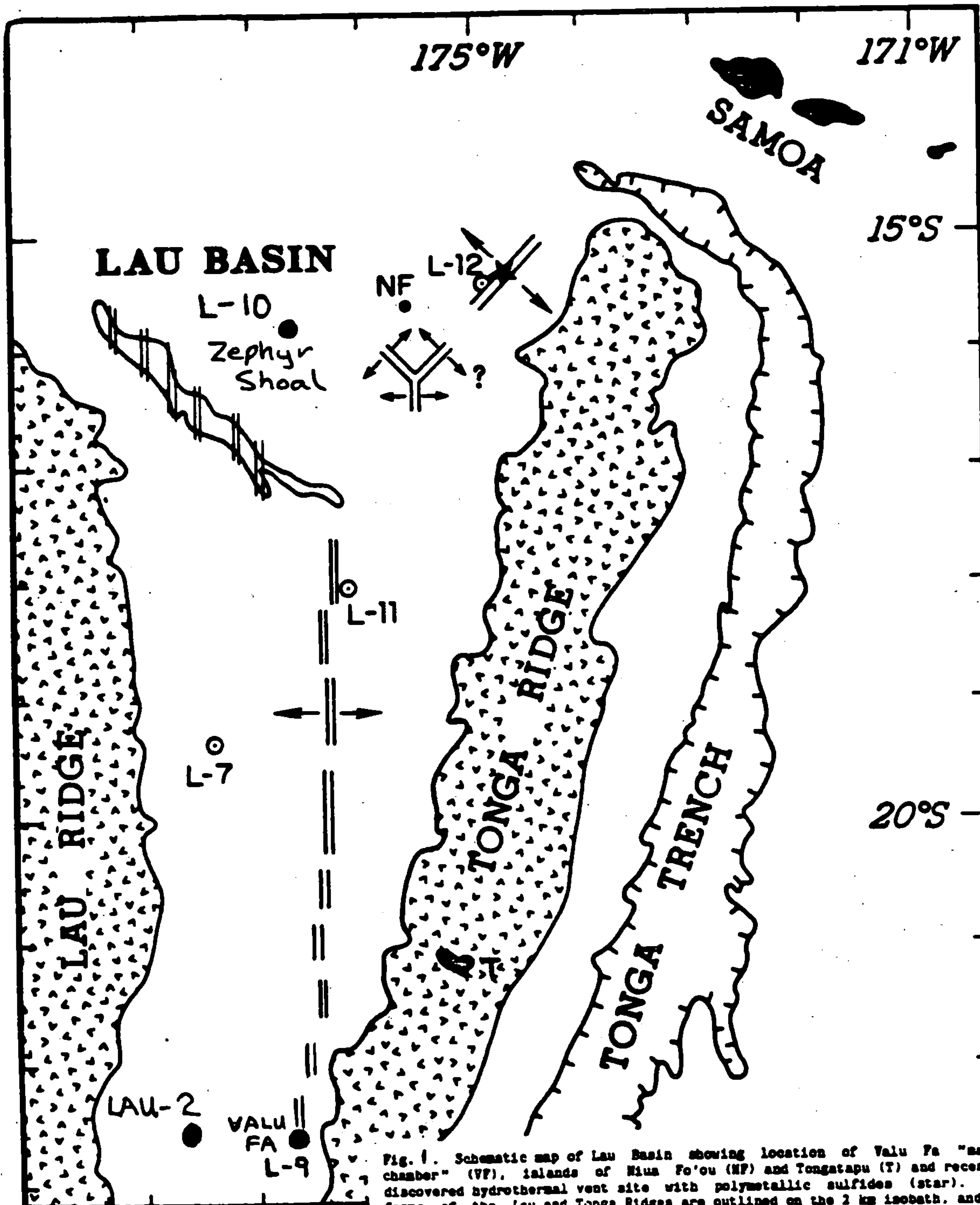


Fig. 1. Schematic map of Lau Basin showing location of Valu Fa "magma chamber" (VF), islands of Niua Fo'ou (NF) and Tongatapu (T) and recently discovered hydrothermal vent site with polymetallic sulfides (star). The forms of the Lau and Tonga Ridges are outlined on the 2 km isobath, and the axis of the Tonga Trench is shown by the 6 km isobath. The orientation of well defined spreading axes is shown schematically. A Ridge-Ridge-Ridge triple junction is inferred in the northeastern part of the basin, but its location and geometry is not well constrained at this time. Peggy Ridge (PR) is an inactive ridge probably formed of offset segments of ridge with a N-S trend. Proposed drill sites L-7, L-11, L-12, L-10, L-9, and LAU-2 are shown.

TABLE 1

Summary of Lau Basin Drill Sites

Site	Lat.	Long.	Water Depth	Sediment Thickness (m)	Proponent's Preferred Basement Penetration	Time to do	Objectives	Proponent
L-7*	19°14'S	177°37'W	2200-2300	400-500	100-200 m	~ 1 week	Older basaltic crust in the Lau Basin	J. Hawkins
L-11*	18°S	176°W	2200	0 (could shift to sediment pond)	500	majority of 1 leg	Axial crust, center of Lau Basin	J. Hawkins
LAU-2	22°10.6'S	177°40.9'W	2700	680	100?	~ 1 week	Oldest sediments, crust in Lau Basin; date opening of southern Lau Basin	A. Stevenson
L-12	15°20'S	174°40'W	2200	0	100 to 500	majority of 1 leg	Reasons for silicic volcanism; metallogenesis	J. Hawkins
L-10	15°53'S	176°42'W	2200	400-500	500	majority of one leg (could shorten to 2 weeks with less basement)	Sedimented version of L-12 (Zephyr Shoal)	J. Hawkins
L-9	22°15'S	176°37'W	1700	0	1500	(surely you jest!) 3-4 legs	Valu Fa magma chamber; crustal structure, hydrothermal process	J. Morton

TOTAL: 5½-6½ legs

SUMMARY OF THE TWO-LEG BONIN-MARIANA DRILLING PROGRAM

TECTONIC SETTING

Subduction of Pacific lithosphere beneath the West Philippine Basin began in the Early Eocene, and through the Early Oligocene formed an intra-oceanic volcanic arc and a 200-km-wide forearc of arc volcanic material (tholeiites and boninites), possibly superimposed on previous oceanic crust. Mid-Oligocene rifting split the arc and late Oligocene-Early Miocene back-arc spreading in the Parece Vela and Shikoku Basins isolated the remnant arc (Palau-Kyushu Ridge) from the active Bonin-Mariana arc and forearc. The rifting and initial spreading was time transgressive, starting in the center of the Parece Vela Basin and at the northern end of the Shikoku Basin, resulting in the bowed and V'd shape of those basins, respectively. This process is being repeated. The southern part of the arc split again in the Late Miocene, and 6 to 8 my of seafloor spreading in the Mariana Trough has isolated the active Mariana arc from, and increased its curvature with respect to, the remnant West Mariana Ridge. Spreading in the Mariana Trough may be propogating to the north. In contrast, the Izu-Bonin arc is still in the rifting stage of backarc basin formation and is undergoing extension along most of its length. The major zone of rifting is immediately west of the active volcanic chain, but some arc volcanoes near 29°N are surrounded by grabens. Volcanism is continuing along both the active and "remnant" arcs. Volcanic centers have also developed in the rift basins. Their chemistry indicates a basalt-andesite-rhyodacite association, with the basalts having similar major and trace-element compositions to Mariana Trough tholeiites. The backarc rifts are semi-continuous along strike, being segmented by structural highs and chains of submarine volcanoes extending westwards from the island volcanoes.

The difference in arc/back-arc evolution between the Mariana and Bonin systems has produced corresponding differences in their forearcs. The Bonin forearc has experienced little structural disruption since its inception. A broad forearc basin has accumulated volcaniclastic and hemipelagic sediments behind an outer-arc high. The onlap of strata onto this high, together with Eocene shallow-water fossils found on the Bonin islands, indicates that it has been a relative structural high since early in the history of the arc. A mature, dendritic, submarine canyon system has developed by mass wasting and headward erosion, incising many deep canyons across the forearc, cutting as much as 1 km into the 1.5 to 4 km thick sedimentary section. In contrast, the Mariana forearc has not behaved as a rigid plate, but has undergone extension tangential to its curvature. This has produced radial fractures and, together with the disruption caused by numerous seamounts on the subducting plate, easy pathways for diapiric intrusions of serpentinised mafic/ultramafics of arc affinity. Eruption of these diapirs onto the seafloor, together with uplift of forearc material due to their subsurface intrusion, has formed a broad zone of forearc seamounts (up to 2500 m high and 30 km in diameter) 50 to 120 km from the trench axis. In the Bonins chloritised/serpentinised mafic/ultramafics occur along a narrow zone which controls the location of a lower-slope terrace. This zone appears to be the oceanic forearc analog of overpressured dewatering zones in accretionary sedimentary wedges. Possibly because most of the sediment has slumped off the trench inner wall, the large forearc canyons die out on the middle slope and do not cut across the lower-slope terrace. Only very minor, and probably ephemeral, accretionary complexes occur at the base of the inner wall of both the Bonin and Mariana trenches.

SITE RATIONALE

Investigating the processes of intra-oceanic arc-trench development in the same region has obvious logistic and scientific benefits. Several factors combine to make the Bonins the best of all the western Pacific locations in which to address these processes. They include (1) the present density of marine geological and geophysical information, (2) the prospects for additional multidisciplinary surveys, (3) certain unique geological factors such as the presence of large submarine canyons and the Bonin Islands (a subaerial outer-arc high), and (4) the inherent simplicity of the system (continuous subduction since the Eocene without major collisions or arc reversal). However, the largest and best studied serpentinite diapirs occur in the Mariana forearc, and two sites in this two-leg drilling program are included there.

BONIN SITES 1 and 2 are located in the graben and on the bounding horst, respectively, of the active Sumisu rift, and seek to determine the:
1) differential uplift/subsidence history of the central graben and bounding tilted arc block, and whether this is compatible with stretching or detachment models of extensional tectonics.
2) duration of rifting
3) nature of syn-rift volcanism and sedimentation, whether arc volcanism is continuous or interrupted by rifting, and when the extrusion of back-arc type basalts began.
4) extent and chemistry of hydrothermal circulation in a tectonic setting similar to that of Kuroko-type massive sulphide deposits
5) nature of the rift basement
6) nature of the arc basement between (and isolated from the pyroclastic deposits of) major arc volcanoes. [Consider the limitation to our knowledge of continental arcs if we were restricted to exposures in the top 1000 m of only the largest stratovolcanoes.]

BONIN SITES 3-6 are located in the forearc near 32°N; BON3 on the frontal arc high, BON4 on the inner and BON5 at the center of the upper-slope basin, and BON6 on the outer-arc high. These sites were chosen to determine the:
1) uplift/subsidence history across the forearc (using backstripping techniques on cored/logged holes and seismic stratigraphic analysis of interconnecting MCS profiles) to provide information on forearc flexure and basin development, as well as the extent of tectonic erosion. We do not know whether the frontal arc and outer-arc high develop by igneous construction or differential uplift, whether the upper-slope basin between them is due to forearc spreading or differential subsidence, or whether flexural loading by either arc volcanoes or by coupling with the subducting plate is an important process. For example, the seismic stratigraphy laps onto and reverses dip over the frontal arc high. Is this due to an original Eocene volcanic high. to mid-Oligocene rifting of the arc, or to Plio/Pleistocene volcanic loads on the fractured (by rifting) edge of the forearc?
2) forearc stratigraphy, to ascertain (a) the sedimentology, depositional environment and paleoceanography, and (b) the variations in intensity and chemistry (boninitic, tholeiitic, calc-alkaline, rhyo-dacitic, alkaline) of arc volcanism over time, and the correlation of these variations with periods of arc rifting, backarc spreading and varying subduction rate.

3) nature of igneous basement forming the frontal arc, outer-arc high and beneath the intervening forearc basin (which has never been sampled) to answer questions concerning the initial stages of arc volcanism and the formation of a 200 km wide arc-type forearc massif (were the frontal arc and outer-arc high formerly contiguous and subsequently separated by forearc spreading, were they built separately but near synchronously on former West Philippine Basin oceanic crust, or are they part of a continuous Eocene arc volcanic province, possibly with overprints of later forearc volcanism?).
4) micro-structural deformation as well as the large scale rotation/translation of the forearc. Paleomagnetic studies of the Bonin Islands suggest 90° clockwise rotation and 20°N translation since the Eocene, which has major implications for reconstructions of the Philippine and surrounding plates.

BONIN SITE 7 & MARIANA SITES 2 & 3 are located on forearc seamounts; BON7 on the flank of a dome along the Bonin lower trench-slope terrace, MAR2 on the flank of Pacman seamount near the Mariana trench slope break (a large diapir which has breached the surface and erupted serpentinite flows), and MAR3 on a nearby conical seamount interpreted to represent an updomed forearc sequence resulting from subsurface emplacement of a diapir.

Forearc diapirs were first recognized AFTER the last round of western Pacific drilling. The proposed drill sites, in three different structural settings, seek to determine the
1) timing of emplacement: ongoing, dormant, Oligocene? — from the stratigraphy of the flows and intercalated sediments on the flanks of the seamounts, and from the history of tectonic uplift above the subsurface intrusion.
2) emplacement mechanism: diapirs of serpentinite with entrained wall rock in the Marianas vs. completely remobilized outer forearc in the Bonins?; and the internal structures (fracture patterns, flow structures) of the seamounts.
3) extent of fluid circulation through the outer forearc and the chemistry of the fluids (from the subducting plate, overlying lithosphere, circulating seawater?).
4) conditions at depth in the outer forearc from the igneous and metamorphic petrology of the lower crustal rocks.

Forearc diapirism may provide a model for emplacing some alpine-type ultramafic bodies common in accreted terranes pre- rather than syn/post-collision.

BONIN SITE 8 is located on the outer trench flexural bulge of the Pacific Plate near magnetic anomaly M15. Drilling objectives include:
1) a reference site for geochemical mass balance calculations: to what extent does subducted material influence the chemistry of arc and rift volcanism?
2) to determine changes in the Tertiary bottom currents, whether these caused the regional hiatuses in NW Pacific sedimentation and, by comparison with the Bonin arc/forearc sites, to what extent the Bonin-Mariana arc served as a barrier to divide the bottom currents.
3) to determine the earliest Cretaceous stratigraphy and crustal petrology (i.e., to penetrate the late Cretaceous cherts for the first time).

SITE SUMMARY

The sites that we propose to be drilling in the Bonins represent a compromise between deep basement and complete stratigraphic objectives. They were chosen from an extensive data base that needs some additional close-spaced MCS profiles. Additional surveys should be able to identify sites where shorter holes can meet the objectives (especially for forearc sites 4 and 5). The Mariana sites are extensively surveyed but need better seismic reflection data. This should be collected using the ATLANTIS II during the ALVIN dive cruises scheduled for spring 1987. Nine of the twelve holes are in water depths less than 4000 m (average - 2400 m) which should result in very good biostratigraphy. The principal proposals on which this summary is based are #171 for the Bonins, with sections on paleoceanography from #83, and #172 for the Marianas.

Site #	Lat. (^{o}N)	Long. (^{o}E)	W.D. (m)	Penetration		Site Time*
				Sed.	Bsmt.	(Days)
BON1	30^{o}55'	139^{o}53'	2270	850	50	8
BON2	30^{o}55'	140^{o}00'	1100	500	200	8
BON3	31^{o}22'	140^{o}17.4'	1250	600	50	6
BON4A	32^{o}26.5'	140^{o}22.5'	1820	700	—	6
BON4B	32^{o}28.6'	140^{o}22.5'	2420	950	50	9
BON5A	32^{o}26'	140^{o}47'	2700	950	—	8
BON5B	32^{o}23'	140^{o}48'	3400	900	50	10
BON6	31^{o}54'	141^{o}06'	2850	950	150	12
BON7	30^{o}58'	141^{o}48'	4650	500		8
BON8	31^{o}18'	142^{o}54'	6000	500	100	12
MAR2	19^{o}20'	146^{o}54'	3700	700		8
MAR3	19^{o}30'	146^{o}41'	4200	700		9
						104

*Time estimates assume APC/rotary coring, with mini-cones but not major re-entry cones, and are based on Figure 15 in JOIDES J., v. XI (4), plus basement drilling at 2 m/hr.

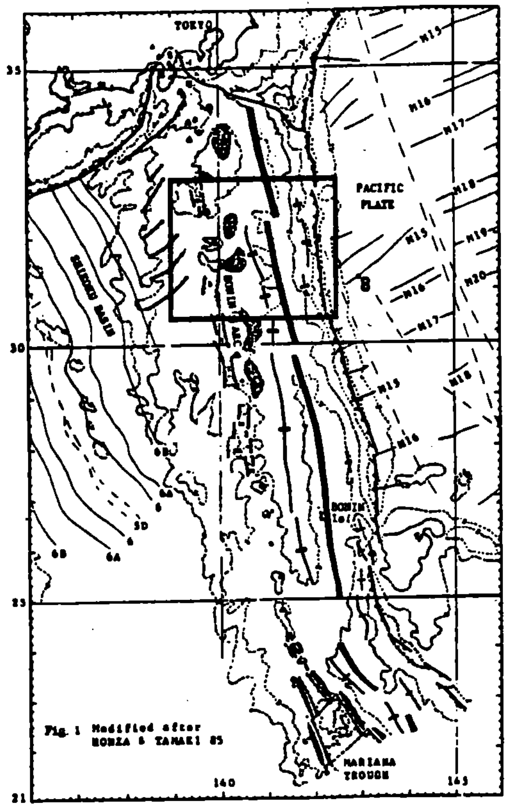


Fig. 1 Modified after HONZA & TAMAKI 85

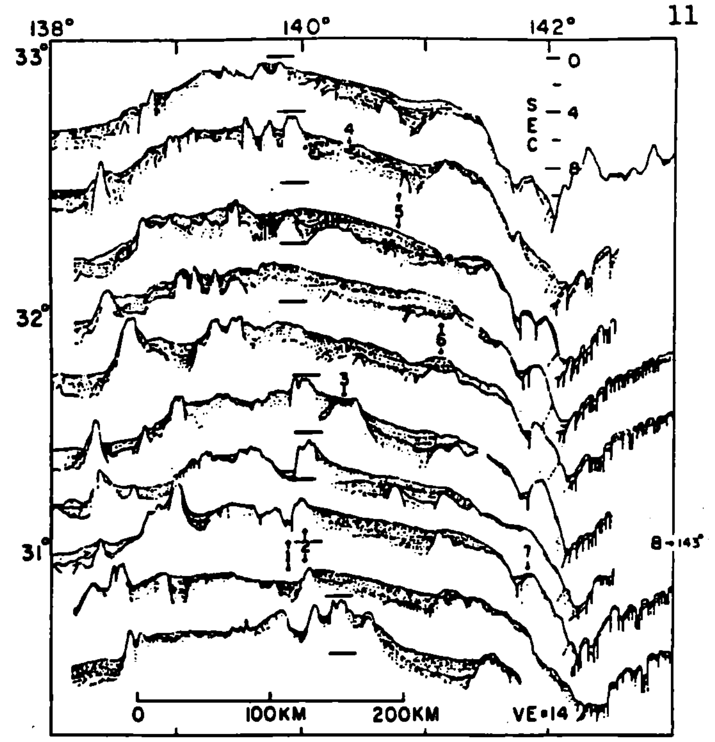
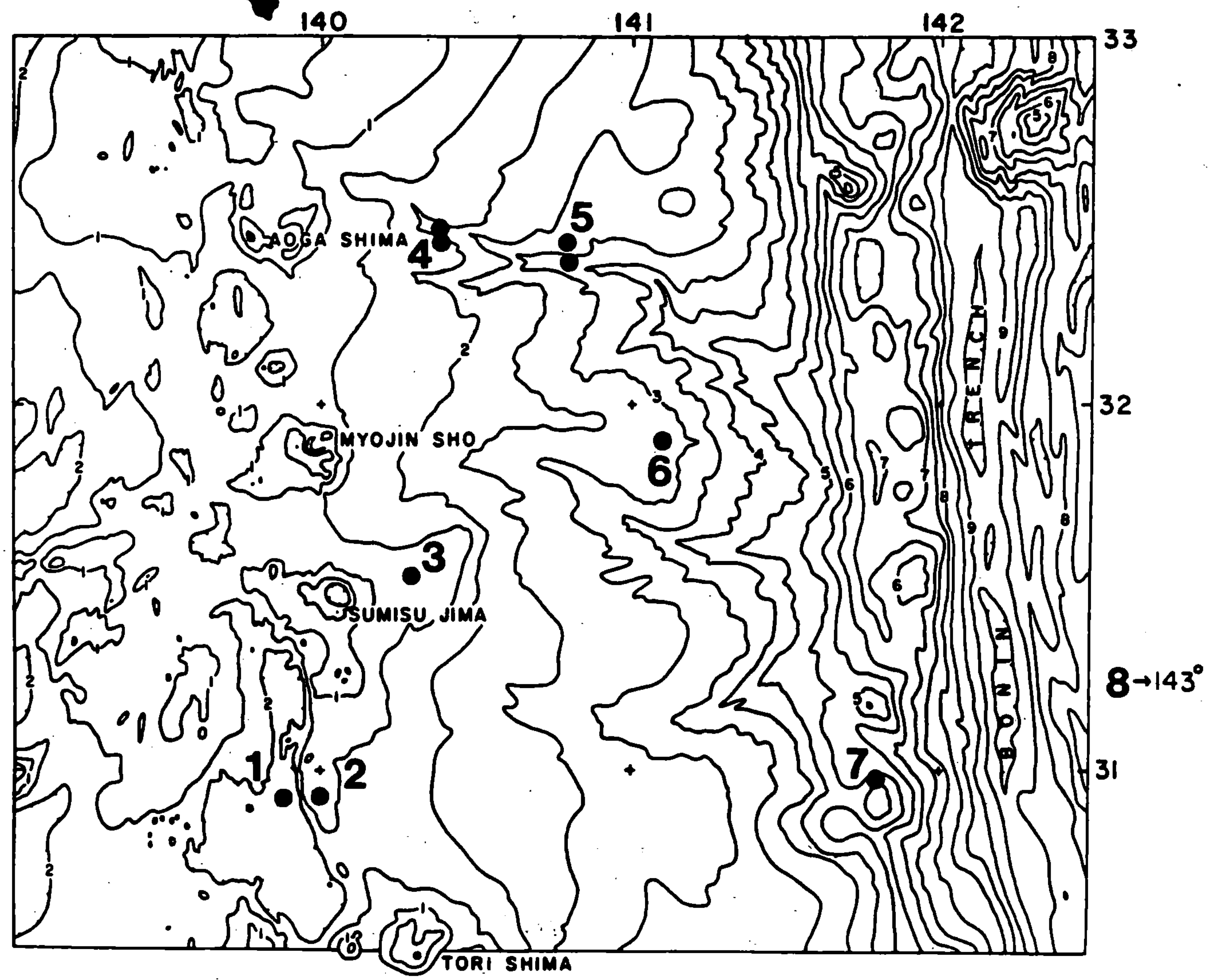
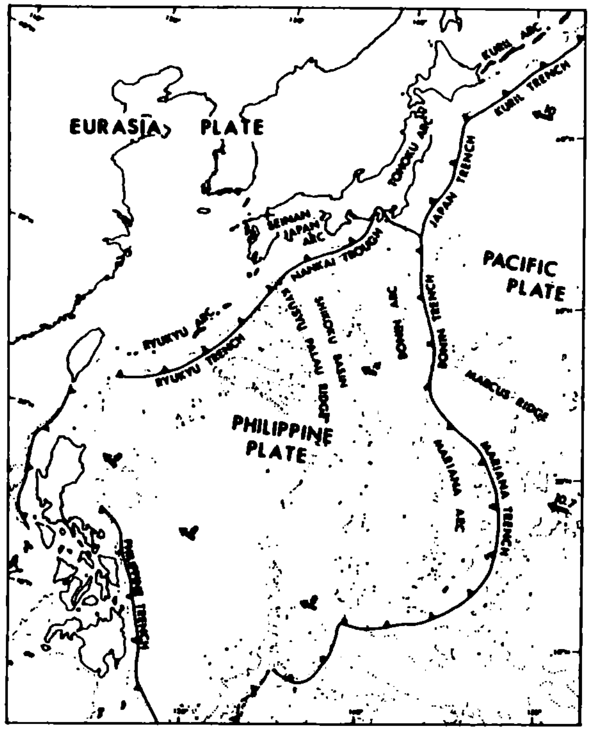
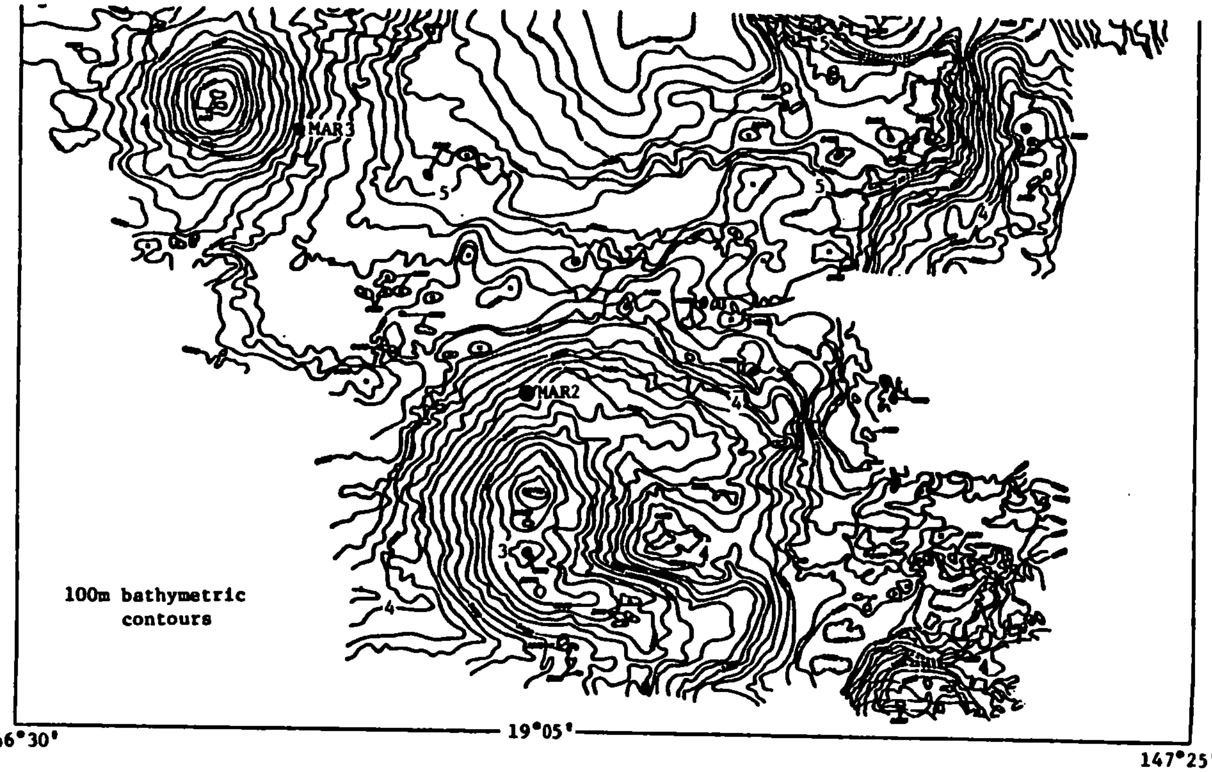
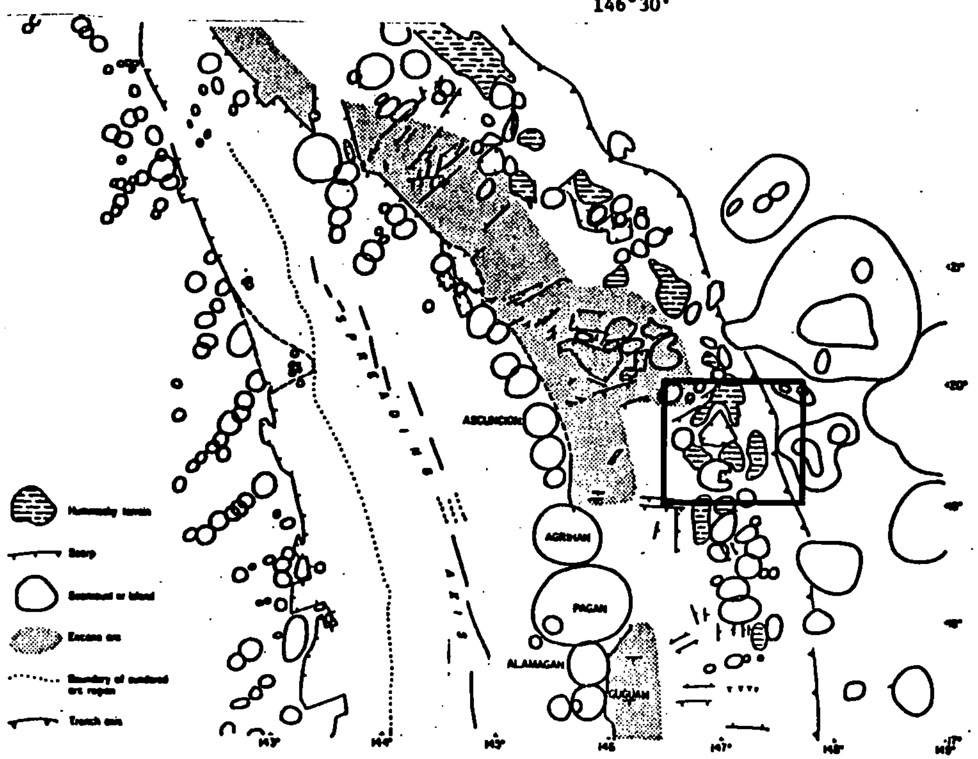


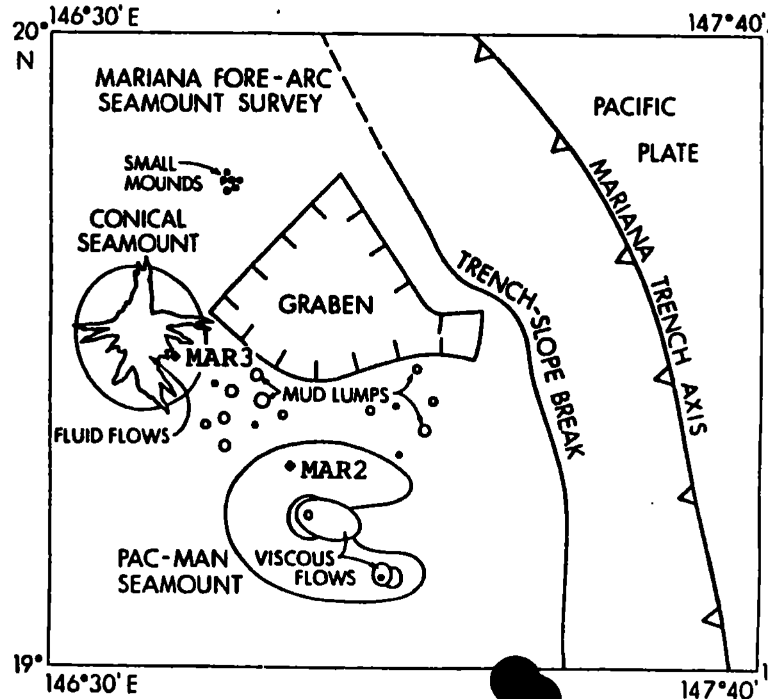
Figure 2. Line drawings of GH79 seismic reflection profiles across the Izu Arc-Bonin Trench system between 30.5° and 33° N(Honza and Tamaki, 1985). From east to west, the characteristic structural elements of this active margin include: (a) a lower slope terrace on the trench inner wall, (b) a thick forearc basin sequence which laps onto and thins over an outer-arc structural high, and (c) a broad arc platform with active volcanoes and rift basins on the east and older volcanic cross chains on the west. The eight proposed ODP sites on or between the seismic lines are indicated by single or double arrows respectively.




EURASIA PLATE
KURIL ARC
KURIL TRENCH
TOHOKU ARC
JAPAN TRENCH
SEINAN JAPAN ARC
NANKAI TROUGH
PACIFIC PLATE
RYUKYU ARC
RYUKYU TRENCH
SHIKOKU BASIN
BONIN ARC
BONIN TRENCH
MARCUS RIDGE
PHILIPPINE PLATE
MARIANA ARC
MARIANA TRENCH
PHILIPPINE TRENCH


MAR3
MAR2
100m bathymetric
contours
146°30'
19°05'
147°25'


ASUNCION
AGRIHAN
PAGAN
ALAMAGAN
GUGUAN


20° N
146°30' E
147°40'
20°
MARIANA FORE-ARC
SEAMOUNT SURVEY
SMALL MOUNDS
CONICAL SEAMOUNT
GRABEN
MAR3
FLUID FLOWS
MUD LUMPS
MAR2
PAC-MAN SEAMOUNT
VISCOUS FLOWS
TRENCH-SLOPE BREAK
MARIANA TRENCH AXIS
PACIFIC PLATE
19°
146°30' E
147°40'
19°

SUMMARY OF THE NEW HEBRIDES (VANUATU) DRILLING PROGRAM.

This drilling program is based principally on USGS/ORSTOM proposal together with TEXAS proposal.

TECTONIC SETTING.

In late Miocene early Pliocene time the New Hebrides arc apparently underwent arc-polarity reversal after which the Indian plate has underthrust the arc from the west at a rate of at least 10 cm/yr. The d'Entrecasteaux zone (DEZ), a linear aseismic ridge on the Indian plate, began to collide with the central New Hebrides arc by roughly 2 my ago. Troughs formed in the back-arc both North and South of the collision zone and may represent an early stage of back-arc rifting initiated since arc polarity reversal. The Aoba basin centers on the volcanic arc directly east of the DEZ collision and may be a result of subsidence between rapidly uplifting forearc and back arc blocks. We believe that distribution and initiation of both the back-arc troughs and the Aoba basin are strongly influenced, if not directly controlled by collision of the DEZ with the arc. It is clear that much of the unusual morphology, pattern and rates of vertical deformation, and even historical seismicity patterns have been strongly influenced by collision of the DEZ. Arc polarity reversal, the collision process, and basin formation can be investigated in a small geographic area with a combination of drill sites that have interlocking objectives and most sites will address at least two of the three principal objectives.

OBJECTIVES.

Arc-Ridge collision.

The DEZ-Arc collision is the most event influencing central New Hebrides structure and tectonics and is the principal objective of our proposal. DEZ 1 will drill into the interplate thrust zone where relatively strong rocks of the North ridge of the DEZ are in contact with probably indurated rocks of the upper plate such as are seen on Santo. Other sites are chosen to allow us to sample an interplate thrust in sediments(DEZ 4) and in a collision zone (DEZ 3), to test the bloc accretion theory (DEZ 5) and to determine the minimum age of collision (DEZ 2,4,6) and the history of uplift of the submerged part of the western Sant block which emerged reefs have a holocene uplift rate exeeding 5mm/yr (DEZ 3,5).

The back arc troughs.

The Coriolis troughs lie behind the volcanic line, yet fresh basalt and glass have been dredged from them. The troughs occur along much of the length of the arc except directly behind the DEZ collision where we suspect that the collision process is suppressing formation of back-arc rifting. We propose to drill sites BAT 4 and 5 in the troughs to sample the range of igneous rocks compositions and its evolution. We also aim to sample sediments in the graben to determine the timing of rifting and its relationship to other events in the arc including the DEZ collision (BAT 3). A reference hole, BAT 1 or 2 on the west side of the rifts will also be useful for comparison with the vertical deformation history of the DEZ collision.

The Aoba Basin-magma evolution following arc polarity reversal and subsidence history related to collision of the DEZ.

The Aoba basin is a second type of intra-arc basin in the New Hebrides whose origin appears to contrast with that of the Coriolis troughs. It may be the result of tectonic subsidence related to collision of DEZ with the central part of the arc. Extremely rapid uplift of Santo and Malakula Islands at the extreme western edge of the arc and uplift of the back arc islands of Pentecôst and Maewo on the eastern edge is consistent with contemporary subsidence of the intervening Aoba Basin. Drilling sites IAB 1 et 2 is to investigate the history of this basin and to compare with sites IAB 3 and BAT 1 outside the DEZ collision zone; this should provide a detailed history of the timing and amount of collision tectonics. By drilling sites IAB 1 and 2 in the sediments of the Aoba Basin we expect to observe a record of the supposed arc polarity reversal reflected by the evolution of ash chemistry in the basin.

SITE SURVEY DATA-existing and planned.

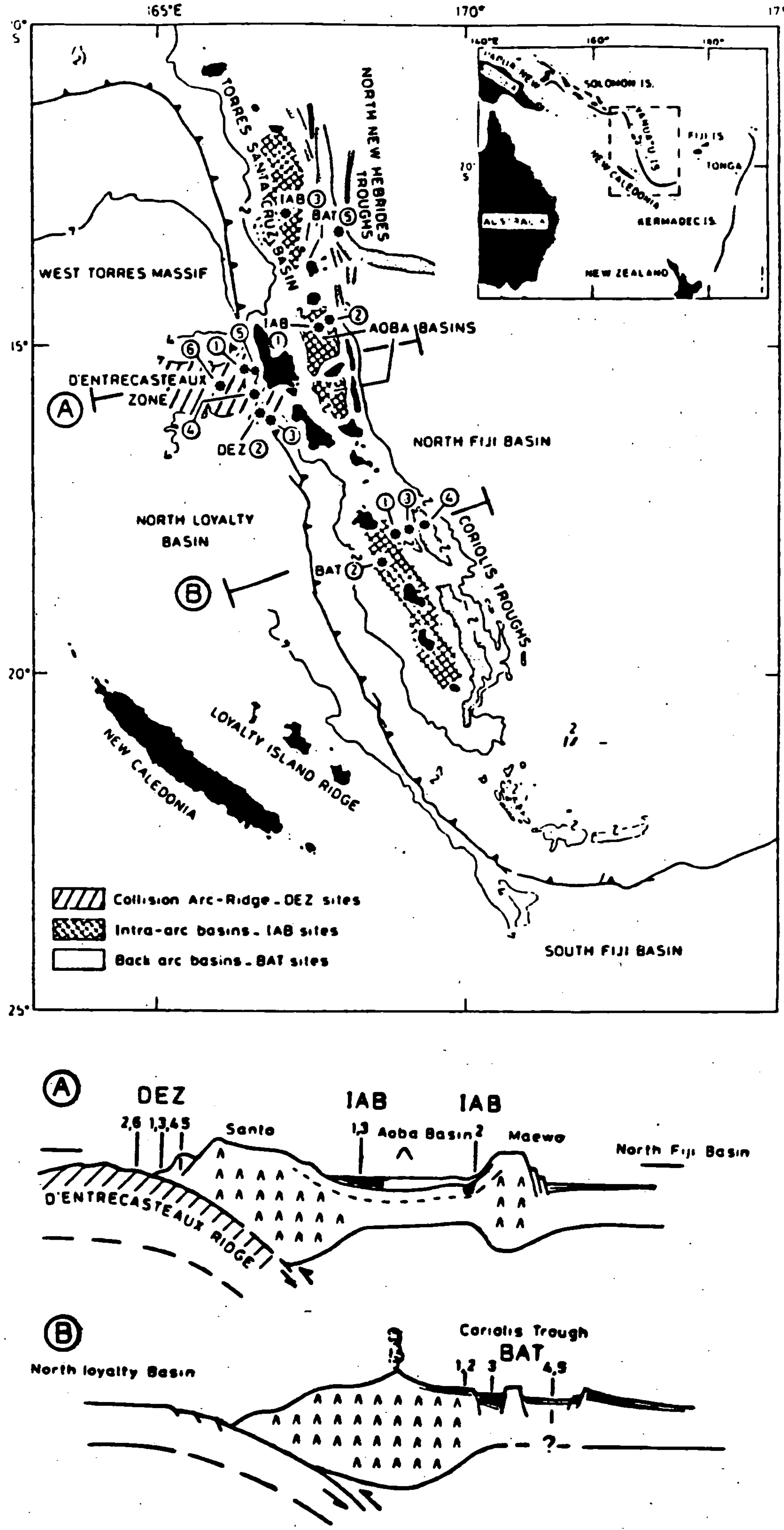
A large data base applicable to the proposed sites has been assembled by ORSTOM and includes single and multichannel seismic profiles, refraction profiles, magnetic, gravity, dredging, bathymetry, and island geological and geophysical data. Recent MCS profiles from the 1982 and 1984 USGS cruises have helped locate ideal sites in the DEZ and Aoba basin. Late 1985, seabeam, seismic and dredging data from the R/V J. Charcot provide excellent bathymetric control and insights for choosing sites on the DEZ collision zone and in the back-arc troughs. ORSTOM and Texas will conduct OBS refraction surveys in the Coriolis troughs and on the DEZ in late 1986. ORSTOM has requested support for additional MCS surveys in the Coriolis Troughs. Site control is already quite adequate, but we are trying to achieve most future programs in time to bear on final site selection.

SUMMARY OF PROPOSED SITES.

Site#	LAT (°S)	LON (°E)	W Depth(m)	Penetration	Drill Days
DEZ 1	15°19.2	166°21.7	2500	1300	11
DEZ 2	16°01	166°40.5	1100	750	5-6
DEZ 3	15°54	166°45	700	1000	6
DEZ 4	15°42.1	166°35.5	3000	1500	14
DEZ 5	15°19.5	166°26	500	800	5
DEZ 6	15°32.1	165°57.5	3400	1000	10
BAT 1	17°57.5	168°52	1000	1500	8-9
2 *	18°16	168°39.5	1000	"	"
BAT 3	17°54	169°05.5	2100	1500	11
BAT 4	17°49.8	169°20.5	2600	500-1000	6-8
BAT 5	13°15	167°57	2550	500-1000	6-8
IAB 1	14°47.5	167°35	3075	1000	9
1A*	14°44	167°4.1	"	"	"
IAB 2	14°38.3	167°55	2600	1000	8
IAB 3	12°51.6	167°04.7	1900	1500	11

Total: 110-116 days without alternate sites.

* indicates alternate sites.
Drilling time estimates are based on Fig. 15 in JOIDES J.,vXI (4).


165°E
170°
175°
15°
20°
25°
TORRES
SANTA CRUZ BASIN
NORTH NEW HEBRIDES TROUGHS
WEST TORRES MASSIF
IAB
BAT
AOBA BASINS
D'ENTRECASTEAUX ZONE
DEZ
NORTH FIJI BASIN
NORTH LOYALTY BASIN
CORIOLIS TROUGHS
NEW CALEDONIA
LOYALTY ISLAND RIDGE
SOUTH FIJI BASIN
SOLOMON IS.
FIJI IS
TONGA
AUSTRALIA
KERMADEC IS.
NEW ZEALAND
Collision Arc-Ridge _ DEZ sites
Intra-arc basins _ IAB sites
Back arc basins _ BAT sites
A
B
DEZ
2,6
1,3,4,5
Santo
IAB
1,3
Aoba Basin
2
Maewo
North Fiji Basin
D'ENTRECASTEAUX RIDGE
Coriolis Trough
BAT
North loyalty Basin
1,2
3
4,5
?

THE BANDA SEA AND SULU SEA MARGINAL BASINS

The Banda Sea lies within the hub of the complex collision zone between Australia, SE Asia, and the Philippine Sea plate. Knowledge of the kinematic evolution of the Banda Sea will provide a crucial constraint on the development of this complex collision zone, a region that has been compared with the evolution of the ancient Cordillera mountain system of western North America.

Proposals for the origin of the Banda Sea include the range of origins proposed for marginal seas elsewhere, namely back arc spreading, entrapment of older ocean crust, or plate edge processes. Recent geophysical and geological studies of the Banda sea suggest that its origin may be a combination of entrapment of several small basins and slivering of a contintental borderland derived from Irian Jaya into the region. Such slivering would be consistent with the presence of subaerial fragments of Irian Jaya surrounding the Banda sea, such as the Sula platform and parts of the islands of Buru, Seram, Buton, and Sulawesi. This proposed model of a constructional origin of a marginal sea through strike-slip faulting of continental and oceanic crustal fragments, provides a new modern analog for rock associations in ancient mountain belts and a system for understanding possible histories of amalgamation of tectonostratigraphic terranes.

The north and south Banda basins (Fig. 1), attain water depths in excess of 5 km, have low average heat flow, and have up to 1 km of sediment cover, making them prime candidates for trapped, older oceanic crust. The northeast part of the Banda Sea, however, has shallower water depths, thinner sediment cover, high heat flow, and complex NE trending ridges, called the Banda Ridges. Dredging of these ridges yielded continental margin rocks that can be correlated with those of northern Irian Jaya. Geophysical studies of the ridges indicate that they are cut by a series of NE trending faults. The basins between the ridges may be young rift basins, and drilling there could record their rift history.

The drilling program consists of sites in the north and south Banda Basins and the Lucipara basin to determine the age and stratigraphic history of each region. Stratigraphy of the lower sections in the north and south Banda basins will test for similarity or difference in origin, and will be compared with the site in the Sulu sea, described below. The Neogene sections will provide a wealth of information on changes in paleoceanography as the Indian and Pacific ocean circulation systems were isolated, on the volcanic history of the eastern Sunda arc, and on the timing and history of rifting and emplacement of the ridges.

Recent models relating the Banda, Celebes and Sulu basins as fragments of a once continuous Indian ocean plate can be tested by drilling at least one site in the Sulu sea, in conjunction with the sites in the Banda sea. If the basins were once part of a larger, continuous plate, the stratigraphy in the basins should be similar prior to plate breakup. Alternatively, the Sulu sea may be related to either the South China sea or the Philippine sea plate, and the stratigraphies in each case should be distinguishable. In addition, the stratigraphy of the Sulu sea may contain the best record of the collisional events inferred for the Palawan and Sulu archipelagos, as well as providing a unique paleoceanographic record of the western boundary circulation pattern during the Neogene. Thus, a well-placed site within the Sulu sea, in conjunction with one or more shallow HPC sites, will provide a highly valuable geological reference site for unraveling western Pacific tectonics.

EXISTING DATA BASE AND REQUIREMENTS

Abundant analog single channel seismic profiles have been taken by a number of institutions, but very few digital single channel or multichannel lines are available. The existing single channel data are sufficient to define the basement problems (where drilling could answer the questions of the age and origin of the basins), but they are insufficient for establishing regional stratigraphies and for imaging the structure of the Banda ridges. We clearly need site surveys within the Banda Sea to maximize the utility of the drilling ship here.

Abundant geophysical information is available for the Sulu sea, and these appear sufficient for site selection and interpretation.

SUMMARY OF PROPOSED SITES

SITE #	LATITUDE	LONGITUDE	WATER DEPTH	SEDIMENT THICKNESS	BASEMENT PENETRAT.	HOLE TYPE	# OF DAYS
BNDA 1	$6^{\circ}30'$S	$128^{\circ}00'$E	4600M	800M	25M	S	10
BNDA 2	$4^{\circ}25'$S	$125^{\circ}12'$E	4800M	800M	25M	S	11
BNDA 3	$5^{\circ}00'$S	$127^{\circ}00'$E	3400M	500M	200M	S	11
SULU 5	$7^{\circ}45'$N	$121^{\circ}11'$E	4300M	1200M	200M	S	17
							49

PROPOSAL LISTINGS

NO.	PROPONENTS	REGION
27/D	RANGIN	SULU SEA
48/D	HINZ ET AL.	SULU SEA
82/D	THUNELL	SULU SEA
131/D	SILVER	BANDA SEA
154/D	HILDE ET AL.	BANDA AND SULU SEAS

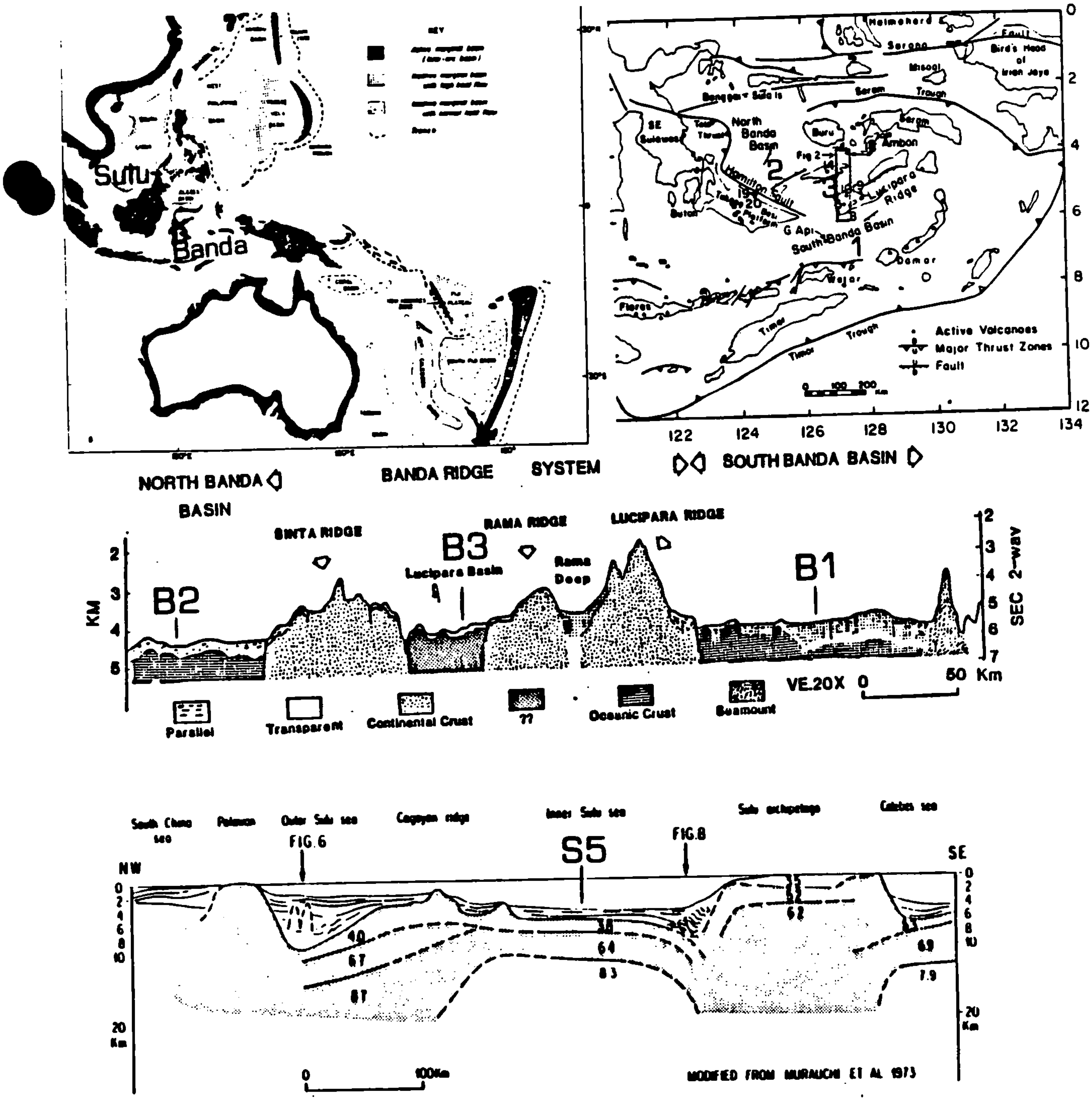


Figure 1. a) Western Pacific basins. b) Banda sea, showing proposed drill site locations. c) Composite cross section across the Banda sea, showing proposed drill site locations. d) Generalized section across the Sulu sea, showing proposed drill location.

Great Barrier Reef - Queensland Trough ODP Leg Summary

The Great Barrier Reef - Queensland Trough province is composed of mixed reefal carbonate/siliciclastic shelf sediment thought to be principally controlled by climate, and relative sea level. During periods of low sea level deltaic progradation occurred at the shelf edge accompanied by fan deposition on the mid- and lower slope. The oldest sedimentary sequences beneath the shelf occur eastwards of a major fault zone lying beneath the middle shelf, and forming the western boundary of the Queensland trough rift basin. An interpreted basal Late Cretaceous rift-fill sequence containing volcanics is overlain by a marine onlap facies interpreted to be Paleocene to Late Eocene in age. These strata are in turn overlain by oblique, complex sigmoid-oblique and sigmoid progradational facies of probable Late Oligocene, Late Miocene, and Plio-Pleistocene ages (Symonds, 1983).

Along the continental margin the Central Great Barrier reef facies was established during the Pleistocene. The reefs grew on siliciclastic fluviatile and deltaic sediments during periods of high sea level, and were subaerially eroded during the intervening periods of low sea level. There is clear latitudinal variation in the nature and timing of reef growth. The reef is thicker in the north and has a multi-phase growth. In addition, side scan sonar profiles of the upper slope of the Great Barrier Reef have identified shelf parallel drowned reefs which are, apparently, low sea level analogues of the present outer barrier (P. Davies, written pers. comm., 1986). The earliest reef growth in the region probably began on basement highs on the Queensland Plateau in the Early to Middle Eocene (Pinchin and Hudspeth, 1975) although some consider that reef growth did not commence until the Late Oligocene and Early Miocene following stabilization of an equational circulation pattern (Taylor and Falvey, 1977). Reef growth today covers almost one-quarter of surface of the Queensland Plateau and the areas of buried reefs indicate this may have been even greater in the past.

In the Queensland Trough distinct seismic packages are identified and tied to major sea level oscillations. The eastern margin of the Queensland Trough is carbonate dominated and sediments have two sources: reef derived material from the Plateau area and planktonic material. Dredging of a series of seamount-like features in the Trough at depths down to 1200 m indicate a shallow water reefal origin for the seamounts and rapid subsidence rates (Plio-Pleistocene rates of 100-500 m per MY) for the Queensland Trough (P. Davies, written pers. comm., 1986).

The Great Barrier Reef area is an excellent example of a mixed carbonate/siliciclastic province in a passive margin setting. This area can provide important facies and stratigraphic models for understanding ocean history, the evolution of passive margins and ancient carbonate depositional systems. The following objectives have been identified and would be addressed by ODP drilling on the slope of the Great Barrier Reef and in the Queensland Trough:

(1) Sea level controls on sedimentation,
(2) the effect of plate motions and subsidence cycles on sedimentation and paleoceanography,

(3) an understanding of tectonic cycles in relation to sea level cycles,
(4) changes in paleoclimate related to plate position and the effect on sedimentation,
(5) slope/basin sedimentation - fans and lowstand deposits.
(6) basin fill history,
(7) Late Paleogene-Neogene paleoceanography,
(8) diagenetic history in a stratigraphic framework, and
(9) comparison of the history of a continental margin and an isolated plateau (Queensland Plateau).

In addition, a transect in this region would be able to be tied to a shallow-water continental shelf drilling program.

The immediate goal is one transect of four holes. One hole would be in the slope area to drill the paleoshelf deposits and toe-of-slope carbonate detritus. One hole would be at the paleo shelf margin for sediment history and slope deposition. A third hole would be at the toe-of-slope to basin transition to drill this transition, and the older Queensland Trough sediments. The fourth hole would be drilled on the eastern side of the Trough near the southern margin of the Plateau for a basinal reference section, paleoceanography, basin history, and periplatform sediment cycles.

Site Summary Table

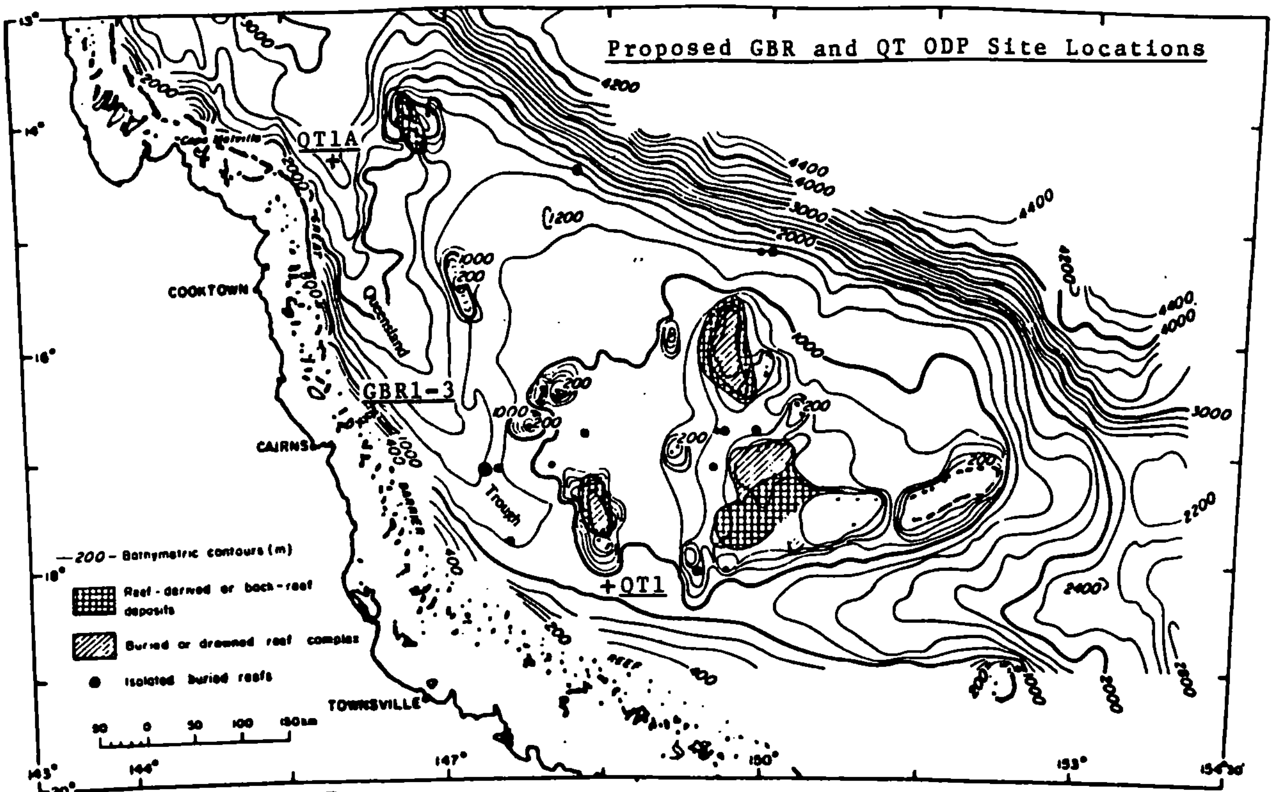
Proposed Holes	Relative Priority	Approx. Location	W.D. (m)	Penetration (m)	Est. Time Required On-Site
GBR1	2	16°38.7'S,146°17.5E	150	1000	10-12 days
GBR2	1	16°38.2'S,146°18.5'E	315	1000	10-12 days
GBR3	1	16°37.2'S,146°19.5E	863	1000	10-12 days
QT1	1	18°S,148°30E	1100	1500	15 days
QT1ALT	2	14°19.2'S,146°8'E	2475	2200	(20 days)
					51 (56) days

References

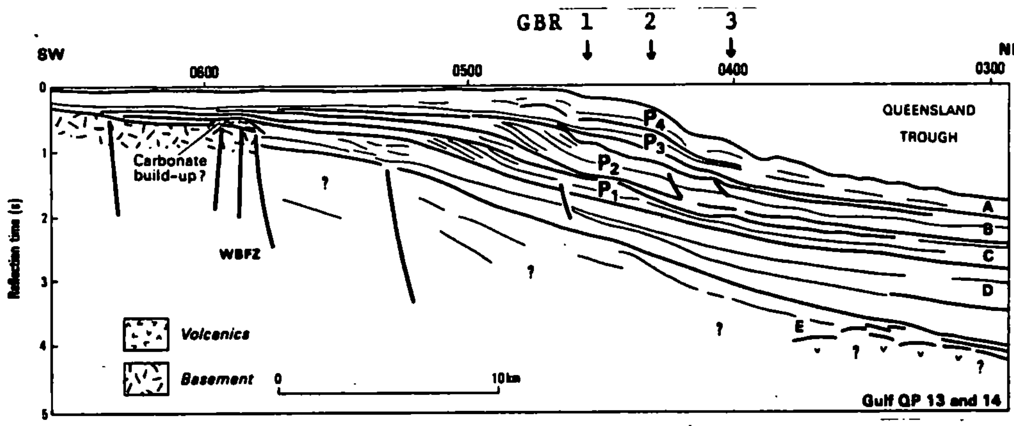
Pinchin, J. and Hudspeth, J.W., 1975, APEA Jour., v. 15, p. 21-31.

Symonds, P.A., 1983, in Baker, J.T. et al. (eds.), Proc. Great Barrier Reef.

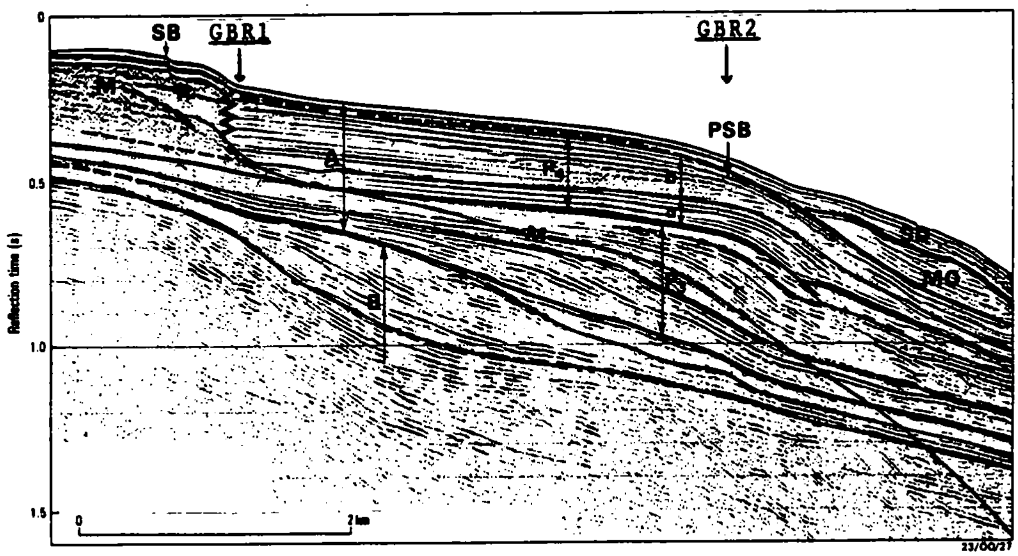
Taylor, L.W.H., and Falvey, D.A., 1977, APEA Jour., v. 17, p. 13-29.



Distribution of buried and drowned reefs



Interpretation of processed Gulf seismic profile: Grafton Passage transect. The major seismic sequences (A, B, C, D, E), and progradational phases (P1, P2, P3, P4) are labelled. WBFZ is the western boundary fault zone of the Queensland Trough rift basin.



Sparker profile at the eastern end of the Grafton Passage transect.
Amplitude-corrected. 12-fold stacked section. Shows prograding, mounded onlap (MO), sheet-drape (SD) and reef facies (R). Note the amount of shelf outbuilding and the relative positions of the present-day shelf break (SB) and the Pleistocene palaeoshelf break (PSB). Major seismic sequences (A, B) and progradational phases (P3, P4) are labelled. P4 has been subdivided into seismic facies units 4a and 4b. M is the first water-bottom multiple.

SUMMARY OF THE JAPAN SEA DRILLING PROGRAM

Introduction

Japan Sea is one of the western Pacific back-arc basins and is believed to have been formed by multi-axial rifting of the continental arc, much different from the rifting of the oceanic arc. Proposed drill holes reaching basement that was not achieved by DSDP Leg 31 can organize a large amount of geological and geophysical data of the Japan Sea to reconstruct the complex Neogene tectonics of East Asia.

Objectives

The drilling program for the Japan Sea is based principally on Tamaki et al's (1985) proposal together with ten proposals from many disciplines.

Tectonics

1. *Tectonics:* Back-arc rifting and spreading tectonics of the continental arc
   Back-arc extension tectonics of the continental arc, associated with multiple rifting, continental crustal extension, anomalous oceanic crustal structure, disorganized magnetic anomaly lineations, and contamination of MORB volcanism and arc volcanism, is comparatively studied with the Atlantic type extension tectonics.
2. *Tectonics:* Age of the spreading of the Japan Sea
   To constrain the age of the formation of the Japan Sea is critical for the regional tectonic reconstruction in East Asia. Recent paleomagnetic study on Japanese islands demonstrate extremely rapid bending of the Honshu island suggesting the Japan Sea generated in only 1 m.y.
3. *Tectonics:* Shift of plate boundary and obduction of oceanic crust
   The EURA-NOAM plate boundary shifted to the eastern margin of the Japan Sea in the Quaternary accreting NE Japan to NOAM. Obduction as well as subduction of the oceanic crust is ongoing along the new plate boundary.

Geochemistry and lithospheric study

4. *Metallogeny:* Ore genesis in the back-arc failed rifts
   Occurrence of shale-hosted massive sulfide and Kuroko-type sulfide deposits is predicted from the study of ore deposits on island arcs. This problem strictly constraints ore genesis of island arc-type ore deposits.
5. *Geochemistry:* Geochemistry of hydrothermal activity buried by sediments
   Geochemical interaction of hydrothermal activity and rapid sedimentation in the back-arc basin is comparatively studied with the case of mid-oceanic ridge.
6. *Petrology:* Origin of BABB (back-arc basin basalts)
   BABB and MORB are comparatively studied to constrain the geodynamism of the mantle wedge beneath the arc, especially under extremely rapid spreading condition.
7. *Sedimentology:* Diagenesis of siliceous back-arc basin sediments

8. *Crustal study:* Logging in basin holes
   Down hole seismometer measurements are carried out for studying detail structure of Layer 2 with anomalous velocity of 3.5 km/sec and acoustic emission measurements for resolving stress history.

Paleooceanography

9. *Paleoenvironment:* Opening of marginal sea and its effect to oceanographic and climatic environments
   Well preserved sediment sequence on rises above CCD in the Japan Sea is studied by standard environment analyses.
10. *Micropaleontology:* Study of fresh-water diatom fauna
   Fresh-water diatomite which was sampled by piston core at only one location in the basin area.

Proposed sites

9 principal sites and 8 alternate sites are proposed. Most of proposed sites are common through multiple proposals. All the sites are carefully selected not to meet gas production. Estimated drilling days for principal sites are 50.5 days which are good fit for a single leg. Extended drilling days of 72.5 days that fit for 1.5 legs can drastically improve paleooceanographic study.

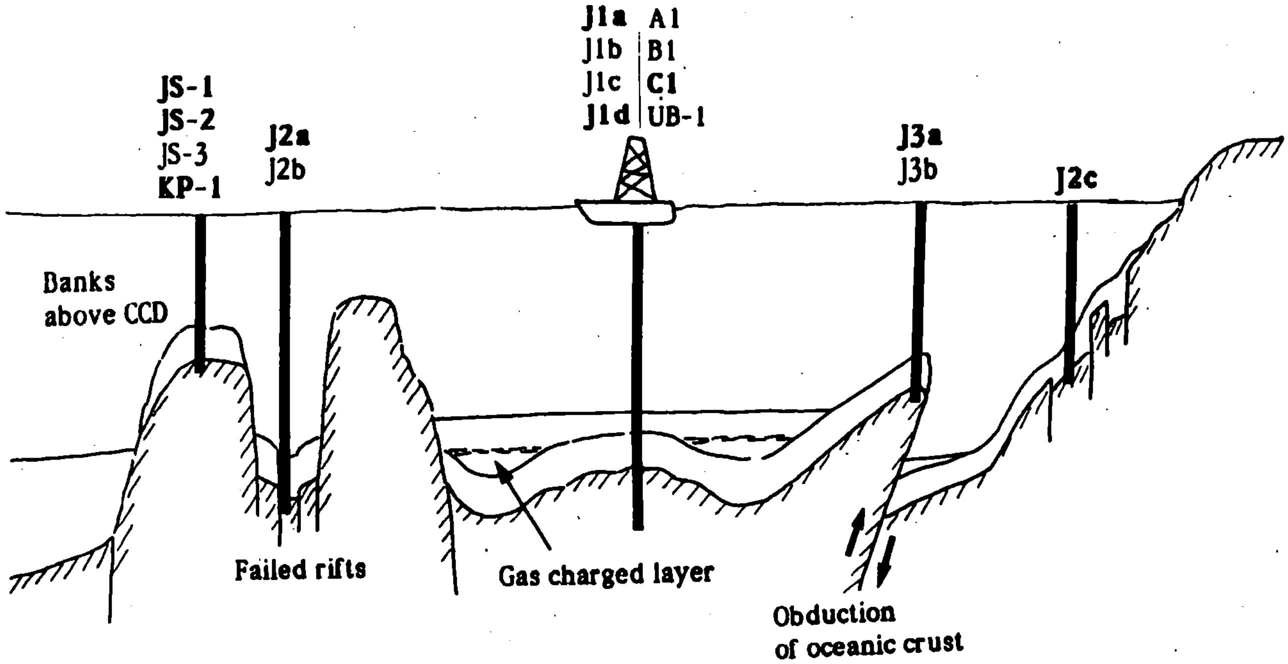
List of proposed sites

Site	Water Depth(m)	Hole Type	Reentry	Drill Days	Penetration (m)	Related Objectives
J1a	**2530**	**Rotary**		**6**	**550**	**1,2,5,6,7,8**
J1b	2780	Rotary	x	9.5	700	1,2,5,6,7,8
J1c	2400	Rotary		6	550	1,2,5,7,8
J1d	**3170**	**Rotary**		**6**	**350**	**1,2,5,6,7,8**
J2a	**2050**	**Rotary**	**x**	**12.5**	**1370**	**1,2,4,5,6,8**
J2b	2065	Rotary	x	10.5	1050	1,2,4,5,6,8
J2c	**1270**	**Rotary**	**x**	**9.5**	**1020**	**1,2,5,6,8,9**
J3a	**2040**	**Rotary**	**x**	**8.5**	**700**	**1,2,3,5,6,9**
J3b	1480	Rotary	x	8.5	870	1,2,3,5,6,9
KP-1	**1400**	**Rotary**	**x**	**8**	**1100**	**1,2,9**
				Sub total: 50.5 days (excluding alternate sites)		
JS-1	**2338**	**Rotary,HPC**		**7**	**500**	**9,10**
JS-2	**998**	**Rotary,D-HPC**		**4.5**	**600**	**9**
JS-3	1200	Rotary,D-HPC		4	400	9
A1	3225	Rotary	x	9	600	1,2
B2	1400	Rotary	x	8	1000	1,2
C3	**2928**	**Rotary**	**x**	**10.5**	**1000**	**1,2**
UB-1	2500	Rotary,HPC		11	1400	1,2,8

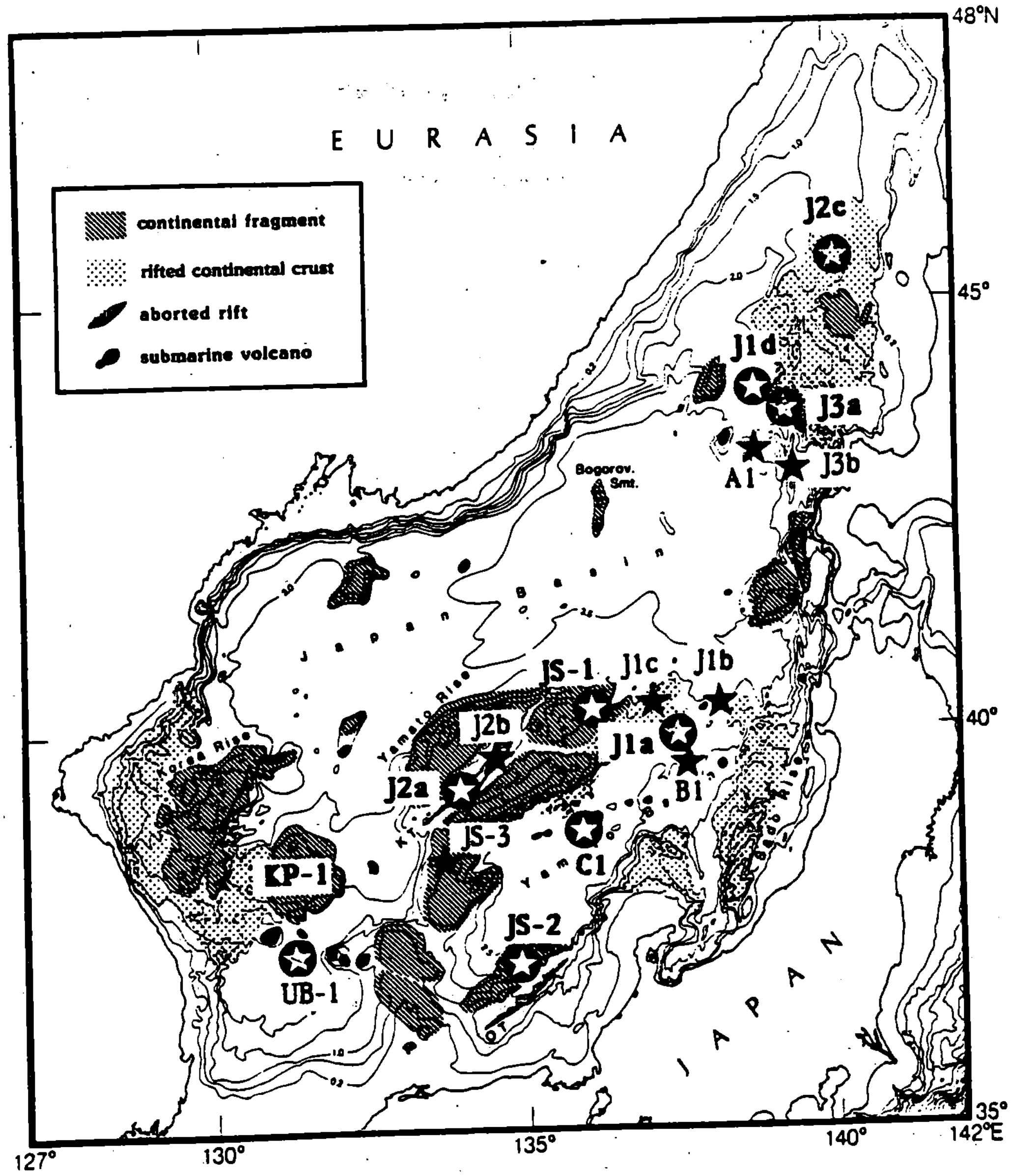
Thick: Principal site

Total: 72.5 days (excluding alternate sites)

Proposed drilling sites on a cartoon profile of the Japan Sea



Proposed drilling sites (thick:principal, thin:alternate)



WESTERN PACIFIC PANEL

Summary of South China Sea Proposed Drilling:
The Northern Rifted Margin and Deep Basins

Part I - Rifted Margins

The South China Basin is an "Atlantic-type" marginal basin, bounded by passive continental margins to the north and south. Opening of the basin moved microcontinental blocks (including northern Palawan and Reed Bank) southward from their original Paleogene positions adjacent to the China mainland. East trending magnetic lineations identified in the eastern half of the basin, date seafloor spreading as mid-Oligocene through Early Miocene (32 to ~17 m.y.B.P.); Figure 1.

The South China Sea is particularly well suited for studying passive margin stretching models because: A) it is probably old enough not to be effected by the complex, unquantifiable initial stretching processes and tectonics B) it is young enough to still exhibit observable differences in its subsidence and associated thermal history predicted by different crustal extension models.

The South China Sea is also an excellent place to: 1) investigate the processes of early rifting and subsidence of passive continental margins in general 2) to examine the validity of existing thermo- mechanical models of rifting in a place where the parameters of such models either have been or can be measured directly 3) to provide tectonic constraints to help isolate the effects of rifting from subsequent collisional processes that also occurred to the south 4) to obtain valuable ground truth on the sediment history (including effects of changing sea level), the paleoenvironment, and the petrology of the crystalline basement in a Western Pacific "marginal sea basin".

In the South China Sea all of the crucial pieces of supporting geophysical data have been collected to test passive margin models that predict the relationships between continental rifting, subsidence, drifting, sediment deposition, thermal history, and hydrocarbon maturation. They include: good regional MCS coverage of the margin, excellent single channel seismic and underway geophysics for the deep basin, deep seismic crustal thickness data and detailed heat flow measurements along selected margin transects.

Our principal drilling goal involves one transect of 4 ODP holes (near ~116°-118° E) in the region best known by the existing geophysical data base, and tied to additional commercial bore hole data from the inner shelf along the landward side of this margin transect.

One hole would be in the deep basin, two holes on the broad continental rise/slope, and one hole on the deep outer shelf/slope (See Figure 1 and table 1).

Part II - Deep Basin Holes

The final phase drifting history of the South China Sea remains open to interpretation. One model suggests a late change in spreading direction from N-S to NW-SE accompanied by coeval opening of the southwestern sub-basin of the South China Sea. Another model requires a late phase or oblique spreading for portions of the basin. A third more radical hypothesis postulates that the southwest sub-basin is much older (Cretaceous) than the eastern basin (Oligocene - Mid Miocene). Because these basins are relatively small, the conventional method of determining crustal ages from seafloor spreading magnetic lineations does not provide an unequivocal answer. Knowing the timing of key spreading events is important in evaluating their relationship to apparent regional pulses of tectonic activity and to possible regional/global plate reorganizations.

A number of similar proposals were received, each designed to resolve one or more aspects of the unknown late spreading history of the central and southwestern portions of the South China Sea basin. The holes shown in Figure 1 - SCS 5-8 represent "generic holes" defined from the ~15 holes proposed for the deep basin. They will answer questions regarding the age and rates of spreading in key parts of the basin, and will investigate the paleoenvironmental/ sedimentary conditions for this enclosed marginal sea. Each hole can be sited to minimize the required penetration and still solve the problems posed. While a minimum of 3 holes is required to answer all the key questions, even 1 or 2 basin holes would solve some of the problems.

Table 1

	Proposed Holes	Relative Priority	W.D.	Sed. Thickness	Penetration	Est. Time required On-Site*
Rifted Margin Sites	SCS 1	2	3650 m	1200 m	1250 m (into basement-oceanic crust)	12-13 days
	SCS 2	1	3150 m	~1000 m	(into basement-transitional crust)	9-10 days
	SCS 3	1	2060 m	~1200 m	(into basement-transitional crust)	9-10 days
	SCS 4	2	750 m	2000 m	(to 1000* m, to basement would be best)	7*-20 days
Deep Basin Sites	SCS 5	2	4000 m	<200 m	~250 m (into oceanic crust)	6 days
	SCS 6	3	4300 m	~400 m	~450 m (into oceanic crust)	7 days
	SCS 7	3	4200 m	~600 m	650 m (into oceanic crust)	9 days
	SCS 8	4	3480	200 m	250 m (into oceanic crust)	6 days

All estimates derived from JOIDES JOURNAL, v. xi, N. 4, 1985, Fig. 15.

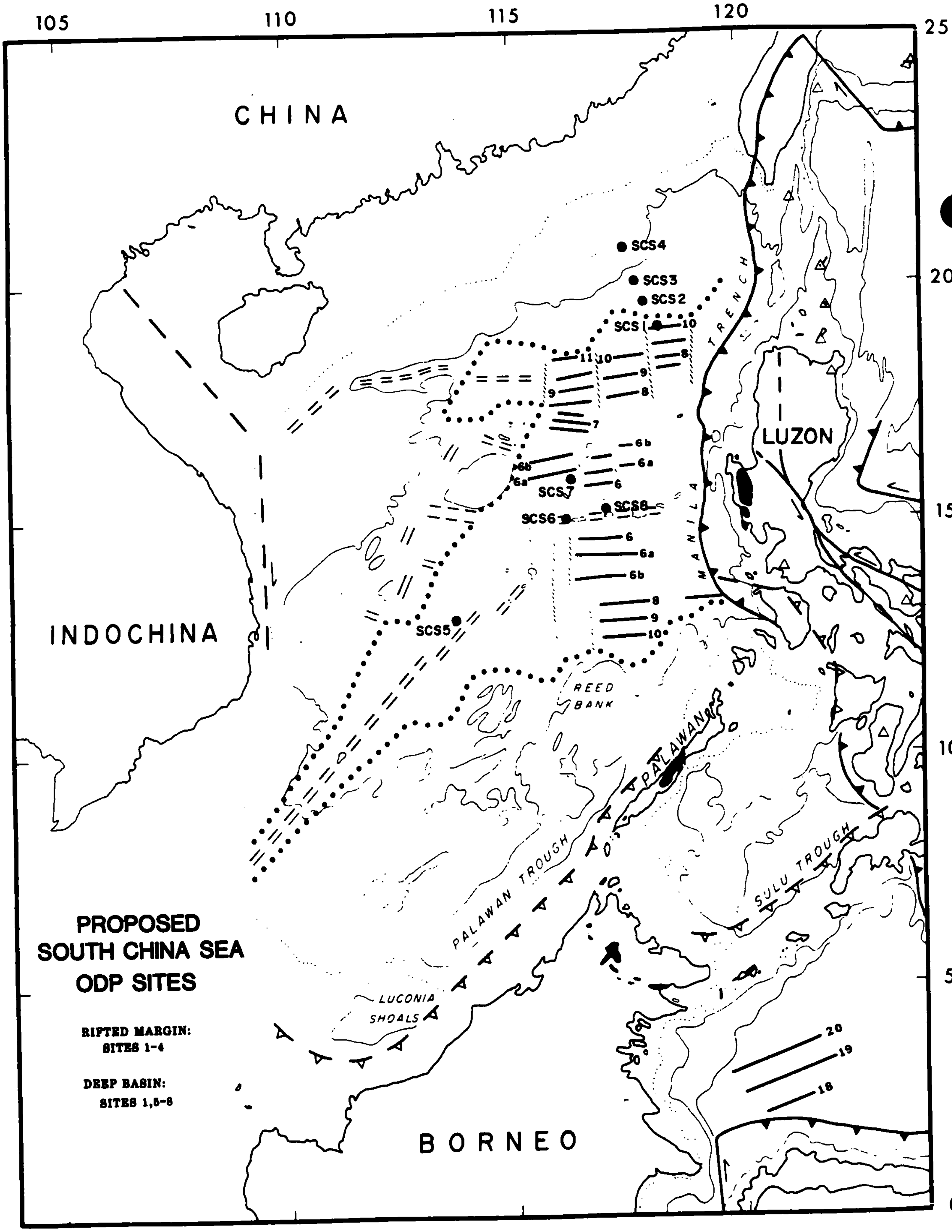

105
110
115
120
25
20
15
10
5
0
CHINA
INDOCHINA
LUZON
BORNEO
SCS4
SCS3
SCS2
SCS1
SCS5
SCS6
SCS7
SCS8
MANILA TRENCH
REED BANK
PALAWAN
PALAWAN TROUGH
SULU TROUGH
LUCONIA SHOALS
PROPOSED
SOUTH CHINA SEA
ODP SITES
RIFTED MARGIN:
SITES 1-4
DEEP BASIN:
SITES 1,5-8

Figure 1

SUMMARY COMMENTS ON OCEAN HISTORY DRILLING OBJECTIVES IN WPAC MARGINAL BASINS

SOUTH CHINA SEA

Paleoceanographic and sediment history objectives in the South China Sea derive from (1) the ideal passive margin record known to exist along the northwest continental margin of the sea, (2) the multiphase water mass and faunal history thought to have accompanied the episodic tectonic and eustatic history of the South China Sea basins, and (3) the importance of the sea as a model for a number of Paleozoic and Mesozoic basins thought to have formed in similar back arc settings.

The proposed transect of sites in the South China Sea offers the possibility of repeatedly tracing faunal and sedimentary response to major Neogene eustatic events from the shelf to deep basin floor in a relatively confined basinal setting as opposed to an open ocean configuration. We anticipate that these studies will be enhanced by the availability of data from commercial drill holes in shelf and shelf-edge areas thus allowing a uniquely complete spectrum of shelf, slope, and deep basin depositional facies to be defined and integrated with seismic profiles. In short, we see an opportunity to document the evolving depositional architecture of this passive margin in a manner allowing well contrained tests of proposed subsidence models in a setting where sedimentary and tectonic parameters can be judged in relation to overall basin history.

The stratigraphic records to be recovered in the South China Sea will provide evidence of (1) varying paleobathymetry at each site and hence documentation of rates and modes of margin and basin subsidence including age contraints on key unconformities, (2) variations in the composition, rate of accumulation, and modes of sediment transport during each phase of rift history reflecting both eustatic control of terrigenous sediment, paleoceanographic and climatic control of pelagic materials, and sedimentary evidence of volcanic events accompanying collision events to the east. We are particularly concerned about documenting any anoxic phases in the evolution of the South China Sea and the possible control of of oxygen deficient water masses by eustatic and tectonic manipulation of basin configuration, existance and position of shallow sills, and the interplay between global and climatic control of surface and deep circulation. Significantly, the South China Sea serves as the only source of well oxygenated water for the adjacent Sulu Sea basins with all this implies for the history of anoxia and resulting faunal and geochemical affairs in both basins. ODP drilling in both the South China Sea and Sulu Sea will thus provide a special opportunity to compare and correlate paleoceanographic histories of two adjacent but contrasting marginal basins during a period of major global climatic change associated with mid Miocene Antarctic cooling. Isotopic and faunal analysis of HPC cores from the South China Sea will provide detailed recordes of deep, intermediate, and surface circulation and productivity as well as supplimentary evidence of the separation of Indian Ocean and Pacific influences on faunal and water mass history as collision, back arc spreading, and basin formation accelerated throughout this region in mid Miocene time.

SULU SEA BASINS

Paleoceaographic objectives in the Sulu Sea basins are focused on the anoxic and suboxic sedimentary record known to exist in this silled marginal sea. A proposal by Thunnel details the importance of this setting for yielding an ultra high resolution stratigraphic record of variations in basin circulation and productivity tied to global climatic and eustatic events and to the tectonic and depositional history of the basin. Incites into the depositional and paleoceanographic evolution of the Sulu Sea basin gained via ODP drilling will have important implications for the interpretation of analogous Mesozoic and early Tertiary silled basins common to the meridial Tethys Sea and which evolved in similar carbonate-rich equatorial settings.

Specifically, faunal and stable isotopic analysis (C^{13}, O^{18}) of the Sulu Sea sequence will provide unusually detailed records of basin response to Quaternary and late Neogene glacial and interglacial climatic cycles manifested by eustatic sea level fluctuations as well as changes in surface circulation in this region. Much of the Neogene record in the Sulu Sea basin is expected to consist of laminated organic-rich sediment reflecting deposition under anoxic and suboxic subsill water which excluded larger infaunal invertebrates allowing preservation of individual laminae. Infact, the laminated character of the subsill sequence may well allow identification and analysis of six month (e.g. seasonal) events and annual cycles in the paleoceanographic evolution of the basin as well as a complete spectrum of longer term climatic and depositional cycles tied to the eustatic control of critical sill depth. We anticipate that benthic faunal analysis will demonstrate threshold effects between the anoxic and suboxic states induced by these events as well as cyclic control of fine grained turbidite deposits in the basin center. Variations in planktonic and benthic foraminifera in these sediments will allow analysis of both deep and shallow circulation in the basin with distinctive benthic biofacies demarking evolution of anoxic, suboxic, and oxic phases in water mass history.

Our proposed site in the west central area of the Sulu Sea basin was chosen to recover the least disturbed deep basin record. Available seismic lines indicate this area is relatively free of coarse turbidite deposits common to the steep eastern flank of the basin, Our second proposed site on the basin flank will yield a less continuous but neverless valuable paleoceanographic and eustatic record with carbonate anticipated to be well preserved in both sites despite the oceanic depths in the basin proper. Finally, it is important to point out that an independent piston and box core transect will likely be completed across the Sulu Sea basin and into the adjacent South China Sea prior to ODP drilling providing especially valuable background information on Recent sediment and faunal relationships in these adjacent seas and aiding in the interpretation of the Neogene sequences anticipated in this area.

SEA OF JAPAN

Sediment history objectives in the Sea of Japan take advantage of the relatively large body of knowledge available on sedimentary, faunal, and oceanographic patterns and processes in the modern sea.

and the substantial incites into Neogene events gained via concentrated study of Miocene, Pliocene, and Pleistocene marine sequences exposed along the eastern and southern margins of the sea. Major goals include (1) faunal and isotopic analysis of the unusually dynamic mid and high latitude paleoceanographic and climatic history experienced by the Sea of Japan which is known to have involved a major change from subtropical to subarctic character in late Miocene time and repeated alternations of anoxic and oxic phases as a function of both tectonic and climatic events in this region, (2) documentation of the age and character of the well established three-fold sedimentary history experienced by this sea and the relative roles of volcanic, eustatic, tectonic, and paleoceanographic events in producing these widespread lithofacies patterns, (3) detailed analysis of the origin and diagenesis of the distinctive and ubiquitous diatomaceous sediments characterizing mid and late Miocene phases of basin evolution, and (4) the origin, development, and sedimentary architecture of major late Neogene and Quaternary submarine fan systems now filling the eastern portions of the sea.

Although the Sea of Japan constitutes one of the best studied of all back arc basins key facts concerning the age, depositional history, and paleoceanographic development of the sea remain obscure or unanswered. For example, Leg 31 drilling failed to penetrate prelate Miocene sediments leaving questions about mid and early phases of basin history unanswered and equivocal. Thus, establishment of the age of earliest marine sediments in the sea constitues a major question to be addressed by ODP drilling. Study of onshore sequences on Honshu has revealed that subsidence in the eastern portion of the sea began in early Miocene time with rapid acceleration of subsidence in mid Miocene time. Although seismic and magnetic evidence tend to support this picture for others areas in the sea hard evidence is lacking with the age of older sediments in the deepest portions of the sea surmised but not fixed. The rapid spreading and subsidence in the Sea of Japan in mid Miocene time is known to have been followed by widespread deposition of largely biogenic diatomaceous sediments representing a response both to a lack of diluting terrigenous debris and relatively high productivity in surface waters during later Miocene time. Recovery of HPC cores in these latter deposits will allow an unusually detailed paleoceanographic history to be reconstructed and enhanced by the abundance of environmentaly sensative diatom floras. These analyses will also sheld light on the relative influences of the warm Kuroshio and cold Oyashio currents in this history with distinctive floras and faunas allowing these patterns to be traced and correlated with both global paleoclimatic trends and the tectonic emplacement of sills and island barriers.

Emplacement of extremely shallow sills at the major gateways of the Sea of Japan in Pliocene time set the stage for control of basin circulation, geochemistry, and productivity during later Pliocene-Pleistocene and Holocene phases in basin evolution. Piston cores and limited data from Leg 31 drilling have provided scant but dramatic evidence of alternating periods of severe anoxia and oxic circulation of the sea as eustatic sea level changes alternatingly isolated the sea from the Pacific Ocean and re-established marine circulation across the shallow sills. The severity of these events is evidenced by the presence of fresh water diatom floras in uppermost Miocene and younger sediments recovered from the sea. Furthermore, it is known that anoxic phases have been accompanied by unusual metal anomalies in deep sediments and that an unusually shallow CCD is present during oxic phases of basin history including the Holocene. Proposed ODP sites in the Sea of Japan are positioned to address each phase in the complex paleoceanographic history of the sea including detailed analysis of pre-sill and post-sill phases of basin evolution. The eustatic control of terrigenous sedimentation in the eastern sub-basins should be clearly displayed within the Toyama Deepsea Fan with the parallel objective of deciphering the depositional architecture of fan systems in confined marginal basin settings as developed in a proposal by de V. Klein.

SUMMARY OF THE DRILLING PROGRAM FOR NANKAI TROUGH AND SHIKOKU FOREARC TRANSECT

Introduction

Accretion of trench-fill turbidites is one of the fundamental processes of orogenic belt evolution. However, the mechanism of formation and deformation of accretionary wedges, including the origin of such chaotic rock facies as melanges or broken flysch formations, is controversial. In particular, there is a large gap in the scale of structural information acoustically imaged at the toes of accretionary wedges and the observed structures of onland examples. Drilling is the only way to narrow this gap.

The Nankai Trough convergent margin is one of the best studied examples of turbidite-filled trenches and active accretionary wedges. The data set is substantial and includes migrated MCS profiles, SCS profiles, abundant geophysical data (including one of the best heat-flow data sets for any trench or accretionary prism), Seabeam mapping, and submersible diving results. All these data indicate that the deformation of trench turbidites and fluid circulation (accompanied by vent ecological systems) are quite active at the toes of accretionary wedges. In contrast to this strong data set, drilling results have been quite incomplete (although as pointed out by Coulbourn, 1986, drilling here should be very rewarding, because of the stable hole conditions and because the gas problem is minor compared to other convergent margins). Parts of two legs (31 and 87) have been devoted to drilling in the Nankai Trough at three sites, but inadequate data was obtained due to shortage of time and misfortunes such as derrick problems and typhoon weather.

Objectives

The overall tectonics and sedimentation in the Shikoku forearc region are controlled by the collision of the Izu-Bonin arc against the Honshu arc. The turbidites come from the "Japanese Alps" through the Suruga Trough. Two broad tectonic objectives can be addressed in the Nankai Trough-Shikoku forearc transect drilling plan: the toe and outer forearc processes of accretionary prisms, and the vertical tectonics of the forearc, particularly in response to the collision event.

1. Toe and Outer Forearc Processes

Several important processes of accretionary wedge evolution are the objectives of Nankai Trough drilling. They are:

(a) the deformation, structural fabric development, lithification, and diagenesis of trench-fill turbidites.
(b) the role of porewater (from both turbidites and oceanic sediments) in accretionary wedge deformation and diagenesis.
(c) the mechanism and conditions of melange formation.
(d) the mechanism of vertical and horizontal growth of accretionary wedges.
(e) the structural and sedimentological evolution of slope basins.
(f) Sedimentary facies of trench turbidite, channel environments.

2. Vertical Tectonics of Forearcs

It has been assumed that the southwestern Japan arc has been deformed, due to the Izu-Bonin collision, since Pliocene time. The consequences are: (a) the uplift of the Japanese Alps, (b) the westward migration of the forearc region, accompanied by the right-lateral strike-slip movement of the

Median Tectonic Line, and (c) E-W compression of the volcanic arc and NW-SE compression of the forearc. The objectives addressed in this program are related to this broad arc deformation phenomena. The drilling plan focuses on the vertical tectonics and formation of forearc basins related to the NW-SE compression. Objectives are: (a) timing and rate of forearc basin subsidence, (b) history of the vertical motion of the outer ridge, and (c) long-term vertical tectonics of accretionary wedges since middle Miocene time, for comparison with presumably drastic Plio-Pleistocene events.

Proposed Sites

The strategy of drilling in accretionary wedges is similar to that of the Barbados leg (Leg 106) — a reference hole at the trench and a series of holes at different tectonic levels of accretionary wedges, emphasizing logging and porefluid sampling.

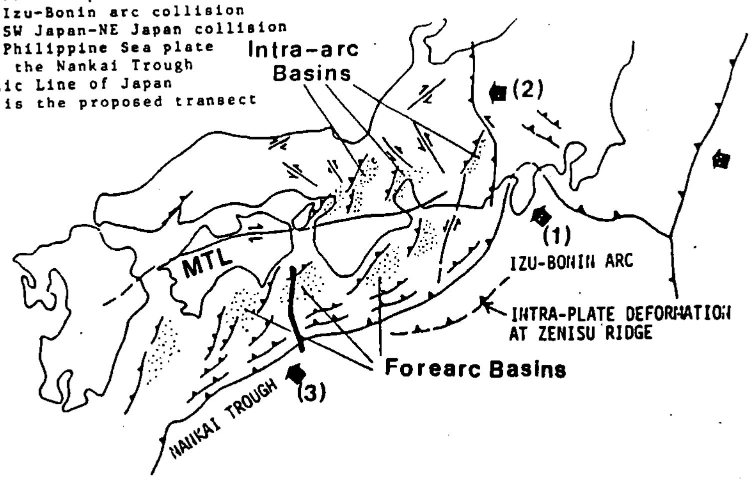
Drilling at the forearc basin sites focuses on the determination of stratigraphy, sedimentary environments, and paleo-waterdepths.

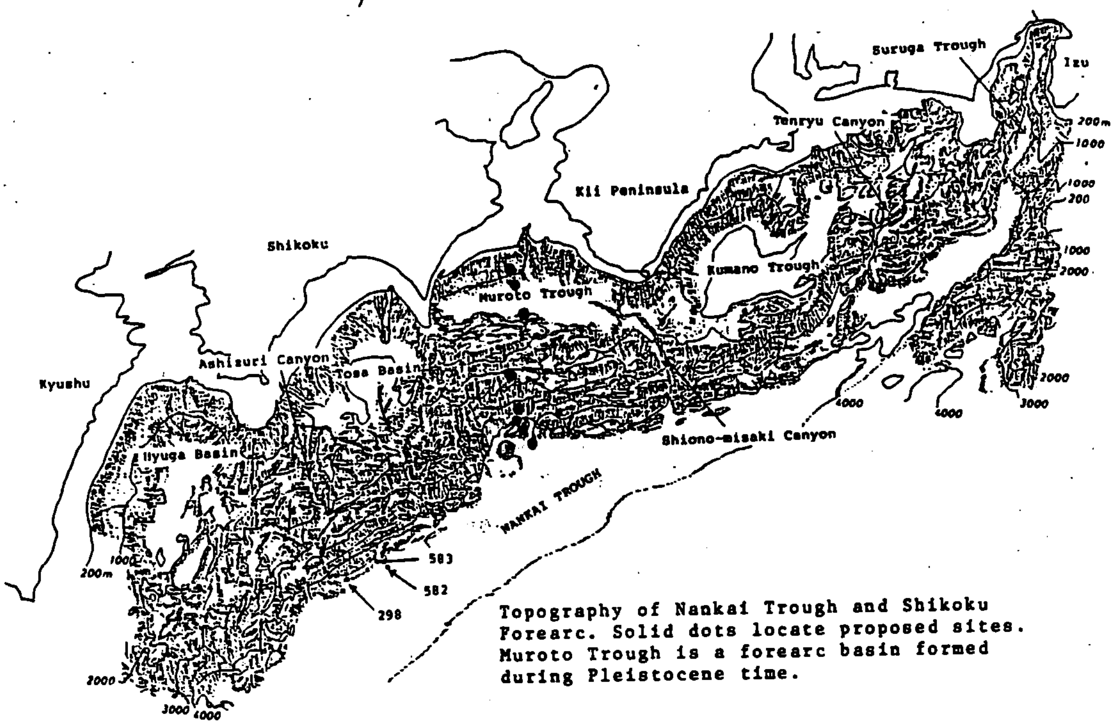
Other objectives which can be investigated in this region include paleoceanography of Kuroshio current, turbidite sedimentary facies of the slope and of the trench channel environments, and paleoseismicity using turbidite frequency.

LIST OF PROPOSED SITES

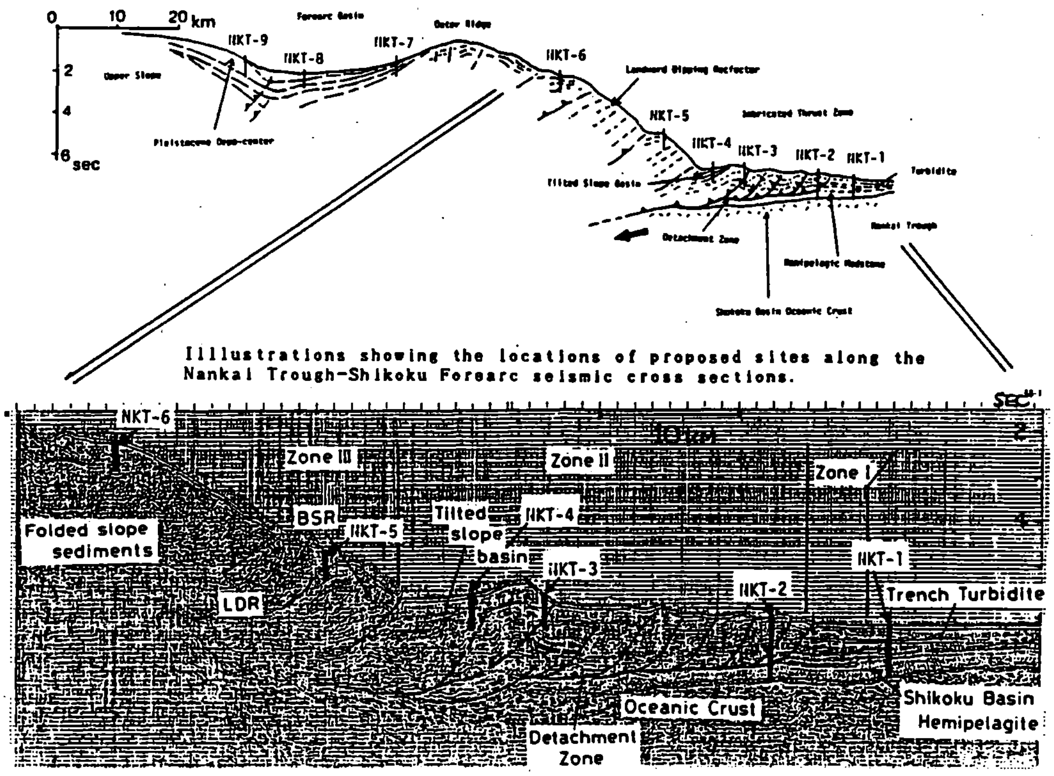
#	Lat	Long	Water Depth	Drill. Days	Penetration	Hole Type
NKT-1	32N	135E	4750m	14	1200m	HPC, Rotary Reentry
(Reference hole at the undeformed trench-fill. Penetrate through Pleistocene turbidites, Plio-Miocene hemipelagic mudstone and oceanic crust).						
NKT-2	32N	135E	4580m	23	1700m	HPC, Rotary Reentry
(Toe of prism to penetrate through decollement to the oceanic crust)						
NKT-3	33N	135E	4280m	9	700m	HPC, Rotary
(Nature of major imbricated thrust zone and porefluid evolution)						
NKT-4	33N	135E	4280m	9	700m	HPC, Rotary
(Slope basin structure and stratigraphy to calibrate tilting history and age of accretionart wedge)						
NKT-5	33N	135E	3530m	9	800m	HPC, Rotary
(Nature and lithofacies of landward dipping reflector sequence)						
NKT-6	33N	135E	1650m	8	700m	HPC, Rotary
(Structure of folded slope basin and vertical tectonics of upper slope)						
NKT-7	33N	135E	1050m	8	800m	HPC, Rotary
(Stratigraphy of forearc basin-fill)						
NKT-8	33N	135E	1320m	7	600m	HPC, Rotary
(Investigation of the subsidence of forearc basin)						
NKT-9	33N	135E	820m	7	700m	HPC, Rotary
(Vertical tectonics of upper continental slope)						

Active Tectonics of SW Japan
(1) direction of Izu-Bonin arc collision
(2) direction of SW Japan-NE Japan collision
(3) direction of Philippine Sea plate subduction at the Nankai Trough
MTL=Median Tectonic Line of Japan
Thick solid line is the proposed transect





Topography of Nankai Trough and Shikoku Forearc. Solid dots locate proposed sites. Muroto Trough is a forearc basin formed during Pleistocene time.



Illustrations showing the locations of proposed sites along the Nankai Trough-Shikoku Forearc seismic cross sections.

Summary: Taiwan Collision Zone/Manila Trench Drilling Objectives

Proposed drilling along the Manila Trench/Taiwan collision zone convergent plate margin is based on the theme of *collision tectonics*. Specific goals are: 1) to gain new understanding of the processes by which an oceanic subduction zone evolves into an island arc-continent collision by investigating the Taiwan arc-continent collision zone, and 2) to investigate a zone of trench-seamount collision offshore of western Luzon. The Manila Trench/Taiwan collision system represents one of the best locales in which one can move along structural strike of a single continuous plate boundary and pass from a region characterized by the subduction of oceanic lithosphere into a region where transitional crust is being subducted, and then to a zone of active collision between a passive continental margin and an island arc. Because of the unique and well-quantified oblique collision geometry between the island arc of eastern Taiwan and the Asian continental margin, the temporal evolution of the collisional orogeny can be accurately documented. The rate of southward propagation of the collision with respect to the arc is about 85 km/my; hence, to move 85 km southward along Taiwan and the northern Manila Trench is equivalent to moving to a stage 1 my earlier in the development of the collisional orogeny. This relationship between the temporal evolution of the arc-continent collision and position along strike of the convergent plate margin allows questions about both the temporal and spatial evolution of the collisional orogeny to be addressed by drilling.

Drilling would ideally take place along three or four transects, each consisting of four or five holes (Fig. 1). The objectives of the southernmost transect, located along latitude 18° 50' N., are to quantify the structure and stratigraphy of sediments involved in oceanic crust subduction prior to arc-continent collision. The results of this transect will serve as a "baseline" for comparison to drill results from within the actual collision zone. The central drilling transect, located at about 20° 15' N., will investigate the sedimentary and structural consequences of the earliest stages of arc-continent collision, including sampling underthrusting continental crust, determining the rates of tectonic uplift during the early stages of the collision, and documenting the involvement of arc and/or continental basement in thrust faulting. The northernmost drilling transects, located southwest and southeast of Taiwan, will investigate the sedimentary record of the arc-continent collision. Questions to be addressed here include: How does the nature and distribution of sediment reflect the geometry of the collision? What are the differences and/or similarities in sedimentation between the forearc basin and the foreland basin during arc-continent collision?

A narrow zone is present further south along the Manila Trench where a collision between the trench inner wall and the Scarborough Seamount chain is occurring. The trench-seamount collision is restricted to a small region of the trench because the plate convergence direction is nearly parallel to the trend of the seamount chain. Hence, the effects of episodic collisions of individual seamounts are repeated in a small segment of the forearc rather than being distributed over a large part of the forearc, as is the case during oblique collisions of linear seamount chains. This serves to amplify the tectonic consequences of the attempted subduction of large topographic features on the oceanic plate. This target region represents a unique opportunity for the investigation of trench-seamount collisions. Five drill sites to investigate this problem are identified using CDP reflection data from the collision zone (Fig. 2). Sampling data from these sites will be directly comparable to hypothesized seamount fragments now exposed within subduction complexes on land.

Detailed information about the onset and evolution of arc-continent collision is difficult or impossible to obtain from ancient examples exposed on land due to the intense deformation that accompanies the terminal stages of collision. However, by moving along strike of the Manila Trench toward the Taiwan arc-continent collision zone one can sequentially investigate 1) the subduction of oceanic crust ("B-subduction") immediately prior to the involvement of continental crust, 2) the transition zone between oceanic and continental subduction, and 3) the early stages of underthrusting continental crust ("A-subduction"). Processes related to subduction can be directly compared to those of collision along the same convergent plate margin, where variables such as convergence rate and direction are constants. The Manila Trench is likely one of the best natural laboratories available in which to identify, isolate, and contrast the processes active during subduction, arc-continent collision (terrane accretion!?), and trench-seamount collision events along a single, continuous plate boundary.

Site Summary

Site	Latitude	Longitude	Water Depth (m)	Penetration (m)	Hole Type
Arc-continent Collision-Early Stage Sites					
MTT-1	20^{o} 15'N.	120^{o} 20'E.	4000	1100	Rotary
MTT-2	20^{o} 15' N.	120^{o} 25'E.	3750	1600	Rotary
MTT-3	20^{o} 15' N.	120^{o} 37' E.	2650	700	Rotary
MTT-4	20^{o} 16'N.	120^{o} 47'E.	2750	700	Rotary
MTT-5	20^{o} 16' N.	121^{o} 08' E.	3150	600	Rotary
Pre-Collision Sites					
MTT-6	18^{o} 50' N.	119^{o} 41' E.	4100	1200	Rotary
MTT-7	18^{o} 50' N.	119^{o} 50' E.	3780	1100	Rotary
MTT-8	18^{o} 51' N.	120^{o} 01' E.	2850	900	Rotary
MTT-9	18^{o} 52' N.	120^{o} 18' E.	2075	800	Rotary
Trench-Seamount Collision Sites					
MTT-10	15^{o} 59' N.	119^{o} 11' E.	3875	500	Rotary
MTT-11	15^{o} 59' N.	119^{o} 15' E.	4580	600	Rotary
MTT-12	16^{o} 00' N.	119^{o} 19' E.	2000	500	Rotary
MTT-13	16^{o} 00' N.	119^{o} 25' E.	1400	800	Rotary
MTT-14	16^{o} 01' N.	119^{o} 33' E.	1810	900	Rotary
Mature Arc-Continent Collision Sites					
MTT-15*	22^{o} 15' N.	119^{o} 35' E.	1650	--	Rotary
MTT-16*	21^{o} 45' N.	119^{o} 50' E.	2350	--	Rotary
MTT-17*	21^{o} 20' N.	120^{o} 00' E.	2900	--	Rotary
MTT-18*	22^{o} 25' N.	121^{o} 20' E.	2250	--	Rotary
MTT-19*	21^{o} 55' N.	121^{o} 20' E.	3050	--	Rotary
MTT-20*	21^{o} 45' N.	121^{o} 12' E.	2770	--	Rotary

* Approx. locations; site surveys for Taiwan Collision targets will be conducted in 1986.

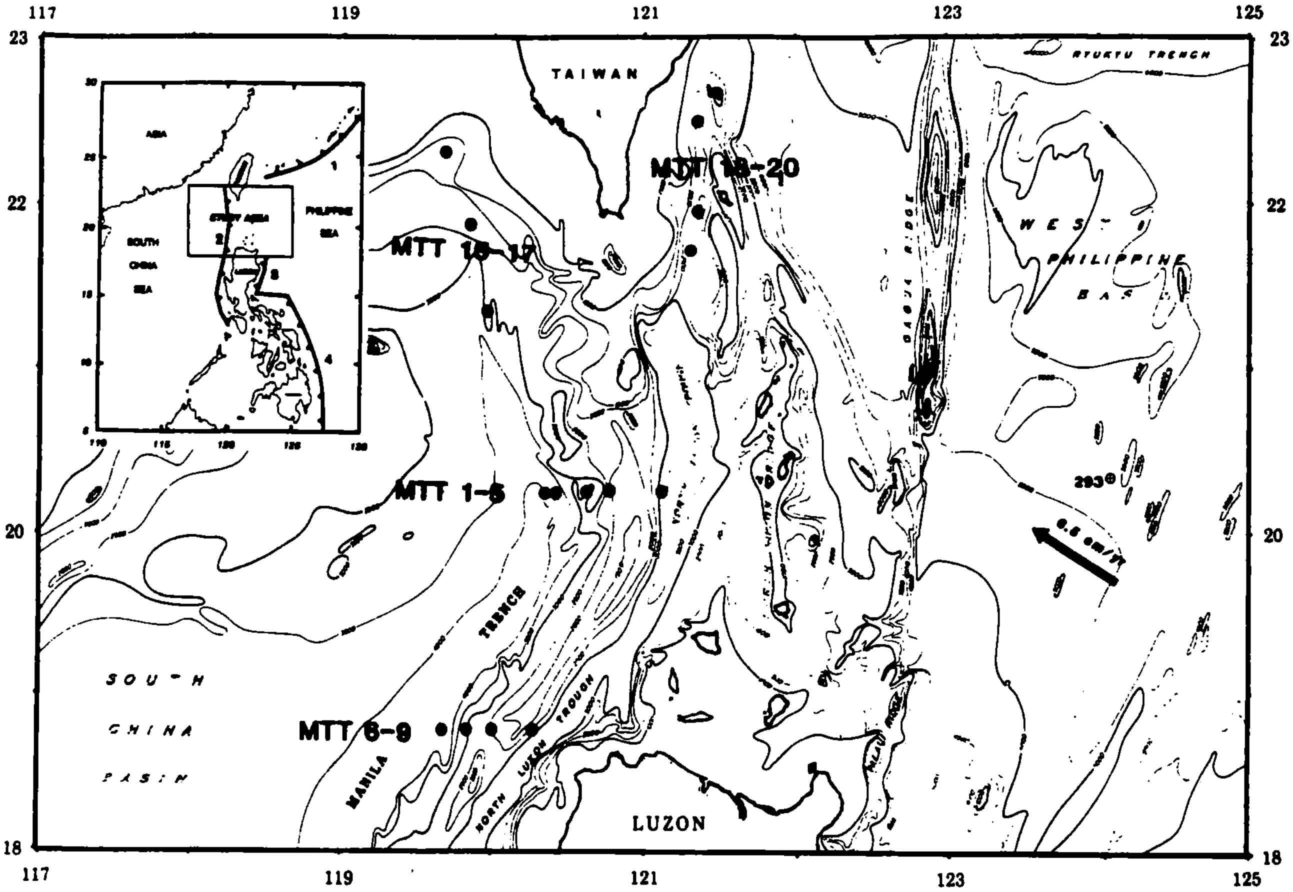


Figure 1

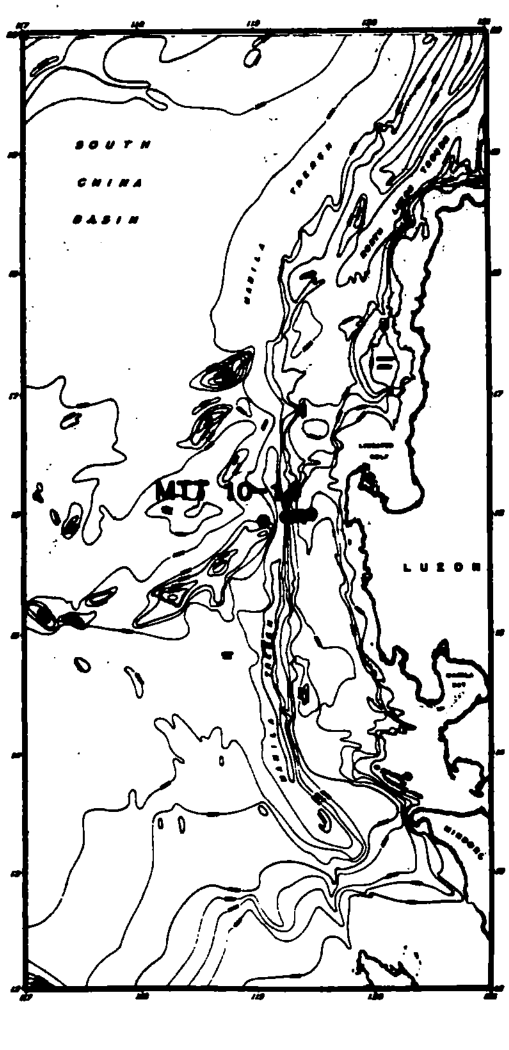


Figure 2

INTRAPLATE DEFORMATION ALONG : ZENISU RIDGE JAPAN

Siegfried LALLEMANT (Université Paris VI, 75005, Paris, France)

Xavier LE PICHON (Université Paris VI, 75005, Paris, France)

Claude RANGIN (Université Paris VI, 75005, Paris, France)

July 1985

General objectives

Intraplate of a young marginal basin by thrusting of the oceanic crust seaward of a subduction trench.

I. Geodynamic setting

The Zenisu ridge is a WSW-ENE trending linear structure located seaward of the Nankai trough, at the western edge of the Izu-Bonin (Iwo-Jima) active arc.

From the morphological point of view, this ridge trending N-50 E is vanishing progressively to the west, where it disappears within the Shikoku basin. Eastward this ridge connects progressively with the Izu-Bonin ridge.

It is a NW dipping monoclinal, fault bounded on its southeastern flank, itself bordered by a sediment filled trench, called the Zenisu basin. The sediments covering the ridge correspond generally to transparent seismic sequences, suggesting an hemipelagic origin, and are very similar to the seismic sequences recognized westward on top of the oceanic crust. Magnetic anomalies trending NW-SE were recognized across the ridge, suggesting an oceanic origin for this western part of the ridge. This NW-SE direction is fairly consistent both with the magnetic lineations related to the first stage of Shikoku basin opening, and with the topographic grain of the eastern wall of Suruga trough.

The tectonic framework of this ridge is controlled by N-60 E trending low dipping faults and associated folds are concentrated along the steep SE ridge slope and into the Zenisu basin. Here, sediments (partly trench fill sediments and partly hemipelagic sequences) are folded and accreted by thrust faults to the base of the ridge. The structures of the steep southern flank display a thrust and fold pattern with thrust bounded folds, very similar to the Nankai accretionary prism.

Zenisu ridge appears as an oceanic crustal slab, dipping to the NW, accreting clastic sediments as its base, and accomodating part of the convergence motion between Japan and the Philippine

Sea plate. It can be considered as a classical example of intraoceanic accretion.

II. Drilling objectives.

Zenisu ridge is a quite unique example of intra-oceanic plate deformation largely documented by MCS, SCS, Seabeam and manned submersible observations.

Complementary data in this area could provide important informations about such intra-oceanic deformation processes, marked by intense dewatering of sediments, water diagenesis, organic matter maturation and development of benthic communities.

Various objectives are presented here :

1. Study the deformed sediments present along the south-eastern slope of Zenisu ridge and their dewatering stage. Three sites are proposed in the place where benthic communities were encountered during Kaiko diving project :

2. To check the nature of the basement of western Zenisu ridge, supposed to represent the oldest part of Shikoku basin.

3. Testing the age and rate of tilting along the Northwestern slope of Zenisu ridge, by dating the observed unconformity.

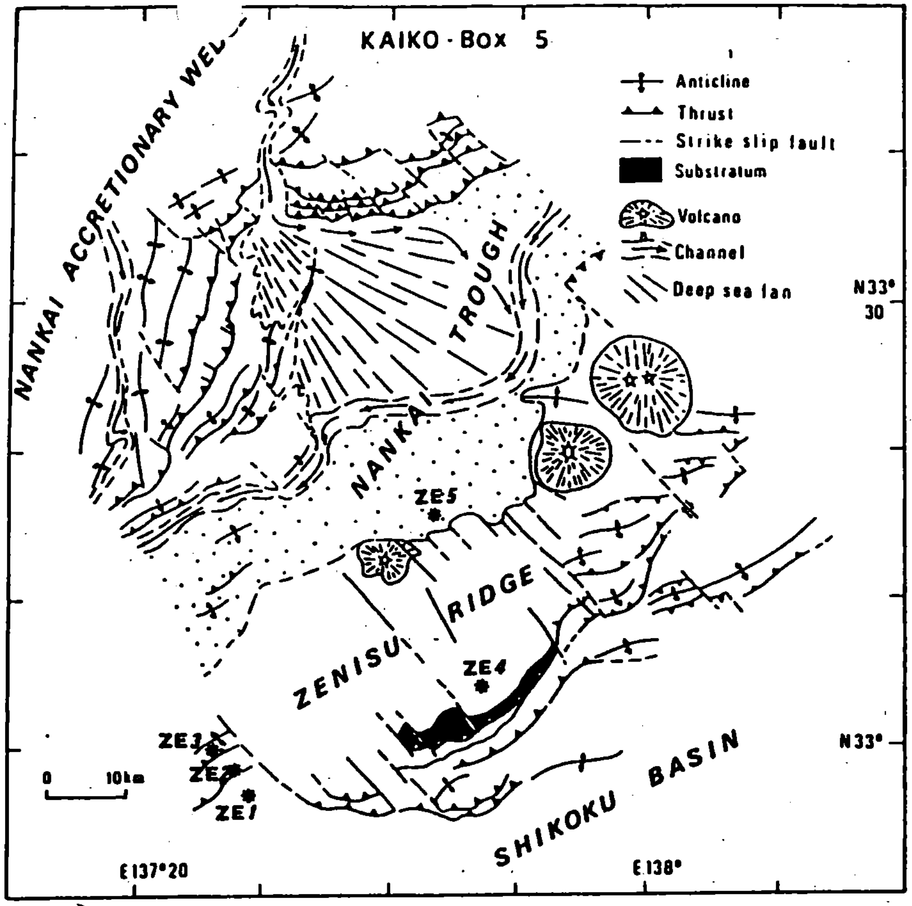
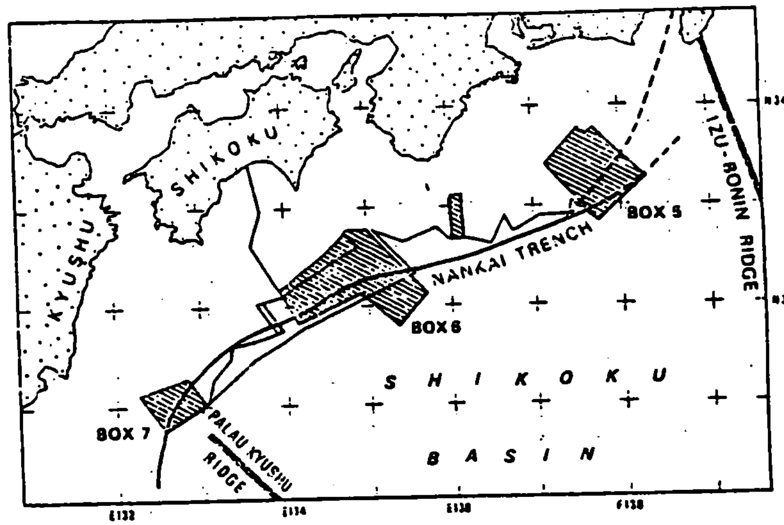
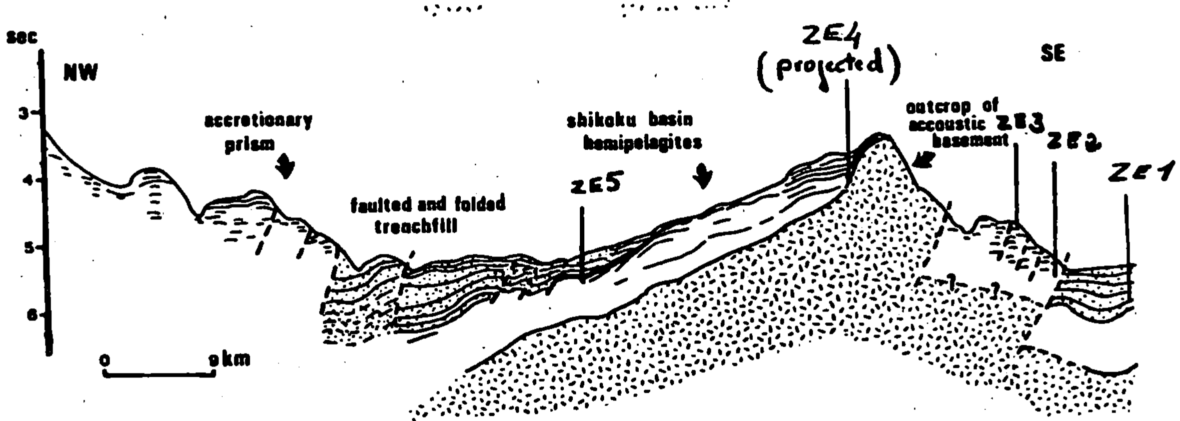


FIGURE 3 Structural sketchmap of BOX 5 showing the superficial deformation of the eastern part of the Nankaï accretionary wedge and of the Zenisu ridge. Stars locate the proposed drilling sites.



Location of the three boxes surveyed during Leg 1 of KAIKO project, June 1984. Zenisu Ridge lies over BOX 5, seaward of the Nankaï Trough.



PROFILE 98

SITE	OBJECTIVE	OPERATIONAL CONSIDERATIONS
ZE1	To establish the nature and age of the "trench-fill like" basin, South of Zenisu. Reference site for ZE2 and ZE3	Water Depht : (m) 4250m Sed. Thickness : (m) 450m Total penetration : (m) 450m Single Bit : Nature of sediments/rocks anticipated : turbidites and hemipelagites Weather conditions/window : May-July Territorial juridiction : Japan
ZE2	(1) In situ pore-water sampling for inorganic and organic analysis expected results : water diagenesis and organic matter maturation, upward flux of connate waters in relation with dewatering processes. (2) Deformation processes into sediments at the base of Zenisu Ridge.	Water Depth : (m) 4200m Sed. Thickness : (m) 400m Total penetration : (m) 400m HPC : Single Bit : Nature of sediments/rocks anticipated ; turbidites and hemipelagites. Weather conditions/window : May-July Territorial juridiction : japanese
ZE3	In situ pore water sampling for inorganic and organic analysis. Expected results : water diagenesis and organic matter maturation, upward flux of connate waters in relation with dewatering processes, at place where biological communities have been discovered during Nautile diving in June 1985.	Water Depth : (m) 4100m Sed. Thickness : (m) 450m Total penetration : (m) 450m HPC : Single Bit : Nature of sediments/rocks anticipated: inurated hemipelagic muds Weather conditions/window: May-July Teritorial juridiction : Japan
ZE4	Etablish the nature and age of the crust of the western Zenisu ridge and document the stratigraphy of sedimentary sequence covering it, supposed to be the oldest sediments in the Eastern half of the basin.	Water Depth:(m) 3150m Sed. Thickness:(m) 400m Total penetration: (m) 420m HPC : Single Bit : Nature of sediments/rocks anticipated: Hemipelagites, turbidites (or tuffaceous layers and lavas (oceanic basements) Weather conditions/window: May-July Territorial juridiction : Japan
ZE5	(1) to determine the age and the rate of basement tilting of oceanic crustal slab, along the northern slope of Zenisu Ridge. (2) To determine the age change of sedimentation between hemipelagites covering the ridge and the ovelying turbidi- of Nankai Trough deposited in onlap.	Water Depth: (m) 4100 Sed. Thickness: (m) 650m Total penetration: (m) 650m HPC : Single Bit : Nature of sediments/rocks anticipated: Turbidites and thin hemipelagites Weather conditions/window: May-July Territorial juridiction: japanese

PROPOSAL FOR DRILLING : SULU SEA MARGINAL BASIN TRANSECT

C. RANGIN, UA 215 C.N.R.S. - France.

H. SCHLÜTER, B.G.R. Hannover RFA.

The Sulu sea is a small basin located between two main marginal basins, the South China Sea to the North, and the Celebes sea in the South. It is bounded from the first one by the Calamian cuyo platform and the Palawan ridge in the North, and from the second one by the Sulu ridge, in the South. This Sulu basin is marked in its axial parts, by a major bathymetric high, the Cagayan ridge.

- The Dangerous Ground platform, belongs to the southern continental margin of the South China Sea and has been colliding with the philippine arc along the Palawan trench, active until 15 Ma. ago (Holloway, 1981).

- The Palawan ridge corresponds to a wide accretionary prism formed by mesozoic ophiolitic and clastic sequences highly deformed during middle Miocene thrusting, disconformably covered by lower middle Miocene (Langhian) clastics deposits.

- The Cagayan ridge is accepted as a remnant volcanic arc related to the Palawan subduction zone;

_ The Sulu ridge is characterized by a very recent volcanic chain, built above a complex basement including undated melanges. Along its northern flank, this volcanic ridge is bordered by the Sulu trench, and along its southern flank by steep escarpments, separating this ridge from the Celebes Sea basin considered as Eocene in age. The Sulu volcanic arc and associated melanges, are testifying for two distinct subduction episodes, the firth one would have been related to the northward subduction of the Celebes Sea, and the last one, to the southward subduction of the Sulu sea along the Sulu trench.

Two deep sub-basins elongated ENE, are present between these ridges :

- The Northern Sulu basin, is characterized by an upper sequence lying disconformably on top of highly deformed sediments.

- The Southern Sulu basin is characterized by a relatively flat acoustic basement interpreted as an oceanic crust of undefined age.

Drilling objectives :

1) Collision processes : timing of propagation of deformation along the Palawan-Northern Sulu basin Neogene orogenic belt.

2) Nature, age and deformation style of an Island arc (Cayagan ridge), involved into this collision (see detailed objectives proposal by BGR).

3) Nature and age of Southern Sulu Sea basin (trapped or intra-arc basin).

4) Sedimentation into a silled oxygen deficient basin.

5) Incipient subduction on back arc side and related dewatering processes.

6) Timing for arc reversal on both flanks of Sulu Ridge.

Proposed BGR site Sulu-2 on the W-flank of the Cagayan Ridge as part of the Sulu-Transect for ODP-Drilling

The NE-SW striking Cagayan Ridge divides the Sulu Basin into the NW Sulu-Subbassin and into the SE Sulu-Subbasin. The tectonic domain of the western/northwestern Cagayan Ridge is characterized by rather uniform sediment thicknesses of assumed Early Miocene to Holocene age overlying shingled acoustic basement reflections that are interpreted as basalt flows. Although pieces of 14 my old arc-basalt were recovered (BGR SONNE cruise SO-23) the nature and age of the Cagayan Ridge remain controversial in the context of the geodynamic evolution of the South China Sea/Sulu Sea areas.

Opening of the South China Sea was counterbalanced by subduction of Mesozoic oceanic crust, hitherto assumed along the NW Borneo-Palawan troughs (Hamilton, 1979; Taylor & Hayes, 1980, 1982) and completed around 15 my ago. But there is strong evidence that subduction occurred further to the east, somewhere along the NW Sulu Basin (Hinz & Schlüter, 1985). In both cases, the Cagayan Ridge represents a remnant volcanic arc, related to this subduction and the NW Sulu Basin a deformed forearc basin due to arc-continent collision causing overthrust of the forearc onto the Palawan microcontinent.

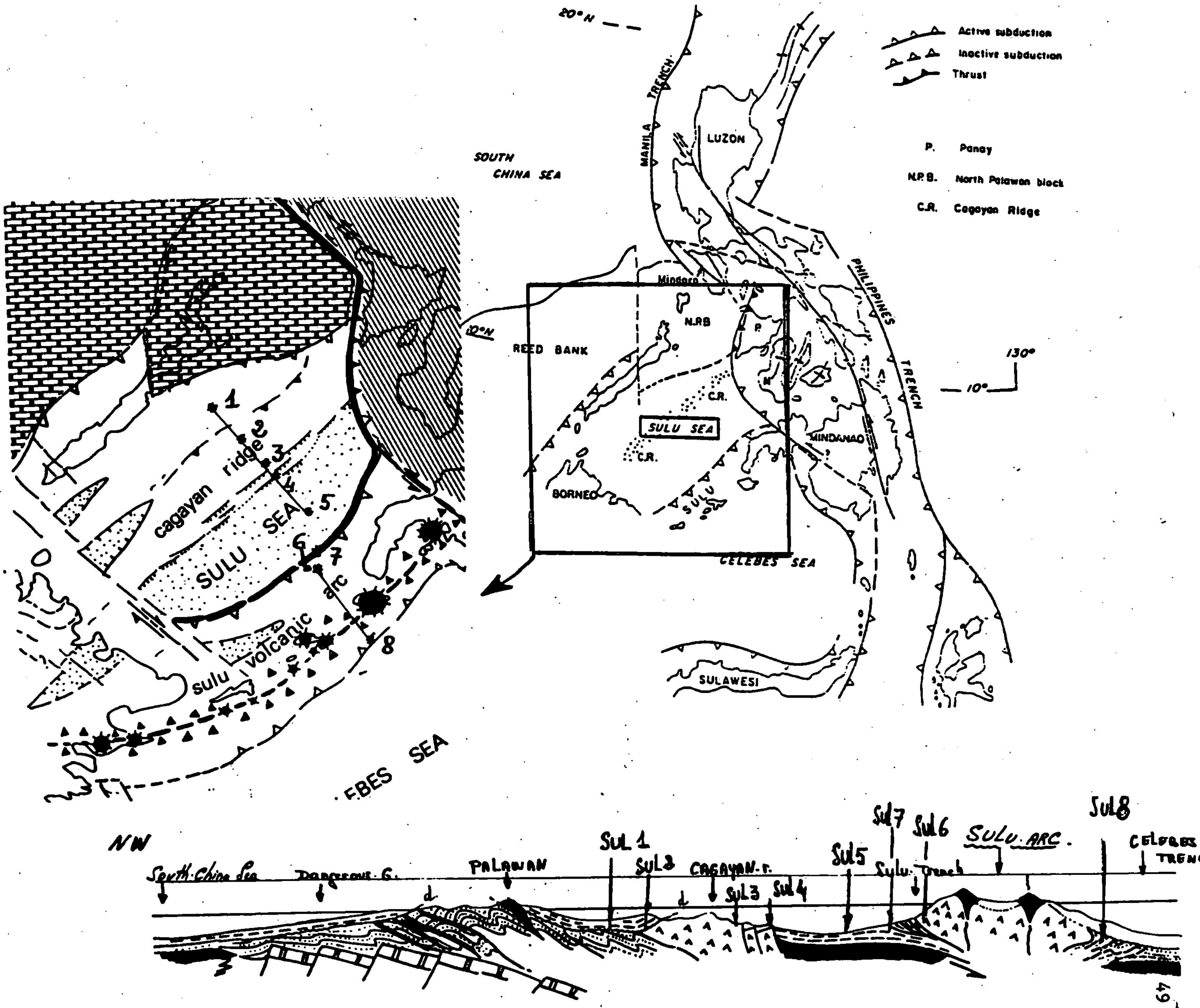
A different hypothesis explains the Cagayan Ridge as the remnant of a rifted volcanic arc system left behind, when the SE Sulu oceanic basin opened in Eocene ? (Hilde et al., 1985)/Oligocene ? (Rangin, 1985) times. Drilling site Sulu-2 on the western terrane of the Cagayan Ridge has a direct feed-back to geodynamic concepts developed for the Sulu Sea and for the southeastern parts of the South China Sea as well as for the Palawan terrane. Main objectives of site Sulu-2 are:

- Determination of age and nature of the sedimentary sequences and their bounding unconformities in comparison to the SE Sulu Basin and to the NW Sulu Basin/Palawan terrane.

- Determination of nature and age of pre-Early Miocene anticipated basalts, in particular their petrologic-geochemical signature.

- Penetrate the underlying basement of unknown nature and age
Sulu-2: 9°23'N/120°12.5'E, WD: 1748 m, Sed. Thickn.: 550 m,
T.Penetr. 1000-1200 m
Special Require: Re-entry, logging, heat flow, paleomag. sedimentology, igneous petrology

SITE	SPECIFIC OBJECTIVE	LARGE THEMATIC OBJECTIVE
SUL 1	Age of regional disconformity , to be compared with some disconformiyy on top of Palawan accretionnary wedge, and Palawan Island. Possible extension of Palawan accretionnary wedge into Sulu Sea. Water Depth: (m) 1500 Sed. thickness : (m) 1200 Total penetration: (m) 1200	Contrain the amount time necessary for Collision processes at large scale. Instantaneous deformation versus propagating deformation into Collisional belts.
SUL 2	Age and nature of deformed Northern Sulu basement : proximal fore arc deposits or volcanic arc terrane. Water Depth: (m) 1500 Sed thickness: (m) 500 Total penetration: (m) 600	Age and nature of Cagayan Ridge. Deformation style and coeval metamorphism on Island arc terrain involved in Collision. Intermixing magma processes between starved Island arc, and incipient marginal opening.
SUL 3	Age and nature of acoustic basement of Cagayan Ridge. Reference site for SUL 4 Water Depth: (m) 1650 Sed. thickness: (m) 200 Total penetration: (m) 300	
SUL 4	Petrology and sedimentation history of rifted arc basement Problem of the transition between last stage of arc magmatism in Cagayan Ridge and first stage of oceanic basement in inner Sulu Sea. Water Depth: (m) 3300 Sed thickness: (m) 450 Total penetration: (m) 600	Development of an intra arc oceanic basin in Neogene time. Fast subsidence history, evaluate the effect of late Cenozoic Sea level fluctuations on sedimentation in a shallowly silled, oxygen deficient basin.
SUL 5	Age and geochemistry of Southern Sulu basin basement considered as oceanic young evolution stage of a possible intra arc oceanic basin to be compared with sites SUL 3 and 4. Water Depth: (m) 4500 Sed thickness: (m) 550 Total penetration: (m) 700	
SUL 6	Nature and age of upper part of Sulu Sea Inner wall, remnant arc drifted Cagayan Ridge after intra-arc Sulu Sea openning. Water Depth: (m) 1500 Sed thickness: (m) 250 Total penetration: (m) 400	
SUL 7	Age, facies, tectonic style of deformed sediments along a incipient subduction zone. In Sulu pore water sampling for inorganic matter maturation, upward flux Connate waters in relation with shallow dewatering processes. Date subduction reversal along Sulu arc. Water Depth: (m) 3900 Sed thickness: (m) 350 Total penetration: (m) 350	Evaluate processes of incipient subduction on back arc side. Evaluate time necessary for flipping of subduction zone from southern side to Northern side of Sulu arc ridge.
SUL 8	Age of disconformity suspected at base of Celebes trench wall. Infilling of the trench after cessation of subduction. Date subduction reversal. Water Depth: (m) 4200 Sed thickness (to be defined by Site Survey)	


Active subduction
Inactive subduction
Thrust
P. Panay
N.P.B. North Palawan block
C.R. Cagayan Ridge
20° N
MANILA TRENCH
LUZON
SOUTH CHINA SEA
PHILIPPINES TRENCH
Mindoro
N.P.B
P
REED BANK
C.R.
SULU SEA
MINDANAO
BORNEO
SULU
CELEBES SEA
SULAWESI
10°N
130°
10°
1
2
3
4
5
6
7
8
cagayan ridge
SULU SEA
sulu volcanic arc
CELEBES SEA
NW
South China Sea
Dangerous G.
PALAWAN
SUL 1
SUL 2
CAGAYAN r.
SUL 3
SUL 4
SUL 5
SUL 7
SUL 6
Sulu Trench
SULU ARC
SUL 8
CELEBES TRENCH

Attachment 2

PRELIMINARY CEPAC DRILLING SCHEDULES

a) 6-leg program

EPR 13°N	3 Legs
Bering paleoenvironments	1 Leg
Atolls and guyots	1 Leg
Old Pacific	1 Leg

b) 9-leg program

EPR 13°N	3 Legs
Bering paleoenvironment	1 Leg
Atolls and guyots	1 Leg
Old Pacific	1 Leg
N. Pacific paleoenvironment/paleoplates	2 Legs
Juan de Fuca sedimented ridge	1 Leg

c) 12-leg program

EPR 13°N	3 Legs
Bering Sea Mesozoic/Cenozoic paleoenvironment	1 Leg
Atolls and Guyots	1 Leg
Old Pacific	1 Leg
North Pacific paleoenvironment/superchron plates	2 Legs
Juan de Fuca sedimented ridge	1 Leg
Chile triple junction & paleoceanography	2 Legs
Hawaii moats and flexure	1 Leg

JOIDES PLANNING COMMITTEE

COSOD-II ARRANGEMENTS

1. The JOIDES EXCOM, at its recent Annapolis meeting, agreed to accept the offer from the European Science Foundation (on behalf of the ESF ODP Consortium, France, the Federal Republic of Germany, and the U.K.) to host the meeting in Strasbourg on 6-10 July 1987. ESF will be responsible for arranging meeting rooms and accommodation for conference attendees.

2. At its previous meeting, PCOM decided to appoint a Steering Committee and chairman of twelve members, including one representative from each of the non-U.S. partner nations. Two nominations from each non-U.S. partner and twelve nominations from USSAC have been sought in order that PCOM could make its final selection for the Steering Committee at its May meeting.

3. With the signing of a MOU between ESF and NSF, these are now six non-U.S. partner nations and PCOM may wish to enlarge the Steering Committee to accommodate the new situation. Nominations (received by the JOIDES Office to date) are attached.

4. EXCOM has requested that, in selecting a chairman, PCOM should be aware that this post involves a commitment of at least 6 months to the project (with financial assistance as possibility). EXCOM has suggested that the chairman should be "a person of substance." EXCOM has asked that PCOM recommendations be circulated to EXCOM members for comment.

5. **PCOM is asked to confirm the size of the Steering Committee and to select a chairman and members of the Committee.**

COSOD-II STEERING COMMITTEE NOMINATIONS

(Listed in order received by the JOIDES Office)

U.K.:	J.R. Cann (U. Newcastle-on-Tyne) A.S. Laughton (IOS-Director)
FRG:	N. Petersen (U. Munich)
USSAC:	M. Arthur (URI) J. Austin (U. Texas, Austin) K. Becker (RSMAS, U. Miami) J. Delaney (U. Washington) J. Fox (URI) M. Kastner (SIO) C. Langmuir (LDGO) D. MacDougall (SIO) C. Moore (U. California, Santa Cruz) D. Moos (Stanford U. - as at Oct. 86) S. Schlanger (Northwestern U.) J. Weissel (LDGO)
Canada:	R.A. Price (Geological Survey of Canada - Director)
Japan:	A. Taira (ORI, Tokyo U.) H. Kinoshita (Chiba U.)

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COSOD-II STEERING COMMITTEE NOMINATIONS

EASYLINK MBX 9217763C001 15MAY86 09:17/14:11 EST
VIA: 9103802848

TO: 62838993

JOIDES URI UD

JOIDES URI UD

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TELEXNO 106
DR T. MAYER
JOIDES OFFICE
TELEX 910-380-2848
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UNIVERSITY OFRHODEISLAND
U.S.A.

THE TWO FRENCH NOMINEES FOR THE COSOD II STEERING COMMITTEE
ARE
NO 1 : PROF. X. LE PICHON, UNIVERSITE P. ET M. CURIE, PARIS
NO 2 : PROF. R. BLANCHET, UNIVERSITE DE BRETAGNE OCCIDENTALE,
BREST.
REGARDS. - J.P. CADET
JOIDES URI UD

TO REPLY FROM TELEX I OR II (TWX) DIAL 100. FROM EASYLINK USE /WUW.
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TO: 62838993
JOIDES URI UD

ESF 890440F

15.5.86

FOR THE ATTENTION OF DR. ROGER LARSON AND DR. ANTHONY MEYER,
JOIDES OFFICE
GR1ADUATE SCHOOL OF OCEANOGRAPHY

AFTER INFORMAL CONSULTATION WITHIN OUR ODP GROUP, ESF CONSORTIUM WISHES TO OFFER FOLLOWING NAMES FOR COSOD-2 STEERING COMMITTEE:

PROFESSOR OLAV ELDHOLM, INSTITUTT FOR GEOLOGI, POSTBOXS 1047, BLINDERN, OSLO 3, NORWAY, TEL. (47) (2) 45 50 50, TLX 72705 ASTRO N

PROFESSOR KEN HSU, GEOLOGICAL INSTITUTE, ETH-ZENTRUM, SONNEGGSTRASSE 5, CH-8092 ZURICH, SWITZERLAND, TEL (1) 377 26 07, TLX 53178 ETH BI

PROFESSOR JAN E. VAN HINTE, VRIJE UNIVERSITEIT, INSTITUUT VOOR AARDWETENSCHAPPEN, POSTBUS 7161, NL-1007 MC AMSTERDAM, NETHERLANDS, TEL (31) (20) 548 3511 OR 2451

PROFESSOR RENZO SARTORI, CONSIGLIO NAZIONALE DELLE RICERCHE, ISTITUTO DI GEOLOGIA MARINA, VIA ZAMBONI 65, I-40127 BOLOGNA, ITALY, TEL (051) 22 54 44, TLX: 51 13 50 CNR BO

ALL OF THEM WOULD BE INTERESTED IN THE JOB, BUT THE FIRST THREE ARE VERY BUSY AND WOULD BE EQUALLY HAPPY TO SEE ANOTHER PERSON NOMINATED. DR. SARTORI MIGHT PERHAPS BE MORE AVAILABLE AT THIS MOMENT.

REGARDS,

BERNARD MUNSCH
EUROPEAN SCIENCE FOUNDATION

JOIDES PLANNING COMMITTEE

PANEL MEMBERSHIP

1. At its January meeting, PCOM agreed to defer consideration of panel membership until May pending the ESF Consortium attaining full membership and to allow the regional and thematic panels to consider an appropriate rotation scheme for their membership and to review the scientific balance of each panel.

2. It should be noted that regional and thematic panels are required to rotate off one-third of the membership each year; that current practice is that a retiring chairman should be asked to remain on the panel for a further year to provide continuity; and that recommendations for changes in non-U.S. membership are merely advisory and are dependent on the responses within the non-U.S. national agencies. It should be noted that there may be changes to ESF representation following meetings of the ESF Consortium Scientific Committee. It should be borne in mind that PCOM has also expressed the desire to involve as wide a community as possible (especially in the U.S.) and to introduce "new blood" into the panels.

3. Service panels do not have the same requirements to change membership although several have responded with proposed changes and/or additions.

4. **PCOM is asked to note the following impending retirement of several panel chairmen and the vacancy in the chairmanship of CEPAC and to decide on possible replacements:**

CEPAC	vacancy (following move of D. Rea to NSF)
DMP	M. Salisbury wishes to retire 1987
IHP	D. Appleman wishes to retire late 1986
SOP	J. Kennett possibly to retire in 1987
PPSP	G. Claypool possibly to retire in late 1987 (suggests M. Ball, USGS as replacement

5. Following the recent round of meetings, panels have submitted rotation schemes which have been attached, together with the overall membership lists. At the time of writing ARP*had not responded and IOP does not meet until July, and their January submissions are included. Further changes may be proposed by IOP after its July meeting. PCOM should note the overlaps within the suggested rotation/replacement schemes. (*SOP meeting at time of writing.)

6. The question of liaisons and their role in panels has been discussed at the Panel Chairmen's meeting. The PANCHM meeting wanted to retain the present policy of:

   a) having single members of thematic panels attend regional panels as <u>full voting</u> members;

b) members of regional and service panels serving as ad hoc non-voting liaisons to thematic panels as necessary;
c) a representative from DMP attending one meeting per year of each thematic and regional panel in a non-voting liaison capacity.

It should be noted that SSP wishes to have a non-voting liaison with appropriate regional panels (at this time IOP, WPAC, CEPAC).

The PANCHM views were in response to a discussion document from the JOIDES Office which is included for information.

7. **PCOM is asked to consider the question of inter-panel liaisons and the submissions by the various panels; to approve the membership rotation schemes; and to decide on new panel membership for 1986/87.**

8. In addition to the membership proposals in the attached sheets, the following additions have also been proposed:

   IHP - C. Broglia to attend as a permanent liaison from LDGO Wireline Services contractor.

   TEDCOM - Charles Sparks, IFP, expert on riser drilling to replace Silcox of Chevron who has resigned. Further revisions are expected to be suggested by TEDCOM.

   SSP - alternates to Duennebier and Langseth needed from USSAC which is considering this matter.

   PCOM is asked to consider and approve the above changes.

9. PCOM should briefly review the "member-at-large" positions. If from a non-U.S. member nation, the "member-at-large" is chosen by PCOM although financial responsibility falls on the non-U.S. member's funding agency. For "members-at-large" outside the JOIDES community, funding responsibility falls on JOI.

10. **At this time, with a detailed Red Sea program devised by the Red Sea Working Group, the need for the continuing existence of this Working Group should be considered, and PCOM is asked to disband the Group at this time.**

11. PCOM should also review the PCOM liaisons to panels in the light of changing PCOM membership.

AESM
May 1986

JOIDES PANEL/WORKING GROUP MEMBERSHIP AND LIAISONS
(as of May 1986)

THEMATIC PANELS

LITHOSPHERE PANEL

1. Detrick, R., Chairman (URI)
2. Delaney, J. (UW)
3. Fujii, T. (Japan)
4. Hawkins, J. (SIO)
5. Juteau, T. (France)
6. Langmuir, C. (LDGO)
7. Leinen, M. (URI) + WPAC
8. Malpas, J. (Canada)
9. Petersen, N. (FRG)
10. Purdy, M. (WHOI)
11. Saunders, A. (U.K.)
    Alt.: Pearce, J.
12. Sinton, J. (HIG) + CEPAC
13. Bostrom, K. (ESF)
14. vacancy
15. vacancy

Liaisons
Honnorez (PCOM)
McDuff (PCOM)

SEDIMENTS & OCEAN HISTORY PANEL

1. Mayer, L., Chairman (Canada)
   Alt. Canadian Rep: Mudie, P.
2. Arthur, M. (URI) + RS-WG
3. Embley, R. (NOAA-Newport, OR)
4. Hay, W. (U. Colo.)
5. Meyers, P. (U. Mich.)
6. Saito, T. (Japan)
   Alt.: Okada, Hisatake + ARP
7. Sarg, R. (Exxon)
8. Sarnthein, M. (FRG)
9. Schaaf, A. (France)
10. Shackleton, N. (U.K.)
    Alt.: Summerhayes, C.
11. Tauxe, L. (SIO)
12. Bosellini, A. (ESF)
13. vacancy
14. vacancy
15. vacancy

Liaisons
Kastner (PCOM)
Gartner (PCOM)

TECTONICS PANEL

1. Cowan, D., Chairman, (UW)
2. Becker, K. (RSMAS) + DMP
3. Blanchet, R. (France)
4. Hinz, K. (FRG)
5. Howell, D. (USGS, Menlo Pk.)
6. Leggett, J. (U.K.)
   Alt.: Westbrook, G.
7. Marsh, B. (Johns-Hopkins)
8. Nakamura, K. (Japan) + WPAC
9. Riddihough, R. (Canada)
10. Vogt, P. (Naval Res. Lab.)
11. Weissel, J. (LDGO) + SOP
12. Van Hinte, J. (ESF)
13. vacancy
14. vacancy
15. vacancy

Liaisons
Robinson (CPCOM)
to be appointed (PCOM)

REGIONAL PANELS

ATLANTIC REGIONAL PANEL

1. Austin, J., Chairman (UT)
2. Jansa, L. (Canada)
3. Klitgord, K. (USGS, WHOI)
4. Mascle, J. (France/member-at-large)
5. Montadert, L. (France)
6. Mutter, J. (LDGO)
7. Okada, Hisatake (Japan) + SOHP
8. Speed, R. (Northwestern)
9. Thiede, J. (FRG)
10. Tucholke, B. (WHOI)
11. Whitmarsh, R. (U.K.)
    Alt.: Smythe, D.
12. Eldholm, O. (ESF)
13. vacancy
14. vacancy
15. vacancy

Liaisons
Cadet (PCOM)
Shipley (PCOM)

CENTRAL & EASTERN PACIFIC REGIONAL PANEL

1. chairman to be appointed
2. Chase, R. (Canada)
   Alt.: Davis, E.
3. Francheteau, J. (France)
   Alt.: Bourgois, J.
4. Jenkyns, H. (U.K.)
   Alt.: Floyd, P.
5. Johnson, P. (UW)
6. Lancelot, Y. (France/member-at-large)
7. Mammerickx, J. (SIO)
8. Okada, Hakuyu (Japan)
9. Rea, D. (NSF)
10. Scholl, D. (USGS, Menlo Pk.)
11. Sinton, J. (HIG) + LITHP
12. von Stackelberg, U. (FRG)
13. Olausson, E. (ESF)
14. vacancy
15. vacancy

Liaisons
to be appointed (PCOM)
Shipley (PCOM)

INDIAN OCEAN PANEL

1. Schlich, R., Chairman (France)
2. Cochran, J. (LDGO) + RS-WG
3. Curray, J. (SIO)
4. Duncan, R. (OSU)
5. Falvey, D. (Australia/member-at-large)
6. Gradstein, F. (Canada)
7. Prell, W. (Brown)
8. Sclater, J. (UT) + LITHP
9. Segawa, J. (Japan)
10. von Rad, U. (FRG)
11. White, R. (U.K.)
    Alt.: Scrutton, R.
12. Herb, R. (ESF)
13. vacancy
14. vacancy
15. vacancy

Liaisons
Kastner (PCOM)
Larson (PCOM)

SOUTHERN OCEANS REGIONAL PANEL

1. Kennett, J., Chairman (URI)
2. Anderson, J. (Rice)
3. Barker, P. (U.K.)
   Alt.: Jenkins, G.
4. Bornhold, B. (Canada)
5. Ciesielski, P. (Univ. Fla.)
6. Dick, H. (WHOI)
7. Elliot, D. (Ohio S.U.)
8. Fuetterer, D. (FRG)
9. Kaminuma, K. (Japan)
10. LaBrecque, J. (LDGO)
11. Needham, D. (France)
12. Suess, E. (OSU) + SOHP
13. Weissel, J. (LDGO) + TECP
14. Kristoffersen, Y. (ESF)
15. vacancy

Liaisons
Beiersdorf (PCOM)
Hayes (PCOM)

WESTERN PACIFIC REGIONAL PANEL

1. Taylor, B., Chairman (HIG)
2. Audley-Charles, M. (U.K.)
   Alt.: Cronan, D.)
3. Hesse, R. (Canada)
4. Hyndman, R. (Canada/member-at-large)
5. Ingle, J. (Stanford)
6. Kagami, H. (Japan)
7. Leinen, M. (URI) + LITHP
8. Nakamura, K. (Japan/member-at-large) + TECP
9. Natland, J. (SIO)
10. Rangin, C. (France)
11. Recy, J. (France/member-at-large)
12. Schluter, H. (FRG)
13. Silver, E., (UCSC)
14. Jongsma, D. (ESF)
15. vacancy

Liaisons
Hayes (PCOM)
Taira (PCOM)

SERVICE PANELS

DOWNHOLE MEASUREMENTS PANEL

1. Salisbury, M., Chairman (Canada)
2. Becker, K. (RSMAS) + TECP
3. Bell, S. (Canada/member-at-large)
4. Goodman, R. (U. CA, Berkeley)
5. Howell, E. (Arco)
6. Jageler, A. (Amoco)
7. Jung, R. (FRG)
8. Kinoshita, H. (Japan)
9. Olhoeft, G. (USGS, Denver)
10. Pozzi, J-P. (France)
    Alt.: Pascal, G.
11. Sayles, F. (WHOI)
12. Timur, T. (Chevron)
13. Traeger, R. (Sandia Labs)
14. Worthington, P. (U.K.)
    Alt.: Peveraro, R.
15. Smits, L. (ESF)
16. vacancy
17. vacancy

Liaisons
McDuff (PCOM)
Von Herzen (PCOM)
Anderson (LDGO/Logging)

INFORMATION HANDLING PANEL

1. Appleman, D., Chairman (Smithsonian)
2. Gibson, I. (Canada)
3. Hathaway, J. (WHOI)
4. Jones, M. (U.K.)
5. Latremouille, M. (Canada/member-at-large)
6. Loeblich, A. (UCLA)
7. Loughridge, M. (NOAA-Boulder)
8. Moussat, E. (France)
9. Nowak, J. (FRG)
10. Saunders, J. (ESF)
11. to be appointed (Japan)

Liaisons
Gartner (PCOM)
Cadet (PCOM)
Merrill (ODP/TAMU)

POLLUTION PREVENTION & SAFETY PANEL

1. Claypool, G., Chairman (USGS, Denver)
2. Ball, M. (USGS, WHOI)
3. Byramjee, R. (France)
4. Campbell, G. (Canada)
5. Green, A. (EXXON)
6. MacKenzie, D. (Marathon)
7. Roberts, D. (U.K.)
8. Stober, G. (FRG)
9. Damiani, V. (ESF)
10. to be appointed (Japan)

Liaisons
PCOM Chairman
Garrison (ODP/TAMU)

SITE SURVEY PANEL

1. Peirce, J., Chairman (Canada)
   Alt. Canadian Rep.: Louden, K.
2. Duennebier, F. (HIG)
3. Jones, J. (U.K.)
   Alt.: Kidd, R.
4. Langseth, M. (LDGO)
5. Mauffret, A. (France)
   Alt.: Renard, V.
6. Suyehiro, K. (Japan)
   Alt.: Tamaki, K.
7. Wong, H. (FRG)
   Alt.: Weigel, W.
8. Sartori, R. (ESF)

Liaisons
Francis (PCOM)
Pisias (PCOM)
Brenner (LDGO/Databank)
Kidd (ODP/TAMU)

TECHNOLOGY AND ENGINEERING DEVELOPMENT COMMITTEE

1. Jarry, Jean, Chairman (France)
2. Bingman, W. (Shell)
3. Dennis, B. (Los Alamos Nat'l. Labs.)
4. Gardner, T. (Exxon)
5. Grassick, D. (U.K.)
6. Hocott, C. (UT)
7. Kasahara, J. (Japan)
8. Manchester, K. (Canada)
9. Marx, C. (FRG)
10. Newsom, M. (Sandia Nat'l. Labs.)
11. Schuh, F. (Arco)
12. Maldonado, A. (ESF)
13. vacancy

Liaisons
Von Herzen (PCOM)
Francis (PCOM)
Harding (ODP/TAMU)

RED SEA WORKING GROUP

1. Cochran, J., Chairman (LDGO)
2. Arthur, M. (URI) + SOHP
3. Backer, H. (FRG)
4. Bonatti, E. (LDGO)
5. Coleman, R. (Stanford)
6. Juteau, T. (France) + LITHP
7. Miller, P. (ESSO)
8. Pautot, G. (France)
9. Whitmarsh, R. (U.K.) + ARP

SUGGESTED MEMBERSHIP CHANGES JOIDES Lithosphere PANEL

*immediate action needed

Current Panel Membership	Date of Rotation off Panel	Suggested Replacement(s)	Institute	Expertise	Panel Liaison
-	-	Keir Becker	U. of Miami	Borehole geophysics	DMP
*Ken Macdonald	4/86	Rodey Batiza	Northwestern	Pacific tectonics	
*John Sclater	4/86	Marcia McNutt or Tony Watts	MIT or LDGO	Global geophysicist	
Andy Saunders (U.K.)	9/86	Julian Pierce (U.K.)		Petrology	
Mike Purdy	1/87	John Mutter	LDGO	Seismologist	
Margaret Leinen	6/87	Jim Gill or Bob Stern	UC Santa Cruz UTA	petrologist arcs	WPAC
John Sinton	6/87	Jill Karsten or Jim Natland	UW or SIO	Petrology	WPAC
Hawkins Langmuir Delaney	6/88	TBA			
Detrick	6/89				
—	-	Larry Cathles	EXXON	ore petrology	

SUGGESTED MEMBERSHIP CHANGES

*immediate action needed

JOIDES SOHP PANEL

Current Panel Membership	Date of Rotation off Panel	Suggested Replacement(s)	Institute	Expertise	Panel Liaison
Mayer (Chairman)	1990				
Arthur	1987				
Embley	1988				
Hay	1987				IOP
Meyers	1988				ARP
Saito (Japan)	1989				
Sarg	1988				WPAC
Sarnthein (FRG)	1987				
Schaaf (France)	1989				
Shackleton (UK)	1989				SOP
Tauxe	1987				
Bosellini (ESF)					
*Vacancy (Suess)	1986	Walter Dean	USGS, Denver	Sed.processes Inorg.geochem.	CEPAC
*Vacancy (Ruddiman)	1986	Warren Prell Sy Schlanger Andre Droxler	Brown Northwestern U.So.Carolina	paleoclimatol. Mesoz.paleocean. carbon.petrol.	
—		R.Garrison	UC, SantaCruz	Inorg.geochem.	
—		1)Normark 2)Shor 2)Bottjer 2)Nelson	USGS, M.Park LDGO USC USGS, M.Park	clastic sedimentol.	

SUGGESTED MEMBERSHIP CHANGES

JOIDES Tectonics PANEL

	Current Panel Membership	Date of Rotation off Panel	Suggested Replacement(s)	Institute	Expertise	Panel Liaison
USA 1)	K. BECKER	6/86	MOOS (?)	Stanford U. (as at Oct. 86)		
2)	D. COWAN, Chairman	1988				
3)	J. EWING	3/86	IAN DALZIEL (or	UT AUSTIN	ACTIVE, PSV MARGINS; S. ATL, ANTARCTICA	ARP
			GREG MOORE)	TULSA	ACTIVE MARGINS, ACC'Y PRISMS, FORE-ARC BASINS	WPAC
4)	D. HOWELL	1988				
5)	B. MARSH	mid-1987				
6)	P. VOGT	1988				
7)	J. WEISSEL	9/86 or early 1987	TONY WATTS	LAMONT	INTRAPLATE DYNAMICS, PASSIVE MRGNS	
FOREIGN 1)	R. BLANCHET (FRANCE)	6/86				
2)	K. HINZ (FRG)	1987	(FRG's OPTION)			
3)	J. LEGGETT (UK)	after 1986	(UK's OPTION)			
4)	K. NAKAMURA (JAPAN)	after? 1986	(Japan's OPTION)			
5)	RIDDIHOUGH (CANADA)	1988	(Just reappointed by Canada)			CEPAC
6)	? (ESF)					

UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON 98195

Department of Geological Sciences, AJ–20

May 1, 1986

Dr. Roger Larson
JOIDES Office
Graduate School of Oceanography
University of Rhode Island
Narragansett, RI 02882-1197

Dear Roger:

Here are the status of and the recommendations concerning TECP membership. Please see the summary on the enclosed form. At our February meeting, I solicited confidential written statements of members' plans for rotation, but we had only a very brief open discussion of possible new members. I have taken the prerogative of making recommendations after considering the panel members' responses to my questionnaire.

1) JOHN EWING resigned after the last TECP meeting in February. Meanwhile, both Ian Dalziel and Greg Moore have asked PCOM (an me indirectly) to consider them for TECP. I would like to nominate Ian, although either or both would be excellent. I downgrade Greg slightly because TECP already has a couple of accretionary-prism types.

2) KEIR BECKER wants to be on LITHP; he is in his third year on TECP. If PCOM chooses to retire him from TECP, I would like a person with expertise in downhole physical-properties measurements, especially regarding fluids. I don't know Moos, Keir's suggested replacement, but happily defer to his recommendation.

3) JEFF WEISSEL would probably like a vacation. However, his expertise on the Western Pacific and thematic issues to be addressed there is currently invaluable to me and the panel, so I want him (and he agreed) to serve at least through our June meeting. Afterwards, he could be replaced by Tony Watts, who the panel agreed would be an ideal choice because of his expertise in plate dynamics and passive margins.

4) RENE BLANCHET experts to be replaced soon by France. I don't think any of our other non-US members will rotate off until 1987.

In summary, I recommend that at your next PCOM you:

- Replace Ewing with Dalziel (or G. Moore)

- Replace Becker, possibly with Moos

effective immediately, so they may attend our TECP meeting on June 5-6 in Seattle if possible.

- Replace Weissel with Watts, effective either Summer 1986 or January 1987.

As for liaisons to regional panels, I recommend Dalziel to ARP and Riddihough to CEPAC.

Sincerely,

Darrel

Darrel S. Cowan
Professor
Geological Sciences

DSC/scb

SUGGESTED MEMBERSHIP CHANGES

JOIDES CEPAC PANEL

(suggested operative rotation date 1 Jan of year) *Immediate action needed

Current Panel Membership	Date of Rotation off Panel	Suggested Replacement(s)	Institute	Expertise	Panel Liaison
*Rea (Chairman to 5/5/86)	89				
Chase (Canada)	88				
*vacancy (Cowan)		J. Morley C. Sancetta G. Keller	LDGO LDGO Princeton	Cenozoic biostrat; paleoceanog.	TECP
Francheteau (France)	87				
*Johnson *Lancelot (France/member-at-large)	86 86	W. Dean W. Sliter S. Schlanger	USGS, Denver USGS, M.Park Northwestern	Mesozoic strat.	SOHP
Jenkyns (U.K.)	89				
Mammerickx	87				
Okada, Hakuyu (Japan)	88				
Scholl	89				
*Sinton	86	R. Batiza J. Natland	NSF SIO	petrology	LITHP
von Stackelberg (FRG)	87				
ESF representative					

SUGGESTED MEMBERSHIP CHANGES   JOIDES WPAC PANEL

(suggested operative rotation date 1 Jan. of year)   *Immediate action needed.

Current Panel Membership	Date of Rotation off Panel	Suggested Replacement(s)	Institute	Expertise	Panel Liaison
Taylor (chair)	89				
Audley-Charles (U.K.)	88				
*Hesse (Canada)	86 already replaced by S. Scott (89)		U. Toronto	Econ. Geol.	
Ingle	87	R. Thunell M. Lagoe (90)	U. So.Carolina UTA	paleoceanog sedimentol.	
*Kagami (Japan)	86	K. Tamaki (89)	ORI	Mar. Geophys	
*vacancy (Langseth)	86 already replaced by R. Hyndman (89) (member-at-large)		P.Geo. Centre Canada	downhole measurements	
*Leinen	87	J. Gill R. Stern (90) (appoint in 86?)	UCSC UTA	petrologist arcs	LITHP
Nakamura (member-at-large)	87				TECP
Natland	88	J. Hawkins (91)	SIO	petrol.	
Rangin (France)	88				
Recy (member-at-large)	87	D. Tiffin N. Exon (90) (member-at-large)	CCOP/SOPAC BMR	SW Pacific	
Schluter (FRG)	87				
Silver	87	G. Moore S. Lewis N. Lundberg (90)	U. Tulsa LDGO Princeton	MGG structure MGG seis.stratig.	
ESF					
*SOHP liaison		R. Sarg	EXXON		SOHP

Appendix 1: Chairman's recommended schedule of WPAC membership rotation.

5/86 1) Roy Hyndman (P.G.C., member at large) or other downhole specialist to replace M. Langseth (12/85).
2) Kensaku Tamaki (ORI, Japan, Marine Geophysics) to replace H. Kagami as Japanese representative.
3) Rick Sarg (Exxon, seismic and carbonate stratigraphy) to become SOHP liason.
4) Steve Scott (U. Toronto, Canada, Economic Geology) to replace R. Hesse.

9/86 5) Jim Gill (U.C.S.C., Petrologist) or other arc specialist (Bob Stern, U.T. Austin) to be added to panel and to become LITHP liason on Margaret Leinen's replacement in 1987.

1/87 6) Greg Moore (U. Tulsa; MGG, structure) to replace E. Silver --alternates Steve Lewis (LDGO) or Neil Lundberg (Princeton)

4/87 7) Bob Thunnel (S. Carolina) or M. Lagoe (U.T. Austin), paleo-oceanography, sedimentologist, to replace J. Ingle
8) Margaret Leinen to be replaced as LITHP liason. New U.S. member?
9) Kazu Nakamura to be replaced as TECP liason.

9/87 10) Don Tiffin (CCOP/SOPAC) or Neville Exon (BMR) to replace J. Recy as SW Pacific member-at-large.

1/88 11) Claude Rangin to be replaced as French representative
12) Hans Schluter to be replaced as German representative
13) Jim Natland to be replaced by U.S. petrologist (e.g., Jim Hawkins, SIO)

4/88 14) Mike Audley-Charles to be replaced as British representative
15) Brian Taylor to be replaced as chairman

Please Print

SUGGESTED MEMBERSHIP CHANGES

ATLANTIC PANEL

Name	Institution	Expertise	Panel Liaison	To Replace
1 J. Fox	U.R.I.	Petrology		
J. Honnorez	(Miami)	Petrology	→ PCOM →	Shipley/Cadet
2 J. Karson	Duke	Petrology		
P. Vail	EPR, Co.	Stratigraphy		
Whittemursh				
		Sedimentology		
P. Enos	SUNY/Binghamton			
B. Normark	U.S.G.S./Menlo Park	Sedimentology		Schlager Eldholm
Bernoulli	Berne (ESF)	Sedimentology		
Mutti	Italy	Sedimentology		
M. Ledbetter (cv attached)	Moss Landing, Calif.	Sedimentology		

Chairmanship Proposal:—

Please Print

SUGGESTED MEMBERSHIP CHANGES

INDIAN OCEAN PANEL

Name	Institution	Expertise	Panel Liaison	To Replace
Fred Frey or Brian Upton	MIT	Petrology	LITHP ?	new member

We will need new liaison members with TECP, LITHP, and SOHP to replace Weissel (who is resigning from, or was never appointed to IOP), Sclater (who is resigning from LITHP), and Taux (who is resigning from IOP). We will have new member from U.K. who might serve in one of these liaison roles.

Chairmanship Proposal:— Schlich

SUGGESTED MEMBERSHIP CHANGES

JOIDES DMP PANEL

Current Panel Membership	Date of Rotation off Panel	Suggested Replacement(s)	Institute	Expertise	Panel Liaison
Salisbury (chairman)	87				
Becker					
Bell					
*vacancy (Duennebier)		Dick Merkel		hard & soft rock logging	
*vacancy (Georgi)					
Goodman					
Howell					
Jageler					
Jung					
Kinoshita					
Olhoeft					
Pozzi					
Sayles					
Timur					
Traeger					
Worthington	89				

PANEL MEMBERSHIP, INTER-PANEL LIAISON & PANEL COVERAGE DISCUSSION PAPER

1. The two main constraints operating on panel membership are the need to achieve a broad scientific coverage and the need to keep panel numbers to a manageable size. With regard to the latter, each non-U.S. partner has the right to nominate and the balance is then achieved with U.S. nominees, principally drawn from JOI institutions. Currently, PCOM holds the view that a panel of 12 to 14 members is the maximum manageable panel size. In addition, PCOM has attempted to involve scientists from the U.S. marine geological community at large.

2. It should be noted that most inter-panel liaison members are usually full members of the panels on which they sit. This means that these liaisons usually have two or more votes in the planning process and occupy seats which could go to other members of the community. This is not always the case and some panels have regular liaisons who attend as invited guests.

3. It is suggested that all liaisons should have a primary panel of which they are full voting members and that they should attend other panels' meetings in the capacity of non-voting liaisons. The point of liaison is to improve communication rather than provide multiple opportunities for voting on planning decisions.

4. Following the La Jolla PCOM, the PCOM Chairman wrote to all panel chairmen outlining the revised procedures for the formulation of drilling plans. In his letter of 4 February 1986 Roger Larson said:

"Ideally we see this (the planning procedure) as a sequential, three-step process for each geographic area of planning as follows. First, we request the thematic panels to specify the overall thematic objectives that can best be achieved in this geographic area, placing this area in the world-wide view of their subject that lies within their panels' mandate. Second, this information is then communicated to the regional panel(s) responsible for this area, and the regional panels are asked to define a specific drilling program <u>within</u> the thematic constraints set down by the thematic panels. Finally, this proposed drilling program is <u>reviewed</u> by the thematic panels who comment on its adequacy in meeting the thematic objectives. This advice is then communicated to PCOM, which is the final arbiter of the drilling program. . . . Thematic panels should de-emphasize the review of all specific drilling proposals. . . and concentrate on long-term world-wide planning. . . .However, we hope that the regional panels' prioritization of specific proposals, and their subsequent proposed drilling programs, will serve as an initial screening process for thematic panel review."

If this procedure is followed, it seems logical that thematic panels should appoint liaisons to regional panels as appropriate. The need for inter-regional panel liaison is probably unnecessary.

In addition, the Site Survey and Downhole Measurements service panels need to have liaisons with certain thematic and regional panels.

5. The level of liaison will vary with time, dependent on the "maturity" of the planning cycle in any particular region. For instance, at the present time the regional panels may be divided into three levels of activity as follows:

   i. Low Activity - Atlantic Regional Panel which will now be reviewing drilling results and embarking on long-range planning (other than its role in Legs 110 and 113). Probably only needs to meet once per year. No specific need for liaison with thematic panels.

   ii. Average Activity - Indian Ocean and Southern Oceans Panels. These panels have a role in final site selection and some advance planning functions. Liaisons with thematic panels dependent on subject under review. Liaison with SSP, and possibly DMP, needed. Two and possibly three meetings per year adequate.

   iii. High Activity - Western Pacific and Central & Eastern Pacific Panels. This stage of planning requires liaisons from each thematic panel to each regional panel. Liaison also vital between SSP and regional panels. Possible DMP liaison needed. Regional panels meeting about 3 times per year.

   As the ship moves through the drilling program, the position of the regional panels in this classification will change. Thematic panels will continue to meet 2 to 3 times per annnum. DMP and LITHP have established a need for a close liaison.

6. It is suggested that each thematic panel identifies a liaison to specific regional panels in categories ii. and iii. and that regional panels will normally invite thematic and Site Survey liaisons as non-voting attendees. Liaisons to category ii. regional panels will be dependent on the subject under review. It should also be noted that in the case of category iii. panels, there could be benefit in arranging meetings back-to-back with a thematic panel in order to resolve matters of difference between them. Furthermore, panel chairmen should not automatically seek liaison attendance unless it is strictly necessary and that liaison in category ii. could be achieved by telephone or electronic mail.

7. The appointment of liaisons must also take cognisance of the rotation of members on the panels to ensure a reasonable continuity over at least 12 months. Furthermore, it is suggested that no individual is liaison to more than one panel (i.e. limit of thematic panel membership plus one regional panel liaison).

8. Appointment of panelists to provide a broad disciplinary coverage is important. Traditionally, this has been achieved by balancing the disciplinary coverage from the U.S. community, having taken

into account the expertise of the non-U.S. nominees. However, there is some concern in the community at large that there is inadequate provision of geochemical expertise. Should a geochemical service panel be established?

The other concerns are the often unbalanced character of regional panels, who often call for additional petrological expertise, and the breadth of SOHP for which a division has been proposed in the Arthur/Leinen memo of December 1986 (into Ocean History & Stratigraphy and Sedimentary Processes). A suggestion has also been made recently (Scholl) to split the TECP into Tectonics and Ocean Tectonic History.

9. Summary of suggestions:

a. Division of regional panels into activity levels to determine liaison levels.

b. Liaisons to be non-voting attendees from thematic to regional panels.

c. No person to serve on more than one panel with one liaison responsibility.

d. SSP to have formal, designated liaison with appropriate regional panels.

e. Occasional back-to-back meetings of thematic/regional panels.

f. Physical attendance not always necessary (use phone or electronic mail).

g. Broad scientific coverage needed.

h. Need for geochemical service panel?

i. Split of some thematic panels?

1986/1987 MEETINGS SCHEDULE

Date	Place	Committee/Panel
12-14 May	Bremerhaven	SOP
28-30 May	L-DGO	PCOM
4-6 June	Seattle	TECP
9-10 June	Sidney, BC	CEPAC
19-21 June	Chambery, France	WPAC
4-8 July	Strasbourg	IOP
22-23 July	Woods Hole	DMP
28-29 July	Corvallis	LITHP
11-15 August	Cornerbrook, Newfoundland	PCOM
August*	Denver	PPSP
17-18 September*	College Station	TEDCOM
15-16 October	Vancouver	EXCOM
20-21 October*	Ann Arbor	CEPAC & SOHP
4-6 November*	Villefranche	SSP
7-8 November*	Tokyo	DMP
13-15 December*	San Francisco	WPAC
8-10 January*	U.K.	LITHP
28-30 April	Washington, DC	EXCOM (& ODP Council)

*Meeting dates are tentative.

INFORMATION

PAPERS

ANALYSIS OF PROPOSALS RECEIVED BY THE JOIDES OFFICE (AS OF 9 MAY 1986)

Total number of proposals received 227

a. Atlantic Ocean — 38 proposals

comprising:	General	24
	Mediterranean Sea	8
	Caribbean Sea	5
	Norwegian Sea	1
from:	U.S./JOIDES institutions	12
	U.S./non-JOIDES institutions	3
	France	11
	U.K.	4
	FRG	3
	ESF Consortium	3
	Canada	2

b. Indian Ocean — 61 proposals

comprising:	General	56
	Red Sea	5
from:	U.S./JOIDES institutions	29
	U.S./non-JOIDES institutions	15
	France	9
	U.K.	3
	ESF Consortium	2
	Canada	1
	FRG	1
	(Australia)	1

c. Southern Oceans — 14 proposals

from:	U.S./JOIDES institutions	6
	U.S./non-JOIDES institutions	2
	France	2
	FRG	2
	(Australia)	1
	(New Zealand)	1

d. West Pacific Ocean — 63 proposals

from:	U.S./JOIDES institutions	8
	U.S./non-JOIDES institutions	9
	Japan	23
	France	11
	FRG	2
	U.K.	1

(Australia)	5
(Peoples Republic of China)	2
(New Zealand)	1
(Korea)	1

e. Central and Eastern Pacific Ocean — 32 proposals

from:	U.S./JOIDES institutions	18
	U.S./non-JOIDES institutions	10
	France	2
	Canada	1
	Japan	1

f. General/Instrumental — 19 proposals

from:	U.S./JOIDES institutions	7
	U.S./non-JOIDES institutions	1
	Japan	4
	FRG	3
	Canada	1
	France	1
	U.K.	1
	ESF Consortium	1

Total (by country) — 227

U.S./JOIDES institutions		80	120
U.S./non-JOIDES institutions		40	
France			36
Japan			28
FRG			11
U.K.			9
ESF Consortium			6
Canada			5
Non-JOIDES nations	(Australia)		7
	(New Zealand)		2
	(PRC)		2
	(Korea)		1

In addition, 67 ideas or suggestions for drilling have been received. These range from brief letters of intent to immature proposals. Several of the items listed have now been re-submitted as full proposals. There are also several proposals for workshops.

A.E.S.Mayer
May 1986

PROPOSALS

CLASSIFIED BY OCEANS

ATLANTIC OCEAN PROPOSALS

Ref. No.	Date Rec'd.	Title	Investigator(s)	Inst.	Site Survey Avail' Data	Site Survey Future Need	Panel Reference	PCOM Reference	Remarks
1/A	12/16/82	Pre-middle Cretaceous geologic history of the deep S.E. Gulf of Mexico	Phair, R.L. Buffler, R.T.	U.T.Austin	Some		SOHP 2/84 CAR-WG (P) ARP (P) PMP (P)		Reference to DSDP Panels
5/A	7/13/83	Structural & sedimentological development of carbonate platforms (Blake-Bahamas area)	Mullins, H.T. Sheridan, R.E. Schlager, W.	RSMAS	No	Ref'd to JOI SSP 7/25/83	SOHP 2/84 ARP (P)	Approved 3/84	Leg 101
6/A	8/-/83	Ocean crust and high latitude paleoceanography in the Labrador Sea	Gradstein, F.M. et al.	Atlantic Geoscience Centre, Canada	Some	SS needed (11/83)	SOHP 2/84 TECP 1/84 SOHP 10/84 (for added 14 days drilling)	Approved 3/84	Proposal revised 3/84 and 5/84 Leg 105 To incld Baffin Bay drilling (Proposal 58/A)
7/A	8/1/83	Future drilling sites in the Gulf of Mexico & Yucatan	Buffler, R.T. Bryant, W. R.	U.T.Austin	Some	Yes	CAR-WG 1/84 ARP 7/84	Approved 9/84	Approved as back-up leg. See Props. 23/A & 32/A
9/A	1/-/84	Pre-Messinian history of the Mediterranean	Hsu, K.J. (on behalf of the Swiss Working Group)	ETH, Zurich Switz. (ESF)	Yes		MED-WG (P) SOHP (P)		
10/A	1/-/84	Cenozoic events in oceanic and atmospheric circulation off N.W.Africa	Sarnthein, M., et al.	Univ. Kiel FRG	Yes	No	SOHP 5/84 ARP 4/84 SOHP 4/85 ARP 4/85	Approved 5/84	Leg 108 Revised 3/84 & further revised 4/85

12/A	1/-/84	A transect across the Tyrrhenian Back-arc Basin	Cita,M.B. Malinverno,A.	Milan Univ Italy(ESF)	Some		MED-WG 3/84 ARP 7/84	Approved 9/84	See Tyrrhenian Sea revised Proposal 21/A
15/A	1/10/84	Paleocommunication between the North and South Atlantic seas during the Cretaceous: Formation of the Atlantic Ocean	Herbin,J.P.	IFP,France			TECP ARP		French Blue Book
16/A	1/10/84	Atlantic-Mediterranean relationship(Gulf of Cadiz, Alboran Sea); Paleoceanographic and paleohydrological evolution since the Miocene	Faugeres, J.C.	Univ. of Bordeaux 1, France	Some	Yes	TECP ARP		French Blue Book
17/A	1/10/84	Deep oceanic crust and upper mantle proposal for deep sea drilling in the Gorringe Bank	Mevel,C.	Univ. P & M Curie, Paris,Fr. (CYAGOR G)	Some	Yes	LITHP 2/84 TECP ARP		French Blue Book
18/A	1/10/84	DSDP Proposal off Galicia Bank	Mauffret,A. Boillot, G. Montadert,L.	Univ. P&M Curie, Paris, Fr IFP	Yes	No	TECP ARP	Approved 5/84	French Blue Book Revised 6/84 <u>Leg 103</u>
19/A	1/10/84	Proposal for drilling on the Eleuthera Fan (Bahamas)	Ravenne, C. Le Quellec,P.	IFP France CFP France	Yes	No	TECP 1/84 ARP SOHP		French Blue Book <u>Leg 101</u>
20/A	1/10/84	Subduction Collision: the outer Hellenic Arc	Mascle, J.	Univ. P&M Curie, Paris, Fr.	Some	Yes	TECP 1/84 ARP		French Blue Book

21/A	1/10/84	Rifting, stretching and oceanic accretion in the Tyrrhenian Marginal Basin	Rehault, J.P. Fabbri, A.	Univ. P&M Curie, Fr. Instituto di Geolog. Marina, CNR, Italy	Some	Yes	TECP 1/84 & 10/84 ARP MED-WG 10/84 SOHP	Approved 9/84	French Blue Book Revised by MED-WG Sept. 1984. Further revised June 1985. Leg 107 see Prop 12/A
22/A	1/10/84	The Rhone deep sea fan site: Proposal for deep sea drilling	Bellaiche, G. Droz, L. Got, H. Orsolini, P.	Lab. de Geodynam. sous marin Villefran. France CRSM, Perpignan, Fr. SNEA, Paris	Yes		TECP 1/84 ARP		French Blue Book
23/A	1/10/84	Caribbean Basins	Mascle, A. Biju-Duval, B.	IFP, France CNEXO, France	Yes		CAR-WG 2/84 TECP 1/84 ARP		French Blue Book Partly related to Props. 7/A & 32/A Rel. to 211/B
24/A	1/10/84	New drilling along Barbados transects	Mascle, A. Biju-Duval, B.	IFP, France CNEXO, France	Some		CAR-WG 2/84 SOHP 2/84 TECP 1/84	Approved 3/84	Incorporates prop. by Biju-Duval, Moore & DSDP Leg 78A science staff on drilling of the Barbados Forearc. Relate to Props. 35/A & 41/A; now inc in Prop. 72/A. Leg 110 & back-up leg
32/A	1/26/84	Primary drilling sites for AODP (Yucatan Basin)	Rosencrantz, E. Bowland, C.	U.T. Austin	Some	Yes	ARP (P) CAR-WG 2/84	Approved 9/84	Agreed as back-up prop. Relate to Props. 7/A & 23/A

35/A	2/-/84	Additional proposed sites for drilling on the Barbados Ridge accretionary complex	Westbrook, G.K.	Durham Univ., U.K.			TECP (P) CAR-WG	Approved 3/84	Related to Prop. 24/A & 41/A. Now incorporated in Prop. 72/A. Part of back-up
36/A	2/-/84	Drilling in the Norwegian Sea during the IPOD-extension drilling	Hinz, K. and Norwegian Sea Working Group	BGR, FRG	Yes	No	NOR-WG ARP (P) TECP 2/84	Approved 3/84	Revised 4/84 & 5/84 (incorporates NOR-WG views) Leg 104
38/A	2/15/84	Proposal for drilling in N.E. Gulf of Mexico (DeSoto Canyon)	Kennett, J. Moore, T.	URI	Yes	Yes	SOHP 4/84		
39/A	2/27/84	IPOD drilling in Cape Verde	Hill, I.	Leicester Univ., U.K.					Previously submitted in 1982
40/A	2/27/84	Re-entry for logging of Site 534 (Blake-Bahamas Basin)	Sheridan, R. Shipley, T. Stoffa, P.	U.T. Austin	Yes		ARP (P) SOHP (P)	Approved 1/84	Part of Leg 101
41/A	3/-/84	Northern Barbados Forearc: structural and hydrological processes	Moore, C.	UCSC	Some		TECP 4/84 ARP SOHP 8/84	Approved 3/84	Related to Props. 24/A & 35/A; see also Prop. 72/A. Leg 110
45/A	3/5/84	Paleoenvironmental drilling in the Equatorial Atlantic	Ruddiman, W.F.	LDGO	No		SOHP 4/84 ARP 4/84 TECP		

58/A	3/21/84	West Baffin Bay	Grant, A.C. Jansen, et al.	Atlantic Geoscience Centre		Yes	SOHP 10/84 TECP 10/84	Approved 3/84	Incorporated within Proposal 6/A Leg 105
59/A	3/27/84	Continental margin sediment instability investigated by drilling adjacent turbidite sequences	Weaver, P.P.E. Kidd, R.B. et al.	IOS, UK	Yes		SOHP 4/84 ARP 4/84 TECP 3/84		Revised proposal 8/84 resubmitted to Panels
60/A	4/20/84	Newfoundland Basin: Eastern Canadian Margin	Masson, D.G.	IOS, UK	Yes	Yes	SOHP 4/84 ARP (P) TECP 4/84		
64/A	6/25/84	To drill at Site NJ-6	Poag, C.W.	USGS, WHOI	Yes		ARP 7/84 SOHP 7/84		
68/A	7/6/84	Deep basins of the Mediterranean	Montadert, L.	IFP, France			TECP 1/84		
72/A	7/30/84	Proposal for a two-leg transect of the Lesser Antilles forearc	Speed, R.C. Westbrook, G.K. Mascle, A. Moore, J.C.	Northwestern Univ. Durham, UK IFP, France UCSC	Yes		ARP (P) TECP 8/84 SOHP 8/84		CAR W/G proposal; incorp. Leg 110 See Props. 24/A. 35/A and 41/A

85/A	9/20/84	Preliminary proposal for ODP drilling along the continental margin of Morocco,N.W. Africa	Hayes, D.E. Mountain, G. Rabinowitz,P.	LDGO TAMU			ARP (P) SOHP (P) TECP (P) 10/84	Approved 9/84	Related to Prop.74/A Approved as part of back-up proposal. Rel. to 211/B
122/A	12/28/84	Basement drilling at the Kane Fracture Zone	Karson, J.A.	WHOI	Yes	Yes	LITHP 1/85 ARP 1/85	Approved 3/84	Legs 106 & 109
125/A	01/14/85	Bare-rock drilling at the Mid-Atlantic Ridge (22°53'N)	Bryan,W.B Purdy,G.M. Thompson,G.	W.H.O.I.	Yes	No	LITHP 1/85 ARP 1/85	Approved 3/84	Legs 106 & 109
204/A	12/30/85	Proposed Florida escarpment drilling transect	Paull,C. Kastner,M. Neumann,A.C.	SIO U.North Carolina	Yes	Yes	SOHP 12/85 ARP 12/85 TECP 1/86		USSAC Carbonate Platforms Workshop
205/A	12/30/85	Drilling in the Bahamas: carbonate fans,escarpment erosion & roots of carbonate banks	Schlager,W. Sheridan,R.E. Ladd,J. Ravenne,C Neumann,A.C. Austin,J.	Vrije Univ Amsterdam (ESF) U.Delaware LDGO IFP Paris France U.North Carolina UT Austin	Yes	Some	SOHP 12/85 ARP 12/85 TECP 1/86		USSAC Carbonate Platforms Workshop

INDIAN OCEAN PROPOSALS

Ref. No.	Date Rec'd.	Title	Investigator(s)	Inst.	Site Survey Avail' Data	Site Survey Future Need	Panel Reference	PCOM Reference	Remarks
30/B	1/10/84	Proposals for oceanic drilling on the Davie Ridge and Malagasy Margin (Mozambique Channel)	Clocchiatti,M. Leclaire,L. Segoufin,J.	Mus.Natn. d'Hist. Naturelle, Univ.P&M Curie Paris,Fr.	Some	Yes	TECP 1/84 IOP 4/85 SOHP 4/85 TECP 4/85		French Blue Book Revised proposal received 03/25/85 Further rev.8/85 French I.O.Book
31/B	1/10/84	Paleoenvironmental history of the Red Sea	Guennoc, P.	BRGM, Fr.	Yes	Yes	TECP IOP (P)	Approved 6/85	French Blue Book
44/B	3/-/84	Tectonic evolution of the Andaman Sea in relation with the relative displacement of Indochina with respect to India	Peltzer, G. Tapponier, P. Jacquart, G.	Univ. P&M Curie, Fr.			WPAC TECP 4/84 IOP (P)		
55/B	3/21/84	The Makran Forearc, Pakistan	Leggett, J.K.	Imperial College, U.K.	Some	Yes	TECP 4/84 IOP 4/84 SOHP 4/85		Revised 04/08/85
56/B	3/21/84	Drilling to constrain the history of deformation and relationship between fault surfaces and upward flow of water in the region of inter-plate deformation, Central Indian Ocean	Weissel, J.K. Forsyth, D.W. Stein, C.A. Anderson, R.N.	LDGO Brown U. North-western U LDGO	None	Yes	DMP 4/84 TECP 4/84 IOP 4/84 LITHP 10/84 TECP 10/84 SOHP 10/84	Approved 6/85	Revised following Indian Ocean Workshop 10/84
57/B	3/21/84	Determine the history of the formation of the African-Arabian margin and adjacent oceanic lithosphere	Stein, C.A.	North-western University	Yes		IOP (P) SOHP 10/84 TECP 10/84		Revised 10/84 following US Indian Ocean Workshop See Prop.119/B
61/B	6/18/84	Conjugate passive rifted margins of Madagascar, East Africa and the Western Somali Basin	Coffin, M.F. Matthias, P.	LDGO TAMU	Some		IOP 7/84 TECP 7/84 SOHP 10/84 TECP 10/84		Revised following US Indian Ocean W'shop 10/84.See 102/B.Inc. in 211/B

62/B	6/18/84	The Davie Fracture Zone: reactivating zone of weakness?	Coffin, M.F. Matthias, P. Bernoulli, D. Scrutton, R.A. Channell, J.T.	LDGO TAMU U.Basel Switz.ESF U.Edin.UK U. Florida	No		IOP (P) SOHP 10/84 TECP 10/84 IOP 12/84		Revised 10/84 following US Indian Ocean Workshop. Further revisions received 12/84 (mature proposal)
65/B	7/5/84	Magnetic quiet zone: Australia's southern margin	Mutter, J.C. Cande, S.C.	LDGO	Some		TECP 10/84 LITHP 10/84 SOHP 10/84 SOP (P) IOP (P)		Revised 10/84 following US Indian Ocean Workshop
77/B	8/20/84	The Seychelles Bank and the Amirante Trough	Mart,Y.	TAMU	Some	Yes	IOP 8/84		Rel. to 97/B & 226/B
78/B	8/23/84	Indus Fan - a proposal for drilling	Kolla, V.	Superior Oil Co.USA			IOP (P) SOHP 9/84		See Prop.96/B
79/B	8/28/84	Tethyan stratigraphy and ancient oceanic crust	Coffin, M.F. Chanell,J.E.T.	LDGO	Some		LITHP 9/84 SOHP 9/84 IOP 9/84		
86/B	10/1/84	Red Sea drilling	Bonatti, J.	LDGO	Yes	S.S. pro--posed	LITHP 10/84 SOHP 10/84 TECP 10/84 IOP 10/84	Approved 6/85	US Indian Ocean Workshop Revised 9/85
87/B	10/1/84	Basalt drilling objectives in the Arabian Sea - Carlsberg Ridge	Natland, J.	SIO	Yes		SOHP 10/84 TECP 10/84 IOP (P) LITHP 10/84		US Indian Ocean Workshop
88/B	10/1/84	Origin & evolution of the Chagos-Laccadive-Mascarene volcanic lineament,Central Indian Ocean	Duncan, R.A. Fisk,M.R. White, W.M.	OSU	Yes		LITHP 5/85 SOHP 5/85 TECP 5/85 IOP 5/85		US Indian Ocean Workshop; Related to Proposal 97/B; Revised 5/85

89/B	10/1/84	Mantle heterogeneity leg-drilling on S.W. Indian Ridge Fracture Zones	Dick, H.J.B. Natland, J.	WHOI SIO	Some		LITHP 3/85 SOP 3/85 IOP 3/85 TECP 3/85		US Indian Ocean Workshop:See prop. 112/B.Revised 3/85 Rel. to Props.162/F 186/F,208/B & 223/B
90/B	10/1/84	S.E. Indian Ocean Ridge transect(mantle heterogeneity)	Duncan, R.	OSU	Yes		LITHP 10/84 SOHP 10/84 IOP (P)		US Indian Ocean Workshop; Related to Prop. 100/B and 111/C
91/B	10/1/84	Nature of chemical discon--tinuity in oceanic crust as a function of time (S.E.Indian Ocean)	Langmuir, C.	LDGO	Yes		LITHP 10/84 IOP (P)		US Indian Ocean Workshop; related to Prop. 112/B
92/B	10/1/84	Seismic observatory in the Crozet Basin	Butler,R. Brocher,T.M.	HIG WHOI	No	Yes	LITHP 10/84 SOHP 10/84 TECP 8/85 IOP 8/85		US Indian Ocean Workshop Revised 8/85
93/B	10/1/84	History of anoxic sediments associated with monsoonal upwelling, salinity strat-ification and oxygen minima in the Western Arabian Sea	Prell, W.L.	Brown Univ.	Little	Yes	SOHP 10/84 IOP (P)	Approved 6/85	US Indian Ocean Workshop
94/B	10/1/84	History of monsoonal upwelling Owen Ridge, Arabian Sea	Prell, W.L.	Brown Univ.	Some	Yes	SOHP 10/84 TECP 10/84 IOP (P)	Approved 6/85	US Indian Ocean Workshop
95/B	10/1/84	History of the Asian monsoon (Bay of Bengal)	Cullen, J.L. Prell, W.L.	Salem St. Brown Univ.	Yes		SOHP 10/84 TECP 10/84 IOP (P)	Approved 6/85	US Indian Ocean Workshop
96/B	10/1/84	Surveying and drilling in the Bengal Fan (Distal Indus and Ganges Fans)	Klein, G.deV.	Illinois Univ.	Some	Yes	SOHP 10/84 TECP 10/84 IOP (P)	Approved 6/85	US Indian Ocean Workshop See Prop.78/B
97/B	10/1/84	Variation of Neogene surface fertility & carbonate compensation in the Equatorial Indian Ocean	Peterson, L.C.	RSMAS	Some	Yes	SOHP 3/85 IOP 3/85		US Indian Ocean Workshop; rel. to 88/B,183/B & 226/B. Revised 3/85

98/B	10/1/84	Determination of the geologic history of southern hemi--sphere atmospheric circu--lation and climatic evolution of the Australian Desert (S.E. Indian Ocean)	Rea, D.K.	Univ. of Michigan	Yes		SOHP 10/84 IOP (P)		US Indian Ocean Workshop
99/B	10/1/84	Palaeo-oceanography climate dynamics (Agulhas Basin)	Coulbourn, W.	Univ. of Hawaii	Yes		SOHP 10/84 TECP 10/84 IOP (P)		US Indian Ocean Workshop
100/B	10/1/84	Stratigraphic sections - S.E. Indian Ridge transect	Hays, J.D. Lazarus, D.B.	LDGO WHOI	Some		SOHP 10/84 IOP (P)		US Indian Ocean Workshop; related to Prop. 90/B and 111/C
101/B	10/1/84	Determination of geologic history of ridge crest hydro--thermal activity	Owen, R.M. Rea, D.K.	Univ. of Michigan	Some		SOHP 10/84 LITHP 10/84 IOP (P)		US Indian Ocean Workshop
102/B	10/1/84	Somali Basin	Matthias, P.	TAMU			IOP (P) SOHP 10/84 TECP 10/84		US Indian Ocean Workshop See Prop.61/B
103/B	10/1/84	Nature of Laxmi Ridge (N.W. Indian Ocean)	Heirtzler, J.	WHOI	Little		IOP (P) SOHP 10/84 TECP 10/84 LITHP 10/84		US Indian Ocean Workshop
104/B	10/1/84	Transect of 90°East Ridge	Curray, J. Duncan, R.	SIO OSU	Some	Yes	IOP (P) LITHP 10/84 TECP 10/84 SOHP 10/84	Approved 6/85	US Indian Ocean Workshop
105/B	10/1/84	Arc-continent collision,Timor	Karig, D.E.	Cornell Univ.	Yes		IOP (P) TECP 10/84 SOHP 10/84		US Indian Ocean Workshop
106/B	10/1/84	Broken Ridge, Indian Ocean	Curray, J. Thierstein,H. Mackenzie, Mahoney	SIO	Poss--ibly		IOP (P) TECP 10/84 SOHP 10/84 LITHP 10/84	Approved 6/85	US Indian Ocean Workshop

107/B	10/1/84	State of stress in ocean lithosphere plate: S.E. Indian Ridge	Forsyth, D.	Brown Univ	Yes		IOP (P) TECP 10/84 LITHP 10/84 SOHP 10/84		US Indian Ocean Workshop
112/B	10/2/84	Lithosphere Targets	Kennett, J. (on behalf of SOP)	URI	Some		SOP (P) LITHP 10/84 TECP 10/84		SOP Proposal, link to Prop. 89/B and 91/B
113/B	10/2/84	Agulhas Plateau	Kennett, J. (on behalf of SOP)	URI	Yes		SOP (P) SOHP 10/84 TECP 10/84		SOP Proposal See props.116/B & 139/B
115/B	10/10/84	Deep sea drilling on the Agulhas Plateau and adjacent basins	Herb,R. Oberhansli,H.	Univ. Bern Switz. ESF	Some	Yes	IOP 10/84 SOHP 10/84 TECP 10/84		Revised 4/85 See props.114/B & 139/B
116/B	10/10/84	Comparative data on deep sea drilling on 90^{O}E & Chagos-Laccadive Ridges for palaeo-oceanog.purposes;evaluation of advantages & disadvantages	Oberhansli, H. Herb,R.	Univ. Bern Switz. ESF	Some	Yes	IOP 10/84 SOHP 10/84	Approved 6/85	Revised 4/85
117/B	10/22/84	Proposal for drilling in the northern Red Sea	Cochran, J.B.	LDGO	Yes	Some	SOHP 9/84 TECP 9/84 IOP 9/84	Approved 6/85	Immature proposal rec'd 9/84;revised 10/84
118/B	11/2/84	Middle-late Cenozoic strati--graphy, chronology, paleo--environmental history off East Africa: correlation with hominoid sites	Kennett, J. Brown, F.H. Howell, C., et al	URI Univ.Utah UCBerkeley	Yes	No	SOHP 10/84 IOP 10/84	Approved 6/85	Includes views of LDGO Paleoclimates and Evolution Workshop

119/B	12/3/84	History of the early opening of the Gulf of Aden resulting rifting of old oceanic lithosphere	Stein, C.A.	Northwest. Univ.	Some	Yes	IOP 12/84 SOHP 12/84 TECP 12/84 LITHP 12/84		See Props.57/B, 134/B & 219/B
120/B	12/10/84	Oceanic drilling in Atlantis II Deep, Red Sea	Zierenberg,R.A. Shanks, W.C. Von Damm, K.L.	U.S.G.S.	Yes		IOP 12/84 LITHP 12/84 TECP 12/84	Approved 6/85	
121/B	12/10/84	Ocean drilling in the Exmouth & Wallaby Plateaus & Argo Abyssal Plain, E.Indian Ocean	von Rad,U. Exon, N.F. Symonds,P.A. Willcox,J.B.	BGR, FRG BMR, Australia	Yes	Yes	IOP 12/84 SOHP 12/84 TECP 12/84	Approved 6/85	Australian COGS-2 proposal Revised 12/85 Rel. to 211/B
134/B	03/25/85	Ocean drilling in the Gulf of Aden	Girdler,R.W.	Univ. Newcastle, U.K.	Yes	Yes	IOP 4/85 TECP 4/85 SOHP 4/85 LITHP 3/86		See Props.119/B & 219/B. Revised 2/86 & 4/86
135/B	03/25/85	Drilling on Broken Ridge to evaluate thermo-mechanical models of rifting	Weisssel,J.K. Karner,G.D.	LDGO U.Durham, U.K.	Some	Yes	IOP 4/85 TECP 4/85 SOHP 4/85	Approved 6/85	
137/B	03/25/85	Oceanic drilling on the fossil ridges in the Indian Ocean	Schlich,R. Royer,J.Y. Whitechurch,H. Clocchiatti,M.	I.de Phys. d.Globe Strasb'g I.de Geol. Strasb'g Mus.Natn. d'Hist.Nat France	No	Yes	IOP 4/85 TECP 4/85 LITHP 4/85 SOHP 4/85		Revised 8/85 French I.O.Book
138/B	03/25/85	Oceanic drilling at the Rodriguez Triple Junction Indian Ocean	Schlich,R. Munschy,M. Royer,J.Y. Montigny,R. Whitechurch,H.	I.de Phys. d. Globe Strasb'g I.de Geol Strasb'g France	Yes	No	IOP 4/85 LITHP 4/85 TECP 4/85		Revised 8/85 French I.O.Book

139/B	03/25/85	Oceanic drilling on the Agulhas Plateau, S.W. Indian Ocean	Jacquart, G. Vincent, E.	CEPM-IFP, Rueil Univ. P&M Curie, France	Some	Yes	IOP 4/85 SOP 4/85 SOHP 4/85 TECP 4/85		See props. 114/B & 115/B Revised 8/85 French I.O. Book
140/B	04/01/85	Deep drilling in the Central and Northern Red Sea axial areas	Pautot, G. Guennoc, P.	IFREMER, Brest BRGM, Brest France	Some	Yes	IOP 4/85 SOHP 4/85 TECP 4/85 LITHP 4/85	Approved 6/85	Revised 8/85 French I.O. Book
141/B	04/02/85	Drilling proposal for the Indus deep sea fan	Jacquart, G. Ravenne, C. Leclaire, L. Clocchiatti, M.	CEPM-IFP, Rueil Mus. Natn. d'Hist. Nat France	Some	Yes	IOP 4/85 SOHP 4/85		See props. 78/B & 96/B Revised 8/85 French I.O. Book
150/B	07/01/85	Hard rock drilling in the S.E. Indian Ocean: 90°E ridge & Kerguelen-Gaussberg ridge	Frey, F.A. Sclater, J.G.	MIT U. Texas Austin	Little	Yes	IOP 7/85 LITHP 7/85 TECP 12/85	Approved 6/85	See Props. 109/C, 136/C & 196/B
173/B	08/19/85	Drilling in the Seychelles-Mascarene Plateau, N.W. Indian Ocean	Patriat, P. Vincent, E. Jacquart, G.	I. de Phys. d. Globe Paris U. P&M Curie Paris IFP France	Yes	Yes	SOHP 8/85 IOP 8/85 TECP 8/85		French I.O. Book
183/B	08/20/85	Periplatform ooze in the Indian Ocean (Maldives)	Droxler, A. Williams, D.F. Baker, P.A.	U. South Carolina Duke U.	Some	Yes	SOHP 8/85 IOP 8/85		See Prop. 97/B USSAC Carbonate Platforms Workshop Revised 9/85
196/B	12/09/85	Impact of India on Asia: 90°E ridge drilling to define northward motion	Peirce, J.	Petro-canada Canada	Some	Yes	IOP 12/85 TECP 12/85 LITHP 12/85		Related to Prop. 150/B

197/B	12/16/85	Drilling on the Australian Continental Margin:Otway Basin/West Tasmanian Region	Wilcox,J.B. Branson, J.C. Exon, N.F.	BMR, Australia	Yes	Some	IOP SOP LITHP SOHP TECP	12/85 12/85 12/85 12/85 12/85		Formerly included in Prop.126/D: COGS-2 super--proposal
208/B	1/10/86	Petrological discontinuities at the ancestral triple junction in the Indian Ocean	Natland,J.H. Fisher,R.L. Mahoney,J.J.	SIO HIG	Some	Yes	LITHP TECP IOP	1/86 1/86 1/86		Related to Props. 89/B & 223/B
211/B	1/17/86	Deep stratigraphic tests	Arthur,M. (on behalf of SOHP)	URI	Some	Yes	SOHP LITHP TECP IOP ARP CEPAC	1/86 1/86 1/86 1/86 1/86 1/86		Sediment & Ocean History Panel proposal. Rel. to 23/A,85/A,121/B, 182/E,195/E,207/E, & 225/E
215/B	2/10/86	Pliocene-Holocene sedimentary & palaeoceanographic history of a young rifted margin, Red Sea	Richardson, M. Arthur, M.A.	URI	Some	Yes	IOP SOHP TECP	2/86 2/86 2/86		
219/B	3/03/86	Evolution of the Gulf of Aden	Simpson,P.R.K.	Newcastle U. U.K.	No	Yes	LITHP IOP TECP	3/86 3/86 3/86		Related to Props. 119/B & 134/B
223/B	4/14/86	Drilling a fracture zone in the Central Indian Ocean	Natland,J. Fisher,R.L.	SIO	Yes	No	IOP LITHP TECP	4/86 4/86 4/86		Related to Props. 89/B & 208/B
226/B	5/1/86	Neogene evolution of the pelagic carbonate system & deep circulation of the equatorial Indian Ocean	Prell,W.	Brown U.	Some	Yes	IOP SOHP	5/86 5/86		Rel. to 77/B & 97/B

SOUTHERN OCEANS PROPOSALS

Ref. No.	Date Rec'd.	Title	Investigator(s)	Inst.	Site Survey Avail' Data	Site Survey Future Need	Panel Reference	PCOM Reference	Remarks
54/C	3/20/84	Southern Ocean Drilling: a. Sub-Antarctic sites b. Weddell sites	Kennett, J.P.	URI	Some	Yes	TECP SOP (P)	Approved 3/84 & 6/85	Legs 113 & 114 See proposal 160/F & 228/C
73/C	08/02/84	Drilling proposal on the Antarctic margin off the Adelie Coast	Wannesson, J. et al	IFP, France	Some	Yes	TECP 2/85 SOP 2/85 SOHP 2/85		Site summary forms submitted. Revised prop. rec'd 2/85 Further rev. 8/85 French I.O.Book
108/C	10/2/84	East Antarctic continental margin	Kennett, J. (on behalf of SOP)	URI	Some		SOP (P) SOHP 10/84 TECP 10/84	Approved 6/85	Southern Ocean Panel Proposal
109/C	10/2/84	Kerguelen - Heard Plateau	Kennett, J. (on behalf of SOP)	URI	Some	Yes	SOP (P) SOHP 10/84 TECP 10/84	Approved 6/85	Southern Ocean Panel Prop. See Prop 136/C, 150/B & 185/C
110/C	10/2/84	Wilkesland- Adelie continental margin	Kennett, J. (on behalf of SOP)	URI	Yes	No	SOP (P) SOHP 10/84 TECP 10/84		Southern Ocean Panel Proposal
111/C	10/2/84	Southeast Indian Ocean Ridge transect (subantarctic)	Kennett, J. (on behalf of SOP)	URI			SOP (P) SOHP 10/84 LITHP 10/84		SOP Proposal, link to Prop. 90/B and 100/B
114/C	10/2/84	Crozet Plateau	Kennett, J. (on behalf of SOP)	URI	Yes		SOP (P) SOHP 10/84		SOP Proposal
129/C	01/21/85	ODP opportunities in the Bounty Trough	Davy, B.W.	D.S.I.R. N.Zealand	Some	Yes	WPAC 1/85 SOHP 1/85 TECP 1/85 SOP 1/85		

136/C	03/25/85	Oceanic drilling on the Kerguelen-Heard Plateau	Schlich,R. Munschy,M Leclaire,L. Froelich,F.	I.de Phys. d.Globe Strasb'g Mus.Natn. d'Hist.Nat France	Yes	No	IOP 4/85 SOP 4/85 TECP 4/85 SOHP 4/85	Approved 6/85	Revised 7/85 See Props.109/C 150/B & 185/C French I.O.Book
169/C	07/30/85	Drilling on the South Tasman Rise	Hinz,K. Dostmann,H.	BGR, FRG	Yes	No	SOHP 7/85 TECP 7/85 IOP 7/85 SOP 7/85		
185/C	08/23/85	Origin,evolution & palaeo-oceanography of Kerguelen Plateau	Coffin,M.F. Colwell,J.B. et al	BMR Australia	Yes	No	SOP 8/85 IOP 8/85 SOHP 8/85 TECP 8/85 LITHP 8/85	Approved 10/85	See Props. 109/C & 136/C.Expansion of part of Prop.126/D: COGS-2 super-prop.
209/C	1/10/86	Eltanin Fracture Zone drilling	Dunn,D.	U.Southern Mississ- -ippi	No	Yes	LITHP 1/86 SOHP 1/86 TECP 1/86 SOP 1/86		USSAC South Pacific Workshop
228/C	5/5/86	Drilling in the Weddell Sea (East Antarctic continental margin)	Hinz,K. Dostmann,H. Fuetterer,D.	BGR,FRG AWI,FRG	Yes	No	SOP 5/86 TECP 5/86 SOHP 5/86		Rel. to 54/C Leg 113
230/C	5/8/86	Drilling the Wilkes Land margin, Eastern Antarctica	Eittreim,S. Hampton, M.A. Tanahashi,M.	USGS Geol.Surv. Japan	Some	Yes	SOP 5/86 TECP 5/86		USSAC South Pacific Workshop

WEST PACIFIC OCEAN PROPOSALS

Ref. No.	Date Rec'd.	Title	Investigator(s)	Inst.	Site Survey Avail' Data	Site Survey Future Need	Panel Reference	PCOM Reference	Remarks
25/D	1/10/84	Deep sea drilling proposal on the New Hebrides arc	ORSTOM team	Centre ORSTOM, New Caledonia,Fr.			TECP 1/84		French Blue Book See Props. 184/D & 187/D
26/D	1/10/84	Succinct proposals for deep sea drilling sites on the Tonga-Kermadec Arc	NOUMEA team	ORSTOM Centre de Noumea,New Caledonia, France			TECP 1/84		French Blue Book
27/D	1/10/84	Drilling in the Sulu Sea Marginal Basin	Rangin,C.	Univ. P&M Curie Paris France	Some	Yes	TECP 7/85 WPAC 7/85 SOHP 7/85 LITHP 7/85		French Blue Book see Props.82/D & 154/D.Revised 7/85
28/D	1/10/84	Tectonic evolution of the South China Sea:marginal basin drilling proposal	Letouzey, J. Fricaud, L. Rangin, C.	IFP,France CFP,France	Some		TECP 1/84		French Blue Book
29/D	1/10/84	Transect across Ryukyu Island Arc and Okinawa Backarc Basin	Letouzey, J.	IFP,France	Yes	No	TECP 1/84		French Blue Book See Prop.145/D
42/D	3/-/84	Preliminary deep sea drilling proposal in Sunda Straits area	Huchon, P.	Univ. P&M Curie, Fr.	Yes	Yes	WPAC TECP 4/84 IOP (P)		
43/D	3/-/84	Outline of suggested ocean drilling program in the S.W. Pacific	Falvey, D.A.	BMR, Australia	Yes	Yes	WPAC (P) IOP (P) TECP 3/84		
46/D	3/5/84	Processes of continental rifting & evolution of passive continental margins; South China Sea	Hayes, D.E. Lewis, S.D. Ladd, J. Diebold,J.	LDGO	Yes	Some	WPAC 2/86 TECP 2/86 SOHP 2/86 LITHP 2/86		Related to Props. 147/D ,194/D,216/D, & 218/D.Revised 2/86.Mature prop.

47/D	3/5/84	Proposal for scientific ocean drilling along the Manila Trench subduction zone, South China Sea	Lewis, S.D. Hayes, D.E.	LDGO	Some	Yes	WPAC (P) TECP (P) 3/84		
48/D	3/5/84	Drilling in the Sulu Sea & the South China Sea	Hinz,K. Schluter,H.U.	BGR, FRG	Yes	Some	WPAC 12/85 TECP 12/85 SOHP 12/85		Revised 12/85 Mature proposal
49/D	3/5/84	Drilling proposal for the Eastern Banda Arc/Arafura Sea	Schluter, H.U. Fritsch, J.	BGR, FRG	Yes		WPAC (P)		
50/D	3/5/84	Nankai Trough and Shikoku Forearc	Kagami, H. Taira,A. et al	ORI Tokyo Japan	Yes		WPAC 8/85 TECP 8/85 LITHP 8/85		Rev.8/85 Japanese Workshop
51/D	3/5/84	ODP proposal for scientific drilling in the Sea of Japan	Tamaki,K. Honza,E. Kagami,H. Kobayashi,K.	Geol.Surv. ORI Tokyo Japan	Yes		WPAC 7/85 LITHP 7/85 TECP 7/85		See Props. 149/D & 151/D.Revised 7/85.Mature prop. Rel. to Props.168/D & 198/D. Japanese Workshop
52/D	3/12/84	The Solomon Sea - a suggested drilling target	Milsom, J.	Univ. College, London,UK			WPAC 4/84		
67/D	7/6/84	ODP drilling on Tonga-Lord Howe Rise transect	Falvey, D.A. Exon, N.F. Willcox,B. Symonds, P.	BMR, Australia	Yes		TECP (P) WPAC (P)		See Prop.217/D
80/D	8/30/84	Sunda and Banda Arc drilling: a study of convergent margin processes	Karig, D.E. Moore, G.F.	Cornell U. Tulsa U.	Yes		IOP (P) TECP 10/84 SOHP 10/84		Revised 10/84 following US Indian Ocean Workshop
82/D	9/4/84	Drilling in the Sulu Sea, Western Equatorial Pacific	Thunell, R.	Univ. S. Carolina	Some		WPAC (P) SOHP (P) TECP 9/84		See Props.27/D & 154/D

83/D	9/5/84	Izu-Ogasawara(Bonin) Arc transect	Okada, H. Takayanagi,Y.	Shizuoka Univ.Japan Tohuku U., Japan	Yes		WPAC 9/84 TECP 9/84 LITHP 9/84		Revised 7/85 & 4/86 Japanese Workshop Rel.to Prop.171/D
126/D	01/14/85	Site proposals for scientific ocean drilling in the Australasian region (composite proposal)	Crook,K.A.W. Falvey,D.A. Packham,G.H.	ANU, Canberra BMR, Canberra U. Sydney Australia	Yes	Yes	SOHP 1/85 LITHP 1/85 TECP 1/85 IOP 1/85 SOP 1/85 WPAC 1/85		Composite proposal from Australian community. COGS-2 super-proposal.
127/D	01/18/85	Eastern Sunda Arc & N.W. Australian Collision: accretionary processes in a sharp transition zone of arc--continent collision	Reed,D.L. Silver,E.A. Meyer,A.W.	U.Calif., Santa Cruz ODP/TAMU	Some	Yes	SOHP 1/85 TECP 1/85 IOP 1/85 WPAC 1/85		
130/D	01/21/85	Evolution of the SW Pacific: drilling proposal for the area north of New Zealand	Eade, J.V.	N.Z.Ocean. Institute N.Zealand	Some	Yes	TECP 1/85 WPAC 1/85 LITHP 1/85 SOHP 1/85		
131/D	03/11/85	Banda Sea Marginal Basin: trapped ocean crust & displaced continental borderland	Silver,E.A.	U.Calif., Santa Cruz	Some	Yes	WPAC 3/85 TECP 3/85 LITHP 3/85 SOHP 3/85		see Prop.154/D
132/D	03/11/85	ODP Proposal on drilling the TTT-type Triple Junction area off Boso,Japan	Ogawa,Y. Fujioka,K.	Kyushu U. ORI,Tokyo Japan	Yes	No	WPAC 3/85 TECP 3/85 SOHP 3/85		Rel.to Prop.148/D Rev.6/85 Japanese Workshop

144/D	05/28/85	Arc-arc collision in the southernmost Kuril forearc off Hokkaido	Seno,T. Kimura,G. Tamaki,K.	Int.Inst. Seism. & Earthquake Eng. Kagawa U. Geol.Surv. Japan	Yes	No	WPAC 5/85 TECP 5/85		Japanese Workshop
145/D	05/29/85	Left-lateral dislocation of the Ryukyu Arc system	Ujiie,H.	U. of the Ryukyus Japan	Some	No	WPAC 5/85 TECP 5/85		See Prop.29/D Japanese Workshop
146/D	05/30/85	Toyama Submarine Fan,eastern Japan Sea	Klein,G.deV.	U.Illinois (Urbana)	Some	Yes	WPAC 5/85 TECP 5/85 SOHP 5/85		Revised 7/85
147/D	06/06/85	Preliminary proposal for scientific drilling in the South China Sea	Wang,P. Zhu,X. et al	Tongji U., PRC	Some	Yes	WPAC 6/85 TECP 6/85 SOHP 11/85		Related to Props. 46/D ,194/D,216/D & 218/D
148/D	06/07/85	Drilling the oblique subduct-ion zone near the TTT-type triple junction area,off central Japan (Sagami Basin)	Ogawa,Y. Fujioka,K. Takeuchi,A. Tanahashi,M.	Kyushu Univ. Japan	Yes	No	WPAC 6/85 TECP 6/85		Related to Prop.132/D Japanese Workshop
149/D	07/01/85	Active spreading centre of the Sea of Japan	Kimura,M. Kato,Y. Yamamoto,S.	U. of the Ryukyus, Japan	Some	Yes	WPAC 7/85 LITHP 7/85 TECP 7/85		See Props.51/D & 151/D Japanese Workshop
151/D	07/01/85	Opening of the Japan Sea: mantle plume origin	Wakita,H.	U.Tokyo Japan	Some	Yes	WPAC 7/85 TECP 7/85 LITHP 7/85		See Props. 51/D & 149/D Japanese Workshop
154/D	07/01/85	Entrapment of Banda-Celebes--Sulu Basin	Hilde.T.W.C.	TAMU	Some	Yes	WPAC 7/85 LITHP 7/85 TECP 7/85 SOHP 7/85		See Props.27/D,82/D & 131/D

156/D	07/08/85	Potential massive sulfide in Kita-Yamamoto Trough,Japan Sea	Urabe,T.	Geol.Surv. Japan	Yes	No	WPAC 7/85 SOHP 7/85 LITHP 7/85 TECP 7/85		Japanese Workshop
157/D	07/10/85	Palaeo-oceanography & marine climatic history of the Japan Sea	Koizumi,I. Oba, T.	Osaka U. Kanazawa U Japan	Yes	Yes	WPAC 7/85 SOHP 7/85		Related to Ideas I-52 Japanese Workshop
158/D	07/15/85	Geochemistry & sedimentology of active oceanic margin & back-arc basin sediments: Japan Sea and Trench	Matsumoto,R. Minai,Y.	Tokyo U. Japan	Some	Yes	WPAC 7/85 SOHP 7/85 TECP 7/85		Japanese Workshop
163/D	07/18/85	Zenisu Ridge (Nankai Trough) - intraplate deformation of a young marginal basin	Rangin,C. Lallemant,S. Le Pichon,X.	U.P&MCurie Paris France	Yes		WPAC 7/85 TECP 7/85 SOHP 7/85		See Prop.177/D
164/D	07/18/85	Japan Trench & Japan-Kuril Trenches Junction	Jolivet,L. Cadet,J-P. Lallemand,S.	U.P&MCurie Paris U.Orleans France	Yes		TECP 7/85 WPAC 7/85 SOHP 7/85		Further revision after KAIKO-2
165/D	07/18/85	Shikoku Basin ocean crust	Chamot-Rooke,N Le Pichon,X.	U.P&MCurie Paris France	Yes		TECP 7/85 WPAC 7/85 SOHP 7/85		
166/D	07/22/85	Instantaneous opening of the Japan Sea;evolution of the mantle wedge	Tatsumi,Y. et al	Kyoto U. Japan	Yes		TECP 7/85 LITHP 7/85 WPAC 7/85		Japanese Workshop
167/D	07/22/85	Okinawa Trough back-arc rifting & Ryukyu Trench system	Uyeda,S. et al	ERI,Tokyo U. Japan	Yes		TECP 7/85 LITHP 7/85 WPAC 7/85		Japanese Workshop
168/D	07/22/85	Japan Sea:sedimentology of siliceous sediments	Iijima,A. Matsumoto,R. Tada,R.	Tokyo U. Japan	Yes		SOHP 7/85 TECP 7/85 LITHP 7/85		Related to Prop. 52/D Japanese Workshop

170/D	07/30/85	Valu Fa Ridge, Lau Basin; back-arc spreading center	Morton, J.L. Vallier, T.L. Hawkins, J.	USGS, Menlo Park SIO	Yes	No	LITHP TECP WPAC	7/85 7/85 7/85		USSAC West Pacific W'shop. Rel. to 189/D & 220/D
171/D	08/13/85	Bonin Region; problems of intra-oceanic arc-trench development	Taylor, B.	HIG	Yes	Some	WPAC LITHP TECP	8/85 8/85 8/85		USSAC West Pacific Workshop. Rev. 4/86 Rel. to 83/D
172/D	08/19/85	Mariana forearc, arc & back-arc basin	Fryer, P.	HIG	Yes	Some	WPAC LITHP TECP	8/85 8/85 8/85		USSAC West Pacific Workshop
174/D	08/19/85	Forearc tectonics: Japan Sea	Otsuki, K.	Tohoku U. Japan	Yes	Yes	WPAC TECP	8/85 8/85		Japanese Workshop
175/D	08/19/85	Origin of inner wall of the Japan Trench	Niitsuma, N. Saito, Y.	Shizuoka U Nat. Sci. Mus. Tokyo Japan	Yes		WPAC TECP	8/85 8/85		Japanese Workshop
176/D	08/19/85	Southernmost Japan Trench & migration of triple junction	Niitsuma, N.	Shizuoka U Japan	Yes		WPAC TECP	8/85 8/85		Japanese Workshop
177/D	08/19/85	Zenisu Ridge: intra-oceanic plate shortening	Taira, A. et al	ORI Tokyo Japan	Yes	No	WPAC TECP SOHP	8/85 8/85 8/85		Japanese Workshop See Prop. 163/D
178/D	08/19/85	Nankai Trough forearc	Shiki, T. Miyake, Y.	Kyoto U. Japan	Yes		WPAC TECP	8/85 8/85		Japanese Workshop
179/D	08/19/85	Daito Ridges region: N.W. Philippines Sea	Tokuyama, H. Konishi, K. Kimura, M.	ORI Tokyo Kanazawa U Ryukyu U. Japan	Yes	Yes	TECP WPAC LITHP	8/85 8/85 8/85		Japanese Workshop

180/D	08/19/85	Kita-Amami basin & Amami Plateau, N. Philippines Sea	Shiki, T.	Kyoto U. Japan	Yes	Yes	TECP LITHP WPAC	8/85 8/85 8/85		Japanese Workshop
181/D	08/19/85	Petrological & tectonic evolution of wedge mantle & forearc crust along the Izu-Ogasawara-Mariana forearc	Ishii, T.	ORI Tokyo Japan	Yes	Yes	TECP LITHP WPAC	8/85 8/85 8/85		Japanese Workshop
184/D	08/21/85	Drilling in the Papua New Guinea/Bismark Sea Region	Exon, N.F. Marlow, M.S. et al	BMR Australia USGS Menlo Park	Yes	Yes	LITHP WPAC TECP	8/85 8/85 8/85		See Props. 25/D & 187/D
187/D	09/13/85	Drilling in the New Hebrides Arc Region, S.W. Pacific	Taylor, F.W. Lawver, L.A.	U.T. Austin	Some	Yes	WPAC LITHP TECP	9/85 9/85 9/85		See Props. 25/D & 184/D USSAC West Pacific Workshop
189/D	10/07/85	Drilling in the Tonga Ridge-Lau Ridge region	Stevenson, A.J. Scholl, D. Vallier, T.	USGS	Yes	Yes	WPAC LITHP SOHP TECP	10/85 10/85 10/85 10/85		USSAC West Pacific Workshop See Prop. 170/D & 220/D
190/D	10/07/85	Drilling in the arc-ridge collision zone in the central New Hebrides island arc (Vanuatu)	Fisher, M.A. Greene, H.G. Collot, J-Y. Recy, J.	USGS ORSTOM France	Yes	Yes	WPAC LITHP SOHP TECP	10/85 10/85 10/85 10/85		USSAC West Pacific Workshop
191/D	10/07/85	Drilling in arc-plateau collision zone & intra-arc basin, central & western Solomon Islands	Vedder, J.G. Bruns, T.R.	USGS	Yes	Yes	WPAC LITHP SOHP TECP	10/85 10/85 10/85 10/85		USSAC West Pacific Workshop

194/D	11/26/85	Drilling in the South China Sea	Liu,D. Luo,Y. Chen,D.	CSCOD,Soc. of Oceanog PRC	Yes	Yes	TECP 11/85 WPAC 11/85 SOHP 11/85		Related to Props. 46/D,147/D,216/D & 218/D
198/D	12/16/85	Ulleung (Tsushima) Basin: Neogene tectonics & sediment--ation	Chough,S.K. et al Honza,E. Klein,G.deV. Cadet,J-P Hilde, T.W.C.	Seoul Nat. U.,Korea Geol.Surv. Japan U.Illinois Orleans U. France TAMU	Yes	Yes	WPAC 12/85 TECP 12/85 SOHP 12/85		Related to Prop. 51/D
206/D	12/30/85	Great Barrier Reef:slope sedimentation adjacent to a mixed reefal-carbonate/ epiclastic shelf	Davies,P.J. Symonds,P.A. Feary,D.	BMR, Australia	Some	Yes	SOHP 12/85 WPAC 1/86 TECP 3/86		USSAC Carbonate Platforms Workshop Formerly included in Prop.126/D: COGS-2 super-prop. Rev.3/86
216/D	2/13/86	Drilling in the South China Sea	Rangin,C. Pautot,G. Briais,A. Tapponnier,P.	U.P&MCurie Paris IFREMER IPG Paris France	Yes	No	LITHP 2/86 TECP 2/86 WPAC 2/86		Related to Props. 46/D,147/D,194/D & 218/D
217/D	2/13/86	Drilling on the Lord Howe Rise	Mauffret,A. Mignot,A.	Univ.P&M Curie, France	Some	Yes	SOHP 2/86 WPAC 2/86 TECP 2/86		See Prop.67/D
218/D	2/13/86	Manila Trench & Taiwan Collision Zone, South China Sea	Lewis,S. Hayes,D.E. Lundberg Suppe Dorsey,R.	LDGO Princeton U.	Some	Yes	TECP 2/86 LITHP 2/86 WPAC 2/86		Related to Props. 46/D,147/D,194/D & 216/D
220/D	3/20/86	Three drilling sites in the Lau Basin	Hawkins,J.W.	SIO	Some	Yes	TECP 3/86 LITHP 3/86 WPAC 3/86		USSAC West Pacific W'shop.Rel. to 170/D & 189/D

CENTRAL & EAST PACIFIC OCEAN PROPOSALS

Ref. No.	Date Rec'd.	Title	Investigator(s)	Inst.	Site Survey Avail' Data	Site Survey Future Need	Panel Reference	PCOM Reference	Remarks
2/E	12/16/82	Regional seismic reflection profiles across the Middle America Trench and convergent margin of Costa Rica	Crowe, J.C. Buffler, R.T.	U.T.Austin	Yes	No	AMP (P) Middle America WG (P)		Reference to DSDP Panels
3/E	6/27/83	Drilling flexural moats flanking the Hawaiian Islands	Watts, A.B. ten Brink,U. Detrick, R.S. Brocher,T.M.	LDGO URI USGS	Yes	Yes	CEPAC 2/84 TECP 11/85 LITHP 2/84		Revised 11/13/85
4/E	undated	Drilling in the Tuamoto Archipelago(French Polynesia)	Okal, E.A.	Yale Univ.	Some		CEPAC 2/84 LITHP 2/84		
8/E	9/18/83	Ridge crest subduction along the Southern Chile Trench	Cande,S.C.	LDGO	Some	Ref'd to JOI SSP8/84	TECP 7/84	Approved 9/84	
14/E	1/10/84	Zero age drilling: East Pacific Rise 13° N.	Bougault, H.	COB,France	Yes		CEPAC 2/84 LITHP 2/84 TECP	Approved 9/84	Related to Prop. 76/E. French Blue Book
34/E	2/-/84	Pacific-Aleutian-Bering Sea (PAC-A-BERS) proposal	Scholl, D. Vallier. T.	USGS,Menlo Park					
37/E	2/25/84	Costa Rica drilling - a test of the duplex model	Shipley, T. Moore, G. Buffler, R. Silver, E. Lundberg, N.	U.T.Austin UCSC Princeton	Some		CEPAC (P) TECP (P) 8/84 SOHP 8/84		Revised 8/84

75/E	8/13/84	Gulf of California drilling	Becker, K. et al	SIO	Some	Yes	LITHP (P) TECP (P) SOHP (P) CEPAC (P)		
76/E	8/17/84	Proposal for drilling oceanic crust at the axis of the East Pacific Rise	Francheteau,J. Hekinian, R.	Univ.Paris IFREMER, Brest			CEPAC (P) CEPAC 11/84 LITHP 11/84	Approved 9/84	Revised 11/84.Rel. to Prop.14/E.
84/E	9/10/84	Peru Margin drilling proposal	Kulm, L. Hussong,D	HIG		Needed	TECP 9/84 CEPAC (P) SOHP 9/84	Approved 9/84	Leg 112
123/E	12/28/84	Regional drilling studies at IPOD Site 501/504	Mottl,M.J.	WHOI	Yes	No	LITHP 1/85 CEPAC 1/85	Approved 6/85	Related to Prop. 124/E.Leg 111
124/E	01/02/85	Proposal to deepen Hole 504B	Becker,K. (on behalf of LITHP)	S.I.O.	Yes	No	LITHP 1/85 CEPAC 1/85	Approved 9/84	Leg 111 See Prop.160/F
142/E	04/02/85	Equatorial Pacific depth transect: Ontong Java Plateau	Mayer,L. Berger,W.H.	Dalhousie U.Canada SIO	Some	Yes	CEPAC 4/85 SOHP 4/85 WPAC 4/86		See Prop.222/E
153/E	07/01/85	Three drill sites in the S.E. Pacific	Hays, J.D.	LDGO	Yes	No	CEPAC 7/85 SOHP 7/85 SOP 7/85		
182/E	08/19/85	Sounder Ridge,Bering Sea: Kula Plate stratigraphy	Taira,A.	ORI Tokyo Japan	Yes	Yes	TECP 8/85 SOHP 8/85 CEPAC 8/85		Japanese Workshop Rel.to 195/E,207/E 211/B & 225/E
192/E	11/06/85	Drilling on the Baranoff Fan S.E.Gulf of Alaska	Stevenson,A.J. Scholl,D.W.	USGS	Yes	Yes	CEPAC 11/85 SOHP 11/85 TECP 11/85		USSAC NORPAC Workshop

195/E	12/05/85	Palaeoenvironment & palaeo--climate in the Bering Sea	Sancetta, C.	LDGO	Some	Yes	SOHP 12/85 CEPAC 12/85		USSAC NORPAC W'shop Rel. to 182/E,207/E 211/B,225/E & 229/E
199/E	12/30/85	Pelagic sediments in the sub-Arctic gyre region of the north Pacific	Janecek,T.R. Morley,J.J. Sancetta,C.	LDGO	Some	Yes	SOHP 12/85 CEPAC 12/85		USSAC NORPAC Workshop
202/E	12/30/85	Geological evolution of N. Marshall Islands:drilling carbonate banks with related palaeoceanographic,tectonics & lithospheric objectives	Schlanger,S.O.	North-western U	Yes	Yes	SOHP 12/85 CEPAC 12/85 LITHP 1/86 TECP 1/86		USSAC Carbonate Platforms Workshop
203/E	12/30/85	Drilling guyots in the central Pacific	Winterer,E.L. Natland,J. Sager,W.	SIO TAMU	Some	Yes	SOHP 12/85 CEPAC 12/85 LITHP 1/86 TECP 1/86		USSAC Carbonate Platforms Workshop
207/E	1/3/86	Tectonic evolution of the Bering Sea Basin & Aleutian Ridge	Rubenstone,J.	LDGO	Some	Yes	TECP 1/86 LITHP 1/86 CEPAC 1/86		USSAC NORPAC W'shop Rel. to 182/E,195/E 211/B,225/E,227/E, & 229/E
210/E	1/13/86	Drilling on the Yakutat Continental Margin, N.E.Gulf of Alaska	Lagoe,M.B. Armentrout,J.	UT Austin Mobil	Yes	Some	TECP 1/86 SOHP 1/86 CEPAC 1/86		USSAC NORPAC Workshop
212/E	1/27/86	Drilling off northern & central California	Greene,H.G.	USGS	Yes	Yes	TECP 1/86 SOHP 1/86 CEPAC 1/86		
213/E	1/27/86	Processes controlling accret-ion in the central Aleutian Subduction Complex	McCarthy,J. Scholl,D.W.	USGS	Yes	No	TECP 1/86 CEPAC 1/86		USSAC NORPAC Workshop.Rel. to 214/E
214/E	1/31/86	Drilling the trench-slope break:Central Aleutian Forearc	Ryan,H.F. Scholl,D.W.	USGS	Yes	Some	TECP 1/86 CEPAC 1/86		USSAC NORPAC W'shop Rel. to 213/E

221/E	3/24/86	Late Cenozoic palaeoenvironments:APC/XCB drilling in the Equatorial Pacific	Pisias,N.G. Mix,A.C. Lyle,M.	OSU	Some	Yes	SOHP CEPAC TECP LITHP	3/86 3/86 3/86 3/86		
222/E	3/28/86	Ontong-Java Plateau: origin, sedimentation history and tectonic processes	Kroenke,L.W. Coulbourn,W. Mahoney,J. Resig,J.	HIG	Yes	Yes	SOHP LITHP TECP CEPAC WPAC	3/86 3/86 3/86 3/86 4/86		See Prop.142/E
224/E	4/23/86	Drilling in the Escanaba Trough:the sediment filled axial valley of the Gorda Ridge,N.E.Pacific	Fisk,M. et al Karlin,R.et al Holmes,M. Morton,J.	OSU U. Washington USGS	Yes	No	LITHP TECP CEPAC	4/86 4/86 4/86		
225/E	4/30/86	Drilling in the Aleutian Basin,Bering Sea	Cooper,A.K. Marlow, M.S.	USGS	Some	Yes	TECP SOHP CEPAC	4/86 4/86 4/86		USSAC NORPAC W'shop Rel. to Props.182/E 195/E,207/E,211/B & 229/E
227/E	5/2/86	Subsidence & fragmentation of the Aleutian Ridge and formation of summit basins	Vallier,T.L. Geist,E.	USGS	Some	Yes	TECP CEPAC LITHP	5/86 5/86 5/86		USSAC NORPAC W'shop Rel. to 207/E
229/E	5/8/86	Drilling on the Beringian continental slope & rise, Bering Sea	Cooper,A.K. Marlow,M.S. Armentrout,J.	USGS Mobil	Yes	Some	CEPAC SOHP TECP	5/86 5/86 5/86		USSAC NORPAC W'shop Rel. to 195/E,207/E & 225/E
231/E	5/8/86	Drilling in the North Pacific magnetic quiet zone	Mammerickx,J. et al	SIO	Some	Yes	TECP CEPAC LITHP	5/86 5/86 5/86		USSAC NORPAC W'shop

GENERAL & INSTRUMENTAL PROPOSALS

Ref. No.	Date Rec'd.	Title	Investigator(s)	Inst.	Site Survey Avail' Data	Site Survey Future Need	Panel Reference	PCOM Reference	Remarks
13/F	1/5/84	Setting-up of a water column research laboratory	Wiebe,P.H.	WHOI	N/A	N/A			
53/F	3/19/84	Vertical seismic profiling for AODP	Phillips, J.D. Stoffa, P.L.	U.T.Austin			DMP 4/84	Approved 9/84	Part of Leg 102
66/F	7/5/84	Laboratory studies of basalt rock cores on SEDCO/BP 471-Principal horizontal stresses in the oceanic crust from anelastic strain recovery and other rock studies	Whitmarsh,R.B.	IOS, UK	Some		DMP (P) LITHP (P)		
69/F	7/23/84	Rock stress measurement in the southern part of the Norwegian Sea	Stephansson,O.	Univ. of Lulea Sweden,ESF			TECP 7/84 DMP 9/84		Revised 7/84
70/F	7/23/84	Borehole seismic experiment at DSDP sites 417 and 603	Stephen, R. Mayer, L. Shaw. P.	LDGO	Some		DMP (P) LITHP (P)	Approved 9/84	Part of Leg 102
128/F	01/21/85	Proposal for an ODP hole dedicated to the physical properties, mechanical state, and structural fabric of deforming sediments in accretionary prisms	Karig, D.E.	Cornell Univ.	Yes	No	SOHP 1/85 TECP 1/85 DMP 1/85 WPAC 1/85		
133/F	03/21/85	In situ sampling of pore fluids during ODP	McDuff, R.E. Barnes, R.O.	U. Washington	N/A	N/A	DMP 3/85 LITHP 3/85		

143/F	04/15/85	In situ magnetic susceptibility measurements with a well log probe	Krammer,K. Pohl,J.	Inst. fur Allgemeine u.Angewan-te,Munich, FRG	N/A	N/A	ARP 4/85 LITHP 4/85 DMP 4/85		Revised 12/30/85 Related to Props. 200/F & 201/F
152/F	07/01/85	Borehole seismic experiments in the Tyrrhenian Sea	Avedik,F. Dietrich,M.	IFREMER Brest U.de Brest France	N/A	N/A	ARP 7/85 DMP 5/85		
155/F	07/01/85	Downhole measurements in the Japan Sea	Suyehiro,K. Kinoshita,H. Kanazawa,T. Yamamoto,K.	Chiba, U. Tokyo,U. Tohuku,U. Japan	Yes	Yes	WPAC 7/85 DMP 7/85 TECP 7/85 LITHP 12/85		Japanese Workshop
159/F	07/15/85	Monitoring changes in the physical conditions across a trench system (Izu-Mariana--Sagami-Suruga)	Kinoshita,H. et al	Chiba U. Japan	Yes	N/A	WPAC 7/85 DMP 7/85 TECP 7/85		Japanese Workshop
160/F	07/15/85	Geophys.conditions of the top most part of the lithospheric plate in the Weddell Sea	Kinoshita, H. Kaminuma, K. Shibuya,K. Kobayashi,K.	Chiba U. Nat.Inst. Pol.Res. ORI Tokyo Japan	Yes	N/A	SOP 7/85 DMP 7/85 TECP 7/85 LITHP 7/85		See proposal 54/C Japanese Workshop
161/F	07/15/85	Magnetic field & Water flow measurements at high temps. in holes accompanying hydrothermal circulation	Kinoshita,H. Kobayashi,K. Furuta,T.	Chiba U. ORI Tokyo Japan	N/A	N/A	DMP 7/85 WPAC 7/85 CEPAC 7/85 ARP 7/85 LITHP 7/85		See proposal 124/E Japanese Workshop
162/F	07/17/85	Offset VSP on the S.W.Indian Ocean Ridge fracture zones	Stephen,R.A.	WHOI	Some	Yes	DMP 7/85 IOP 7/85 LITHP 7/85 SOP 9/85 TECP 9/85		Related to proposal 89/B

186/F	08/28/85	Hydrology & heat flux in the S.W. Indian Ocean fracture zones	von Herzen, R.	WHOI	N/A	N/A	IOP 8/85 DMP 8/85 LITHP 8/85		See Prop. 89/B
188/F	09/18/85	Alternate proposal for Leg 109; 395A borehole geophysics & 418A drilling & geophysics	Salisbury, M. (on behalf of DMP)	Dalhousie U. Canada	Yes	No	DMP 9/85 LITHP 9/85 ARP 9/85	-	
193/F	11/06/85	Cooperative study of upper ocean particulate fluxes in the Weddell Sea	Biggs, D.C.	TAMU	N/A	N/A	SOP 11/85 SOHP 11/85		Proposal to NSF
200/F	12/30/85	Borehole magnetometer logging on Leg 109 (MARK)	Bosum, W.	BGR, FRG	N/A	N/A	DMP 12/85 ARP 12/85 LITHP 12/85		Related to Props. 143/F & 201/F
201/F	12/30/85	High precision borehole temperature measurements on Leg 109 (MARK)	Kopietz, J.	BGR, FRG	N/A	N/A	DMP 12/85 ARP 12/85 LITHP 12/85		Related to Props. 143/F & 200/F

IDEAS ; SUGGESTIONS

FOR

DRILLING

IDEAS, SUGGESTIONS FOR DRILLING (RECEIVED BY JOIDES OFFICE)

Ref.#	Title	Proponent	Institution	Date Recd	Refer. to Panel	Comments
1	Objectives/suggestions for Mediterranean Leg	Hsu, K	ETH Zurich, Switzerland (ESF)	7/13/83	DSDP/PMP and OPP	
2	Study of sedimentation patterns on the Barbados Ridge and in the Tobago and Grenada Basins	Saunders, J.B.	Naturhistorisches Museum, Basel Switzerland (ESF)	7/19/83		Formal proposal requested
3	Future potential sites in the Gulf of Mexico	Bouma, A.H. Coleman, J.	Gulf Research	1/4/84	TECP (P)	Reference to this in letter on other subject. Memo never received by JOIDES Office.
4	Outline of multi-topical program of Ocean drilling: NE Pacific Ocean	INPAC Group (Johnson, P.)	Univ. of Washington	1/6/84	TECP (P) 12/85 CEPAC (P) 12/85 LITHP (P) 12/85 SOHP (P) 12/85 DMP (P) 12/85	Workshop convened for Feb. 1985 Workshop Report received 12/30/85 & distributed to Panels as indicated Formal proposals requested 12/85.
5	Proposed objectives for ODP: Gulf of Mexico	King, J.	Univ. of Rhode Island	1/6/84		
6	Suggested drill sites in the NE Pacific Ocean	Malpas, J.	Memorial University, Canada	1/11/84	CEPAC 2/84 LITHP	
7	Some geological problems and areas of regional interest (Central and Eastern Pacific)	Okada, H.	Shizuoka University, Japan	2/15/84	CEPAC (P)	

8	Peru-Columbia Trench: provisional proposal	Aubouin, J.	Univ. P. & M. Curie Paris, France	2/-/84		Formal proposal requested
9	New Jersey Site 1A	Miller, K.G. Mountain, G.S.	LDGO	3/-/84		
10	General drill sites off Cuba	Case, J.E.	USGS, Menlo Park	3/19/84		
11	Suggestions for drilling on young seamounts in the Eastern Pacific	Batiza, R.	Washington Univ. Missouri	4/9/84	LITHP (P)	
12	Heterogeneity of the mantle	Schilling, J-G. O'Nions, R.K. White, R.M. Frey, F.A. Albarede, F.	URI Cambridge Univ., UK Max-Planck.Inst.,FRG MIT CNRS Nancy, France	5/21/84	LITHP 6/84	
13	Gulf of Aden drilling 1987	Girdler, R.W.	Newcastle Univ., UK	6/25/84	IOP 7/84	Further letter 12/30/85.Formal prop. requested 2/85,12/85 & 1/86.Prelim. prop.received 3/85.See Props.119/B & 219/B
14	Potential coring objectives and site locations for future deep sea drilling in the Mediterranean Sea	Thunell, R.	Univ. of S. Carolina	7/6/84	TECP (P)	Formal proposal requested.
15	South Atlantic palaeo-circulation	Robert, C.	IPOD Cttee, France	7/6/84	ARP SOHP	
16	ODP drilling in the tectonic area of Japan	Klein, G. deV.	Univ. of Illinois (Urbana)	7/6/84	TECP (P)	See proposal 146/D

17	Ocean margin drilling project around Japan	Ogawa, Y.	Kyushu Univ., Japan	7/6/84	TECP (P) 12/83	Proposals 132/D & 148/D receieved 6/85
18	Some drill sites in the Indian Ocean	Luyendyk, B.P.	Univ. of California, Santa Barbara	8/22/84	IOP (P) TECP 10/84	
19	Suggestions for drilling in the Indian Ocean - Indus Fan	Kidd, R.B.	IOS, UK	9/4/84	IOP 9/84 TECP 9/84	Withdrawn.
20	Drilling in the Indus Fan	Haq, B.U.	Exxon	9/8/84	IOP (P)	Formal proposal requested.
21	Drilling in the SW Somali Basin	Scrutton, R.A.	Edinburgh Univ., UK	9/8/84	IOP (P)	Formal proposal requested. Withdrawn No further action.
22	Drilling in the Atlantis-II Deep, Red Sea	Zierenberg, R.A	USGS, Menlo Park	9/8/84	IOP LITHP TECP	Proposal 120/B received 12/10/84.
23	Transect: Northern Exmouth Plateau to Argo Abyssal Plain	Willcox, J.B. Symonds, P.A. (supported by Gradstein, F.)	BMR, Australia (Atlantic Geoscience Centre-Canada)	9/8/84	IOP SOHP 12/84 TECP	Proposal 121/B received 12/10/84.
24	Drilling stratigraphic bore-hole off the coast of East Africa	Burckle, L.H.	LDGO	10/16/84		Formal proposal requested. Advised to liaise with Kennett (see pro-posal 117/B)
25	Investigation of hydrothermal processes and basalt dia-genesis in the Gorda Ridge	Hart, R. Fisk, M.	OSU	10/16/84		Formal proposal requested.

26	Deep sea drilling targets near loci of arc volcanism in Marianna back-arc basin	Fryer, P.	HIG	10/19/84	TECP LITHP 10/84 WPAC	Proposal 172/D received 08/19/85
27	Philippines Workshop	Wolfe, J.A.	Taysan Copper Inc., Philippines	11/14/84		Copied to Chairman, WPAC
28	Transect of upwelling zone sedimentation and palae-oceanography of cold circulation 15°-30°S	Kelts, K.	ETH-Zurich, Switzerland (ESF)	11/16/84	CEPAC (P)	Formal proposal requested.
29	504B Drilling	Purdy, G.M. (LITHP)	WHOI	12/10/84	LITHP	Proposal 124/E received 1/2/85
30	Drilling non-hotspot seamounts	Batiza, R.	Washington Univ., Missouri	12/19/84		
31	Physical and mechanical properties of core material	Karig, D.E.	Cornell University	12/19/84		Proposal 128/F received 1/21/85
32	Banda Sea Marginal Basin: trapped ocean crust & displaced continental borderland	Silver, E.A. Jongsma,D. Audley-Charles, M.G. von der Borch, C.C.	Univ. California,S. Cruz Vrije Univ,Amsterdam Netherlands (ESF) Univ.Coll.London (U.K.) Flinders Univ., Adelaide (Australia)	12/28/84	WPAC (P) TECP 12/84	Formal proposal in the name of Silver only received 03/11/85. See Proposal 131/D

33	Workshop on Western Pacific drilling (USSAC)	Hawkins,J.W.	S.I.O.	01/02/85	WPAC(P)	Report of Workshop rec'd 08/20/85. See proposals 170/D,171/D ,172/D, 187/D,189/D,190/D,191/D & 220/D
34	Drilling in the East Pacific Rise (N. & S. of Clipperton F.Z.)	Fox, P.J. Macdonald,K.C.	U.R.I. Univ. California,S. Barbara	01/02/85	LITHP(P)	No formal proposal likely until at least late 1985.
35	Oceanic plateaus (Kerguelen-Heard)	Schlich,R.	Inst.de Phys.d.Globe Strasbourg (France)	01/03/85	IOP(P)	Rec'd from IOP Chairman See proposal 136/C
36	Upper Mesozoic & Cenozoic palaeoenvironments of S.Indian Ocean (Kerguelen-Gaussberg Plateau)	Leclaire,L.	Mus.Nat.d'Histoire Naturelle, Paris (France)	01/03/85	IOP(P)	Rec'd from IOP Chairman
37	South Antarctic Ocean palaeooceanography (Crozet & Enderby Basins)	Leclaire,L.	Mus.Nat.d'Histoire Naturelle, Paris (France)	01/03/85	IOP(P)	Rec'd from IOP Chairman
38	Sedimentary record of Indonesian volcanic activity	Leclaire,L.	Mus.Nat.d'Histoire Naturelle, Paris (France)	01/03/85	IOP(P)	Rec'd from IOP Chairman
39	Palaeoenvironment and geodynamics of Central Indian Basin	Leclaire,L.	Mus.Nat.d'Histoire Naturelle, Paris (France)	01/03/85	IOP(P)	Rec'd from IOP Chairman

40	Study of shear margin and fault (Davie Ridge)	Leclaire,L.	Mus.Nat.d'Histoire Naturelle, Paris (France)	01/03/85	IOP(P)	Rec'd from IOP Chairman See revised proposal 30/B
41	Carbonate, clastic and other deposits in the Indian Ocean	Jaquet,J.M.	Univ. of Geneva Switzerland (ESF)	01/03/85	IOP(P)	Rec'd from IOP Chairman
42	Tectonics of the Red Sea	Pautot,G	Centre de Brest IFREMER (France)	01/03/85	IOP(P)	Rec'd from IOP Chairman See proposal 140/B
43	Magma generation & mantle heterogeneities, Indian Ocean (Rodriguez T.J.,S.E.,S.W., Central Indian Ocean Ridges)	Schlich,R.	Inst.de Phys.d.Globe Strasbourg (France)	01/03/85	IOP(P)	Rec'd from IOP Chairman See proposal 138/B
44	Suggested drilling in the East Indian Ocean	Falvey,D.A.	BMR,Canberra Australia	01/03/85	IOP(P)	Rec'd from IOP Chairman
45	Drilling on the Shaka Rise	Sclater,J.G.	UT Austin	07/20/84		Paperwork not available Previously classified as Prop. 71/C
46	Drilling proposal on the Antarctic margin off the Adelie Coast	Wannesson,J.	IFP,France	08/02/84	IOP(P)	Only site summary forms received Previously classified as Prop. 73/C Full proposal received 02/25/85(73/C)

47	Madeira Abyssal Plain	Duin,E.J.T. Kuijpers,A. Schuttenhelm, R.T.E.	Geol.Survey of Netherlands (ESF)	06/21/84		Not full proposal. Previously classified as Prop.63/A
48	Bare-rock drilling for hydrothermal objectives:Legs 106 & 109	Rona,P.A.	NOAA,Miami	02/25/85	LITHP(P)	Full proposal requested Further note about Leg 109 received 1/10/86
49	Stratigraphic tests proposal	SOHP	Panel proposal	04/02/85	IOP(P)	Proposal 221/B rec'd 1/17/86
50	Proposal for a workshop on scientific seamount drilling (proposal to NSF)	Watts,A.B.	LDGO	04/11/85		
51	Hydrogeology experiments to be performed during the first two years of ODP (proposal to NSF)	Becker,K. Gieskes,J.	SIO	05/22/84		
52	Back-arc spreading & fresh-water sediment: Japan Sea	Koizumi,I.	Osaka Univ., Japan	05/03/85	WPAC	Related proposal 157/D received 7/85 Formal proposal requested Japanese Workshop
53	Geochemical significance of hard-rock drilling in the S.E.Indian Ocean	Frey,F.A.	M.I.T.	05/14/85	IOP(P)	Proposal 150/B received 07/01/85
54	Workshop to evaluate upper ocean dynamics studies in conjunction with ODP operations (proposal to NSF)	Miller,C.B. Wiebe,P.H.	OSU WHOI	07/01/85	SOHP	

55	Manila forearc & opening of the Japan Sea	Niitsuma,N.	Shizuoka Univ.,Japan	08/19/85		Japanese Workshop Formal proposal requested
56	Accurate dating of the Hawaiian hotspot	Niitsuma,N.	Shizuoka Univ.,Japan	08/19/85		Japanese Workshop Formal proposal requested
57	DSDP Hole 462A,Nauru Basin	Fujii,N.	Kobe Univ.,Japan	08/19/85		Japanese Workshop Formal proposal requested
58	NORPAC drilling proposals	Scholl,D.	USGS	11/13/85		USSAC Workshop
59	Scientific rationale for establishing long-term ocean bottom observatory/laboratory systems	Delaney,J.R.	U.Washington	11/12/85		Formal proposal requested
60	Mantle peridotite drilling	Bonatti,E.	LDGO	10/22/85		Related to 89/B
61	Basin margin exploration : S.E.Asia	Mcmanus,J.W.	URI	11/19/85		
62	Fracture zone drilling in the Indian Ocean	Natland,J.	SIO	12/30/85		See proposal 223/B Related to 89/B.
63	USSAC Workshop on Carbonate Banks & Platforms Report	Winterer,E.L.	SIO	12/30/85		USSAC Workshop See Props. 183/B;202/E;203/E;204/A;205/A;206/D

64	USSAC North Pacific (NORPAC) Workshop Report	Scholl,D.W.	USGS	1/23/86	CEPAC Dist.at SOHP PCOM TECP mtg. LITHP 1/86	USSAC Workshop. See props.192/E;195/E;199/E;207/E; 213/E;214/E;225/E;227/E
65	Ocean drilling in S.Red Sea	Hemleben,C.	U.Tubingen,FRG	1/27/86		Formal proposal requested
66	Geochemical reference holes on active convergent margins	Langmuir,C.	LDGO	2/24/86		
67	Evolution of the Sulu Sea	Fernandez,J.C.	Bureau of Mines, Manila,Philippines	3/03/86	WPAC(P)	Formal proposal requested

(P)= Referred directly to the indicated Panel by the proponent.

WORKSHOPS RELEVANT

TO DEVELOPMENT OF DRILLING PLANS

CHECKLIST OF WORKSHOPS RELEVANT TO DEVELOPMENT OF DRILLING PLANS

WORKSHOP TITLE	DATE HELD	CONVENERS/ CONTACT POINT	SPONSORING ORGANISATION	PROPOSALS REF. #	IDEAS/SUGGESTIONS REF. #	ODP DRILLING LEGS
Future of Scientific Ocean Drilling in the Australasian Region (Report available)	3/12/81	Cook,P.J. Crook,K.A.W. Frakes,L.A.	Consortium for Ocean Geosciences of Australian Universities (COGS)	See 126/D (COGS-2)		
Some proposals for ODP (Report available)	1/1/84	Aubouin,J.	Comite Scientifique ODP (France)	15/A;16/A;17/A; 18/A;19/A;20/A; 21/A;22/A;23/A; 24/A;25/D;26/D; 27/D;28/D;29/D; 30/B;31/B		101,103,107,110, Red Sea,(EPR back-up)
Future Drilling in the Indian Ocean (Report available)	6/5/84	Curray,J.R. Prell,W.L. Weisel,J.K.	NSF (U.S.A.)	56/B;57/B;61/B; 62/B;65/B;80/D; 86/B;87/B;88/B; 89/B;90/B;91/B; 92/B;93/B;94/B; 95/B;96/B;97/B; 98/B;99/B;100/B; 101/B;102/B;103/B; 104/B;105/B;106/B; 107/B		Neogene Package, Red Sea, SWIR, Broken Ridge, 90°E Ridge, Intraplate Deformation, Mascarene Plateau
Philippines Workshop	-	Wolfe,J.A.			I-27(WPAC)	
Western Pacific arc-backarc systems (Report available)	6/25/85	Hawkins,J.	USSAC	170/D;171/D;172/D; 187/D;189/D;190/D; 191/D;220/D	I-33	

Scientific Seamount Drilling	6/4/86	Watts,A.B.	USSAC		I-50	
Workshop on Carbonate Banks and Guyots (Report available)	8/6/85	Winterer,E.L. Schlager,W.	USSAC	183/B;202/E;203/E; 204/A;205/A;206/D	I-63	
Workshop to evaluate upper ocean dynamic studies in conjunction with ODP operations (SPECTROS)	11/4/85	Miller,C.B.	NSF (U.S.A.)		I-54	
Japanese ODP Workshop (Report available)	5/17/85	Taira,A. Kobayashi,K.	ODP National Committee (Japan)	50/D;51/D;83/D; 132/D;144/D;148/D; 149/D;151/D;155/F; 156/D;157/D;158/D; 159/F;160/F;161/F; 166/D;167/D;168/D; 174/D;175/D;176/D; 177/D;178/D;179/D; 180/D;181/D;182/E	I-52;I-55;I-56; I-57	
Ocean Drilling in the Australasian Region (COGS-2) (Report available)	11/12/84	Crook,K.A.W. Falvey,D.A. Packham,G.H.	Consortium for Ocean Geosciences of Australian Universities (COGS)	121/B;126/D;185/C; 197/B;206/D		Argo/Exmouth
Neogene Palaeoclimates and Evolution	9/11/84	Denton,G.H. Partridge,T.C. Vrba,E.S. Burckle,L.H.		118/B		Neogene Package
South Pacific	4/20/86	Cieselski,P. Mammericx,J. Weissel,J.K. Anderson,J.	USSAC	209/C;230/C;		

North Pacific Drilling (NORPAC) (Report available)	9/22/85	Scholl,D.	USSAC	192/E;195/E;199/E; 207/E;210/E;213/E; 214/E;225/E;227/E; 229/E;231/E;	I-58	
International NE Pacific Activities Consortium (INPAC) (Report available)	2/20/85	Johnson,P. Rea,D.	NSF (U.S.A.)	224/E	I-14	
Cretaceous Black Shales	12/6/85	Arthur,M. Meyers,P.	USSAC			
Physical & mechanical properties measurements in ODP samples	6/26/86	Karig,D.	USSAC			
Palaeomagnetic objectives of ODP	TBA 1986	Virosub.K.L.	USSAC			
Gulf of California drilling activities consortium (GULFAC)	8/5/86	Dauphin,J.P.	USSAC			
South Atlantic drilling	TBA 1986	Austin, J.	USSAC			

DOSECC

DEEP OBSERVATION AND SAMPLING OF THE EARTH'S CONTINENTAL CRUST, INC.

1755 Massachusetts Ave., N.W. - Suite 700 Washington, D.C. 20036 (202) 234-2100

DOSECC UPDATE - 2 MARCH 1986

DOSECC (Deep Observation and Sampling of the Earth's Continental Crust, Inc.) is a private, non-profit corporation formed in 1984 by a consortium of universities to design and manage a national continental scientific drilling program. DOSECC UPDATE is a source of communications for those interested in the drilling program. Items in the newsletter include information about DOSECC activities and plans, upcoming scientific drilling-related meetings, details of U.S. research drilling projects, descriptions of holes being drilled by industry, government, and academe that may provide opportunities for add-on scientific investigations, and information on continental scientific drilling programs in other countries. If you wish to change your address or add other recipients to the mailing list, complete the enclosed response form.

DOSECC SCIENTIFIC INVESTIGATIONS PROPOSAL SUBMISSION PROCEDURES

Proposals requesting support from DOSECC should address scientific experiments that can best be conducted with the use of the drill to provide samples or access for downhole measurements. Requests for support of workshops to define experiments and to assemble potential principal investigators in multifaceted projects are also encouraged. Acceptance of a proposal is preceded by review by DOSECC's Science Advisory Committee (SAC) of the scientific merit and cost effectiveness of the proposed experiment, assessment of the drilling cost and feasibility, and appraisal of proposed downhole measurements and sample studies.

The following general guidelines will be used to prepare proposals for original scientific projects and for experiments to be added on to projects, but will not be used for the awarding of contracts such as drilling, logging, and technology, which are based upon specifications and work statements. Announcements inviting scientific proposals to specific projects will be made as opportunities arise. However, proposals appropriate for DOSECC support may be submitted at any time. Scientific investigation proposals submitted to DOSECC will involve at least two steps; pre-proposals and final proposals. A pre-proposal submitted to SAC should outline briefly the scientific experiments involved and indicate their significance in terms of expected gain in new knowledge. Pre-proposals must specify the reasons that drilling is required. The pre-proposal is then distributed by SAC to reviewers for evaluation of scientific merit. Following return of the reviews, SAC will consider the proposal at its next meeting and then inform the author of its decision. If the recommendation is favorable, a meeting will be arranged between the principal investigator (PI), the DOSECC Drilling and Engineering staff, and the Downhole Measurements Advisory Panel to evaluate the feasibility of the proposal, estimate costs, and consider downhole measurements. If SAC recommends not to support the pre-proposal, review comments will be provided to the PI, who may then consider submission of a revised proposal or request funding for a workshop to refine or modify the original proposal.

Following provisional acceptance of the pre-proposal and consultation with the DOSECC technical support groups, the PI will prepare a final proposal containing a detailed science plan, a drilling, logging, and sampling plan, and a budget. The final proposal is reviewed by SAC and, if found acceptable, receives a priority for inclusion in DOSECC's overall program. DOSECC management acts on SAC recommendations by placing the project in the drilling schedule. Once a scientific drilling project is approved and a priority is set, SAC appoints a Science Experiments Panel (SEP) to work with the PI to refine the project and insure broad awareness in the scientific community of research opportunities. Public announcements will solicit secondary proposals made possible by the proposed hole. Secondary proposals will be reviewed by SEP and assigned a priority, depending on compatability and relationship with the ~~primary project for which the hole is being drilled,~~ their scientific merit, and the estimated cost, SEP submits recommendations regarding secondary experiments to SAC for final review and approval. This entire procedure may take as long as two (2) years.

Funding for workshops may be requested to modify proposals that have been rejected or to develop new experiments and projects. Negotiations for support of workshops are initiated by a letter proposal of not more than two or three pages to SAC, which will either approve the workshop, request more detail, or reject the request. SAC will assist in workshop arrangements. Lead time should be at least six (6) months.

DOSECC anticipates ephemeral opportunities to arise periodically in the form of add-on experiments to drilling activities of industry or government. These may involve deepening a hole or additional experiments or sampling in a hole already planned or being drilled. In such cases, a special proposal may be presented to SAC requesting rapid scientific consideration and response.

For details on proposal formats check the appropriate box on the enclosed response form.

ILLINOIS SUPERDEEP DRILL HOLE WORKSHOP

A scientific workshop will be held in Champaign, IL, 1-4 April 1986, to refine proposals for drilling a superdeep scientific research drill hole in southern Illinois. The principal purpose of the workshop is to prepare a detailed report on the scientific objectives of the project, including downhole instrumentation.

Committees will develop experimental plans in the subject areas of tectonics and structure; basin analysis; basement age, composition, and evolution; hydrology, hydrodynamics, and brine geochemistry; environmental studies; rock mechanics; hydrocarbon studies; ore deposit studies; and downhole technology. For further information, contact J. James Eidel at the Illinois State Geological Survey Division, Natural Resources Building, 615 East Peabody Drive, Champaign, IL 61820 [telephone (217) 333-5166].

INTERNATIONAL CONTINENTAL LITHOSPHERE SYMPOSIUM

The Inter-Union Commission on the Lithosphere (ICL) is holding a Symposium on The Continental Lithosphere - Structure, Composition, and Processes, 7-12 April 1986 at Karlsruhe University, Federal Republic of Germany. The symposium is co-sponsored through ICL Working Group 6 (Structure, Physical Properties, Composition, and Dynamics of the Lithosphere-Asthenosphere) and ICL Coordinating Committee 4 (Continental Drilling). The symposium will focus on the exploration of the continental lithosphere by seismic reflection/refraction and other sounding methods and by drilling.

On Friday, 11 April, a special session on continental scientific drilling will be held. Invited speakers will discuss the plans for and results of research drilling projects in various countries. In addition, a poster session on the German Continental Deep Drilling Program (KTB) will be presented, and a panel discussion on application of geophysical survey data to siting scientific drill holes will be held. On 12 April, an excursion will be conducted to the Rhinegraben Valley and Black Forest, a possible target area for the KTB.

Information on the Symposium can be obtained through Prof. Dr. H. Wilhelm or Prof. Dr. K. Fuchs, Geophysikalisches Institut, Universitaet Karlsruhe, Hertzstrasse 16, D-7500 Karlsruhe 21, Federal Republic of Germany [telephone (0712)/608-4558; telex 782570 GEOK D].

ULTRADEEP CORING CONFERENCE

The Engineering Foundation has scheduled a conference on "Core Drilling for Ultradeep Scientific Targets: An Engineering Challenge." It is to be held 20-25 April 1986 at Sky Valley Resort, Dillard, Georgia. Matt Walton, Director, Minnesota Geological Survey, is Chairman, Co-Chairmen are Frank J. Schuh, Sr., [illegible]co Resources Technology and John C. Rowley, Los Alamos National Laboratory.

DOSECC is investigating a long term program to drill ultradeep holes for scientific targets. One proposed target is to drill a 10- to 15-km hole in crystalline rocks of Southern Appalachia. To achieve this, considerable challenges lie ahead. The meeting is designed to explore these challenges and point to possible solutions.

For further information and application form, contact Engineering Foundation Conferences, 345 East 47th Street, New York, NY 10017.

CONTINENTAL SCIENTIFIC DRILLING GENERAL WORKSHOP

On 12-14 June 1986, DOSECC will sponsor a general workshop at the South Dakota School of Mines and Technology to offer scientists the opportunity to present proposals for continental scientific drilling projects. The workshop is open to individuals and groups pursuing research that requires drilling samples and/or downhole measurements to answer basic questions concerning the structure, properties, and dynamics of the continental crust. The agenda will include discussion of DOSECC's program; related Department of Energy and U.S. Geological Survey projects; DOSECC 1986 projects; new proposals for drilling and related experiments; and current drilling, coring, and logging capabilities, constraints, and costs.

Abstracts should be submitted to SAC by 15 April 1986 to be considered for the workshop program. Interested parties should contact DOSECC by checking the appropriate box on the enclosed response form.

DOSECC DRILLING PROJECTS SCHEDULE

Science Experiments Panels (SEP) have met on the Cajon Pass (CA) and Creede (CO) research drilling projects. Deepening of the Cajon Pass hole from 1.3 km to 5 km is expected to begin in late 1986. DOSECC plans to issue a Request for Bids for a drilling contractor in March. A final proposal from the project principal investigators will be completed in May, followed ~~by an informati~~on session at the American Geophysical Union Annual Spring Meeting in Baltimore, MD, on 22 May, to solicit proposals for additional science experiment proposals. Drilling for the Creede project should begin in 1987 with shallow (1 km) holes in the caldera moat sediments.

DOSECC WORKSHOP ON CRATONIC PROCESSES

A DOSECC-sponsored workshop was held at St. Louis, MO, 23-26 February 1986, to bring together expertise in geology of the continental interior. Logging, downhole measurements, and regional geophysics were discussed for the purpose of planning a comprehensive program of scientific drilling in the continental interior aimed at understanding the processes important in the origin and evolution of the stable craton. The workshop organizer, W. R. Van Schmus, Department of Geology, University of Kansas, Lawrence, KS 66045-2124 [telephone: (913) 864-4974], can provide further information.

SALTON SEA SCIENTIFIC DRILLING PROJECT

In mid- February 1986, the Salton Sea Scientific Drilling Project in Niland, CA, reached a depth of 9450 ft in a diabase intrusion, with an equilibrium temperature of about 350°C. Thirty-three 30 spot cores have been collected, and a flow test was conducted at about 6200 ft. Lost circulation has caused problems in drilling and coring. The target depth of 10,000 ft should be reached in the near future. For further information contact Prof. Wilfred A. Elders, Institute of Geophysics and Planetary Physics, University of California, Riverside, CA 92521.

SECOND INTERNATIONAL SCIENTIFIC DRILLING SYMPOSIUM

Scientists from 20 countries met in Seeheim, Federal Republic of Germany (FRG), October 4-6, 1985, to exchange information about continental scientific drilling programs in progress or planned. The Second International Symposium on Observation of the Continental Crust through Drilling was sponsored by Coordinating Committee 4 (Continental Drilling) of the Inter-Union Commission on the Lithosphere and was presented as the 4th Alfred Wegener Conference.

Scientific sessions, augmented by poster sessions were held and a post-meeting field trip was conducted to two proposed locations for the German Continental Deep Drilling Program (KTB) -- one in the Schwarzwald and the other in the Oberpfalz. Sessions dealt with national programs, with special emphasis on the background for the KTB. In addition, techniques and problems in drilling, logging, and sampling were discussed. Presentations will be published.

Proceedings of the First International Symposium, held 20-25 May 1984 in Tarrytown, NY, have been published: Raleigh, C.B. (ed) 1985. Observation of the Continental Crust through Drilling I. Springer-Verlag, N.Y. 364 pp.
