

JOIDES PLANNING COMMITTEE MEETING  
30 November - 4 December 1987  
Sunriver, Oregon

MINUTES

Members:

N.Pisias (Chairman) - Oregon State University  
J.Austin - University of Texas (for T.Shipley)  
G.Brass - University of Miami  
W.Coulbourn - University of Hawaii  
O.Eldholm - ESF Consortium  
T.Francis - United Kingdom  
S.Gartner - Texas A&M University  
M.Kastner - Scripps Institution of Oceanography  
M.Langseth - Lamont-Doherty Geological Observatory  
R.McDuff - University of Washington  
J.Malpas - Canada (for P.Robinson)  
J.C.Sibuet - France (for J.P.Cadet)  
A.Taira - Japan  
B.Tucholke - Woods Hole Oceanographic Institution  
U.von Rad - Federal Republic of Germany

Absent:

M.Leinen - University of Rhode Island (for R.Larson)

Liaisons:

B.Malfait - National Science Foundation  
T.Pyle - Joint Oceanographic Institutions, Inc.  
L.Garrison - Science Operator (ODP/TAMU)  
R.Jarrard - Wireline Logging Services (Borehole Research/LDGO)

Panel/Committee Chairmen:

S.Schlanger - Central & Eastern Pacific Regional Panel  
P.Worthington - Downhole Measurements Panel  
R.Schlich - Indian Ocean Regional Panel  
T.Moore - Information Handling Panel  
C.Langmuir - Lithosphere Panel (for R.Detrick)  
M.Ball - Pollution Prevention & Safety Panel  
L.Mayer - Sediments & Ocean History Panel  
J.Peirce - Site Survey Panel  
P.Barker - Southern Oceans Regional Panel  
J.Jarry - Technology & Engineering Development Committee  
D.Cowan - Tectonics Panel  
B.Taylor - Western Pacific Regional Panel

Guests / Observers:

P.Ciesielski - Leg 114 Co-chief Scientist  
B.Duncan - Leg 115 Co-chief Scientist  
M.Storms - Science Operator (ODP/TAMU)  
R.Heath - University of Washington  
E.Kappel - JOI, Inc.

JOIDES Office:

M.Wiedicke - Non-U.S. Liaison/Executive Assistant  
S.Stambaugh - Science Coordinator  
C.Moss - Office Coordinator

**30 November 1987**

**684 WELCOME ADDRESS AND INTRODUCTIONS**

N.Pisias opened the meeting and welcomed all to Oregon. After explaining meeting logistics, he introduced new and alternate PCOM members: B.Tucholke, new WHOI representative, J.Austin for T.Shipley, U.Texas, J.Malpas for Canadian representative P.Robinson (at sea with Leg 118), and J.C.Sibuet for J.P.Cadet of France. Pisias said that M.Leinen, scheduled to attend for R.Larson and URI, had sent word that she would not attend due to illness of a family member.

The Chairman then introduced new panel chairmen, T.Moore (IHP) and M.Ball (PPSP). He welcomed Charles Langmuir as alternate for R.Detrick (LITHP). B. Malfait, new NSF liaison replacing R.Buffler, was introduced. Finally, Pisias welcomed Leg 114 Co-Chief, Paul Ciesielski and Leg 115 Co-Chief, Robert Duncan.

Additional meeting papers were distributed and a list of them reviewed (Appendix A).

**685 ADOPTION OF THE AGENDA**

The report from the Panel Chairmen's meeting was rescheduled to precede the Annual Reports of the Chairmen. Items on ODP editorial board and role of co-chiefs were added. An item on PCOM recommendations for the 4% set aside in the FY89 budget was added.

PCOM Motion:

PCOM adopts the agenda for the 30 November - 4 December, 1987 Annual Meeting of the Planning Committee. (Motion, Francis, second Kastner)

Vote: for, 15; against, 0; abstain 0

## 686 APPROVAL OF PREVIOUS MINUTES

The following changes were recorded to the minutes: p.3<sup>1</sup>, third line: deletion of "by NSF"; p.17, line 33: "EP9B" should read "EP9E"; p.25, third line from bottom: "MCS" should read "SCS."

### PCOM Motion:

PCOM approves the minutes of the 26-28 August Planning Committee meeting, with amendments. (Motion Brass, second Langseth)

Vote: for 15; against, 0; abstain, 0

## 687 EXECUTIVE COMMITTEE REPORT

N.Pisias, PCOM liaison at the 5-7 October 1987 meeting of EXCOM, reported. He referred PCOM to the summary of the meeting prepared for the agenda book (Appendix B).

Pisias reported that EXCOM was supportive of the proposal review process approved by PCOM; EXCOM will review the initial report of the Panel Structure Subcommittee at its next meeting.

Pisias reviewed specific tasks before PCOM as a result of requests presented at the last EXCOM meeting for ODP planning:

- 1) To finalize the FY89 Science Plan for the FY89 Program plan due at JOI, Inc by the end of December, 1987;
- 2) To provide input to a four-year planning document required by the U.S. Science Board for continued program support; and
- 3) To provide specific panel structure recommendations.

Because the COSOD II draft arrived too late for PCOM review, a lengthy discussion of COSOD II was postponed until the April, 1988 PCOM meeting (See COSOD section below). EXCOM has developed a strawman schedule for incorporating COSOD II recommendations into the program (Appendix C) and suggested that the timetable be compressed if possible.

### Discussion:

G.Brass requested information on the new Agenda Subcommittee designated by EXCOM. Pisias said that some members of EXCOM thought the agenda outline now in use could be more informative. They want to focus on how planning is being implemented and intend for EXCOM to focus on policy issues.

## 688 NSF REPORT

### FY 88 Budget Developments:

B.Malfait reported for NSF. He reviewed the possible effects of the Gramm-Rudman budget reductions on NSF appropriations (up to 25% if implemented). News from Congress on the budget is expected by mid-December.

Malfait reviewed the status of the FY88 NSF/ODP budget:

FY 88 budget request = \$31.3 M

(ODP = 20.5 M)  
(US Science = 10.8 M)

ODP Program Plan = \$35.5 M

(NSF-ODP = 20.5 M)  
(International = 15.0 M)

U.S.Science = \$10.8 M

(JOI/USSAC = 3.9 M)  
(NSF Grants = 6.9 M)

### Future budgets:

Malfait discussed the U.S.Science Support Program and budget. New activities planned to begin in FY88 are: support for acquisition of data from "ships of opportunity"; support for U.S. participation in non-U.S. site surveys; development of wireline re-entry capability; support of VSP experiments; and support for U.S. logging workshops.

Malfait presented a list of NSF funded ODP grants (Appendix D) for 1987 through early FY89. He noted that the Bonin and Nankai regional field programs for 1987 had been completed. He reported that the Old Pacific survey (Shipley and Larson) is currently at sea and reports promising data. Clearance was denied for E.Silver's cruise to Sunda/Banda and NSF has no plans to reschedule it. For 1988, funding will determine how many regional field programs are scheduled. Malfait closed with a description of and timetables for the ODP long-range planning documents needed by NSF and National Science Board review (Appendix E).

## 689 JOI, INC REPORT

T.Pyle reported for JOI, Inc. and distributed copies of his handouts used during his presentation. He reviewed key 1987 events, with emphasis on the final development of the FY88 Program Plan.

Review of FY88 Program Plan:

JOI accepted the IHP recommendations on the publications budget and through reprogramming of funds (\$126K), typesetting of Part B and editorial staff (two editors) were added back. PCOM's concern on elimination of onboard XRF/XRD capability was addressed by reprogramming funds (\$26K) to maintain XRF/XRD on priority legs. IHP had recommended data base enhancements and \$26K was reprogrammed for this task.

[Note: In discussions on ODP Publications, concerns on the elimination of reprints to Part B authors arose. Although Pyle did not specify how the budget could accommodate reprogramming for this item, the following motion was forwarded and passed by PCOM.

PCOM Motion:

Fifty reprints per manuscript in the ODP Proceedings Part B should be available to authors, to be funded through a reprogramming of the remaining publication budget for FY88. (Motion von Rad, second Kastner)

Vote: for, 12; against, 2; abstain, 1

This modification to the publications budget was estimated at \$9K for FY88.]

Pyle reported that the first Fellow chosen through the "Lesser Developed Countries Initiative" participated on Leg 116, and predicted that EXCOM will revive a "Third World/LDC" program in the FY89 Program Plan.

JOI and TAMU are interviewing candidates for a clearance specialist position in order to address the problem of late drilling clearances.

Status of other JOI, Inc./ US Science Support Program projects:

Pyle reviewed the status of USSAC workshop reports and presented the amended USSAC budget for FY87-90. The FY 88 funds allocated for data storage are for storing all available DSDP digital data on one CD ROM disk. Pyle said that funds for large data synthesis had been cancelled until strong support, as seen for workshops, is shown.

ODP Renewal/ FY 89 budget:

Pyle discussed the program review process, which will probably be a four-year review. Pyle reported that a review of ODP administrative costs is being conducted by outside management consultants in order to identify reasonable costs for the program. An ad hoc committee nominated by the JOI BOG will review their report.

Pyle presented a schedule for through FY88 which outlines steps in the review process including evaluation by the U.S. National Science Board. Areas of concern identified by Pyle for developing the FY89 budget include:

- stability of publication decisions
- engineering development costs
- "special operating expenses" (4%)
- international participation and clearance problems
- transfer of JOIDES Office
- panel chairmen's expenses

Discussion:

Pyle answered questions about the Lesser Developed Country Fellow program. Pyle also explained that the new USSAC program for site survey augmentation was of a size that U.S participation in non-U.S. survey cruises would most likely cover scientists' salaries, rather than significant shiptime.

690 SCIENCE OPERATOR REPORT

Leg 118 Status Report:

L.Garrison, TAMU liaison, reported on science operations, beginning with an update from Leg 118. After several attempts to spud-in at proposed SWIR sites, hardrock guidebase deployment and successful coring was achieved at Site 735B. Recovery at the site has been excellent, averaging 87%, and tests of various drill bits have proceeded. Bit life has averaged around 30 hours. A telex from the Co-chiefs indicated that Navidrill testing would follow RCB drilling.

PCOM briefly discussed Leg 118. von Rad said that this leg should serve as a lesson for the necessity of comprehensive site surveys. J.Peirce added that SSP did have reservations about the leg, which were expressed to PCOM. Brass reminded PCOM that Leg 118 was scheduled as a high-risk venture. Sibuet and Schlich asked that Leg 118 co-chiefs report to PCOM on how the scientific objectives of the leg were achieved, not the engineering successes.

Future leg scheduling:

Garrison described several changes in the operations schedule (Appendix G). The Leg 120 port was changed to Fremantle for shorter transit. TAMU has studied options for the port call based on costs, Australian requirements for union crews, and savings in transit time. Garrison said the decision to use Singapore was made on a logistics, not political basis. Leg 124 was shortened in order to avoid getting into port during the Christmas holidays, which has created logistical problems in the past.

Engineering test leg:

Garrison described upcoming technology requirements (hard rock drilling, alternating lithologies, e.g.) which will require dedicated testing. TAMU is proposing a systematic development of engineering tools and recommends consistent funding for engineering.

Garrison said that TAMU would like to link engineering and science planning by way of engineering test legs, the first of which is proposed to follow Leg 124

(See Appendix H). The 30-day leg would be combined with a long transit from Manila to Guam, thus improving logistics for the Leg 126 port. As recovery of core is expected, an abbreviated scientific party would be required. Other test legs are proposed to follow Leg 130, and tentatively scheduled before Lau Basin drilling.

#### Discussion:

Pisias said that LITHP had proposed the idea of engineering test legs and the scheduling of one after Leg 124 was approved by WPAC for logistics reasons. The leg would also improve the engineering planning for East Pacific Rise drilling. (See further discussion of the engineering test leg below.)

#### ODP Clearances:

Garrison reviewed upcoming clearances. Verbal request from the French has been obtained for Leg 119. Final Australian approval is pending for SKP sites on Leg 120. Clearances from Australia are required for Leg 122 and 123; request procedure will begin in early 1988. [The clearance situation for Leg 124 was discussed during WPAC planning.]

Garrison said that the hiring of a clearance specialist, 50% of whose time will be spent on TAMU clearance advance work, should enable TAMU to get necessary background for clearances for the Pacific.

#### Cruise staffing:

Garrison reviewed staffing for upcoming legs and ice boat logistics for Leg 119. Ice support for the leg is estimated at \$865K; the MAERSK MASTER will be released as soon as possible if no ice problems exist or if SKP-6B is drilled instead of Prydz Bay.

Garrison concluded his presentation with a statistics on shipboard participation by member country (Appendix I).

#### Leg 115 Report:

R.Duncan, co-chief with J.Backman on Leg 115, reported on operations and preliminary results from drilling on the Mascarene Plateau, Maddingly Rise, and Chagos Bank. Major objectives of the leg were to determine the geochemistry and ages of hot spot volcanics and relate them to plate motion, and to achieve a Neogene carbonate depth transect.

Duncan reviewed clearance problems at the legs outset, when primary basement sites, MP1 and MP2, were denied clearance by the Mauritius government. Alternative basement sites on the Chagos Plateau were cleared through the Maldivian government. The loss of MP1, however, will leave an age gap for correlation with the Reunion volcanics. Duncan did a site-by-site review, noting hole stability problems at Site 712 and poor recovery in Eocene carbonates at Site 715.

Preliminary results from the ages and compositions of the volcanics are consistent with a model for northward motion of the Indian plate and a fixed hotspot. Although no radiometric dates are yet available, the preliminary ages agree extremely well with a model based on a fixed Atlantic hot spot. Duncan reported on geochemistry and possible source regions for the volcanics. He said that the onboard XRF performed well during the cruise.

In conclusion, Duncan noted the tremendous cooperation the operations staff had with the shipboard scientists, and he acknowledged the excellent scientific staff as well.

#### Discussion:

PCOM discussed reports of magnetized core barrels causing bad paleomagnetic measurements on Leg 115, 116 and 117. Duncan reported that the problem was discovered halfway through the Neogene program and was thought to have resulted from magnetization during drillpipe inspection. L.Mayer asked if non-magnetic pipe could be used in the future.

M.Storms, TAMU engineering, responded that cost for non-magnetized core barrel collars would be four times greater than standard ones as they would have to be custom made. TAMU, after limited testing, has determined that sheared set screws could be causing non-oriented core. Rig crews are being asked to check the set screws and TAMU is outlining tests and calibrations for future legs. R.Jarrard presented results from repeat passes of the Schlumberger magnetometer during Leg 117 which confirmed effects of adjacent pipe magnetization even with non-magnetized collars.

#### Leg 114 Report:

Paul Ciesielski, co-chief with Y.Kristoffersen, reported on results and the extreme operating conditions on Leg 114. Although the MAERSK MASTER was effectively used as an emergency fuel barge at the outset of Leg 114, Ciesielski said such operations should be avoided if possible in the future. He also reported that an operations change of chasing the core barrel with sinker bars resulted in four to five extra drilling days for the leg.

Ciesielski reviewed the paleoceanographic and stratigraphic objectives of the leg, which were to study the initiation of a deep connection between the South Atlantic and Antarctic Basins and to determine its paleoceanographic and paleoclimatic evolution of the sub-Antarctic South Atlantic. He said that they were able to obtain a valuable record of Neogene high latitude sediments, in addition to the primary Paleocene objectives.

Sites 699 and 700 drilled late Paleocene to Cretaceous sections that showed paleocirculation changes. The biggest change in surface water temperature occurred in the mid-Eocene, with cooler foram assemblages indicated by the late Eocene. Carbonate analyses from the Neogene show a major change in the late Miocene, with an influx of silicic sediments beginning about 9 Ma. Interglacials are indicated in Messinian age sediments, and the geochemical logs from the section will be used to analyze for climatic signals.



Ciesielski concluded by thanking PCOM for its support of the leg. He noted the contributions of logging for future high-latitude work, but said the wireline heave compensator should be improved for work in rough seas.

### 691 TAMU ENGINEERING REPORT

M.Storms gave a special report on TAMU engineering which included an overview of current major projects and future requirements for the program. Requirements for future technology development include: advanced science operations data; commitment to shipboard engineering testing; and adequate staffing/funding levels commensurate with level of technical difficulty ahead.

Storms stressed the need for advanced science operations data to better forecast budgets and manpower. TAMU would like to conduct more land tests instead of testing instruments on legs where they are needed for the science objectives. He presented a list of the types of data required:

- \* tentative leg numbers
- \* tentative dates of operation
- \* operating area
- \* anticipated weather/sea conditions
- \* major/minor science objectives
- \* anticipated number of sites/holes
- \* tentative site detail ( water depth, sedimentary penetration depth, basement penetration, anticipated lithologies, anticipated special tool requirements and anticipated technology needs/priorities

Storms reviewed benefits of committed sea trials. He said that valuable engineering development time is lost when an engineer is on a two month cruise for a limited amount of equipment tests. He compared the benefits of land and sea trials, noting the difference between controlled testing versus operating conditions testing on each. Engineering test legs would avoid the problem of "selling" engineering testing to scientific leg co-chiefs.

Storms emphasized that increased engineering budgets are not as important as consistent funding for key projects. He said that consistent liaison with key JOIDES panels (LITH, SOHP, e.g) is a necessity as well as exchange with industry should continue. The five TAMU engineers are over-committed now, and in order to prepare for future developments, staffing must be kept at appropriate levels.

Storms presented TAMU's proposed long-term development engineering schedule (Appendix H). Although some of the legs listed are not finalized, Storms noted that TAMU would like to project staffing and funds for engineering tests. He said the length of the legs and time between them would hopefully dovetail with the science program.

Priority crustal coring tasks (Appendix J) and the status of crustal coring projects (Appendix K) were presented. Storms noted that the positive displacement coring motors were performing well on Leg 118 tests. TAMU is looking at the diamond coring high speed system as a key system for deep basement

penetration and recovery in fractured rock. In reference to modifications to the hardrock orientation systems, Storms noted that they would be needed for Leg 123. TAMU hopes to test existing systems with the mining coring system, but no TAMU engineer is available for the project. Storms said that TAMU engineer Steve Howard will be assigned as permanent liaison to LITHP.

Storms next covered priority sediment coring tasks (Appendix L) and status of sediment coring projects (Appendix M). Continued development of the XCB coring system is a priority as ODP is running the tool deeper, into harder rock than the original design was intended. In discussion of the Navidrill, Storms noted that no engineer would be available for Leg 120, a critical leg for Navidrill use. He said that the disappointing tests on Leg 114 set the program back and that feedback on the performance of the redesigned tool on Leg 118 would be very important. TAMU is interested in a hydropercussive tool as a potential solution to interbedded and unconsolidated formations, but no engineer is assigned to follow its development.

Storms finished his presentation with discussion of downhole tools and liaison with outside tool developers (Appendix N).

#### Discussion:

Storms presented statistics on recovery of XCB cores during DSDP compared with ODP statistics; he said the performance on Leg 117 (68.0%) was not much improved over DSDP recovery, and said more comparison testing (double holes with the same rig crew on each test) would be needed. He said that the final XCB tool would probably not solve the alternating hard/soft lithologies problem such as chert/chalk.

N.Pisias said that PCOM will look at the TAMU development schedule and respond with PCOM priorities for upcoming legs. Storm acknowledged that the Navidrill was a known PCOM priority from last year's program plan, but the Navidrill addressed a complex problem. Langmuir suggested that certain CEPAC programs be postponed if the appropriate tools are not ready in time.

Francis asked why the Navidrill had been downplayed in the COSOD II document. Storms said that the COSOD draft dealt mainly with major new systems. Since industry does not use the Navidrill concept, TAMU has had to do all design, testing and modification work, with some assistance from Eastman Christensen. Storms said that incorporating measurement while drilling techniques and conducting land tests would have been optimal for the tool, but that engineers worked hard to ready the present Navidrill for Leg 118. Schlich added that Leg 119 would have been a better test leg, and the IOP had assumed that the tool would be ready for Leg 120.

M.Kastner emphasized the need for follow-up on engineering programs, especially when immediate program needs tie up tools that are essential for future legs. She said that TAMU must comment on the engineering feasibility of science plans so PCOM can redesign/reschedule those programs, one to two years in advance, which technically can not be achieved at that time.

Storms commented further on the Navidrill land tests. Originally, land tests were to be scheduled on interbedded formations between Leg 114 and 118, but TAMU did not have funds for two separate systems and engineers' time was limited. The tool would not have been ready for 118 if land tests had been conducted.

The engineering test leg was further discussed, including budget impact. Piasias commented on JOIDES input for geologic sites for the tests. He said the transit from Leg 124 solves logistical problems, and the young, fractured rock in the Mariana Trough is geologically appropriate. Garrison added that the tests sites would have to have surveys and routine safety approval.

Storms said the tools most likely to be tested on the first leg would be an early version of the mining coring system, Navidrill, pressurized core sampler, the Leg 121 version of the XCB, and possibly the positive displacement coring motors.

Jarrard added views on the many tasks versus limited manpower for PCOM priority projects. He said that setting priorities would be especially important in FY89 with a possible increase in funds, but that the rest of FY88 must be planned effectively to see that longer term projects can be accomplished.

#### PCOM Action Items on Engineering:

A list of PCOM action items resulting from the TAMU Engineering presentation was discussed the following day. M.Kastner presented her and J.Malpas' views on the necessary directions for ODP Engineering so that TAMU can be responsive to the science program. She said that PCOM must be willing to change scientific objectives if the engineering is not available. Malpas added that continued funding for ODP from the non-U.S. partners would be more secure if engineering planning in advance of specific programs could be demonstrated. PCOM discussed ways to insure that TAMU and PCOM exchange schedules and progress reports for engineering developments, with the following results:

#### PCOM Motion:

The Planning Committee will set up a monitoring group, consisting of one U.S. PCOM member and one non-U.S. PCOM member, to act as the first line of liaison among PCOM, the advisory panels, TAMU engineers and the Borehole Research Group. (Motion, Malpas, second Kastner)

Vote: for, 10; against, 5; abstain, 0

T.Francis and M.Langseth were appointed as the monitoring group, with the initial task of modifying the engineering development timetable presented by TAMU with PCOM's perceptions of when these developments will be needed.

#### PCOM Consensus:

When scheduling panel meeting locations, JOI and PCOM should consider the importance of scheduling one meeting per year at College Station to encourage exchange with the TAMU Engineering Group.

1 December 1987

## 692 WIRELINE LOGGING REPORT

R.Jarrard reported for the Borehole Research Group. LDGO, and provided a written summary (Appendix O).

### Leg 117 results:

Jarrard, the logging scientist on Leg 117, gave logging results from sites on the Owen Margin and Ridge, and the Indus Fan (Appendix O). Jarrard described physical properties logs from Site 723, in particular a high uranium component which corresponds to high porosities and organic matter in the core. Logs from Site 722 on the Owen ridge picked up complex mineralogy changes and are being processed for Milankovitch cycles.

### Discussion:

Jarrard discussed the accuracy of the U/Th/K logs, among the best calibrated geochemical tools. LDGO wants to test their quality through comparisons with XRF data. Jarrard updated PCOM on tests of log geochemistry accuracy. Tests of Leg 107 results are being conducted and Leg 117, with up to 100% core recovery will be useful in comparison studies. Although the geochemistry tools do not replace XRF analyses, Jarrard emphasized that the continuous geochemical capability of the log is valuable.

### Operations report:

The bridge problems have improved since Leg 110 due to the revised mud program, with only one bridge in five holes reported from Leg 117. Jarrard reported on the quality of through the pipe logs from Leg 117. A test of spectral gamma logs showed a consistent suppression of the signal by the pipe. Slower logging would improve the signal, but data from through pipe logging are useful except between 0 - 30 m depth. Jarrard said that additional tests on other geochemical logs are needed.

### Status of logging tools:

Jarrard reviewed tools on upcoming legs (Appendix P with new tools indicated in upper case).

Jarrard asked PCOM to encourage development of a French sediment magnetometer, which developers say can determine reversal stratigraphy. This tool is not slim enough for ODP use at present.

LDGO has asked that three hours be set aside for testing of the RESOLUTION wireline heave compensator's effects on logging tools.

Jarrard reported that the consolidation of logging tools to two strings would not be completed for another year. To consolidate from three strings, a new phaser resistivity tool, a better lithodensity tool and calibration of the Cf-source

neutron tool are needed. PCOM discussed the calculations of logging times with three strings. Jarrard said that the new mud program is reducing the need to run the side-entry sub; he suggested that three runs, without the side-entry sub, be standard in calculating logging times for ODP.

Formation Microscanner:

Jarrard said that both LDGO and DMP advocate the acquisition of a Schlumberger formation microscanner (FMS), which must be slimmed for ODP use. PCOM discussed the tradeoffs of this purchase with that of a third wireline packer, originally budgeted for FY88. DMP has pointed out that reliability tests on the packers will take at least a year, and DMP would like to assess the FMS during that year instead of purchasing a third packer.

Jarrard said that the tool would be useful on most legs as opposed to other "specialty" tools. He said that it could be incorporated on a third string with a high temperature tool. He reviewed the capabilities of the tool for facies and dip determination and for high resolution stress directions.

Jarrard noted that the FMS would be useful for upcoming programs in the Western Pacific such as Northeast Australian Margin, Japan Sea and S.China Sea Margin drilling, and especially for Nankai. B.Taylor added that for WPAC sites, especially margin sites, the tool would definitely be used if available. Jarrard said that Leg 124 would probably be the earliest the tool would be on-line. Processing time will be greater for this tool, Jarrard noted, but Schlumberger is providing the software in its purchase agreement.

The following day, PCOM passed the following motions and consensus items regarding ODP logging:

PCOM Consensus:

PCOM proposes that TAMU Engineering and the Borehole Research Group work together to plan a test for the JOIDES RESOLUTION wireline heave compensator by providing time estimates and a candidate ODP leg for such testing.

PCOM Consensus:

PCOM encourages continued development by the French of an ODP-compatible, 3-component sediment magnetometer.

PCOM Consensus:

Time estimates for standard Schlumberger logging on ODP legs will be based on three tool string runs without sidewall entry sub deployment.

PCOM Motion:

PCOM accepts the Borehole Research Group and Downhole Measurement Panel recommendation for purchase of the Schlumberger formation microscanner, modified as a slimline tool, for ODP use. (Motion Brass, second Francis)

Vote: for, 13; against, 0; abstain, 2

[Note: Acceptance of this recommendation postpones purchase of a third wireline packer. Total cost is \$160K, divided between FY88 and FY89.]

### 693 PANEL CHAIRMEN'S MEETING REPORT

D.Cowan, Chairman of the Panel Chairmen's meeting held on 29 November, presented the report. Minutes of the meeting are attached as Appendix Q. The group focussed on panel structure, but also covered long-term planning, engineering developments, and Part B publications. Extensive discussion of COSOD II was deferred.

Cowan summarized the Chairmen's concerns on advisory panel structure discussed at their meeting:

- \* Concern that enough regional and thematic expertise exists on the panels in order to address global themes.
- \* Should major thematic panels be subdivided?
- \* What is the lifetime of a regional panel?
- \* How can the panel's handle the number of proposals in the system? Should deadlines for submission be established?

The Chairmen have recommended the following modifications to the panel advisory structure:

- \* The number and character of the present thematic panels should be retained.
- \* Thematic panels can form advisory bodies for specific tasks; they report to the panels.
- \* Regional panels synthesize thematic priorities, mature proposals and logistical constraints into drilling prospectuses.
- \* Regional panels have a finite lifetime.
- \* Thematic panels should reflect a global distribution of regional expertise.

During the Chairmen's meeting, the dual role of DMP as a service and science development panel was discussed. At the meeting, J.Peirce noted that with its interest in global stress mapping and other themes, DMP has become thematic, in addition to its role as a service panel. A motion was forwarded which recommended that DMP be viewed as a thematic panel, but did not pass. The consensus of the Chairmen was that although DMP serves largely as a service panel, it also considers and promotes the science of downhole measurement.

In conclusion, Cowan noted the Chairmen's concerns on plans for the drillship after the program in the Pacific has been completed. He said that the community must know plans soon. Cowan said that COSOD II, workshops, thematic panels, and advisory groups will play a role in these plans.

## Discussion:

Langmuir added that LITHP needs direction for thematic long-term planning, not just a shiptrack. Mayer said that SOHP also needs direction on how to move from ocean to ocean planning. Cowan suggested that the thematic panels be given a specific charge as TECP still focuses on individual proposals. He added that working groups could play an important role and help reduce the workload on thematic panels.

R.Schlich expressed concern that solutions to panel structure point to an increase in the number of panels, and resultant problems in communication and expense. He advocated a regional system of expertise that would move with the evolution of the program.

B.Taylor alerted PCOM to the sense of incompatibility the panels chairmen see for a proposal-driven, thematic program. He said that themes such as deep sediment holes or reference sites will involve dedicated ship time, and "freezing in" programs may result.

## 694 ANNUAL REPORTS OF THE PANEL CHAIRMEN

### Downhole Measurement Panel:

P.Worthington reported on activities of DMP during this year. Worthington reviewed meetings and membership of DMP, and presented the panel's philosophy on the ODP downhole program:

- 1) ODP holes are not objectives in themselves, they are a scientific legacy.
- 2) The acquisition of downhole measurement data should be planned from a global standpoint.
- 3) When a site is vacated, properly executed logs provided the only continuous record of the succession. Logs provided and intermediate sampling scale between core and surface geophysics; they characterize the subsurface environment and record physical properties in an in situ environment.

In order to increase liaison with TAMU, DMP is requesting to meet once each year in College Station. DMP liaison to TEDCOM is also requested, as well as with regional panels in critical planning stages.

In his review of tool improvements, Worthington stressed that if the budget does not allow purchase of a tool in one fiscal year, that tool is placed as the top priority in the next year's budget. DMP supports purchase of the formation microscanner as a high resolution dipmeter that will image faster and better than the BHTV plus improve the resolution of other logging tools.

DMP has evaluated the physical properties program and Worthington outlined development priorities (Appendix R). DMP asked that PCOM acknowledge that the panel's mandate includes review of the physical properties program and asked for a subgroup to monitor it. [PCOM nominated D.Karig, a physical properties

specialist, to fill a panel vacancy.]

In conclusion, Worthington said that much scientific "meat" was cut from the DMP White Paper as it appeared in the COSOD II document; DMP is looking for outside publication of the paper.

#### Tectonics Panel:

D.Cowan presented TECP's agenda for 1988 and beyond. Directions of the panel include:

- 1) Scientific reviews of proposals; appropriate experts needed;
- 2) Survey of global tectonic problems (balance ocean against ocean); and
- 3) Implement plans from COSOD II and workshops.

Cowan said that the panel is concerned with how ODP can actively begin advertising a longer term program of global themes so that the appropriate proposals can be generated.

In regards to Western Pacific planning, Cowan said that TECP finds the Sunda proposal lacking, even with the prospect of additional site survey data. The panel is more positive toward the revised S.China Sea Margin proposal.

#### Lithosphere Panel:

C.Langmuir reported for the LITHP, whose Annual Report is attached (Appendix S). In his presentation, Langmuir reviewed the major LITHP drilling themes for CEPAC, an important region for LITHP objectives. (see CEPAC discussion). He emphasized that these themes would require bare rock, high temperature, fractured rock and deep penetration drilling.

Langmuir forwarded LITHP's recommendations for the WPAC program:

I. Half-leg drilled on Conical Seamount and adjacent forearc site as highest priority for second half of the Bonins-Marianas program.

II. Lau Basin: One leg without barerock drilling; LG-2 in western Lau with 200m basement penetration is the highest priority. Bare rock drilling should be for engineering development and should not compromise other science.

III. Geochemical reference holes:

LITHP reminds WPAC and PCOM of the diversity of objectives behind reference holes:

1. compositions of sediment and ocean crust being recirculated.
2. compare alteration/hydrothermal activity of old fast-spreading with old slow-spreading.
3. Old Pacific crust composition
4. Causes of velocity structure and magnetic signal of fast-spreading crust.
5. Correlations between crustal compositions and neighboring arc volcanics.



LITHP proposes one and one-half leg of reference hole drilling:

A: One 'deep" (200m basement) hole off the Bonins to complete the transect and recover normal reference section.

B. Three shallower holes (50m basement) near DSDP Leg 59/60 transect (seamount, seamount apron, non-seamount).

Langmuir forwarded LITHP's concerns on the WPAC program, especially on the site specificity and availability of site surveys. He said the Bonin site can be located on Lamont MCS lines; the specific location can be optimize to integrate with the M-series anomaly proposal (287/E) if desired. Langmuir said the normal Marianas sites MAR-4 would be near Site 452, the MAR-5 site at the seamount flank, and MAR-6 at the seamount summit. The Larson cruise is attempting to survey the MAR-5 and MAR-6 sites. LITHP has suggested that the Iwo-Jima anomaly may be a better site, for reasons of scale-length arguments and site survey availability.

#### Sediment and Ocean History Panel:

L.Mayer reported for SOHP whose Annual Report is attached (Appendix T). Mayer reviewed the panel's engineering priorities: short-range (support of TAMU liaison, magnetic orientation of cores), medium range (continuous core logging) and long-range (deep stable holes, drilling through salt).

Mayer reviewed SOHP's recommendations for the Western Pacific program, in order of priority:

<u>Program</u>	<u>Sites</u>
1.Northeast Australian Margin	NEA 1,2,3,4,5,8,9,10,11,13,14
2.Japan Sea	JS-2 (double HPC)
3.S.China Sea (Basin)	SCS-5 (with industry data)
4.Sulu Sea	Sulu 4, Sulu 5
5.South China Sea Margin	Not yet prioritized by SOHP
6.Bonins	Bonin 6

SOHP did not respond to requests by PCOM to examine Nankai transect sites for a possible hydrogeology program. Although it acknowledges the importance of fluid flow problems and tries to incorporate these objectives into legs and sites, SOHP does not have a proposal to review for Nankai hydrogeological studies, and therefore, did not consider it further.

Mayer presented a detailed report on SOHP's priorities for the Northeast Australian Margin drilling (a 22-page, site by site prospectus was distributed at this meeting). Mayer reviewed the objectives of the program:

1.To determine Oligocene through Quaternary history of sea level fluctuations, relate these to other "global" sea level signals, and test the validity of the Vail et. al. hypothesis. To contrast "margin" with "atoll" subsidence in the same region.

2.To evaluate facies and stratigraphic models for passive margin evolution.

3. To evaluate "margin hydrology"- the diagenetic history of pure carbonate and especially mixed carbonate/siliclastic sequences.
4. To define the effects of latitudinal plate motion and therefore paleoclimatic and oceanographic factors on carbonate platform development (particularly reef growth and cessation - the Darwin point concept).

SOHP's drilling plans call for two transects, one a latitudinal transect through various tectonic environments. The second transect is a NS one which will address tectonic, paleoceanographic and paleoclimate objectives.

Mayer reviewed SOHP's justification for drilling at the NEA Margin. In his review, Mayer emphasized that the margin slopes in the region are such that seismic events can be continually traced from shallow to deep water, and that the proximity of three platforms with independent tectonic and subsidence histories permits separation of local from "global" sea level signals (with buried reefs as subsidence markers). The separation of tectonic versus global sea level effects was a particular concern of PCOM at its August meeting.

Mayer added that SOHP had discussed the Mississippi Valley-type deposits proposal for the program. They did not recommend adding extra sites for this objective as it is not clear that there is a mechanism for driving the mineralizing fluids through the system. SOHP is interested in investigating pre-mineralizing conditions at the existing sites.

Mayer then reviewed SOHP's CEPAC priorities (see CEPAC discussion). SOHP has reviewed 33 CEPAC proposals and eliminated 17 as not theme-related. SOHP's top priority programs are similar to those of COSOD II Working Group I, although they were derived independently (see listing in the CEPAC discussion below)

In his discussions of the ODP planning process, Mayer asked that a hierarchical structure be established to ensure a thematically-driven program. He said that as SOHP's mandate is broad, PCOM may consider subgroups for the panel.

#### Indian Ocean Panel:

R. Schlich presented the report for IOP whose written report is attached (Appendix U). Schlich focused on changes requested by IOP to the upcoming Kerguelen programs:

1) Leg 119, Site KHP-1

Option to terminate drilling at KHP-1 above the 910 mbsf reflector (discordance A) if drilling becomes too difficult or if sediments contain poorly preserved microfossils, and instead drill KHP-3 below the 320 mbsf reflector.

2) Leg 120, Site SKP-2

At the request of the PPSP, site SKP-2 has been moved about 12 km NW, with drilling depth estimated at 1200 mbsf.

3) Leg 120, Site SKP-3

PPSP has limited drilling to 800 m which precludes the Mesozoic stratigraphy/tectonics objectives for the site. Two new localities, SKP-3B and SKP-3C, have been defined.

For Exmouth Plateau drilling, IOP has recommended that proposed site EP12 be added to the EP7 site for improved tectonic interpretations; they recommend a program consisting of EP7, EP10, EP12, and EP2A if an acceptable proposal for EP12 drilling is submitted and if PPSP approves the change. If not, the original program of EP7, EP10, EP2A and EP6 is recommended. (Sites are in priority order.)

Schlich asked PCOM for a meeting of IOP after the Indian Ocean program is completed in order to compare program objectives with actual achievements.

In his discussion of the ODP panel structure, Schlich noted that IOP agrees with a thematic orientation for ODP. Because the Indian Ocean has no major institutions nearby, care must be taken that major themes there are not passed up if the IOP is disbanded.

Western Pacific Panel:

B.Taylor reported for WPAC, whose written report is attached (Appendix V). Taylor reviewed the Western Pacific Program, noting the various options for sites and clearances in the Banda-Sulu-SCS program (see Western Pacific discussion). Taylor said that the SCS Margin proposal has preliminary approval from TECP. The Sunda program is now ranked lower by TECP, and WPAC recommends dropping it from the prospectus.

Central Pacific Panel:

S.Schlanger reported for CEPAC, whose written report is attached (Appendix W). Schlanger reviewed the current CEPAC prospectus, noting that transit time will be a large factor (up to 90 day) for the program. Schlanger gave an overview of selected programs of the 23 detailed in the prospectus and reviewed the technology requirements for CEPAC targets. He emphasized that certain targets (Ontong-Java Plateau, Marshall Islands, Shatsky Rise, e.g.) need engineering developments sooner (chert/chalk/limestone penetration) if they are going to be folded into the WPAC program.

Schlanger said that in order to produce an advanced prospectus, PCOM guidance was needed on: further definition on thematic panel input, length of CEPAC program, advice on thematic balance of the program and a "freeze" date for the program in light of engineering lead times.

Atlantic Regional Panel:

J.Austin reported for ARP whose written report is attached (Appendix X). He identified themes in ARP's priorities list as best addressed in the Atlantic. He suggested "open competition" for drilling among oceans as a way to get a global, thematically focused program.

Austin said that workshops in central Atlantic and Arctic drilling are planned. He asked for further definition of future meeting schedules for ARP, since scheduling meetings with workshops would be one way of keeping ARP thematically oriented in the "off-season."

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#### Southern Ocean Panel:

P.Barker reported for SOP whose written report is attached (Appendix Y). He reviewed the recent ODP successes in high-latitude drilling on Legs 113 and 114 and plans for 119/120; Barker suggested that SOP is a "semithematic" panel since high-latitude paleoceanography and continental glaciation are addressed in the Southern Oceans. He said that more drilling in the South Pacific would answer important objectives there and that proponents are discouraged because of a perception that ODP will not drill there. He noted that because of weather windows, a regional panel structure that deals with high-latitude drilling does not operate on a "campaign" like other regions.

#### Information Handling Panel:

In his report for IHP, T.Moore emphasized core curation, data storage and access, ODP publications and the micropaleontological reference centers. Moore described the effects of budget reductions in core curation and said that sample request response time would take up to 10 weeks in the future. The data storage and access objectives are to microfilm and archive ODP/DSDP data and transfer them to a searchable computer data base.

Moore reported that ODP/TAMU is acquiring IBM-compatible microcomputers for use by scientists, as well as software for translating various word processing programs, which will aid manuscript preparation.

Moore said that IHP is reviewing the role of the ODP editorial board, and that a model for the review process had been proposed by ODP (see Appendix Z for a simplified model of the process). Moore asked for comments from the JOIDES community on the model. A copy of R.Merrill's 12 November 1987 letter describing the process was distributed at this meeting.

Two other IHP issues which required PCOM action were the continued updating of the micropaleontological reference collections and the problem of "non-production" by ODP cruise participants and sample requestors. [See further PCOM discussion and actions on these issues below.]

#### Discussion:

At its last meeting, PCOM reviewed a request from Canada for the eighth micropaleo reference collection. Moore said that IHP had researched the request and that technically the split has been promised to the Smithsonian Institute, although it has no funds to support it and PCOM may decide that another location is more suitable.

In conclusion, G.Brass thanked Moore and IHP for its thorough assistance in formulating the FY88 Publications budget and responding to other PCOM questions.

#### Technology and Engineering Development Committee:

J.Jarry reported for TEDCOM whose written annual report is attached (Appendix AA). Jarry reported that the Panel Chairmen's engineering priorities have not changed from last year (See attached minutes of PANCHM meeting.) He reviewed the long and short term engineering priorities for the program. Jarry noted that deep drilling, a longer term priority, must have dedicated development work if it is achievable for the Central and Eastern Pacific program. Shorter term engineering priorities, not ranked, are: pore pressure sampler, RCB/XCB/APC improvements, pressure core barrel, physical properties measurements, and core orientation.

TEDCOM encourages land testing of the Navidrill and other tools and supports dedicated engineering legs. TEDCOM wants better liaison between TAMU engineers and panels, TEDCOM liaison with DMP and better liaison with industry and outside engineers such as those at IFREMER. Jarry presented an update on the NADIA wireline re-entry system under development in France and currently scheduled for testing in July, 1988.

Jarry concluded his report with a discussion of the riser drilling workshop held at TAMU; TEDCOM has concluded that a slimline riser system, using mining technology, would be the most cost-effective way to achieve this capability for ODP. Jarry illustrated the limited ODP resources versus the divergent technology needs with his "ODP tree" (Appendix BB).

#### Site Survey Panel:

J.Peirce, outgoing Chairman of SSP, presented the report for his panel whose written report is attached (Appendix CC). Peirce updated PCOM on the site survey status on upcoming cruises and noted a big improvement in getting reviews earlier. He predicted no major problems with the WPAC program. He noted the importance of Carl Brenner at the Site Survey Data Bank in helping SSP with these reviews.

Peirce concluded his report with comments on NSF and other funding agencies' roles in planning site surveys. He said that in order to get beyond DSDP-style drilling, the shiptrack must be planned ahead to avoid last minute "replacement" programs. He said that the effort NSF has made toward planning surveys has made a real impact and suggested that unless a similar approach is made for engineering, the program could not advance.

#### Pollution Prevention and Safety Panel:

M.Ball reported for PPSP and a written report is attached (Appendix DD). Ball reviewed current membership and the functions of the panel, including its interaction with the TAMU safety group headed by L.Garrison. Ball reported that

there is currently no formal procedure through PPSP for following up sites where hydrocarbons were detected, although TAMU does, if time permits.

N.Pisias thanked the Panel Chairmen for their reports and contributions to the meeting.

PCOM Consensus:

The Planning Committee recognizes outgoing Panel Chairmen, D.Cowan (TECP), S.Schlanger (CEPAC) and J.Peirce (SSP) for their dedicated service to ODP during their tenures.

695 COSOD II RECOMMENDATIONS

N.Pisias reminded PCOM that input on implementing COSOD II recommendations for long-range planning must be reviewed in detail at the next PCOM meeting. Changes in panel structure will have an impact on this planning. Some PCOM members had received advance copies of the COSOD II document shortly before this meeting, but most had only reviewed the recommendations chapter which was distributed at the meeting.

Pisias asked that PCOM watchdogs for each of the five COSOD II working groups be assigned to write position papers. These papers will include input from COSOD II, remaining COSOD I goals and thematic panel white papers. Watchdogs for the programs appear below:

COSOD II WORKING GROUP(s)

PCOM WATCHDOGS

I.Global Environmental Changes, &  
V.Evolution and Extinction  
of Oceanic Biota

N.Pisias  
W.Coulbourn  
S.Gartner

II.Mantle-Crust Interactions

J.Malpas (Canada)  
R.Larson

III.Fluid Circulation and Global  
Geochemical Budget

M.Kastner  
A.Taira

IV.Stress and Deformation of  
the Lithosphere

O.Eldholm  
M.Langseth

696 INDIAN OCEAN PLANNING

Leg 119 (N.Kerguelen/Prydz Bay):

PCOM reviewed co-chief J.Barron and IOP's requested changes to the leg. (See the

Indian Ocean Panel annual report.)

PCOM Consensus:

For Leg 119, PCOM accepts that proposed site KHP-3 will be drilled if site KHP-1 does not fulfill the scientific objectives of the leg.

Leg 120 (S.Kerquelen):

PCOM Consensus:

For Leg 120, PCOM recognizes the Indian Ocean Panel recommendation to relocate site SKP-3 on an existing line to satisfy safety concerns and address primary objectives.

PCOM Consensus:

PCOM accepts plans to test the French magnetic susceptibility tool during Leg 120 provided that the test does not interfere with scientific objectives of the leg.

[Note: Time estimate for the test is .3 days from the total 43 operational days for the leg.]

M.Storms presented various options for testing of the Navi-drill on this leg. He also discussed trade-offs with other programs such as redesign of the XCB. An ODP engineer will be required to operate the Navidrill and provision made for a re-entry cones as well. PCOM also discussed options of testing the tool on Leg 121 instead as more contingency time is available, and the chert/chalk sequences expected on the leg is a better test environment.

PCOM Consensus:

The Navidrill core barrel will be tested on Leg 120 only if the Leg 118 test is successful, if TAMU engineer Frederic Young is available for the test, and if Leg 120 co-chiefs have achieved their primary scientific objectives for the leg. PCOM encourages that contingency time set aside for the leg be used for this test.

Leg 121: (Broken Ridge/90<sup>0</sup>E Ridge):

PCOM reviewed the recommendations of IOP to relocate Site BR-1 about 5 km downslope for a more complete section and approved the relocation. Garrison said that with the proposed changes to the Leg 121 program, about 2.2 days contingency time was available. TAMU would like to use the time to test the prototype mining coring system on the leg since a TAMU engineer will be onboard for Navidrill testing.

PCOM discussed the trade-offs of the lowest priority site (90ER-5) with the engineering test. Peirce, a co-chief for the leg, pointed out that the petrological objectives at NNER-5 rank lower than those at the other Ninetyeast Ridge sites because the site surveys demonstrated that dredging is possible at this location. Furthermore, the site is relatively closer to Site 254 than the

other proposed sites are to holes drilled on DSDP legs.

PCOM Motion:

For Leg 121, drilling at southern site 90ER5 is of lower priority than an engineering test of the prototype mining coring system at the central site 90ER2. (Motion Brass, second Kastner)

Vote: for, 13; opposed, 0; abstain, 2

R.Jarrard added that DMP has requested downhole televiewer experiments (.3 day required) for site NNER-1. Peirce said that the stress regime in the central sites differs from the northern site and that DMP may want to reconsider those sites for the stress experiment.

PCOM Consensus:

For Leg 121, setting aside time for the proposed borehole televiewer stress measurements is deferred until the Downhole Measurement Panel has reviewed stress information from sites NNER9 and NNER10.

Additional requests for the leg, double HPC/APC on the Neogene section and deeper basement penetration on the central ridge site, were left to co-chiefs' discretion.

Leg 122 (Exmouth Plateau):

SOHP and IOP have considered a preliminary proposal for moving site EP-2A to EP-12 (see IOP report above). EP-12 covers the objectives of EP-2A and addresses additional tectonic objectives. Safety at EP12 may be a problem. von Rad added that drilling times may be underestimated for the leg and that for logistics, EP-10 would be best drilled first. PCOM discussed the thematic trade-offs of EP-6 (sea level effects) versus EP-12 (transitional crust) and EP2-A (synrift).

PCOM Consensus:

For Leg 122 drilling priorities (in order), Sites EP-7, EP10A, EP12 and EP2A are recommended, provided that EP12 can be drilled safely and if proponents show that it fulfills tectonic objectives. If EP-12 drilling is not advisable, the drilling priority is EP-7, EP-10A, EP2A and EP6.

Leg 123:(Argo-Abyssal Plain):

Further changes by PCOM to this leg await review of additional site survey data. Co-chiefs for the leg will be F.Gradstein (C) and J.Ludden (C).

697 WESTERN PACIFIC PLANNING

The attached 1987 WPAC Executive Summary shows the current status of the WPAC prospectus, included estimated drilling times (Appendix V). Legs 124 through 130 are included in FY89 planning.



Leg 124 (Banda-Sulu-South China Sea):

After their August meeting, PCOM had instructed WPAC to revise this leg in order to better address basement objectives. PCOM had determined that a Celebes Sea site might be added to the program. In response, WPAC ranked sites SCS-5, SCS-9, SULU-5, CS-1 and BANDA 1 and 2 equally as they all addressed unique problems. This six-hole program was estimated at 65 operational days, without transit, and therefore, represents more than a leg of drilling. In addition, the Banda sites face potential survey and clearance problems. Piasias suggested that PCOM plan a leg of drilling to address as many objectives as possible.

PCOM discussed the various transit and drilling options depending on clearance. B. Taylor said that the Celebes site will increase tectonic objectives, and as the two Banda sites are in distinct basins, both are optimal. He said that a DARWIN cruise in early March of 1988 would possibly yield survey data for the Banda sites. SCS-9 is probably lowest priority for WPAC. SCS-5 may have to be moved as it lies in disputed waters.

L. Garrison said that TAMU would pursue clearances for all sites, especially those in Indonesian and Philippine waters, in order to have back-up programs. Taylor reminded PCOM that choosing co-chiefs for the program would be impacted since WPAC's recommendations represented scientists with expertise in specific basins, but that optimal science would be more important. He suggested that PCOM consider a 3/4 leg, three-site program until the April PCOM meeting, and in the meantime, go for all six site clearances.

PCOM Consensus:

The following options are in effect for the Leg 124 program, depending on clearance status:

Option 1:

A leg consisting of BANDA 1 and 2, and SCS-5 (alternate site, if necessary), as described in the WPAC prospectus, with 41.5 operational days allotted.

Option 2:

If no clearances from Indonesia for Banda are obtained, a program consisting of CS-1, SULU-5, and possibly SCS-5 (alternate) is proposed, for a total of 41.5 operational days.

Options based on no clearances and in context to the rest of the Western Pacific programs were discussed. L. Garrison discussed the logistics difficulties for a "normal" length leg as holidays will make shipping and travel extremely tight.

The following day, PCOM discussed additional options. As the South China Sea Margin program has gained favor with excellent new site survey data, this program was suggested as a possibility for Leg 124. Taylor mentioned possible clearance delays from the Chinese. Drilling times of 30 days may be underestimated as well.

Garrison suggested an additional option: moving the engineering leg to the first WPAC leg since transit and weather windows for later WPAC programs would improve. Garrison said that TAMU would try for all clearances, and by April, PCOM could

decide on an option. He said that by June, 1988, site clearance must be obtained.

Pisias summarized that all six clearances would be pursued concurrently, as well as Chinese clearance for the South China Sea Margin sites because of long lead time necessary from the Chinese. If clearances are available from Indonesia for the Banda Program, then Option 1 of the previous consensus is the priority program.

Co-chief recommendations for the leg are listed in Appendix EE.

#### Leg 125E (Engineering Leg)

See discussion on inclusion of this leg. M.Storms listed the main systems to be tested on Leg 125E: Mining (MCS) coring system, a modified pressure core barrel sampler, Navidrill core barrel, and coring motors. Storms said TAMU would also like to continue tests begun on Leg 117 to confirm bending stress on the drillpipe in deeper water.

Transit and drilling times and possible drilling environments for the leg were discussed. B.Taylor said that WPAC considered the Marianas as a test site for the MCS and Navidrill. The Marianas are a U.S. trust territory. Also DSDP Leg 60 sites could be revisited with the new technology.

Storms said that TAMU would ideally like to drill in 100-200 m of sediments over basement in order to test the PCB/XCB/Navidrill in different lithologies, as well as test the MCS and Navidrill in crystalline rock.

Brass commented that in the future, PCOM should see a more definite proposal for engineering legs before considering them for dedicated ship time. T.Francis noted that the scientific community must help the engineers define the program.

#### PCOM Consensus:

PCOM supports the idea of a technology development leg, to follow the Leg 124 (Banda) program, and consisting of 30 days ship time. TAMU engineers should submit a proposal for the leg at the April, 1988 PCOM meeting.

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#### Leg 126 (Bonins/Marianas):

For this program, LITHP and TECP were asked after the August PCOM meeting to prioritize the science for the last half leg, for a total of two legs for the Bonin I and II programs. Both panels have recommended two holes in the Conical Seamount (MAR-3 on the flank and another at the top of the seamount). The BON-7 site originally in the program was ranked as a lower thematic priority by TECP.

WPAC has recommended a program consisting of MAR-3, MAR-3A, BON-6, and if time permits, BON-7. A second hole in the Marianas would permit studies of the unroofing history, and via inverted stratigraphy, the petrology of the intruded forearc. To save time, less than 700 m could be drilled at MAR-3, perhaps

allowing BON-7 drilling in order to complete the Bonin and Marianas transects.

U.von Rad mentioned that an upcoming SONNE cruise in June-July, 1988, would provide piston cores from the seamount area. Taylor said that digital SCS was recently obtained, and about 100-200 m of sediment are expected on the seamount.

PCOM Consensus:

The Leg 126 program will consist of drilling sites MAR-3 (the flank of the Conical Seamount), a new MAR-3A site (on the top of the seamount), BON-6 and BON-7. As recommended by the thematic panels, BON-7 is the lowest priority site.

Since this leg starts from Guam, PCOM recognizes that the Marianas sites will be drilled first followed by BON-6. Co-chief recommendations for the leg are listed in Appendix EE.

Leg 127 (Bonins):

In the current schedule, BON-1, BON-2, BON-5 and BON-5A constitute a full leg of drilling. The leg has two 950 m penetrations (BON-5A and 5B); PCOM discussed possible re-entry on the sites. L.Garrison indicated that a 56 days are required for the leg, including setting re-entry cones and contingency.

Taylor said that new site surveys had better defined drilling times for the leg. DMP has recommended more than standard logging for the leg. DMP was charged with formulating an updated schedule of downhole experiments and logging for WPAC to review, and the plans will be discussed at the April PCOM meeting. Taylor said that WPAC estimates a 56-day leg for the program.

PCOM Consensus:

PCOM recommends that the program outlined in the WPAC Third Prospectus (consisting of sites BON-1, BON-2, BON-5 and BON-5A), and estimated at 56 days operations time, be drilled for Leg 127. An updated downhole measurements program, to be provided by DMP, will be reviewed at the April, 1988 PCOM meeting.

Leg 128 (Nankai Trough):

No fundamental changes from the NKT-1 and NKT-2 program approved at the August PCOM were made. Total time estimated for the leg stands at 57 days. SOHP was asked to review the program for possible inclusion of fluid circulation/geochemistry sites for the program; SOHP feels that proposal 233/E (Oregon Margin) would better address this theme.

PCOM Consensus:

The Nankai Trough program will consist of drilling sites NKT-1 and NKT-2, as outlined in the Third WPAC prospectus, for a total leg time of 57 days.

### Leg 129 and 130 (Japan Sea I and II):

The WPAC Prospectus outlined sites J1B, J1D, J1E and J3A for Leg 129, and no changes were made by PCOM. The inclusion of the engineering leg has slightly improved the weather window for this leg, now scheduled to begin in mid-July, 1989.

WPAC has endorsed a proposal to place a long-term seismic monitoring experiment at J1B, instead of the oblique seismic experiment proposed by DMP. A.Taira said that there were problems with funding the instruments for the experiment, however. Jarrard added that DMP has asked for 6.5 days for logging, VSP, and hydrofracture experiments, a plan too ambitious for the time available. He said the FMS, which will be available for the first WPAC leg, could replace the planned BHTV with shorter runs. PCOM members discussed the possibility of setting re-entry cones and finishing the logging program during Leg 130 (Japan Sea II). Garrison said that his logging program times include 10.7 days for Japan Sea I and 4.6 days for Japan Sea II.

### PCOM Consensus:

The Japan Sea I program, with 54 days operation at sites J1B, J1D, J1E and J3A as outlined in the WPAC Third Prospectus, is scheduled as Leg 129.

### PCOM Consensus:

PCOM endorses the program of 30 days drilling at Sites J-2A and JS-2, as outlined by WPAC, and recommends adding approximately 11 days for a downhole experiments (oblique seismic and deploying the Japanese seismometer, if available.) WPAC and DMP are to provide further definition for the downhole measurements program.

PCOM continued with plans for FY90 in the Western Pacific. As many of these programs involve development of tools outside of ODP, B.Taylor had asked that PCOM review this issue.

### Nankai Geotechnical/Third Party Tools:

G.Brass suggested that a PCOM subcommittee meet with NSF, TAMU, LDGO and international partners with tools in development in order to draft a policy. He mentioned that PCOM had not seen a proposal for the GEOPROPS probe on which planning for the Nankai Geotechnical is dependent. B.Malfait said that six months of NSF funding (through April, 1988) for a conceptual design for the tool had been approved.

Langseth said the DMP is the best liaison mechanism for tracking these tools. Francis added that scheduling test time for these tools on preceding legs would impose development deadlines.

Taylor reviewed WPAC scheduling for the Nankai leg, which is dependent on Navidrill/RCB technology as well. He said an option would be to use the technology on a western CEPAC leg or for the Oregon accretionary prism. He said that WPAC prefers seeing the tool tested on the first Nankai program for feasibility, which would leave a year between use on the Nankai geotechnical leg.

Storms added that the probe needs a pilot hole and that the Navidrill may not be the ultimate system used. He advocated TAMU coordination with outside tool developers and assurance that the tool not only fits ODP equipment, but that it is a workable tool as well. Currently, TAMU has no role in monitoring these requirements.

Jarrard pointed out that DMP had not originally advised a separate Nankai geotechnical leg, and much development work in the year between Nankai programs would be necessary. Taylor reviewed TECP's prioritization of Nankai; it was chosen over other accretionary prism legs because a 2 km penetration to below decollement was not required for fluid studies.

#### PCOM Consensus:

PCOM charges the Downhole Measurements Panel with providing detailed information on the proposed GEOPROPS probe tool for the Nankai Geotechnical leg. This will include: schedule for development, input to TAMU on hole requirements, and proposal revisions. PCOM expects a successful test of the tool before a leg dependent on it will be scheduled.

Further, PCOM charges DMP to consider a generic solution to liaison of third-party tool developers with TAMU engineers, who have final approval on a tool's use on ODP legs.

M.Langseth volunteered to draft a letter to DMP on this matter.

TECP has informed the PCOM Office that a proposal which further defines the fluid measurements on the leg is forthcoming.

G.Brass asked that the next PCOM agenda include an item on outside tools. He said that TAMU must formally accept these tools before they are scheduled to make sure that they are compatible with TAMU/LDGO equipment. He also raised the issue of whether proven tools should be absorbed into the ODP budget.

#### Geochemical Reference Sites:

At the last PCOM, LITHP was charged with defining a minimum program for the reference hole concept. They recommend four holes for one-and-one half leg of drilling: a deep hole at BON-8 and three shallower holes near the Marianas transect of DSDP Legs 59 and 60. If only one leg were available, BON-8 and one shallow hole near the transect are recommended.

The Chairman asked PCOM to consider this program as well as the broader issue of reference holes. G.Brass was enthusiastic about reference holes as a global cycling problem which is endorsed by all three thematic panels. He recommended that the thematic panels work on a proposal on recycling in subduction zones.

M.Kastner agreed that the theme was important as a long-term project, one which COSOD II strongly endorsed. She said that the original Natland/Langmuir proposal has changed, but that this arc environment test of the concept could be evaluated by the thematic panels for future programs. She advised setting up a Working Group on the subject. Kastner recommended BON-8 (originally planned at 500 m

penetration, now down to 200 m) and MAR-6 as a minimum program.

Taylor reviewed plans to include the remaining one-half leg program (to complete the transect) with the high-priority CEPAC program for Old (M25) Pacific crust drilling. Langmuir has suggested MAR-5 as the top priority site for the first leg.

PCOM noted the massive cherts expected in the Mariana drilling (BHA lost on Site 452).

PCOM Consensus:

PCOM asks LITHP to devise a one-leg (or possibly one and one-half leg), geochemical reference site program, which will include BON-8.

South China Sea Margin:

WPAC has recommended this program pending TECP endorsement. Eldholm (TECP liaison) said the panel's interest in the program is growing; Piasias added that TECP likes the new survey data, but has not seen the revised proposal.

L.Mayer said that SOHP had not reviewed the new proposal, but would like the opportunity to compare this area with the drilling on the Northeast Australian Margin. J.C.Sibuet wondered whether the proposed drilling would allow testing of subsidence curve and margin evolution models. B.Taylor said that because of the mid-Oligocene break-up, a high resolution curve would be possible, as well as drilling to syn-rift sediments or basement. Conjugate margin drilling on the Reed Bank is doubtful due to substantial reef formations. Austin added that the Atlantic conjugates are older, with evaporites, and this location seemed more promising.

PCOM Consensus:

PCOM tentatively schedules a South China Sea Margin program, pending review of the proposal by TECP.

Sunda:

Taylor said that both TECP and WPAC have no strong interest in the current proposal or objectives. TECP favors drilling in the region behind Timor. Only one site, possibly to be included in the second half of the Banda program, are recommended based on current survey data. Francis said a February, 1988, DARWIN cruise is planned in the area. Piasias noted the potential clearance problems.

PCOM Consensus:

The Sunda program, in the form in the current WPAC prospectus, is removed from the Western Pacific drilling plans.

Northeast Australia Margin:

At the previous PCOM meeting, PCOM asked SOHP to provide a prospectus for the drilling at the NEA Margin; a well-documented prospectus was presented by L.Mayer in his Chairman's report. Deepening of one hole should get stratigraphic overlap

to address the question of subsidence versus sea level changes, although safety may be a problem for such drilling.

PCOM discussed how to retain important objectives in a single leg since the current prospectus includes 12 sites. L.Mayer responded that the Darwin point concept (reef growth and recession) testing is of lower priority. If the program were to be cut, he recommended combining site 9 and 10A objectives in single site and dropping Site 13. Taylor added that the new site survey is extremely detailed and will help define the program.

#### PCOM Consensus:

In light of the new geophysical data, PCOM recommends a one-leg program on the Northeast Australia Margin. SOHP priorities for the leg should be coordinated with WPAC logistics for the leg. A one-leg program should be available to PCOM for review at the April meeting.

#### Vanuatu:

PCOM had requested that WPAC reduce the original one-and-one half leg program to a single leg which specifically addressed collision processes.

#### PCOM Consensus:

PCOM approves a one-leg, collision process program for Vanuatu, consisting of sites DEZ 1, 2, 3, 4, and 5 and IAB 1A and 2A, for the second half of Western Pacific drilling.

#### Lau Basin:

PCOM had previously requested that LITHP formulate two scenarios for a single leg of drilling: one with and one without bare rock drilling, which would focus on back arc processes.

LITHP favors a no-guidebase program consisting of sites LG-2, either LG-1 or LG-7, LG-3 on the platform, and LG-6 to drill forearc volcanics (as a back up site). With bare rock drilling, LITHP proposes a site on or near axis between 18-19o S, plus drilling of LG-2. A Scripps SCS survey will be available next year for specific site locations.

#### PCOM Consensus:

The Lau Basin science program, which requires no bare-rock guide base, is accepted for a single leg of drilling in the second half of the Western Pacific Program. The drilling plan will include a forearc site. Further definition of the program will be made when new site survey data are available.

#### Engineering discussion:

PCOM discussed the status of bare rock drilling and guide base development. Several PCOM members recommended that TAMU defer development on a cheaper, smaller guidebase, in order to concentrate on more pressing program needs. Storms said that with the new mining technology drilling, a smaller, more portable guidebase may be used. The option of including guidebase drilling could

be available for all legs in the future, if guidebase development proceeds with the mining coring system work.

Pisias asked that TAMU engineers provide an outline on guide-base development at the next PCOM meeting. Garrison said that experience from Leg 118 deployment would give valuable input.

PCOM discussed TAMU's proposal for additional engineering legs in the Western Pacific, specifically in reference to drilling at the Lau sites as a prelude to EPR drilling in the CEPAC program. Storms said that TAMU engineering must set up a schedule for testing in fractured rock, including land testing, in order to drill in the Lau Basin. Pisias asked the engineering sub-group to take this into consideration for their schedule.

#### 4 December 1987

Pisias opened the meeting. L.Garrison followed with an update from Leg 118. After TD at 500 m, a total of 434 m of gabbro had been drilled with 87% average recovery. The mudmotors on the HRGB had worked well and the Navidrill was being tested. The Navidrill had recovered rock on the initial test, and the logging program, including VSP, was in progress.

#### 698 CENTRAL PACIFIC PLANNING

O.Eldholm opened discussion on the CEPAC program, noting that the Western Pacific program had expanded from one and one half years to two years. Pisias responded that 18 months for planning purposes had been set aside previously, but the WPAC programs had all been accepted in terms of science.

Pisias read the motion from the April, 1987, PCOM meeting which stated: " For clarification of the Pacific planning, the Planning Committee reaffirms its advice to CEPAC, WPAC and the thematic panels that WPAC plan an approximately 22-month drilling plan based on their top nine programs and that CEPAC utilize an 18-month guideline for CEPAC planning. CEPAC shall include scenarios with and without a three-leg East Pacific Rise program."

Taylor said that the only new addition to the 9-program, 11-leg plans for WPAC was the geochemical reference hole, a concept with strong thematic interest. Eldholm believed that PCOM should prioritize the WPAC program; he said there is some concern that the ship will stay in the Pacific indefinitely.

Kastner wondered how CEPAC could plan time in the Central Pacific, especially considering the time allotted to the East Pacific Rise program. She believed that if important objectives warranted it, PCOM must face the fact that four or five years could be spent in the Pacific. Austin added that in order to see global themes, all oceans must "compete" for drilling time.

Eldholm agreed that science must run the program, but there is concern in the community, especially in renewal of the MOUs, about the time spent for Pacific drilling.



Pisias pointed out this issue will be reviewed by the Panel Structure Subcommittee, as long-range plans will impact the type of panel structure adopted in the future.

Francis suggested an arbitrary block of time be set aside for CEPAC to provide an planning framework and to satisfy national interests. Eldholm said that the ESF Consortium had discussed this issue. The Consortium does not see a conflict between "shuttling" between the Pacific and Atlantic, even if it means increased transit times. He suggested that some kind of balance be achieved.

W.Coulbourn said that CEPAC will continue to come forward with excellent science plans for their region, and PCOM must provide some guidance soon. G.Brass said that PCOM should plan science, and let EXCOM decide if a political question exists on the shiptrack. Francis did not see it merely as a political question; he believed the Atlantic region was not getting its share of drilling.

Pisias noted the concerns and said that in order to frame a four-year plan, the impact of CEPAC's program should be examined. Pyle noted that the transition using COSOD II objectives will impact the plan as well. Malfait said the final plan must be available by April, 1988, and EXCOM can not discuss scientific balance until its May meeting.

#### Thematic objectives in CEPAC planning:

The Chairman reviewed the status of the current CEPAC prospectus, in which the six top-ranked priorities of the thematic panels were presented.

Kastner opposed setting aside an arbitrary six months for each of the panels. She said PCOM must look at the dominant themes. She presented a summary of the themes suggested by more than one panel and other panel priorities:

#### CEPAC Themes Summary (M.Kastner)

- 1) Old Pacific Crust (LITH, TECP, SOHP)
- 2) Ontong-Java Plateau (LITH, SOHP)
- 3) Guyots and drowned atolls (TECP,SOHP)

#### LITH

EPR  
Juan de Fuca  
Loihi  
504B

#### SOHP

Eq.Pac.Paleocean.  
Shatsky Rise

#### TECP

Chile triple junc.  
Flexure in lith.

Pisias pointed out that the Old Pacific crust was a low-ranking program for two thematic panels. He said that reference site drilling could also be added as a three-panel theme. He asked for a review of the list by the thematic panel liaisons and had PCOM review the list below which was compiled for the meeting agenda book:

SOHP:

- |                                   |       |                               |
|-----------------------------------|-------|-------------------------------|
| 1. Neogene Paleoenvironment       | 221/E | Eq. Pacific                   |
|                                   | 142/E | OJP transect                  |
| 2. Mesozoic Paleoceanography      | [     | 202/E Drowned Marshall guyots |
|                                   | [     | 203/E Central Pacific guyots  |
|                                   | [     | 260/E Ogasawara Plateau       |
| 3. Sea Level: Atolls & Guyots     | 202/E | Drowned Marshall guyots       |
| 4. Anoxic Events:                 | 253/E | Shatsky Rise                  |
| 5. Old Pacific Crust:             | 285/E | Jurassic quiet zone           |
| 6. Metallogenesis & Diagenesis:   | 233/E | Oregon accret. margin         |
| 7. Fans and sedimentary processes | 250/E | Navy Fan                      |

The themes are in priority order; only highest-ranked associated proposals are listed. SOHP would like to see all themes covered taking the associated one or two top ranked proposals.

LITHP:

- |   |        |                     |
|---|--------|---------------------|
| 1. Structure of Lower Oceanic Crust:                                | 286/E  | Deepening of 504B   |
| 2. Magmatic & Hydrothermal Processes of sediment-free ridge crests: | 76/E   | EPR 13°N            |
| 3. Magmatic & Hydrothermal Processes of sedimented ridge crests:    | 232/E  | JdF                 |
|   | 224/E  | Escanaba Trough     |
|   | 284/E  | Escanaba Trough     |
|   | 275/E  | Gulf of California  |
| 4. Early Magmatic Evolution of hot-spot volcanism:                  | 252/E  | Loihi               |
|   | 291/E  | Marquesas           |
| 5. Crustal Structure and Magmatic Evolution of Oceanic Plateaus:    | 222/E  | OJP                 |
| 6. Drilling Old Oceanic Crust....:                                  | 285/E  | Magnetic Quiet Zone |
|   | (261/E | Nauru Basin)        |

Some of the second ranked proposal should be carried on and be further developed. In the case of theme 3 (prop.232, 224, 284) there may be a chance to combine

objectives in a drilling package.

TECP:

First priority by clear majority (no internal ranking):

- \* M-Series dating/calibration: 285/E Jurassic quiet zone  
287/E M-Series drilling
- \* Flexure of lithosphere: 3/E Hawaii flexural moat
- \* Ridge - Trench Interaction: 8/E Chile triple junction
- \* Pre-70 MA absolute motion: 280/E Geisha seamounts  
(203/E partial) Central Pac guyots
- \* Deformation in accretionary prisms: 37/E Costa Rica, duplex model  
233/E Or. accr. complex  
237/E Active margin off  
Vancouver Isl.

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Pisias noted that the TECP objectives had not been prioritized in the above list. He asked PCOM to note common themes and construct a schedule. Langseth wanted input from the thematic panels on which themes were best addressed in the Pacific. Pisias said that even if the panels identify those programs, the list must be reduced. M.Kastner said that availability of technology would impact the choices for the program.

J.Malpas, as a member of LITHP, felt that the panels had already provided strong cases for their priorities, including technology considerations. A.Taira agreed that PCOM should now give guidance to the panels. Malpas suggested setting a definite time for drilling. He mentioned that the Japanese had waited a long time for the ship, and if necessary, the second year of CEPAC drilling could include Atlantic Ocean "pogoing". Langmuir added that all six LITHP themes were best and almost exclusively for drilling in the Pacific.

L.Mayer said that SOHP programs listed were prioritized and "Pacific specific." He said that proposals for CEPAC drilling are continuing to flow to SOHP, and the thematic panels should be given time constraints. Mayer said that SOHP may want to reexamine the program in light of a total thematic program and may decide on several legs on a theme rather than an arbitrary number of top ranked programs.

G.Brass strongly opposed giving each thematic panel an arbitrary equal number of legs for CEPAC. He noted that LITHP had been "saving up" of the Pacific. Tucholke was concerned that by dealing with isolated programs, the thematic panels would not have an opportunity to "cross-fertilize" and evaluating multiple objectives for legs.

Austin gave an update of the Atlantic planning. He said that the thematic panels had not been asking his panel for input and few proposals are in review.

Following this discussion, a motion was forwarded to reaffirm the time frame for CEPAC drilling.

PCOM Motion:

PCOM should draw up a plan for approximately 18 months of drilling in the central and eastern Pacific and send it back to the thematic panels for justification, with the understanding that the program could be expanded if important themes emerge. (Motion: Malpas, second Brass)

Vote: for, 13; against, 2; abstain, 0

Discussion:

PCOM then approached the question of how to select themes (and associated proposals) for CEPAC drilling to fit into a 18-month timeframe.

PCOM agreed that lithosphere objectives should be well-represented in the plan since LITHP has "saved up" for drilling in the Eastern Pacific. Furthermore, tectonic objectives had been dominant in the Western Pacific area.

PCOM decided that approximately four legs should be devoted to LITHP objectives, three legs to SOHP objectives and two legs to TECP objectives.

Tentative CEPAC Program:

PCOM defined a tentative CEPAC program using the highest priority themes of the three thematic panels. PCOM watchdogs were assigned to these themes for a more detailed discussion at the April, 1988 PCOM meeting. PCOM agreed that watchdog assignments would be made on themes, and would not be limited to specific proposals, although relevant ones for watchdog review were identified.

Tentative Central and Eastern Pacific Program

<u>Program</u>	<u>Relevant Proposals</u>	<u>PCOM Watchdog(s)</u>
<u>LITHP</u>		
* Structure of lower oceanic crust (about 1.5 leg)	286/E Deepening of 504B [300/B Return to 735B]	J.Malpas or Canadian rep.
* Magmatic and hydrothermal processes/ sed-free ridgecrests (2 legs)	76/E East Pacific Rise at 13°N 14/E EPR 13°N	T.Francis
* Magmatic and hydrothermal processes/ sedimented ridgecrest (1 leg)	232/E Juan de Fuca 224/E and 284/E Escanaba Trough	M.Langseth M.Kastner

## SOHP

- |  |   |            |
|--|---|------------|
| * Neogene paleo-environment (1 leg)                    | 221/E Eq.Pacific<br>142/E OJP transect  | S.Gartner  |
| * Mesozoic paleoceanography/atolls and guyots (1+ leg) | 202/E Drowned Marshalls<br>Guyots<br>(203/E Cent.Pac Guyots)<br>(260/E Ogasawara Plateau) | B.Tucholke |
| * Anoxic events (1 leg)                                | 253/E Shatsky Rise  | G.Brass    |

## TECP

- |                                      |   |           |
|--------------------------------------|---|-----------|
| * Ridge-trench processes (1 leg)     | 8/E Chile 3-junction                        | O.Eldholm |
| * Flexure in the lithosphere (1 leg) | 3/E Hawaii flexural moat<br>291/E Marquasas | Coulbourn |

## ALL PANELS

- |                                   |  |                      |
|-----------------------------------|--|----------------------|
| * M-series dating/reference holes | 285/E Jr quiet zone<br>287/E M-series drilling<br>261/E Nauru Basin<br>267/F Geochemical Ref. Hole | A.Taira<br>J.P.Cadet |
|-----------------------------------|--|----------------------|

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## Discussion:

PCOM tried to address LITHP's highest priority programs with the above program. Several PCOM members noted that LITHP had fewer programs than TECP in the Western Pacific, and felt that 8 of the tentative 18 months for CEPAC drilling should focus on their thematic priorities. Tucholke asked that LITHP's response to the above program include discussion on essential technology.

In devising the SOHP program for CEPAC, Brass suggested that two themes, Mesozoic paleoceanography and sea level changes at atolls and guyots, are combined in Proposal 202/E (Drowned Marshall Guyots). Overlaps with TECP on Old Pacific crust drilling were noted.

The impact of three possible legs on the EPR and how to distribute them among the CEPAC program were discussed. M.Storms said that the close timing of bare-rock legs 106 and 109 did not leave adequate engineering development time between them.

Because the TECP had not priority-ranked its six top programs, PCOM agreed that additional input was necessary. PCOM is concerned with experimental design for drilling of ridge-trench collision. Eldholm (TECP liaison) indicated that

accretionary prisms are TECP's lowest priority of the list. Taylor added that the Nankai program addressed this for TECP. M-series dating and ridge trench interaction were seen as particularly specific to Central Pacific drilling by PCOM. PCOM agreed that TECP be asked to devise a two-leg program in the Central Pacific.

Reference holes were further discussed. Piasias said that all three panels would be asked to look at the concept for the Central Pacific, particularly in combination with the Old Pacific Crust and M-series dating objectives. Piasias added that the three thematic panels must meet before the next CEPAC meeting in order for CEPAC to refine the prospectus.

Langmuir discussed LITHP's request for a special session for EPR drilling. He said a working group would like to meet before LITHP's March 1988 meeting and would include members outside of LITHP. He said a good synthesis proposal is needed for this high-priority program. Langmuir said that the RIDGE program is currently working on this idea, but will not produce an ODP proposal. Austin expressed concern that both groups were not working together.

PCOM Motion:

PCOM approves formation of an East Pacific Rise Working Group as requested by the Lithosphere Panel. (Motion, Tucholke; second, Malpas)

Discussion:

Tucholke prefaced his motion by noting that ODP is in transition to a more thematically driven program. Working groups would ensure that comprehensive proposals for themes could be produced and he encouraged formation of one for the EPR.

Austin expressed some concern that by forming working groups, panels would become lobbyists for specific programs. He urged that the larger scientific community know that the program is moving in the direction of themes, not oceans, to prevent this. Tucholke responded that former Atlantic working groups on the Caribbean and Mediterranean had acted as advocates and followed PCOM instructions appropriately. Malpas suggested that engineering input would be important for such a group.

Vote: for, 11; against, 3; abstain, 1

Piasias formulated instructions for the working group from the above discussion. LITHP will be asked to provide PCOM with a list of names for the EPR working group, and members will be chosen after consultation between the PCOM and LITHP Chairmen. The working group will be asked to meet before the next LITHP meeting, in College Station, and report results through LITHP.

Central Pacific Logistics Planning:

T. Francis noted that with its outline for CEPAC drilling, a 9-leg program had

been devised opposed to a 12-leg program for the Western Pacific. He asked that PCOM consider which of the Central Pacific legs could be inserted into the WPAC drilling schedule.

Pisias brought up the broader question of whether PCOM should mandate a finite time for the drillship to return to the Atlantic (1992?). He said that inserting CEPAC legs into the Western Pacific program for logistics reasons differed from putting them in because of a three-year limit in the area.

PCOM Motion:

For purposes of planning the Pacific program. PCOM should retain the option of replacing a couple of WPAC legs with CEPAC legs in the second year of Pacific drilling. (Motion, Francis; second, Gartner)

Francis explained that his motion would keep options open for Pacific planning and would not detract from the CEPAC program. Several PCOM members expressed concern that the motion did not make clear whether CEPAC programs would replace WPAC programs only for reasons of logistics.

Vote: for, 3; against, 11; abstain, 1

### 699 MEDIUM RANGE PLANNING

Pisias referred PCOM to the information in the agenda book regarding a medium range science plan. The plan will be used for budget and engineering requirement projections for the next four years of programming. It will be used as a basis for a U.S. National Science Board review. Pisias said that the JOIDES Office would construct the document using the two years of WPAC planning firmed up at this meeting plus the CEPAC program as outlined by PCOM. A draft of the plan must be sent to JOI, Inc. for budget input by late December.

### 700 PANEL REVIEW SUBCOMMITTEE REPORT

T. Francis reported that the subcommittee had met twice during the course of the meeting. The committee members were Francis, Taira, Langseth and Heath (EXCOM). [Note: M. Leinen, the second PCOM member, was absent]. N. Pisias was present at the first meeting of the subcommittee.

Francis noted that the group had a tremendous amount of input, often containing divergent advice. In discussing a new panel structure, the subcommittee considered the problem of proper balance for all member countries.

A written report from the subcommittee will be submitted by R. Heath. Francis gave some preliminary results of the discussions, including the following:

- \* The number of panel meetings should not increase in the future.
- \* As it is important that ODP be thematically driven, a number of models for

restructuring of the thematic panel structure were discussed. An increase in the number of these panels may be necessary, with a possibility of splitting SOHP into two panels - paleoceanography/bioenvironment and diagenesis/sedimentary processes panels.

- \* Regional panels should be phased out and somehow incorporated into ad hoc planning groups appointed by PCOM. These groups would construct drilling schedules.
- \* Thematic panels would oversee thematic subgroups.
- \* A new technical service panel, an on-board data analysis panel, is suggested. This panel would assist SOHP on geochemistry matters and also deal with physical properties.

### 701 PCOM FY89 BUDGET RECOMMENDATIONS

#### Budget 4% Set Aside:

Pisias asked PCOM to make recommendations to forward to JOI, Inc on the FY89 budget, specifically the allocation of the 4% set aside for special operations. Brass said that the science plans did not call for special operations and suggested the funds be applied to engineering development, as well as equipment purchase, such as drillstring replacement, as previously discussed by PCOM. He also suggested that these funds be used in part to support development of downhole geotechnical tools. A.Taira added that geotechnical tool development involves not just the tools themselves, but development work by TAMU to be able to produce clean holes for them.

Pisias asked PCOM to identify any specific items, excluding staffing, needed for long-term developments, adding that BCOM will have to make final recommendations because of Program Plan deadlines.

#### PCOM Consensus:

One half of the 4% set aside for special operations in the FY89 ODP budget should be applied to program engineering needs. PCOM recommended that some of this be set aside for interface with downhole measurements developments. TAMU should provide input on their development priorities, which will be forwarded to BCOM. It is understood by PCOM and recognized by TAMU that these funds will not be applied for staffing at TAMU.

### 702 INFORMATION HANDLING PANEL ISSUES

#### Micropaleontological reference collections:

As requested by the Information Handling Panel, PCOM discussed support for the DSDP/ODP micropaleo reference collections, currently housed at seven international centers. M.Kastner summarized the issues: bringing current collections up to date, preparing the radiolarian collections, and maintaining them in the future. W.Coulbourn added that the centers were formed in response from the scientific community and he supported their continuance.



T. Moore reviewed the status of the radiolarian collection, which has not been funded by DSDP or Lamont in past requests. He said that IHP does not recommend that the centers themselves be supported, but that sample preparation for the radiolarian collections be considered. Gartner said that if PCOM is willing to recommend support for the collections, it should also monitor progress on the project for continued support.

Moore reviewed usage of the centers and said that the European centers have been used by many researchers. Taira said that the new Japanese center has been well-received. He suggested that a small workshop for the directors of the centers be funded, in conjunction with IHP, in order to develop a long-range plan for the collections.

The Chairman suggested that the item be postponed for the FY89 Program Plan. He asked IHP to coordinate a proposal for bringing the radiolaria collections up to date and on ways to continue the centers' work. In terms of long range budgeting, it was suggested that \$200K start-up costs be would required, with \$100K maintenance per year thereafter.

#### ODP "Non-production":

T. Moore had discussed the issue of non-performance at the Panel Chairmen's meeting. Non-performance extends to co-chief editorial obligations, sample request follow-up, manuscript preparation for the Part B Proceedings volumes, among other concerns. Moore suggested that these non-participants be notified through JOIDES that a perception exists that certain obligations have not been fulfilled. The individual could respond and clear any misconceptions or explain mitigating circumstances. Moore stressed that these letters would not be sent lightly and the ultimate purpose would be to improve the science program.

Pisias added that TAMU should be aware of non-producers, especially co-chiefs and potential co-chiefs, so it can effectively staff cruises. Coulbourn noted that co-chief obligations are clearly stated, but often a co-chief is timely with his own contributions to a volume, and does not participate on the volume as a whole. T. Moore asked PCOM if it would consider sending copies of the notification letters to the individuals funding institution. L. Garrison said that TAMU would be better able to respond on why certain co-chiefs candidates were not selected if this mechanism existed.

Pisias asked that IHP draft a sample letter to be sent to ODP non-producers, names of whom IHP will compile. After review, the letters would be sent from the JOIDES Office.

#### 703 WIRELINE RE-ENTRY BY THIRD PARTIES

At the October, 1987 EXCOM meeting, EXCOM endorsed a request by the French for wireline re-entry of Site 396A, contingent on PCOM scientific approval. PCOM determined that the request presented no problem, but agreed that TAMU should be informed of the condition of the hole after the experiment.

A verbal U.S. request to enter Site 417 next summer will be considered when a proposal is available. Piasias noted that a BHA was left in the hole and may be fishable. Francis suggested that these requests be considered on an ad hoc basis in the future.

#### 704 JOIDES OFFICE ROTATION

The non-U.S. members of PCOM, and W.Coulbourn, Hawaii Institute of Geophysics PCOM member, met during the meeting in order to recommend a replacement for Michael Wiedicke, the current JOIDES non-U.S. liaison, for the October, 1988 rotation of the JOIDES Office to HIG.

The French candidate, Laurent D'Ozouville, now with CCOP-SOPAC, was recommended. If he can not take the post, the Canadian candidate, Elaine Leblanc Isabelle from the Canadian Natural Sciences and Engineering Research Council, is recommended.

#### 705 PANEL MEMBERSHIP

PCOM made the following recommendations for JOIDES panel replacements, based on panel and PCOM suggestions:

##### Panel Chairmen:

TECP: D.Cowan rotating off to become U.Wash. PCOM member.  
PCOM endorsed TECP's recommendation of Ian Dalziel (UT-Austin), who currently serves on TECP.

SSP: J.Peirce retiring, after SSP's next meeting. PCOM recommends the following:

- 1.Greg Mountain (LDGO)
- 2.Alain Mauffret (France, currently on SSP)

PCOM based its recommendation on the need for excellent communications between the SSP Chairman and the ODP Site Survey Data Bank, housed at LDGO.

CEPAC: S.Schlanger has asked to step down from the Chairmanship. PCOM recommends:

- 1.Dave Rea (U.Michigan, Ann Arbor, currently on CEPAC)
- 2.Connie Sancetta (LDGO, on CEPAC)

PCOM recommended Rea because CEPAC is currently in the planning phase for the Central Pacific drilling and, since Rea has been a past CEPAC Chairman, can quickly assume the duties of chairmanship.

##### Panel Membership:

ARP: ARP has requested that a petrologist replace rotating member, K.Klitgord. PCOM recommended:

- 1.J.Karson (Duke)
- 2.H.Dick (WHOI)

CEPAC: Rotating off: D.Scholl. PCOM recommendations are:

- 1.L.Kroenke (HIG)
- 2.W.Sager (TAMU)

SOP: SOP has asked that a replacement for three members, D.Elliot, J.Kennett, and P.Ciesielski, be postponed until the April, 1988 PCOM meeting when the role of this regional panel may be better defined. SOP's next meeting will be scheduled in mid-88.

WPAC: At-large member rotating off: J.Recy  
WPAC recommends D.Tiffen (CCOP-SOPAC) and PCOM has endorsed the recommendation, if funding for Tiffen's travel can be arranged. [Note: The JOIDES Office has been notified that Tiffen will end his post with CCOP-SOPAC and WPAC withdrew his name from consideration.]

Rotating off: J.Ingle. PCOM recommends the following:

1. R.Thunnell (U. South Carolina)
2. J. Hein (USGS)

LITH: Members rotating are: J.Hawkins, C.Langmuir, and J.Sinton. LITHP requests two petrologists and one geophysicist. PCOM recommended the following:

Petrologists:

1. M.Perfit (U.Florida) or W.Bryan (WHOI) will be invited.
2. J.Alt (Washington Univ. in St.Louis) If Alt cannot serve, S.Humphries (SEA at Woods Hole) will be invited.

Geophysicist:

1. John Orcutt (Scripps). If Orcutt cannot serve, N.Sleep (Stanford) will be invited.

TECP: Members rotating off are: D.Cowan, D.Howell, B.Marsh and P.Vogt. TECP and PCOM recommend the following:

Plate kinematics, history of ocean basins:

- 1.D.Engebretson (W.Washington)
- 2.D.Gallo (URI)

**Mechanical models:**

1.R.Buck (Columbia)

PCOM decided to retain D.Howell and P.Vogt on the panel for the next TECP meeting to avoid rotating such a large portion of the membership.

DMP: PCOM confirmed that DMP membership is 15 members. D.Karig (Cornell) was recommended for membership in order to increase physical properties expertise on the panel.

IOP: Membership changes were deferred to the April, 1988 PCOM meeting.

BCOM: G.Brass will continue to serve on the Budget Committee along with N.Pisias from PCOM.

**706 FUTURE MEETING SCHEDULE**

N.Pisias asked that an extra day be set aside for the spring 1988 PCOM meeting, now scheduled for:

19-22 April 1988

College Station, TX

T.Francis provided information on the next international meeting (Appendix FF), scheduled for:

23-25 August 1988

Oxford, England

G.Brass agreed to host the next annual meeting of PCOM, and the following dates were tentatively set aside:

28 November -

Miami, Florida

2 December 1988

**707 ODP SEDIMENT CLASSIFICATION**

A copy of the revised ODP sediment classification scheme, which incorporated SOHP's responses, was distributed at this meeting. U. von Rad forwarded his disapproval that the scheme continued to use the term "neritic" instead of "shallow water carbonates".

PCOM Consensus:

The ODP Sediment Classification Scheme, as revised by TAMU, is acceptable to

PCOM and endorsed for use by ODP.

#### 708 DMP RECOMMENDATIONS

Pisias said that DMP should forward its responses to the WPAC downhole program to WPAC and PCOM. PCOM will also ask TAMU to respond to the recommendations from the Physical Properties Working Group as there will be financial implications for the program.

#### 709 SOHP RECOMMENDATIONS

SOHP had asked that the TAMU policies on core be examined, including issues of retaining whole round core and core barrel magnetization. Gartner said that fixed sampling intervals did not allow for best represented or recovered sections at times.

Garrison said that TAMU could be less rigid with its whole core retention policies if necessary. He asked and PCOM agreed that SOHP formulate specific concerns and then forward them to IHP. PCOM will review the recommendations at its next meeting.

At the conclusion of the meeting, N.Pisias thanked all participants for their contributions and for coming to Oregon. There being no further business, the meeting was adjourned at 1:45 PM.

## APPENDIXES TO SUNRIVER PCOM MINUTES\*

- A List of handouts at November 30 - December 4, 1987 meeting
- B EXCOM Report from 5-7 October 1987 meeting
- C Strawman Timetable for Evaluation and Incorporation of COSOD  
II Recommendations
- D NSF Funded ODP Grants List
- E Other NSF Items of Interest
- G ODP Operations Schedule
- H Proposed "Long Term" Development Engineering Schedule  
prepared by TAMU
- I ODP Leg Participation Tally, Legs 101-120
- J Priority Crustal Coring Tasks (TAMU/ODP)
- K Crustal Coring Projects List (TAMU/ODP)
- L Priority Sediment Coring Tasks (TAMU/ODP)
- M Sediment Coring Projects List (TAMU/ODP)
- N Downhole Tools Development and/or Principal Investigator  
Liaison (TAMU/ODP)
- O Wireline Logging Services Report
- P Leg 117 Logging - Summary of Findings
- P List of logging tools scheduled for Legs 118 through 121
- Q Minutes of JOIDES Panel Chairmen Annual Meeting , 29  
November 1987, Sunriver, Oregon (pp. 11)
- R Physical Properties Items (from DMP Annual Report)
- S JOIDES LITHP Annual Chairman's Report
- T SOHP Annual Report
- U Indian Ocean Panel Annual Report
- V 1987 WPAC Executive Summary
- W CEPAC Annual Report to PCOM
- X ARP Summary of Activities 1987
- Y Southern Ocean Panel Annual Report 1987
- Z Flow chart of Vol.B Manuscript Review (from IHP Annual  
Report to PCOM)
- AA TEDCOM Annual Report
- BB ODP Tree (presented by J.Jarry at meeting)
- CC Annual Report of the Site Survey Panel
- DD Annual Report of PPSP to PCOM
- EE List of PCOM Co-Chief recommendations through Leg 127
- FF Info sheet, PCOM meeting scheduled in U.K., 23-25 August,  
1988 (from T.Francis)

\* Not included with agenda packet; attached to draft PCOM minutes mailed out for PCOM review in December, 1987.

List of handouts  
(Sunriver PCOM meeting):

Copies for all attendees:

1. Letter from Russell Merrill re the role of the editorial board.
2. CEPAC minutes, 29 Sep - 2 Oct, Paris.
3. IOP minutes, 21-23 Oct, Rome.
4. IOP annual report.
5. SOHP annual report.
6. COSOD II Steering Committee recommendations (not the complete report).
7. WPAC minutes, 2-5 Nov, London.
8. WPAC annual report.

Copies for PCOM members and liasions:

9. SOHP's scientific justification for NEA/GBR.
10. New ODP Sediment Classification Scheme.
11. J.Barron's letter re leg 119;
12. There are 20 copies of the Appendices for the IOP minutes 21-23 Oct, Rome.

For the Non-US PCOM members:

13. Curriculum Vitae of Canadian Executive Assistant candidate (6 copies);

APPENDIX A

## ITEM D. EXCOM REPORT

The last EXCOM meeting was held 5-7 October 1987 in Nikko, Japan. Results from that meeting which are of interest for this PCOM meeting are listed below. Copies of the EXCOM meeting minutes are available from the JOIDES Office.

- EXCOM endorsed and recommended implementation of the editorial and publications policy developed by the IHP.
- EXCOM approved the FY88 program plan as revised August 6, 1987 by JOI, Inc.
- EXCOM endorsed the new outline for proposal processing developed at the last PCOM meeting, with the addition that regional panels should provide input on alternative areas which can better address problems posed by proposals.
- EXCOM endorsed the establishment of PCOM's subcommittee to review the advisory panel structure.
- EXCOM made changes in its BCOM representation by appointing J.Briden (U.K.) and B.Lewis as the new non-U.S. and U.S. representatives, respectively, with C.Helsley to serve as BCOM Chairman for the next year. Changes in PCOM representation were left for PCOM action.
- With no foreseeable budget concerns, EXCOM advises PCOM to proceed with the development of the FY89 science plan.
- EXCOM considered a strawman timetable for the review, evaluation, and incorporation of COSOD II recommendations into the JOIDES/ODP planning process (see following page).
- EXCOM appointed a subcommittee to review agenda content for the next few meetings to insure that EXCOM decisions are kept at a policy level, and do not involve science planning issues. Subcommittee members are M.Keen (Canada), C.Helsley (HIG), J.Baker (JOI, Inc.), and N.Pisias (PCOM). The subcommittee will communicate via telephone and telemail prior to the next EXCOM meeting.
- EXCOM directed the non-U.S. PCOM members to meet during the annual PCOM meeting to consider French and Canadian nominations for the position of Non-U.S. Liaison and Executive Assistant to the JOIDES Office. It was recommended that the PCOM Chairman and HIG representatives also participate in the selection of this person who will serve with the JOIDES Office during its tenure at HIG.
- EXCOM endorsed an oral request for French re-entry of Hole 396D, contingent upon PCOM approval of the request at its next meeting.
- EXCOM appointed a subcommittee to develop long-term options for increasing involvement of developing countries in ODP. The subcommittee members are J.Baker (JOI, Inc.), H.Duerbaum (FRG), and J.Stel (ESF).
- EXCOM passed a motion acknowledging J.Clotworthy's (JOI, Inc.) long association with ocean drilling, thanking him for his contributions to both the DSDP and ODP, and wishing him well in his retirement.



**STRAWMAN TIMETABLE FOR  
EVALUATION AND INCORPORATION OF COSOD II RECOMMENDATIONS**

- 1 Mar 88      COSOD II report assumed to be available
- 21 Apr 88      PCOM Meeting:
- PCOM Subcommittee will report on advisory structure in relationship to COSOD II recommendations
- PCOM will discuss COSOD II objectives in relationship to present objectives of ODP and in terms of 4-year view of upcoming drilling, as mandated by PCOM Terms of Reference.
- 25 May 88      EXCOM Meeting:
- PCOM reports on possible advisory structure and makes its first set of suggestions for these changes
- PCOM reports on initial view of the relationship of COSOD II objectives to present objectives of ODP
- EXCOM formulates initial instructions to PCOM on how to begin implementing COSOD II recommendations
- Aug 88      PCOM Meeting:
- PCOM discusses EXCOM instructions and formulates recommendations on how to address COSOD II objectives
- Fall 88      EXCOM Meeting:
- EXCOM provides specific instructions to PCOM for their December 1988 Annual Meeting

NSF FUNDED ODP GRANTS

1987

ODP REGIONAL FIELD PROGRAMS

1. Taylor (HIG) MCS. Bonins  
Moore (Tulsa)
2. Shipley (Texas) MCS. Nankai  
Moore (Tulsa)
3. Shipley (Texas) MCS. Old Pacific  
Larson (URI)
4. Silver (~~UCSC~~) MCS. Sunda/Banda  
Moore (~~Tulsa~~)  
Davis (~~SUNY~~)

MARINE GEOLOGY AND GEOPHYSICS CRUISES- WITH ODP SUPPORT

1. McNutt (MIT) Seabeam, dredging. Marquesas  
Natland (SIO)  
Duncan (OSU)
2. Hine (S. Florida) Profiling, Coring. Nicaragua Rise

1988 (PLANNED)

ODP REGIONAL FIELD PROGRAMS

1. Cande (LDGO) MCS. Chile Triple Junction
2. Detrick (URI) Seismic, Hawaiian Moat  
Watts (LDGO)
3. Keigwin (WHOI) Seismic, coring. Northwest Pacific  
Lonsdale (SIO)
4. Schlanger (NW) SeaMarc II. W. Pacific Atolls  
Duennebier (HIG)
5. Winterer (SIO) Seabeam, Seismic, Ontong-Java
6. Winterer (SIO) Seabeam, Seismic W. Pacific Guyots  
McNutt (MIT)  
Sager (TAMU)

MARINE GEOLOGY AND GEOPHYSICS PROGRAMS- WITH ODP SUPPORT

1. Thunnel (USC) Coring. Sulu Sea
2. Hawkins (SIO) Dredging, Seismic. Lau Basin

FY 1989 (PLANNED) EASTERN PACIFIC FIELD PROGRAMS

TARGET DATES FOR PROPOSALS 1 FEBRUARY; 1 JUNE 1988

APPENDIX D

OTHER ITEMS

1. REVIEW OF OCEAN DRILLING PROGRAM: 1989-1992

- \* REVIEW BY NATIONAL SCIENCE BOARD    AUGUST 1988
- \* REVIEW BY PANEL    MAY/JUNE 1988
- \* WILL NEED FROM PCOM:
  - \* 1989 SCIENCE PLAN
  - \* 1990-1992 EXTENDED SCIENCE PLAN
- \* JOI WILL PREPARE DOCUMENT TO BE SUBMITTED IN EARLY MAY TO NSF
  - \* SCIENCE PLANS 1989-1992
  - \* SUBCONTRACTOR PLANS AND BUDGETS
  - \* HIGHLIGHTS. etc.

2. COSOD II

- \* NSF WILL NEED JOIDES LONG-RANGE PLANNING DOCUMENT BASED ON COSOD II RECOMMENDATIONS IN EARLY 1989
- \* WILL BE USED IN PLANNING AND NEGOTIATION OF MOU's FOR POST 1993 PERIOD.

3. PERSONNEL CHANGES

- \* MIKE LEDBETTER HAS REPLACED MALFAIT AS THE ACTING PROGRAM DIRECTOR IN MARINE GEOLOGY AND GEOPHYSICS

LEG	OBJECTIVE	LOCATION	DEPARTS		ARRIVES		IN PORT
			DATE	DESTINATION	DATE		
118	Southwest Indian Ridge Fracture Zone	Mauritius	23 October	Mauritius	14 December	December 14-18	
119	Kerguelen Plateau and Prydz Bay	Mauritius	19 December	<b>Fremantle</b>	<b>21 Feb. '88</b>	<b>February 21-25</b>	
120	Central Kerguelen Plateau	<b>Fremantle</b>	<b>26 Feb. '88</b>	Fremantle	27 April	<b>April 27-1 May</b>	
121	Broken Ridge and Ninetyeast Ridge	Fremantle	2 May	Singapore	23 June	June 23-27	
-----							
122	Exmouth Plateau	Singapore	28 June	Singapore	27 August	August 27-31	
123	Argo Abyssal Plain and Exmouth Plateau	Singapore	1 September	Darwin	29 October	October 29 - 2 November	
124	Sulu Sea/So. China Sea	Darwin	3 November	Manila	14 December	December 14-18	
125	Bonins I	Manila	19 December	Tokyo	8 Feb. '89	February 8-12	
126	Bonins II	Tokyo	13 February	Yokohama	10 April	April 10-14	
127	Nankai Trough	Yokohama	15 April	Yokohama	12 June	June 12-16	
128	Japan Sea I	Yokohama	17 June	Niigata	2 August	August 2-6	
129	Japan Sea II	Niigata	7 August	Nagasaki ?	7 September		
	Dry Dock		Nagasaki?			September 7-20	

APPENDIX G

Revised 11/10/87

NOTE: Ports and dates after Leg 121 are tentative and should be used as estimates only.  
**Boldface indicates date and port changes.**

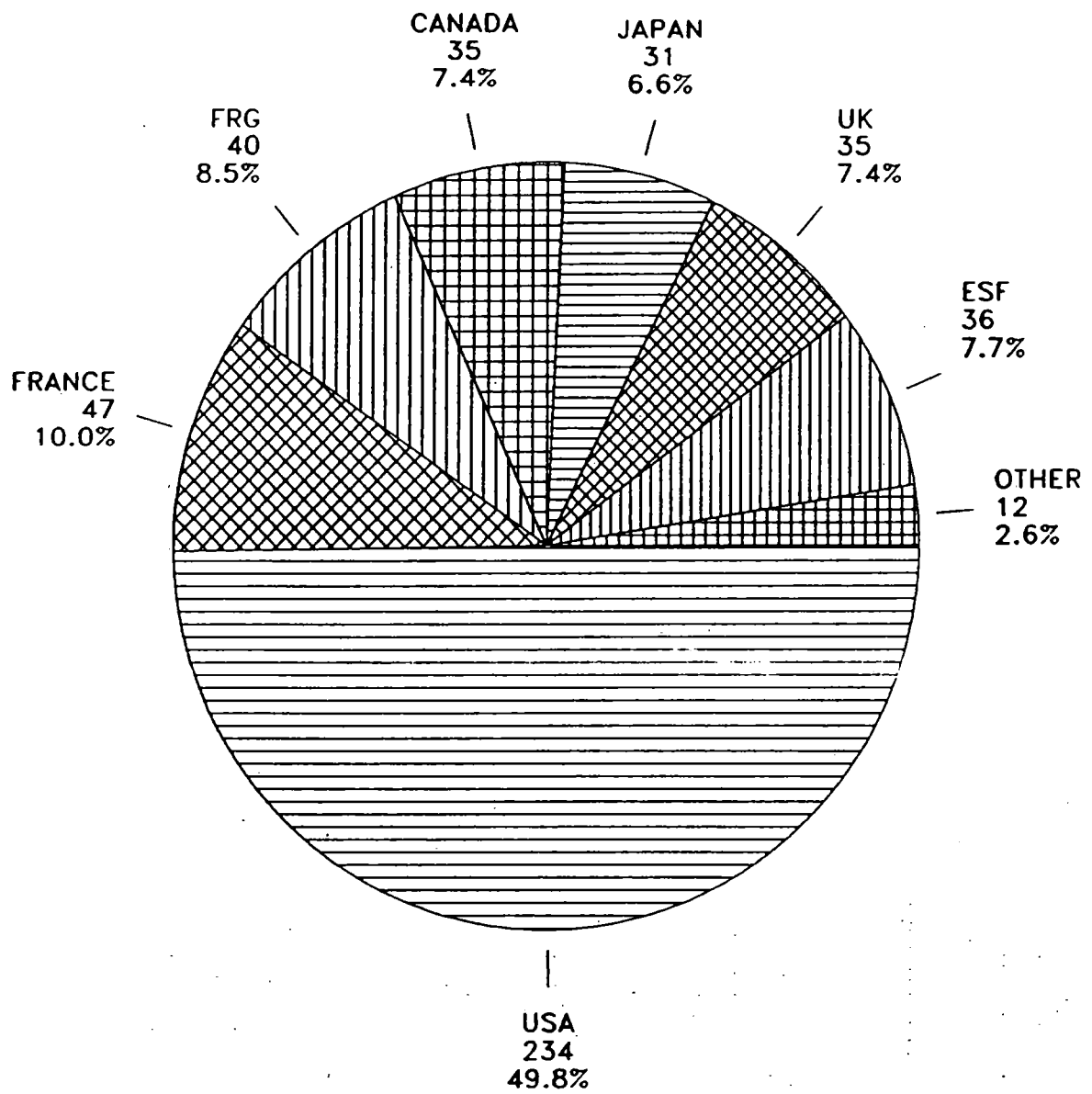
# PROPOSED 'LONG TERM' DEVELOPMENT ENGINEERING SCHEDULE

	1988					1989					1990					1991					1992			
	FY 88					FY 89					FY 90					FY 91					FY 92			
	INDIAN OCEAN					WESTERN PACIFIC										CENTRAL & EAST PACIFIC								
	119	120	121	122	123	124	125E	126	127	128	129	130E	131	132	133	134	135	136	137E	138	139	140	141	142
DIAMOND CORING SYSTEM			T				T	S												X		X		
PRESSURE CORE SAMPLER					T		S		X															
NAVI-DRILL CORE BARREL			S		S		S								X		X					X		
HARD ROCK GUIDE BASE - MOD 2		C																		S	X		X	
HARD ROCK BIT DEVELOPMENT				T	T			T												X		X		
ADVANCED XCB SYSTEM			T		S	S	S			S					X		X					X		
POSITIVE DISPLACEMENT CORING MOTOR - MOD 2		C					T																X	
HYDRO-PERCUSSIVE CORING								C							S		X					X		
HIGH TEMPERATURE DRILLING (?)																								
DEVELOPMENT ENGINEER ASSIGNED			DPH		TLP	MAS	ALL ENG								TLP		DPH			ALL ENG	SPH			

APPENDIX H

- T INITIAL TESTING
- S PROTOTYPE SEA TRIALS
- X INTENDED OPERATIONAL USE
- \$ ADDITIONAL FUNDING REQUIRED
- C CONCEPT DEVELOPMENT

# PARTICIPANT TALLY, LEGS 101 - 120



## PRIORITY CRUSTAL CORING TASKS

- \* IMPROVE RECOVERY, ROP, BIT LIFE  
IN MASSIVE AND HIGHLY FRACTURED  
CRYSTALLINE ROCK CORING
  
- \* DEVELOP MORE EFFICIENT/LESS COSTLY  
METHODS OF BARE ROCK SPUDDING
  
- \* IMPROVE HARD ROCK CORE BITS AND  
DRILLING EQUIPMENT/REFINE  
OPERATIONAL TECHNIQUES
  
- \* IMPROVED HOLE STABILITY TECHNIQUES
  
- \* HARD ROCK CORE ORIENTATION
  
- \* IMPROVED LITHO PANEL LIAISON

CRUSTAL CORING PROJECTS

**\* NAVI-DRILL CORE BARREL (NCB) DEVELOPMENT**

- \* PROTOTYPE SEA TRIALS STAGE
- \* EVALUATION OF ANTI-JAM SYSTEMS

**\* POSITIVE DISPLACEMENT CORING MOTOR (PDCM) DEVELOPMENT**

- \* PROTOTYPE SEA TRIALS STAGE

**\* DIAMOND CORING SYSTEM (DCS) DEVELOPMENT**

- \* CONCEPT DEVELOPMENT STAGE

**\* HARD ROCK GUIDE BASE**

- \* 2 SUCCESSFUL DEPLOYMENTS
- \* PLANNING SMALLER/LESS COSTLY DESIGN

**\* CONTINUED OPERATIONS SUPPORT**

- \* REFINED DRILLING JARS, ROLLER REAMERS, ETC.
- \* TAMU/PET E. DEPT. HOLE CLEANING EXPERIMENTS

**\* HARD ROCK DRILL BIT DEVELOPMENT**

- \* IMPROVED ROLLER CONE BIT LIFE
- \* HYBRID TCRC/PDC BITS
- \* IMPREGNATED DIAMOND BIT DEVELOPMENT

**\* INVESTIGATION INTO EXISTING HR ORIENTATION SYSTEMS AND REQUIRED ODP EQUIPMENT MODS**

**\* DEVELOPMENT ENGINEER ASSIGNED AS PERMANENT LIAISON TO LITHO PANEL**



## PRIORITY SEDIMENT CORING TASKS

### \* IMPROVED RECOVERY IN INTERBEDDED HARD/SOFT LITHOLOGIES

\* PARTICULARLY CHALK/CHERT SEQUENCES

### \* UNCONSOLIDATED FORMATION RECOVERY

\* PARTICULARLY LOOSE RUNNING SANDS,  
TURBIDITES, ETC.

### \* IMPROVED HOLE STABILITY TECHNIQUES

### \* IMPROVED SOHP PANEL LIAISON

## SEDIMENT CORING PROJECTS

### CONTINUED REFINEMENT OF XCB CORING SYSTEM

- \* IMPROVED MECHANICAL INTEGRITY
- \* IMPROVED CUTTING SHOE SELECTION
- \* IMPROVED CIRCULATION CONTROL
- \* CORE CATCHER REFINEMENTS
- \* POSSIBLE ANTI-JAM FEATURES

STATUS: IN PROGRESS SCHEDULED F/LEG 121

### \* NCB (DISCUSSED UNDER CRUSTAL CORING)

- \* INVESTIGATION INTO APPLICATION OF  
NEW HYDRO-PERCUSSIVE CORING TECHNIQUES  
(VIBRA CORING)

STATUS: TECHNOLOGY INVESTIGATION ONLY  
- AWAITING AVAILABLE PROJECT ENGINEER

### SONIC CORE ENTRY MONITORING - RECORDS CORE RECOVERY DURING PENETRATION

STATUS: INDUSTRY R&D STAGE  
INVESTIGATING ODP APPLICATIONS  
INCLUDING 'REAL TIME' MWD REFINEMENT  
- AWAITING AVAILABLE PROJECT ENGINEER  
(ALSO HAS APPLICATION TO CRUSTAL CORING SYSTEMS)

### \* DRILL-IN-CASING (DIC) SYSTEM

- BANDAID APPROACH TO UNSTABLE FORMATION ISOLATION

STATUS: ONE DSDP UNIT REFINED FOR LEG 110 (UNUSED)  
AVAILABLE ABOARD SHIP FOR POSSIBLE LEG 121 USE

DEVELOPMENT ENGINEER ASSIGNED AS PERMANENT  
LIAISON TO SOHP PANEL

DOWNHOLE TOOLS DEVELOPMENT  
AND/OR PRINCIPAL INVESTIGATOR LIAISON

\* **PRESSURE CORE SAMPLER (PCS)**

- SMALL VOLUME INSITU SEDIMENT SAMPLE

STATUS: UNDER DEVELOPMENT - SCHEDULED FOR  
LEG 123 PROTOTYPE TEST

\* **TAM DRILLING PACKER (TDP)**

STATUS: REFINEMENTS COMPLETED TO EXISTING DESIGN  
AWAITING OPERATIONAL DEPLOYMENT

- MODIFICATIONS TO ALLOW DEPLOYMENT  
COMPATIBILITY WITH APC/XCB BHA  
AWAITING PROJECT ENGINEER AND  
SCIENTIFIC PRIORITY

\* **TAM TUBING PACKER**

STATUS: LIAISON WITH KEIR BECKER  
(POSSIBLE TRANSFER TO ODP)

\* **PORE WATER SAMPLER DEPLOYMENT SYSTEM**

STATUS: DESIGN MODS COMPLETE  
READY FOR OPERATIONAL DEPLOYMENT LEG 120

\* **APC PORE WATER SAMPLER**

STATUS: LIAISON WITH ROSS BARNES

\* **INSITU PRESSURE METER**

STATUS: LIAISON WITH KATE MORAN

APPENDIX N

\* **GEOPROPS PROBE (INSITU PHYSICAL PROPERTIES)**

STATUS: LIAISON WITH DAN KARIG/ELLIOTT TAYLOR

## WIRELINE LOGGING SERVICES REPORT, 11/30/87

### OPERATIONS MATTERS RELEVANT TO LOGGING PLANS

Bridges: The bridge problem has been diminishing since Leg 110 (e.g. only one bridge in five sites on Leg 117). Primary reason may be saline (29 ppt) mud often used by TAMU now. Sidewall entry sub used once on Leg 117. BRG is beginning our second analysis of logging success rate.

Bits: The TAMU lockable flapper worked in initial tests. This cheaper alternative to APC/XCB bit release permits more coring after logging. The hydraulic bit release continues to jeopardize logging of rotary-cored holes. Stuck core barrels continue: one lost APC hole and three lost XCB holes on Leg 117.

Software: BRG now has the CORPAC software package. This program yields a continuous correlation between logged sites, in spite of some lithologic change and substantial changes in sedimentation rate. CORPAC will be used on logs from 116, 117, and Prydz Bay.

Through-pipe logs: Reliability of through-pipe spectral gamma logs was confirmed on Leg 117, for slow logging speeds. Tests of other geochemical logging tools are still needed.

Logging tool status: Many new Schlumberger tools were shipped for Leg 118, reestablishing complete backups. A pad-type neutron tool should have much better signal-to-noise ratio than the old tool. The magnetometer/susceptibility tool from the University of Washington and a hybrid wireline packer were completed in time for Leg 118. A high-resolution temperature tool and French susceptometer will be available beginning on Leg 120. Consolidation from three to two Schlumberger tool strings may be possible in late 1988.

High-resolution dipmeter: The FMS dipmeter can be ready 11 months after signing a contract. The cost is \$160K; processing will be done in-house, with no charge for software. Ship heave probably will not degrade the <1 cm vertical resolution. The tool will be available for holes in which determination of any of the following is high priority: high resolution, sedimentary facies, structural dip, stress direction, or imaging of fractures, contacts, and porosity geometry. Logging speed is fast.

### POSSIBLE PCOM ACTION ITEMS

Should PCOM allot 4 hours for testing quality of through-pipe geochemical logs and 3 hours for testing performance of the wireline heave compensator?

Should PCOM encourage the possible French development of an ODP-compatible, 3-component sediment magnetometer?

Should estimated logging times for standard Schlumberger logs assume 3 tool strings and no sidewall entry sub?

Should PCOM permit acquisition of the high-resolution dipmeter?

## APPENDIX O

LEG 117 LOGGING (AND SOME SEIS. STRAT.)  
SUMMARY OF FINDINGS

Indus Fan (Site 720):

- 1) detailed correlation of seismic sequences with log stratigraphy through a synthetic seismogram; episodes of channel switching, usually followed by pelagic deposition at Site 720, identified on seismic section and as changes in patterns of fining upward on Th log.
- 2) core recovery 80% in pelagics, 10% in turbidites, based on comparison of logs with cores.

Owen Ridge (Sites 722 and 731):

- 1) log confirmation of core indications that almost no biogenic carbonate beds are present in the Site 731 turbidites, though a synthetic seismogram shows that we reached seismic horizons deeper than those reached at DSDP Site 224.
- 2) a major seismic reflector, penetrated at Sites 722 and 731 and formerly thought to be the top of the turbidites, is actually an internal turbidite reflector.
- 3) the turbidites are bimodal (either very silty or very clay-rich), with little evidence of fining-upward sequences; dominance of clay-rich beds near the top and silt-rich beds near the bottom.

Oman Margin (Site 723):

- 1) dolomite stringers probably lack lateral continuity, based on:  
(a) absence of a seismic reflector where beds are thick enough to create one, (b) lack of effective permeability barriers (no porosity increase beneath a dolomite stringer), and (c) non-log indications of only partial duplication of dolomite horizons between A and B holes.
- 2) seismic horizons are not dolomite stringers; variations in the very high content of organic matter control the velocity and density variations that cause the reflectors; uranium log at 723 is a good, continuous indicator of organic matter variations.
- 3) independent evidence of low-chlorinity pore fluids.
- 4) identification of opal-rich zones at the bottom of the site, detected in the very limited core recovery only in hindsight.

Oman Margin (Site 728):

- 1) biogenic opal as the most likely cause of 2-m log cyclicity.
- 2) highly variable, sometimes organic-rich zone at 70-85 mbsf.

	118	119	120 or 121
Seis. Strat. combo.	analog sonic (4 channel) gamma ray resistivity	analog sonic (4 channel) gamma ray resistivity	digital sonic (4 & 8 channel) spectral gamma ray phasor, resistivity TEMPERATURE (HIGH RES.)
Lithoporosity combo.	lithodensity NEUTRON (PAD, Am/Be) spectral gamma ray devi/mag(low-res.) temp. (low-res.)	lithodensity neutron(pad, Am/Be) spectral gamma ray devi/mag(low-res.)	lithodensity neutron(pad, Am/Be) spectral gamma ray devi/mag(low-res.) TEMPERATURE (HIGH RES.)
Geochemical combo.	gamma spectroscopy aluminum clay spectral gamma ray devi/mag(low-res.) temp. (low res.)	gamma spectroscopy aluminum clay spectral gamma ray devi/mag(low-res.)	gamma spectroscopy aluminum clay spectral gamma ray devi/mag(low-res.) TEMPERATURE (HIGH RES.)
Specialty	dual laterolog (Schlum.) sonic (12 channel) televiwer MAG/SUSCEPT. WIRELINE PACKER (HYBRID)	televiwer	dual laterolog (Schlum.) sonic (12 channel) televiwer mag/suscept. WIRELINE PACKER
Third party	mag (USGS) suscept (USGS) temp. (USGS) packer (Keir) VSP (WHOI)	VSP	

JOIDES PANEL CHAIRMEN ANNUAL MEETING  
29 November 1987  
Sunriver, Oregon

MEETING MINUTES

ATTENDANCE

D.Cowan - Meeting Chairman, Tectonics Panel  
S.Schlanger - Central & Eastern Pacific Regional Panel  
R.Schlich - Indian Ocean Regional Panel  
T.Moore - Information Handling Panel  
C.Langmuir (for R.Detrick) - Lithosphere Panel  
M.Ball - Pollution Prevention & Safety Panel  
L.Mayer - Sediments & Ocean History Panel  
J.Peirce - Site Survey Panel  
P.Barker - Southern Oceans Regional Panel  
J.Jarry - Technology & Engineering Development Committee  
B.Taylor - Western Pacific Regional Panel  
N.Pisias - Planning Committee  
M.Wiedicke - JOIDES Office  
S.Stambaugh - JOIDES Office

Absent:

P. Worthington - Downhole Measurements Panel

AGENDA & INTRODUCTIONS

The meeting was called to order at 8:45 am. An overview of the agenda, provided by D.Cowan, was followed by introductions of participants.

JOIDES ADVISORY PANEL STRUCTURE

N.Pisias summarized three documents which will be produced at this Annual PCOM Meeting which the Panel Chairmen should consider in their discussions:

1. The FY89 Program Plan (to be submitted to JOI, Inc. by January, 1988) must include the first six legs of the WPAC program.
2. A document for the US National Science Board review in August, 1988 which will cover four years of drilling (i.e., the entire Pacific drilling program).
3. An extended long-range planning document (to be submitted to EXCOM/NSF by the first quarter of 1989) on how to implement COSOD II recommendations. This document will ultimately be used in negotiations for new MOUs with non-US JOIDES members.

Pisias reviewed the status of the advisory structure to-date:

- At the August PCOM meeting a PCOM subcommittee was named to deal with questions of thematic expertise in panel membership, possible expansion of panels, etc.

- Also at the August PCOM meeting, a new proposal review process was adopted which places emphasis on the thematic panels to "write the Table of Contents" for regional prospectuses.
- Piasias affirmed the need for regional panels.
- EXCOM has endorsed PCOM's changes to the proposal process, with the addition that if necessary, regional panels should provide input on alternative areas to better address problems posed by proposals. Although EXCOM thought the new process addressed thematic concerns, PCOM needs to know if panel mandates need to be revised, among other issues.

Cowan directed the regional panel chairmen to forward their views first. Although interspersed with much discussion, comments from the regional chairmen are summarized below:

#### J. Austin - Atlantic Regional Panel

- Regional expertise is critical to the program, perhaps not in the form of the current panels, but they are essential for a proposal driven program.
- ARP is the first panel out of the active planning mode, and has endorsed participation at workshops to keep interest alive. However, long-term planning and new proposals for the Atlantic are dependent on knowing whether and when the ship will return to the area.

Many issues were forwarded during this discussion, including:

- How the scientific community will be advised of drilling themes in order to submit proposals.
- Translating global themes to specific drilling programs needs focus from the thematic panels.
- A shiptrack for long-range planning is essential for lining up site surveys and other logistics considerations.

#### B. Taylor - Western Pacific Regional Panel

- The scientific community needs guidance on where the ship will go after the first circumnavigation. Will oceans or objectives be the focus?
- If thematic panels become the first filter for proposals, the process may slow down (longer meetings needed?).
- PCOM often dealt with immediate planning concerns during the formulation of the WPAC Prospectus, thus WPAC planning progressed well in advance of direction from thematic panels and PCOM. Is this advisable?
- A "critical mass" of experts is necessary to address themes and construct drillable programs. Taylor suggested schemes of restructuring the thematic panels: splitting TECP to active and passive margin (and possible mid-plate) panels; splitting SOHP to sediments/diagenesis and paleoceanography panels; adding a panel to deal with spreading centers. Because more work will fall to the thematic panels, they must either grow, divide, or add regional expertise.
- There may be a problem if a few individuals on a panel representing the entire thematic focus and become "policymakers".

Comments from this discussion included:

- Possible increase in costs/meeting time with more panels.



- How to get worldwide expertise for global themes. PCOM should take responsibility for getting global expertise on thematic panels.
- The effectiveness of working groups to generate proposals, address thematic issues, and bring regional expertise.
- Possible changes in thematic panels to match themes identified by COSOD II.

Cowan pointed out that at least TECP functioned better when asked specific questions by PCOM rather than engaging in "global armchair philosophy." Enlarging panels would decrease control at meetings.

Peirce suggested a hierarchical structure, with proposal review and "philosophizing" kept separate. The group discussed the problems encountered with working groups (funding, bypassing panels and advising PCOM directly). Austin reiterated that workshops could be effective tools to focus on broad themes, not merely collating proposals. Other issues included: the need for effective PCOM liaison with the panels.

A discussion of the CEPAC prospectus process followed. In April, CEPAC was asked to write a prospectus on the WPAC model. The thematic panels gave CEPAC their six top priority programs after the August PCOM meeting.

#### S.Schlanger - Central & Eastern Pacific Regional Panel

- Schlanger's impression is that the system works well, but could be done with a lot less energy.
- The "scientific community" is truly represented by the current structure.
- There is a need to establish themes, publicize them, and actively solicit proposals.
- CEPAC can prepare a prospectus, but it needs a firm timeframe, plus input from thematic panels on the latest version.
- The specifications for proposals should be publicized.

Pisias pointed out that the panels have to "sell" the science to PCOM and justify the number of legs proposed in a prospectus. "Open competition" for drilling was suggested by Austin after the first circumnavigation as a way to motivate quality proposals with global themes. Austin added that if a significant change were to be made in 1992, then the community has to know soon. Lead time for site survey and technology development was also discussed, as well as dangers of "freezing" old science goals until the new, COSOD II responsive, directives are identified.

#### R.Schlich - Indian Ocean Regional Panel

- Schlich felt that the current Indian Ocean program was initiated by regional directives, and may have missed some thematic opportunities. Liaison with the thematic panels should have been better.
- Schlich was concerned about how the future path of the ship will be determined and felt that proposals alone will not determine it.
- Regional expertise must be represented, possibly "moving with the ship."
- The program should consider deadlines for proposal submission so that site surveys can be funded in time.

#### P.Barker - Southern Oceans Regional Panel

- Barker feels that SOP deals with thematic issues.

- The quality of proposals submitted to PCOM will decline with no regional expertise. A more efficient system is needed to avoid second-rate drilling; ten panels advising PCOM is excessive.
- Short-term working groups will not take the place of regional panels, who need about five years in the current structure to bring a program from planning to drilling.

B. Taylor presented three options for developing a consensus from the above discussion:

1. Considering PCOM's last set of changes to the proposal process, leave the advisory structure as it stands.
2. Bring regional expertise into the thematic panels by way of subgroups, or additional members.
3. Increase the number of thematic panels.

Further discussions toward consensus included:

- Adjusting regional expertise so regional panels do not "push" their own programs.
- How to balance themes based on new global themes in areas with good data, as well as continue "reconnaissance" drilling in lesser known areas.
- A suggestion from Taylor that the Site Survey Panel function more like a regional panel.
- Austin emphasized that regional panels, or some version of them, must integrate disparate thematic interests and come up with a drilling schedule.

The role of proposals was discussed. Schlanger pointed out that regional panels spend unnecessary time on immature proposals (working out drilling time estimates, etc.). He emphasized the need for a general increase in the quality of proposals.

Langmuir added LITHP's views. He felt that the issue of long-term planning in a proposal-driven system needed to be put into a clearer perspective. LITHP has been pushing consistently for long-term thematic planning that would be able to encompass, for example, a three leg-two year program at the East Pacific Rise. It is not clear that such planning can be purely "proposal driven." No one individual is capable of writing an EPR proposal.

Furthermore, Langmuir added, although the system needs better proposals, there is very little motivation for a proponent. He must put substantial effort into the proposal and follow-up documentation, but he gets no funding and has no assurance of being chief scientist. The system is not structured so that excellent proposals will be submitted. So there is a conflict between the needs for long-term planning and broadly based comprehensive proposals on the one hand, and on the other hand the lack of structural motivation for the community to write such proposals.

For these reasons, Langmuir suggested that perhaps there should be "oversight groups" responsible for carrying out long-term thematic goals. These groups might write comprehensive proposals, oversee engineering and tool development, integrate site survey data from diverse fields, etc.

Barker suggested that ODP operate as a 50% responsive-50% directive program during the transition period.

A lunch recess was called and Cowan requested some consensus upon return. When the meeting reconvened Cowan summarized the ideas presented in the morning session:

1. Long-range planning: Important to identify a plan for the shiptrack to the community in order to generate proposals and schedule site surveys.

Cowan suggested that the thematic panel's job is to be aware of scientific currents, COSOD II, workshops, and generally serve as the global advisory panels to PCOM.

2. How to generate proposals: identify important themes and advertise them, watch for multidisciplinary proposal problems like the East Pacific Rise.

3. What are the mandates for the panels?

Cowan reiterated the three options presented thus far (see above). If more regional expertise were added, possibly coincidental with regional drilling, the distinction between regional and thematic panels would blur. He suggested maintaining the current system, but let thematic panels deal with global issues and not usurp the regional panels.

Peirce gave ideas on how to improve panel efficiency. He suggested that different panel sub-groups could focus on proposal review, medium-range planning and long-range planning. They could all report to an "expanded" thematic panel which, in turn, could report to PCOM. He suggested an expanded Site Survey Panel as well, with one group dealing with short-term drilling for specific holes, and another on coordinating future site surveys (through NSF, NERC, etc.).

Pisias presented a possible scenario for the next five years (Diagram 1), which included five thematic panels and presupposed that the ship would return to the Atlantic in 1992. The role of SOP is problematic in this scenario.

Barker suggested that if five thematic panels were created, then they should interact effectively, possibly coordinated by a group composed of the panel chairmen.

Schlanger presented a curve depicting the "lifetime" of a panel (Diagram 2). He stated that it would be inefficient to continue panels "in perpetuity". Taylor pointed out that the peak of the regional panel activity is when synthesizing site surveys.

Mayer presented another possible structure (Diagram 3, as modified in subsequent discussion).

The group discussed possible mechanisms for getting regional expertise including subdivision of thematic panels into working groups; adding "outside" experts to the panel in working groups; meeting structure; and continuing joint panel meetings. Moore suggested that working groups identify specific tasks and delegate those to a specific "task force". Both working groups and "task forces" could generate proposals as well as evaluate outside ones. Langmuir agreed that

if working groups could bring in expertise from other areas, they would be flexible enough to solve thematic problems.

Pisias noted that by setting up subgroups instead of creating new thematic panels, problems with MOU representation requirements and panel rotation could be avoided.

Cowan presented additional options: preserving the present panels, but convening ad hoc working groups, and possibly splitting the TECP into active and passive margin panels (possibly overlapping with LITHP objectives).

Peirce recommended the following structure:

1. Reducing the number of regional panels to three (in correspondence with short-, medium- and long-range planning).
2. Retaining the three service panels (IHP, SSP, PPSP)
3. Retaining TEDCOM, and
4. Making DMP a thematic panel (as its role as a proponent for global stress measurements has emerged).

Further discussions on who would call working groups (thematic panels or PCOM) and financial considerations of meetings ensued. Taylor mentioned that working groups lack "corporate memory" while long-term, global themes will be around for a long time. Schlich did not feel working groups had been particularly effective in the past. He questioned who would review proposals in a working group structure, and reiterated his suggestion for a regional panel with changing membership which would coordinate with the regions of drilling.

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Below follows a series of motions proposed and voted upon by the Panel Chairmen for consideration by PCOM and the advisory panel subcommittee. (Note: As much overlap with previous discussion accompanied these motions, only new discussion is summarized after the results of the votes.)

Motion 1:

That the Downhole Measurements Panel be viewed as a thematic rather than a service panel.

Vote: 4 for; 6 against; 3 abstain

[This motion was forwarded by Peirce in response to DMP projects (stress map, BHTV experiments in Indian Ocean). The consensus of the chairmen was that although DMP serves largely as a service panel, it definitely also considers and promotes the science of downhole measurement.

Motion 2:

That the number of thematic panels should be increased to five: namely, active margins, passive margins, sediments/diagenesis, paleoceanography, and ocean crust.

No second, motion not voted upon.

Motion 3:

That the number and character of the present thematic panels be retained.

Vote: 10 for; 2 against; 1 abstain

Motion 4 (as amended):

That the thematic panels be empowered, with the consent of PCOM, to form advisory bodies that will deal with specific tasks defined by the thematic panels, and report to them. Membership of the advisory bodies may extend beyond or cross panel boundaries.

Vote: 9 for; 2 against; 2 abstain

Motion 5:

Regional panels will be primarily responsible for synthesizing thematic priorities, mature proposals and logistical constraints into a drilling prospectus. Recognizing the temporal variability of the workload, the regional panels should be finite in their lifetime, consistent with an ongoing plan for drilling.

Vote: 10 for; 1 against; 2 abstain

[In discussion of this motion, Barker pointed out that SOP drilling is seasonal in nature, and does not fit in the normal three panel system. Peirce responded that perhaps problems of high-latitude drilling be addressed by placing high-latitude expertise on each panel. Austin wanted some guidelines from PCOM on whether to continue convening ARP once per year in the interim. (Pisias said yes.) Austin asked that the US be a "buffer" in trying to name panel members who will balance out global themes, if necessary.]

Motion 6 (as amended):

The regional panels will merge into one standing regional panel whose composition will be adjusted to the projected path of the drillship.

No second, not voted upon

[This motion was forwarded by Schlich; some of his concerns were forwarded in Motion #7 below, which was separated from this motion.]

Motion 7:

Thematic panel membership should reflect a global distribution of regional expertise.

Vote: 10 for; 2 against; 1 abstain

ENGINEERING DEVELOPMENTS

A list of engineering priorities identified at the Honolulu PANCHM meeting was distributed (Attachment 1).

J.Jarry presented an overview of engineering priorities as discussed at recent TEDCOM meetings and at COSOD II. He noted that most of TAMU engineering

directions are short-term goals whereas COSOD II envisioned much longer range goals (e.g., drilling deep holes) Jarry said planning must begin now if a new development is needed in the next 5-6 years.

Pisias said that the 4% set aside in the ODP budget does not encompass engineering developments, but is for special operations or equipment.

The group reaffirmed that the priorities for drilling and recovery in young or fractured basement, and in alternating hard/soft sediments are still the top priorities. Mayer said his panel is looking for in situ physical properties capability.

Jarry discussed the proposed land testing of the Navidrill in spring, 1988. Approximately \$35-45K will be required according to TAMU. Schlanger mentioned that the test should involve drilling below sea level, if possible, as dry rock conditions may be different. There is no report on testing from Leg 118; the Navidrill will be essential for the Kerguelen legs.

Jarry presented a list of future drilling options from ODP as presented by B.Harding (TAMU) at COSOD II. Slimline riser drilling seems to be most feasible, with total development costs estimated at \$6.5M. Some panel chairmen were concerned about possible add-on costs for ship conversion and logistics (space onboard the drillship) for the drillstring. Jarry said that \$8K/day operation costs for the slimline system are estimated.

Pisias said that the engineering group is currently pursuing the diamond coring system for deep drilling in sediments. He reviewed some of TAMU's engineering timelines for the coring system, Navidrill, and other developments. Some panel chairmen are concerned that the pressure coring system will not be on line for Nankai drilling. High temperature drilling will be ready by that leg, however. Pisias also noted that he has talked to TAMU about sending engineers instead of staff scientists as liaisons to panel meetings in the future.

There was a consensus that, budget permitting, it would be more beneficial if TAMU liaisons to panels were engineers, rather than staff scientists, as has been the case until now.

Jarry concluded by noting that TEDCOM still meets about every eight months and encouraged all interested JOIDES scientists to attend.

Other issues noted by the panel chairmen included:

- The possibility of an engineering test leg, inserted after the Leg 124 drilling, which fits well logistically and would avoid problems of engineering tests taking up platform time during cruises.
- A need for increased spending on long-term developments if COSOD II objectives are addressed. [Note: The summary chapter of COSOD II recommendations was distributed at this meeting.]
- TAMU's contractual obligations to JOI to keep on schedule for engineering priorities for ODP.

## ODP PUBLICATIONS

Moore presented some of the changes in ODP Proceedings Part B as described in Russ Merrill's letter of 12 November, 1987 to IHP and PCOM (handed out at this meeting). He reviewed the new editorial board (consisting of the two leg scientists, the leg ODP staff scientist, an external scientist/expert, and an ODP editor). He noted that the Manager of Science Services has ultimate responsibility for publications, but the co-chiefs are responsible for quality publications from their leg.

Austin was concerned that criticism was leveled against the Part B volumes without a tangible volume to review. He said that for Leg 101 Part B (nearly complete), one or two external reviewers were assigned per article and 10% of the submitted articles were rejected. Several more were extensively rewritten before acceptance.

Other issues from this discussion included:

- A review of why outside publication was rejected as an option for the Proceedings volumes.
- Co-chief responsibility for overseeing the volumes, especially those receiving six month salaries from USSAC.
- The possible inefficiencies of copy editing at the "front end" of each article instead of after scientific review.
- "Non-performance", including shipboard scientists who made sample requests but did not follow through with articles. The chairmen agreed that staffing the cruises was important to ensure follow up; they discussed the possibility of identifying the worst offenders as unsuitable for future cruise participation.

A consensus emerged that one of the responsibilities of the co-chief scientists is to serve as part of the editorial board for Part B Proceedings volumes.

There being no further business to consider, the meeting adjourned at 6:20 pm.

Attachment 1

ENGINEERING PRIORITIES

Identified at

Honolulu PANCHM Meeting

1. Drilling young or fractured basement; drilling/logging in high temperature and corrosive environments; guide-base development
2. Packers for measuring in situ pore pressure and permeability; tools to measure in situ physical properties; development of pressure core barrels and the ability to handle gassy sediments
3. Drilling deep (2-3 km) holes
4. Drilling and recovering alternating hard/soft sediments, and unconsolidated sediments



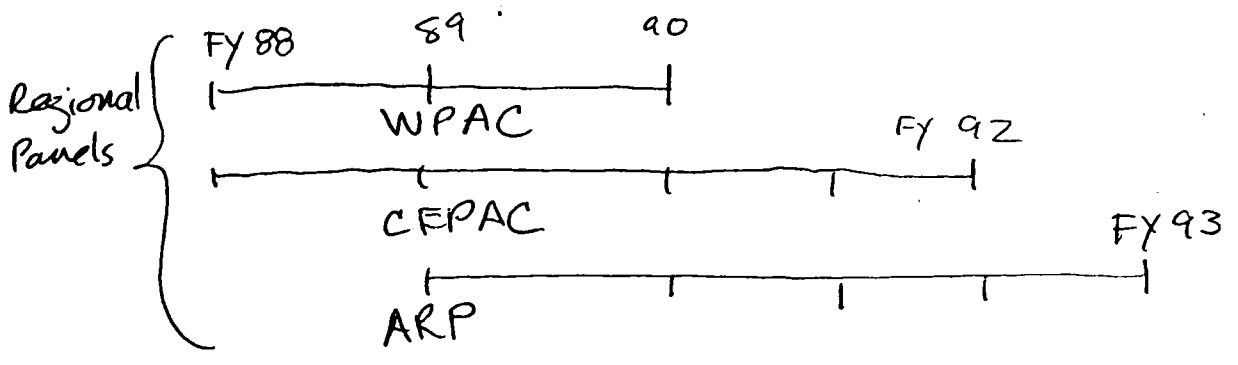
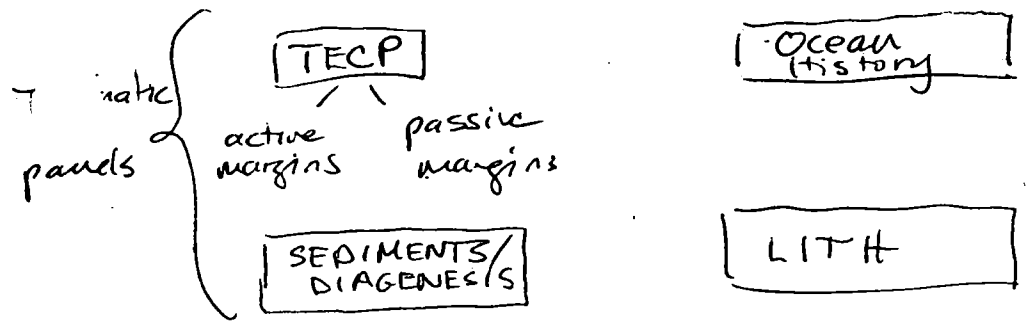
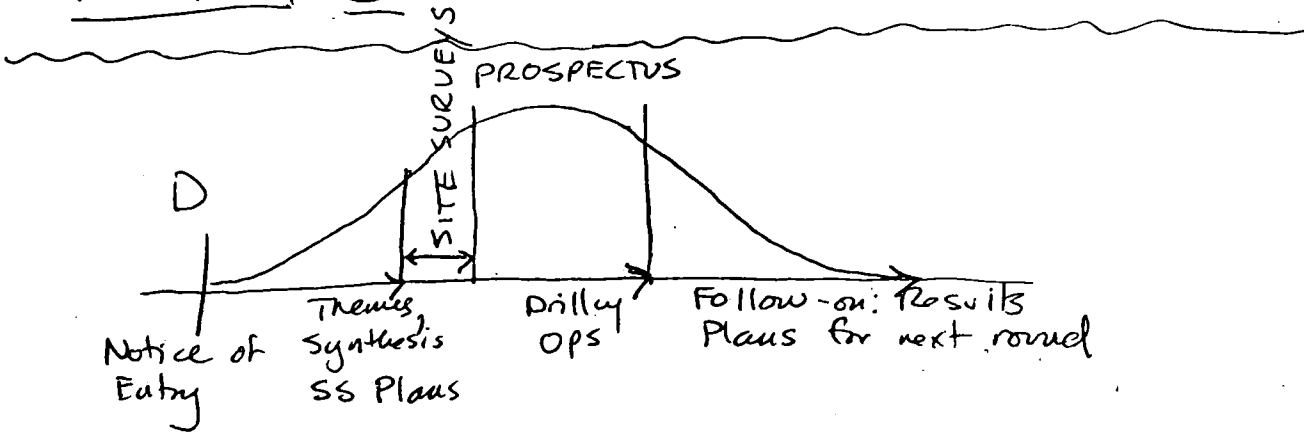
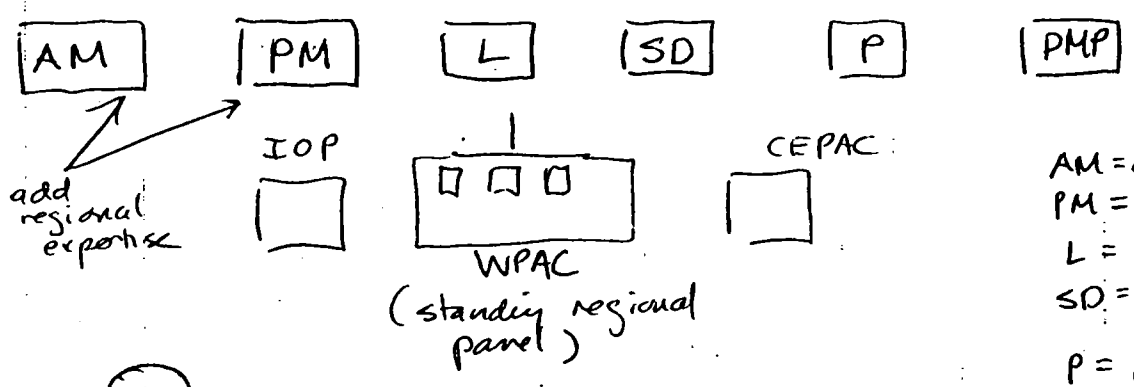


DIAGRAM (1)



LIFE OF REGIONAL "PANEL"  
(or expertise on Thematics)

Diagram (2)



AM = active margins  
 PM = passive margins  
 L = lithosphere  
 SD = sediments/diagenesis  
 P = paleogeography  
 PMP = double measurements

Diagram (3)

# PHYSICAL PROPERTIES

## PHYSICAL PROPERTIES LABORATORY DATA:

- correspondence of downhole/lab. parameters
- in-situ conditions
- 3D, anisotropy
- scanning whole core (eg GRAPE)
- detailed measurement on plugs.

## PHYSICAL PROPERTIES IN SITU DATA:

- Geoprops probe principle.

## SAMPLING METHODOLOGY

- core orientation
- multiscanning for intact material
- plug prior to splitting

## DEVELOPMENT PRIORITIES

- feasibility study for core orientation
- Geoprops probe
- Seismic/resistivity cell
- Anelastic relaxation
- Spectral gamma sensor / ultrasonic sensor

## PHYSICAL PROPERTIES GROUP

- subgroup of DMP
- advise ODP through DMP

## TECHNICAL SUPPORT

- dedicated shipboard technician

## JOIDES Lithosphere Panel

### Chairman's Annual Report

1987

The Lithosphere Panel (LITHP) has met twice since the last annual PCOM meeting: in May at Lamont, and in October in Paris. The October meeting was held jointly with CEPAC. Both were three day meetings and, in general, I believe the semi-annual meeting schedule begun this year has worked out quite satisfactorily. The 3-day meetings are long enough to discuss important issues in sufficient detail, and meeting only twice a year appears to be frequent enough to provide the input needed by PCOM.

The panel accomplished three main tasks at these meetings: (1) completion of the long-awaited LITHP White Paper, (2) evaluation of the 3rd WPAC Prospectus, and (3) review of CEPAC proposals and development of LITHP thematic objectives in the CEPAC area. Our recommendations in each of these areas are briefly summarized below. I also include some comments on the panel advisory structure and long-term planning within ODP.

#### LITHP White Paper

In May, the LITHP White Paper was completed and distributed to PCOM and the regional and thematic panel chairmen. The purpose of this document was to identify important global lithospheric drilling themes, and develop specific recommendations on the drilling strategies and technical development required to achieve these objectives.

The panel identified the two most important long-term lithospheric drilling objectives as: (1) the completion of one or more deep holes into the lower oceanic crust, and (2) the establishment of a suite of crustal drill holes at both fast and slow spreading ridges. We recognized that achieving these long-term drilling objectives will require a major engineering development effort to improve crustal drilling technology, and strongly recommended that a major commitment of manpower and resources be devoted to this effort within ODP over the next 5-7 years. In the short-term, the panel identified a number of important lithospheric problems that can be addressed using existing drilling technology in intraoceanic convergent margins, on old oceanic crust, in young oceanic rifts and on oceanic plateaus and aseismic ridges. We argued that the most sensible lithospheric drilling strategy for the next five years was to continue to address these problems, with a parallel engineering development effort to obtain the drilling technology needed to achieve our longer-term lithospheric objectives.

I have heard some comments that the recommendations to come out of COSOD II, especially the Crust-Mantle Interactions Working Group, are at odds with the priorities established by LITHP, and that our panel has not been representing the views of the broader community. This impression is not correct. LITHP has always rated deep crustal drilling as one of its highest priority thematic objectives and on this count we are in full agreement with the Crust-Mantle Interactions Working Group. They did not rank ridge crest drilling as highly as LITHP, but I believe that is because LITHP represents a much broader constituency, including the hydrothermal community, who were included in a separate COSOD II working group. The problem in the lithosphere community is not on agreeing what we want to do, it is in having the drilling technology and the drilling time to achieve those objectives.

#### Evaluation of 3rd WPAC Prospectus

At our May meeting, we gave an overall appraisal of the 3rd WPAC Prospectus. The Bonin drilling program, the Japan Sea legs and the Lau Basin drilling all satisfy important thematic interests in the western Pacific and were all rated highly by our panel. In the case of the Lau Basin, we recommended the drilling concentrate on the magmatic evolution of the back-arc basin, especially the interplay between volcanism and tectonics in the early opening of the basin. Bare-rock drilling is not required to achieve these objectives.

The most serious omission in this prospectus, we felt, was the absence of a viable reference hole program which has been one of LITHP's highest thematic priorities in the region. Drilling a series of crustal holes outboard of the arcs in the western Pacific can address a variety of objectives emphasized in the LITHP White Paper. These objectives include: (1) determining the composition of sediment and igneous crust being circulated into the mantle at subduction zones, (2) testing whether there is a correlation between the composition of the subducting plate and the neighboring arc volcanics, (3) investigating the temporal and spatial variations in the composition of igneous crust, (4) determining the alteration history of oceanic crust, and (5) "ground-truthing" geophysical models of oceanic crust produced at a fast spreading ridge. While the term "geochemical reference holes" (and the awful cow-grass-milk analogy) connotes objectives (1) and (2), the priority LITHP places on these holes is based on the entire suite of objectives. We believe a minimum drilling strategy for a reference hole program in the western Pacific is one deep hole outboard of the Bonins and three shallower holes near the Leg 59/60 Mariana transect. This program requires 1 1/2 legs of drilling.

#### CEPAC Proposal Review and LITHP thematic objectives

During our past two meetings we have reviewed twenty-six CEPAC proposals and ranked them based on their thematic interest, maturity and suitability as part of a Pacific drilling program. Our panel's six highest thematic objectives, and the highest rated related CEPAC proposals are:

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**LITHP CEPAC Drilling Themes**  
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<u>Ranking</u>	<u>Theme</u>
1.	Structure of the lower oceanic crust Return to 504B (286E) (1-1 1/2 legs)
2.	Magmatic and hydrothermal processes at sediment-free ridge crests East Pacific Rise (76E Revised) (3 legs)
3.	Magmatic and hydrothermal processes at sedimented ridge crests Juan de Fuca Ridge (232E) (1-2 legs) Escanaba Trough (224E, 284E) Guayamas Basin (275E)
4.	Early magmatic evolution of hot spot volcanos Loihi (282E) (1 leg) Marquesas (291E)
5.	Crustal structure and magmatic evolution of oceanic plateaus Ontong-Java Plateau (222E revised) (1 leg)
6.	Composition and magnetization of old crust Jurassic Quiet Zone (285E) (1 leg)

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Two important points regarding these recommendations should be emphasized. The top four LITHP drilling themes in CEPAC require bare-rock drilling (EPR, Loihi), young crustal drilling (EPR, Juan de Fuca, Loihi) or high-temperature drilling (504B, EPR, Juan de Fuca, Loihi), none of which are technically feasible at the present time. If the highest priority lithospheric drilling objectives in CEPAC are going to be addressed in this next round of drilling, a major improvement in crustal drilling technology must be achieved over the next 3-5 years. This will require appropriate long-term planning by PCOM and a major commitment of manpower and resources by ODP/TAMU.

In addition to the development of new drilling technology, achieving the highest priority LITHP drilling objectives in the CEPAC area will also require the commitment of substantial amounts of drilling time. A realistic estimate of the drilling time required to address all six LITHP CEPAC drilling objectives is 8-10 1/2 drilling legs; just the top four drilling themes, which we consider a minimal lithospheric drilling program in CEPAC, will require 6-8 1/2 legs of drilling. We believe devoting this amount of drilling time to LITHP objectives in CEPAC is justified because these are, and have been, our panel's highest global thematic priorities. Only 3 legs (106, 109 and 111) will be devoted to these objectives in the first 5 years of ODP.

### Related recommendations:

In order to help achieve LITHP drilling objectives in CEPAC we have made the following related recommendations:

- 1) A minimum of four hard rock guidebases are required for LITHP drilling in CEPAC. Additional guidebases will be required if any near-axis seamount drilling is carried out.
- 2) An engineering test leg should be scheduled for sometime in the next 12-18 months to allow ODP engineers to field test their new hard rock drilling and coring systems prior to EPR or Loihi drilling.
- 3) It is desirable to attempt one leg of young crustal drilling as early as possible in the CEPAC program to allow ODP engineers to evaluate their new systems and have time to make necessary modifications.
- 4) A working group be established to develop a detailed drilling plan for EPR and Juan de Fuca Ridge/Escanaba Trough including strategies for hydrothermal fluid sampling, borehole logging and downhole geophysical experiments (including VSPs, crosshole seismic tomography etc.), as well as options for long-term instrumentation of the drillholes.

### Panel advisory structure and long-term planning in ODP

The LITHP has long been a vocal advocate of a more thematically driven drilling program that concentrates on few important global drilling objectives. We believe the circumnavigation philosophy that has driven ODP planning up until now has led to a regionalization of drilling priorities that has been a major impediment to achieving many of the long-term, global drilling objectives recommended at COSOD I and COSOD II. We are thus encouraged that PCOM is finally taking some positive steps toward dealing with this problem, and we hope that some fundamental changes in the panel advisory structure and long-term planning within ODP can be implemented within the coming year. Our panel has discussed how we would like to see the planning process carried out on several occasions. What follows is a summary of some of the ideas that surfaced in those discussions, plus my own personal opinions.

Several factors have contributed to the present situation. One problem, until very recently, has been the largely advisory role of thematic panels and their minimal involvement in the proposal review process or the preparation of drilling prospectuses. We would favor a more hierarchical panel structure in which proposal review and prioritization is done primarily by the thematic panels, with the regional panels evaluating specific drilling strategies and site locations. In this sense we support the recent changes in panel mandates approved by PCOM. However, this should be viewed as only an interim solution. I would argue that in a truly thematically oriented drilling program regional panels should be eliminated altogether. They should be replaced by panels or working groups organized around specific thematic drilling objectives - eg. Neogene paleoceanography or mantle geochemical mapping. These panels would report to the appropriate thematic panel and would be responsible for tackling specific questions such as where to drill, what drilling strategies need to be employed and what drilling technology is required. They might hold workshops to solicit input from the broader

community. They would be responsible for putting together a long-term (~5 yr) drilling plan that addresses their thematic objective. This plan could be based on unsolicited proposals submitted by the drilling community for individual legs, workshop recommendations or the panel's own deliberations. This plan would then be evaluated by the parent thematic panel, and these panels would work with PCOM to incorporate it into an overall global drilling program.

This change in the panel advisory structure would, I believe, help redirect ODP toward a more thematic approach to drilling problems. However, this change alone will not be enough unless there is a parallel change in the way long-term planning is carried out at the PCOM level. Long-term planning in the first five years of ODP has been based on a circumnavigation philosophy with an arbitrarily assigned, equal number of legs in each major ocean basin with no consideration to global thematic objectives, where they are best attacked, or how long it will take to achieve them. The result has been a program with a decidedly regional focus, with the regional and thematic panels fighting over the limited number of legs arbitrarily assigned to a particular area. As long as the long-term planning by PCOM is carried out in this fashion, no amount of fiddling with the panel structure, mandates, liaisons etc. is going to change the regional focus of the program. Long-term global drilling objectives require long-term global planning, and that cannot be effectively done with the present leg-by-leg, regional planning process.

We on LITHP would favor a fundamental change in the way long-term planning is carried out in the second five years of ODP (ie. after the conclusion of the planned WPAC and CEPAC drilling programs). As a first step, the plans for a second circumnavigation should be dropped altogether. Each of the thematic panels should be assigned the task of assembling a five year drilling program comprised of say 12 legs that would address the major global thematic objectives outlined in the COSOD I and II documents. In each case they would identify prioritized thematic drilling objectives, where in a regional sense the drilling should be carried out, and the amount of drilling time required. Each "thematic prospectus" would be reviewed by PCOM and used to construct a tentative five year drilling strategy outlining approximately where the ship will go and how much time it will spend in each area. For example, it may be decided to devote most of the first two years to paleoceanographic and tectonic thematic objectives in the Atlantic and Pacific with an engineering leg to test new crustal drilling technology. However, the entire third year might be devoted to drilling a deep crustal hole on old crust in the North Atlantic or western Pacific. That kind of drilling scenario would be impossible with the present planning structure, but might be feasible with this new approach. Once an overall five year drilling strategy has been established by PCOM, the thematic panels and their associated working groups would be charged with developing detailed drilling plans as described above.

Clearly, this kind of approach will not eliminate the problems that will inevitably arise when a variety of groups with competing interests are using a scarce and valuable resource like the drillship. However, I believe it could succeed in giving us the more thematically driven program that the drilling community wants.

Bob Detrick, LITHP Chairman  
October, 1987

# SOHP ANNUAL REPORT

1987

## A. MEETINGS: (2)

March - Menlo Park

Sept - Tokyo

SOHP applauds change to two meetings per year (with flexibility) and has adopted a regular schedule of meetings in Feb/March and mid-September.

## B. MEMBERSHIP:

After next meeting there will be no original members of the panel left (except the poor Chairman). The addition of two extra members (we now have 16) has improved discipline balance though we still feel rather thinly spread. We urge PCOM to review 1/3 rotation policy; with two meetings/year we have at least three new members every other meeting - an extremely inefficient situation.

## C. ENGINEERING DEVELOPMENTS:

Short term priorities:

1. continuous core recovery - particularly in:
  - a. mixed lithologies (will be critical for Kerguelen program)
  - b. sandy sediments
  - c. gassy sediments (pressure core barrel development)
2. improved core orientation for magnetic studies
3. improved pore fluid sampling
4. high-temperature sampling

Medium range priorities

1. continuous core logging:

The SOHP is extremely supportive of the downhole logging program and would like to see equivalent capabilities developed for recovered cores. In particular we would like to see a suite of laboratory tools capable of making continuous measurements of; density, porosity, (GRAPE) sonic velocity, attenuation, susceptibility, natural gamma-ray, resistivity, color, texture, grain size and mineralogy.



**Long-term priorities:**

1. ability to drill deep (2500-3000 m bsf) stable holes
2. ability to drill through salt

**Downhole logging:**

SOHP would like to see the following additional logging capabilities:

1. increased effort to log upper 100 m
2. downhole susceptibility measurements
3. formation micro scanner

**Other technology issues:**

1. recommend that dropping sinker bars directly after core barrel become standard practice - can save 30 minutes/core.

**D. SAMPLING POLICY/STRATEGY:**

1. more flexibility to co-chiefs and scientific party.
2. coordinated sampling and sample sharing is essential.
3. shipboard scientific party must retain highest priority - 'Manifest sample requests' should be approved only when there is little overlap with shipboard scientists interests.
4. Approved sample requests should be processed in a timely manner.
5. Review of sample request should include option to defer some sampling to core repository.
6. The SOHP is not happy with present policy of routine whole-round core sampling.
  - a. the best solution to sampling that needs whole-round sections is a dedicated extra hole.
  - b. where an extra hole is not possible, SOHP recommends that need for whole-round sampling be justified on hole by hole basis and suggests that small working groups (ie. Physical Properties and Geochemistry) be established to review and/or initiate whole-round sampling requests.

**E. SEDIMENT CLASSIFICATION SCHEME:**

The SOHP carefully reviewed the proposed TAMU sediment classification scheme and sought the advice of outside experts. Numerous modifications were suggested and these have, for the most part, been incorporated into the scheme. The SOHP now approves the proposed scheme and applauds the efforts of Mazzulo et al. in

putting together a comprehensive classification scheme that will greatly facilitate the comparison and interpretation of ODP results.

**F. INDIAN OCEAN RECOMMENDATIONS: (only those discussed in 1987)**

**LEG 115: Carbonate Saturation Profile**

1. that deepest 3 of 4 transect sites be drilled at shallower depths
2. that a core program consist of 4 transect sites plus MLD-2
3. if time permits, in order of priority, drill MLD-1, HPC at MP-1

**LEG 122: Exmouth Plateau**

1. strongly support recommendations of proponents though differ in priority of sites SOHP priorities:
  1. EP-7
  2. EP-10A
  3. EP-12
  4. EP-6
2. recommend that all 4 sites be drilled
3. request that TAMU explore feasibility of using Port Hedland as port stop and thus save significant steaming.

**LEG 123:**

1. AAP1B plus basement drilling
2. EP9
3. if basement drilling is unsuccessful we recommend that AAP2 be drilled

**G. WESTERN PACIFIC RECOMMENDATIONS: (in order of priority)**

Objectives and justifications can be found in SOHP minutes:

Program	Sites
1. N.E. Australia Margin* (* see SOHP Special Document)	NEA 1,2,3,4,5,6,8,9,10,11,13,14
2. Japan Sea	JS-2 (double HPC)
3. South China Sea (Basin)	SCS5 - with addition of industry data
4. Sulu Sea	<u>Sulu 4</u> , Sulu 5
5. South China Sea Margin	SOHP has not prioritized yet
6. Bonins	Bonin 6

The SOHP was asked to examine Nankai Transect sites for a possible geohydrology program. The SOHP acknowledges the importance of fluid flow in problems of tectonism, diagenesis and global chemical fluxes and will seek opportunities to incorporate geohydrology objectives into legs and sites. We have not, however, received any proposal for such work in the Nankai Transect region (we have received no Nankai proposals) and therefore cannot respond to this request.

#### H. CEPAC RECOMMENDATIONS:

The SOHP has developed prioritized themes for CEPAC drilling and reviewed 33 proposals in terms of their relevance to these themes. Thus far 17 proposals have been eliminated.

##### PROGRAMS:

1. Neogene Paleoenvironment:

High-resolution surface and bottom water Neogene history of the Pacific and its relationship to paleoclimate, sea level and tectonic events.

Relevant proposals: 221, 142, 195, 271, 199, 259, 257, 275

2. Mesozoic Paleoceanography:

Evolution of late Mesozoic through Paleogene paleoclimates in high and low latitudes

Relevant proposals: 202, 203, 260, 182, 195, 222, 199

3. Sea level: Atolls and Guyots (SLAG)

Drowning history, sea level and subsidence curves; early Cretaceous to Recent shallow water biota, diagenesis as a function of sea level history and volcanic episodicity

Relevant proposals 202, 260, 203

4. Anoxic Events

Time stratigraphy, distribution and significance of oceanic carbon in low latitude open ocean settings. Correlation with other Cretaceous anoxic events; role of black shales in global carbon cycles; importance of carbon preservation vs productivity; effect of volcanism and role of bathymetry and climate in developing upwelling.

Relevant proposals: 253, 275/257, 182

5. Old Pacific Crust

Our only chance to look at the Cretaceous open ocean

Relevant proposals: 285/261

**6. Metallogenesis and Diagenesis**

The role of pore fluid movement and reactions in ore formation, tectonism and global chemical fluxes; physical, chemical and mineralogical changes in sediment column as a function of time, temperature, depth and environment.

Relevant proposals: 233, 284/224, 275/257

**7. Fans and Sedimentary Processes**

Modern analogs to ancient deposits; test models for fan development; relationship of turbidites to tectonic and sea level history.

Relevant proposals: 250, 271, 275

**I. ODP PLANNING PROCESS: (see Sept minutes for full discussion)**

1. process must be thematically driven
2. planning structure must be hierarchial to insure it is thematically driven
3. planning must be long-term and global in perspective
4. program must be open to, and responsive to all proposals – but a strictly proposal-driven program makes coherent and efficient long-term planning difficult. Instead we propose a thematically-driven 'proposal-responsive' system.
5. The mandate of SOHP is too broad. We propose several working groups for subdisciplines (organic chemistry, physical properties, etc.)

**INDIAN OCEAN PANEL ANNUAL REPORT**

**PCOM Meeting, Sunriver (Oregon)**

**30 November - 4 December, 1987**

1. The Indian Ocean Panel met twice in 1987 : 31 March-1st April, 1987 at Lamont Doherty Geological Observatory (Palisades, N.Y.), 21-23 October, 1987 at Consiglio Nazionale delle Ricerche (Rome, Italy).
2. IOP membership rotation. J. Curray (US) and J. Sclater (US) were replaced in 1987 by T. Davies (US) and E. Vincent (France). H. Baecker (FRG) replaced U. von Rad (FRG). Substitute of R. White (UK) to be nominated. D. Falvey (member at large), W. Prell (US), and J. Cochran (US), will rotate off the panel in 1988 ; substitutes have been proposed to PCOM.
3. The Indian Ocean drilling program started with leg 115 on 19 May, 1987. Legs 116 and 117 have been completed and Joides Resolution is now operating on the Southwest Indian Ridge (Leg 118).
4. Leg 115, 19 May-2 July, 1987 (co-chief scientists : R. Duncan and J. Backman), was successful in achieving its principal objectives of investigating the history of hotspot volcanism associated with the Reunion hotspot and Neogene carbonate production and dissolution in tropical Indian Ocean waters. A total of 21 holes were drilled at 12 sites (sites 705 to 716). Sites 705 and 706 are located on the eastern shoulder of the Mascarene Plateau (Nazareth Bank). Site 707 is located between the Saya de Malha Bank and Seychelles. Site 708 is in the abyssal plain southwest of Madingley Rise. Sites 709, 710 and 711 are located on or close to the Madingley Rise. Sites 712 and 713 are located on the northern margin of the Chagos Bank. Sites 714, 715, and 716 are located on the Maldives Ridge. Total core recovered was 3075 m, including 124 m of basement rock, with an overall recovery of 77.7 %.
5. Leg 116, 7 July-19 August, 1987 (co-chief scientists : J. Cochran and D. Stow), in the Central Indian Ocean Basin 600 km south of Sri Lanka, was designed to investigate both tectonic and sedimentary processes recorded in the sediments of the distal Bengal Fan in a region that has undergone significant intraplate deformation. A total of ten holes were drilled at three sites. Site 717 was a reference hole in the thickest sedimentary section on a fault block. Site

719 was drilled further up on the same block. Site 718 was drilled on a heat flow high on the next block south, to investigate hydrothermal circulation and the influence of high heat flow on diagenesis.

6. Leg 117, August-October, 1987 (co-chief scientists : W. Prell and N. Niitsuma), drilling plans have addressed two major scientific objectives : the evolution of the Indian Ocean summer monsoon and the history and origin of the Owen Ridge. Twelve sites (720 to 731) were occupied on the Oman Margin, Owen Ridge, and Indus Fan (preliminary report not yet available).

7. Leg 118, October-December, 1987 (co-chief scientists : R. von Herzen and P. Robinson), plans include one or more holes in the Atlantis II Fracture Zone of the Southwest Indian Ridge. The primary goal will be to drill a deep hole (500 m) in exposed upper mantle peridotite on a median ridge of the fracture zone with the aid of a hardrock guide base. Secondary objectives are to drill a series of shallow basement holes across the floor of the fracture zone and to sample basement in active and fossil nodal basins.

8. Kerguelen-Prydz Bay Drilling Program, Legs 119 and 120 (co-chief scientists : J. Barron and B. Larsen for leg 119, R. Schlich and R. Wise for leg 120). Legs 119 and 120 will complete a latitudinal transect in the Southern Ocean between Kerguelen Island (49°S) and Prydz Bay, Antarctica (67°S). This transect will study the Late Cretaceous to Holocene paleoclimatic history of East Antarctica, the nature, the origin and tectonic history of the Kerguelen Plateau and the Late Mesozoic rifting history of East Antarctica and India. Site KHP-1, KHP-3 (alternate), SKP-1, SKP-2, SKP-4A, SKP6A, SKP-8, PB-1 to PB-4 and SKP-6B (alternate) have been accepted by the Pollution Prevention and Safety Panel. Site SKP-3 has been limited to a drilling depth of 800 m, this precludes the original scientific objectives (Mesozoic stratigraphy and tectonics). Deepening sites KHP-1 and/or SKP-2 could provide the corresponding information ; IOP recommends to define a new locality, with thinner Neogene section to allow sampling the lower Mesozoic section.

9. Broken Ridge Drilling Program, Leg 121 (co-chief scientists : J. Weissel and J. Pierce). Drilling at Broken Ridge should allow to establish whether the sediments deposited before rifting indicate that the ridge was deepening or shallowing with time and thus to discriminate between rifting processes. IOP endorses

the proposed program but suggests to shift site BR-1 further downslope to the north, to allow the determination of detrital remnants of the truncated section which might be incorporated in younger sediments.

**10. Ninetyeast Ridge Drilling Program, Leg 121 (co-chief scientists as above).** The objectives of drilling on the Ninetyeast Ridge are to better constrain the age progression along the ridge, to obtain basement samples to further characterize the basalt geochemically, and to achieve from high resolution Neogene sections paleoceanographic reconstructions of the Indian Ocean.

- . IOP recommends for the northern (90°ER-1) Ninetyeast Ridge site the proposed composite hole (NNER-9 and NNER-10) which will sample the complete upper (Neogene) and lower (Paleogene) sedimentary sections, and penetrate the underlying basement (50 m).

- . IOP endorses for the central (90°ER-2) and southern (90°ER-5) Ninetyeast Ridge sites the J. Newman and J. Sclater preferred options : central 90°E Ridge site at 17.08°S-88.11°E and southern 90°E Ridge site at 27.33°S-87.46°E.

- . If time precludes drilling all three sites, IOP recognizes that the central and northern 90°E Ridge sites have the highest priority.

- . IOP recommends HPC for the Neogene-Oligocene sedimentary sequence at all 90°E Ridge sites and double HPC (if time permits) at the northern and central sites.

- . IOP recommends, that if drilling conditions permit, the 90°E Ridge sites be drilled to more than 50 m into basement ; the highest priority for deep penetration corresponds to the central 90°E Ridge site.

**11. Exmouth Plateau Drilling Program, Leg 122 (co-chief scientists : U. von Rad and B. Haq).** The main drilling objectives of the leg are : to test the Jurassic, Cretaceous and Tertiary sea level curve, to study the differential subsidence and paleobathymetric development, to study the early-rift history and subsidence/stretching models, and to study the post-breakup evolution of the plateau. IOP discussed in detail the merits of the selected sites including the new EP-12 proposed site.

- . IOP accepts the importance of the tectonic questions addressed by both EP-2A and EP-12 sites and does not consider them as alternates.

- . IOP considers that the three sites EP-6, EP-7, and EP-12 could provide data relevant to the global sealevel curve.

- . IOP notes some safety problems at site EP-12 and considers that a better formulated drilling proposal is essential to demonstrate a clear relationship between the anticipated stratigraphy and the postulated tectonic model.

. IOP recommends the following priorities (in that order) : EP-7, EP-10, EP-12 and EP-2A, if a more definitive EP-12 proposal is presented and if there are no safety concerns. If the tectonic-stratigraphic relationship cannot be demonstrated or safety considerations preclude drilling EP-12, the priorities should be EP-7, EP-10, EP-2A, and EP-6.

**12. Argo Abyssal Plain Drilling Program , Leg 123 (co-chief scientists : F. Gradstein and ?).** Drilling in the Argo Abyssal Plain should allow to obtain a high resolution Thethyan stratigraphic section and to sample the oldest Indian ocean crust.

. IOP confirms the priorities of drilling first site EP-9E on the Exmouth Plateau, followed by site AAP-1B with approximately 200 m of basement penetration.

. IOP favors, if time is available, double-coring of the critical Upper Jurassic-Neocomian section in a second Argo Abyssal Plain site (AAP-2).

### **13. Future of the Indian Ocean Panel - Next meeting**

In the immediate future, the Indian Ocean drilling program is now set for the complete 9-leg schedule. The IOP will not meet again before the completion of Leg 123 ; at this time (November 1988) IOP desires to meet together with a co-chief from each leg to 1) evaluate the 9-leg program, 2) summarize results, 3) make recommendations about remaining important Indian Ocean program.

In the long-term future, IOP first notes the importance of this regional panel for the Indian Ocean drilling program. In fact, the entire program was constructed from proposals initiated through the IOP. We believe that the IOP must continue to exist in some form as an advocate for future programs in the Indian Ocean which address thematic objectives, to encourage workshops, increase site surveys of poorly investigated regions.

### **14. Structure of the ODP advisory panels**

Regarding the general structure of the advisory panels, IOP supports the intended changes toward a thematically driven drilling program. In the event that regional panels are disbanded or greatly atrophy there is a danger that drilling will be focused only in the most familiar regions, without necessarily identifying the best region to investigate thematic objectives. IOP strongly recommends that the thematic panels be increased to include members with strong regional expertise and familiarity with data-sets. This membership may be tailored to true projected path of the drillship.



## 1987 WPAC Executive Summary

1. Meetings: WPAC met twice in 1987: in March, to prepare the 3rd Prospectus; and in November to respond to PCOM and thematical panel recommendations.
2. Clearances: Indonesian clearances have been problematic by being denied or delayed, and by requiring an Indonesian co-chief scientist, that cores and data be owned by Indonesia, and that publications first be cleared by Indonesia, terms which are unacceptable to ODP. Similar terms prevented drilling in the Red Sea. We note that free access to the data are guaranteed to Indonesian participants, and hope that Indonesia and any other countries considering such restrictions will modify their requirements.
3. Sunda: The planned MCS site survey was not done. TECP continues not to rank Sunda highly because of regional complexity and difficulties of obtaining clear information about arc-continent collision by drilling at the revised sites which Silver proposed. Future proposals emphasizing the Wetar Strait area may interest TECP more. WPAC drops Sunda drilling pending new proposals.
4. Banda-Celebes-Sulu-South China Sea Transect: WPAC and the thematic panels concur that the stratigraphic history and age of the basins is the most important single focus. Therefore, WPAC agreed with PCOM to defer Banda 3 and Sul 4. However, the transect's irreducible core is one site in each of the South Banda (Banda 1), North Banda (Banda 2), Celebes (CS 1), and Sulu (SUL 5) Basins, plus 1 in each of the southwestern (SCS 5) and eastern (SCS 9) South China Sea. Each of these five basins, and the two parts of the South China Sea, may have a different age, origin, and sedimentologic and tectonic history. While they can be ranked, and cut to fit into one leg, sites which are scientifically and technically sound will be eliminated arbitrarily.

The southeast Asian marginal basins are nested between a series of arcs, trenches and microcontinental terranes at the hub of the Asia-Australia-Philippine-Pacific Plates convergence. Their stratigraphy and paleomagnetism record a history of surrounding volcanism and deformation, as well as basin development, that is critical to unravelling the tectonic and paleo-oceanographic evolution of an area that many geologists use as the best modern analog to Alpine, Caledonide and Laramide evolution. The surrounding land areas contain a prolific and diverse suite of Tertiary arc and ophiolite terranes. Competing models/reconstructions concerning processes of arc reversal, obduction, back-arc spreading, basin entrapment, strike-slip slivering and arc collision could be tested and refined if the basins history could be compared to the land geology. Drilling in this type region is the only way to provide the necessary information.

The Banda and SCS5 sites have clearance uncertainties; the Sulu site has safety uncertainties due to high heat flow and gas potential. In response to PCOM's charge to provide a one-leg scenario for 1988 with sufficient viable alternate sites, WPAC proposes to break the transect into two ~40-day legs one in 1988 and the other in 1990. The 1988 3/4 leg should attempt the three sites with clearance uncertainties, with the other 3 sites as alternatives. The 1990 3/4 leg could complete the other 3 sites with the advantage of a years delay for obtaining clearances.

5. Bonin I and BonMAR (renamed from Bonin II): Bonin I and half a leg of BonMar to drill Bon 6 remain unchanged. Site surveys are complete. WPAC agreed with LITHP and TECTP that the summit of Mariana "Conical Seamount" (MAR 3a) has the highest priority for drilling forearc diapirs. Discussion dwelt on whether the third site for BonMAR should be at Mar 3, or at Bonin7. A second hole in the Marianas would permit studies of the unroofing history and, via inverted stratigraphy, the petrology of the intruded forearc. Drilling both Mariana 3 plus Bonin 7 would complete both the Bonin and Mariana transects, a comparison of fluid fluxes between two forearcs and at two different heights above the subducted plate. WPAC divided evenly between these two options. Logistics favor doing Mar 3 + 3a first, with Bonin 7 as a high priority alternate. Time may be saved by drilling less than 700m into the diapir at Mar 3, thus permitting both options above.

6. Japan Sea I and II: Sites remain as in the Third Prospectus, J1d may need to be moved, based on new site survey information. Suyehiro et al.'s new proposal for implacement of a long-term recording seismograph rather than the week-long oblique experiment previously proposed, at site J1b was endorsed. Suggestions from LITHP to move J2a for basement objectives compromise the primary objectives of the hole and were not endorsed.

7. Nankai: The one approved leg for 1988 includes 20 days of logging and special experiments, which is adequate for substantial downhole experiments. WPAC supports development of the Karig Tool which could be tested during 1988.

A second leg could combine two of three objectives: geotechnical, fluid geochemistry of the accretionary prism, and Zenisu. New proposals with fluid geochemical objectives are encouraged. Taira's revised Zenisu proposal was reviewed and re-affirmed as a viable opportunity to gain information about intra-oceanic plate shortening by drilling. Although WPAC agrees that the process of ophiolite emplacement is important, members are divided whether a half leg is better spent on Zenisu or on additional Nankai sites. Zenisu's youth, background information, and geohydrology provide a unique drilling opportunity to evaluate the timing, mechanics, and role of fluids in ophiolite emplacement, whereas Nankai's objectives will be addressed elsewhere and already occupy one and a half legs. However, hydrogeologic characterization of Nankai may require drilling at more than two sites.

8. Geochemical Reference Sites: LITHP's proposal is for one and a half legs, drill one deep re-entry site near Bonin 8 and 3 shorter holes near Mariana site 452. WPAC cannot assess the regional suitability of specific sites with which to meet LITHP's thematic objectives until a more mature proposal is provided. More specificity is needed about the site surveys of proposed sites, and their rationale. The Bonin site might best be located on the well-defined magnetic anomalies east of the fracture zone at 31° N where there are crossing MCS and refraction lines. Those in the Marianas might use the Conrad MCS lines near site 452. Whether there are differences in subducting sediments between the two locales can be determined only by drilling. However, whether plausible differences in sediment can account for known differences in the geochemistry of volcanic rocks in the two arcs needs to be predicted in more detail than in existing proposals. If, for example, the modern geochemical fluxes in the Mariana volcanic arc-forearc pair become better known by drilling (including site 3a) than in the Bonins, then perhaps the deep hole should be in the south not north. Or, if the greatest Quaternary geochemical anomalies on the overthrust plate occur in the northern Mariana seamounts, then reference sites might best be placed opposite here.

9. South China Margin. Tectonic objectives are the driving force for this proposal. WPAC recognizes that the crustal structure of the margin is as well imaged as any continental margin worldwide, and that its Tertiary age is ideal for resolving time/depth relationships. Because these relationships can test rifting models and can be determined only by drilling, WPAC endorses the proposal and awaits thematic panels' reviews of the current revision.

WPAC believes that the subsidence history of this margin can be evaluated quantitatively using the proposed sites, and that a minimum of four sites are necessary to evaluate the rifting-subsidence history across the margin. Site 4 is above the hinge zone, where the crust is little attenuated. Sites 2 and 3 are in the region of transitional crust and are at significantly different distances across the transect. Both sites 3B and 3C would be required if the differential subsidence on either side of the master detachment surface is to be documented. Site 1 is on oceanic crust and would date the onset of spreading as well as provide a complete stratigraphic section of basin evolution. Our panels site priorities are 3 and 2 before 4 and 1.

Although the conjugate margin is not recommended for drilling at this time, abundant geophysical and sample data, including published well sections, exist against which the China margin data can be compared. In addition, WPAC considers as sound the SOHP objectives to include the SCS as a regional example of siliciclastic sedimentation, and to utilize the contrasting tectonic history of the various marginal basins to distinguish tectonic versus sea level controls on submergence histories.

10. Northeast Australia. WPAC concurs with SOHP's reply to PCOM justifying site NEA1-6 and 8-10, and expects this program to be included as a full leg in the second year of drilling. Sites 11 and 14 are to be alternates. Site 13 is not endorsed because similar sequences also are known from other margins which are not drifting into the tropics.

WPAC agreed with SOHP's arguments why a comparison of stable sites 1-5 versus subsiding sites 6, 8, 9 and 10 may resolve causes of eustatic sea level changes. Site survey work is complete and extensive and results are awaited eagerly by SSP. Drilling times are conservative, and mining technologies may be important. Clearances seem probable, although whether permission will be granted for 800-1000m holes still needs to be established.

WPAC concurs with thematic panels that the proposal to study the Mississippi Valley Type of mineralization should be accommodated within the sites listed above, as part of planned studies of diagenesis. This requires that the holes be deep enough to achieve MVT's objectives, but not additional or different sites. There is insufficient time to accommodate MVT proponents' request to use packers, but either pore fluids or drill string packers may suffice. Although LITHP endorsed an additional half-leg for MVT objectives, it gave this idea low priority and WPAC does not propose it.

11. Vanuatu: WPAC replied to PCOM's request for a one-leg program by endorsing the proponents' proposal to retain sites DEZ1, 2, 4, 5 and IAB 1a and 2a. Loss of the backarc group is deplored. Site survey work is complete, and results are being processed. As a result, several sites may be moved slightly, and drilling time may be reduced by up to 9 days, thereby allowing all 6 sites to be completed in one leg.

12. Lau-Tonga: WPAC endorsed LITHP's proposal in which LG2, <sup>LG3,</sup> LG1 or 7 and LG6 constitute the basic program. The four holes can be drilled in one leg and, WPAC believes LG6 which has been a high LITHP priority, should be considered as an essential, not alternate, site. The forearc site LG6 would provide the history of arc volcanism during the pre-, syn-, and post-rift stages of back arc spreading. This is an integral component to the thematic focus of Lau-Tonga drilling which concerns arc rifting and backarc spreading.

13. Mining Technology: WPAC recognizes the desirability of testing proposed high-rpm drilling of small diameter holes prior to the Bonin, Northeast Australia, Lau-Tonga, as well as the East Pacific Rise legs. A location with sufficient survey information (Sea Beam, bottom photographs, ALVIN dives) for a bare rock site in zero-age crust exists at 18°N in the Mariana back-arc basin. An engineering mini-leg could be accommodated early in the WPAC schedule, following Leg 124.

14. Scheduling. A recommended schedule for FY89 and FY90 is:

Leg	Objective	Destination	Dates	Total Days
124	Banda-SCS	Manila	23.10-19.12	<42
-	Engineering	Guam	?	
125	BonMar	Tokyo	Jan-Feb 88	(56)
126	Bonin I	Tokyo	Mar-Apr	(56)
127	Nankai	Yokohama	May-June	58
128	Japan Sea I	Niigata	July-Aug	54
129	Japan Sea II	Nagasaki	Sept	38
-	Dry Dock		Oct	14
130	Geochem. Ref	Guam	Nov-Dec	(56)
131	Nankai II	Nagasaki	Jan-Feb	(56)
132	S. China Margin	Hong Kong	Mar-April	(56)
133	Banda-SCSII	P. Moeresby	May	-40
134	NE Australia	Noumea	June-July	(56)
135	Vanuatu	Suva	Aug-Sept	(56)
136	Lau-Tonga	Pago Pago	Oct-Nov	(56)

October 13, 1987

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To: Nick Pisias, PCOM Chairman

From: S.O. Schlanger, CEPAC Chairman

Subject: CEPAC Annual Report to PCOM

**A. Activities of CEPAC since the PCOM meeting in Hawaii, January, 1987**

1. CEPAC has met twice: at Northwestern University, March 30-31, 1987 and in Paris at the IGP, September 29-October 2, 1987.
2. Efforts at both of these meetings were directed at preparing the First CEPAC Prospectus (Northwestern meeting) and the Second CEPAC Prospectus (Paris meeting). Copies of the Second CEPAC Prospectus are included in the material sent to PCOM members for the November Annual meeting in Oregon. It should be noted that the Second Prospectus includes about 22 Legs of drilling.

**B. Issues regarding future planning of ODP**

1. PCOM should be aware that the COSOD-II report will in all probability contain recommendations for the use of diverse drilling platforms (e.g., the proposed French light drilling ship for HPC and reentry tasks and the use of chartered platforms for long-term drilling sites such as deep margin holes that might take a year or more to complete). Adoption of the probable COSOD-II recommendations will (besides current problems) create a demand for a new structure, or even parallel planning structures.
2. The recent directives from PCOM on the changed role of regional panels have severely disturbed members of CEPAC in that some of these people now regard their role as "rubber-stamping", "superfluous" and/or "scut-work". My personal opinion, based on discussions with CEPAC members is that the role of regional panels as such needs to be re-examined. Could we use only thematic panels with ad hoc regional experts who would be appointed as advisers as each region approaches on the long-term planning schedule?
3. CEPAC finds that advice on drilling problems that are particularly severe in certain regions are apparently not addressed far enough in advance. I particularly refer to the chert-chalk-limestone recovery problem. As per instructions at the PCOM Hawaii meeting I prepared a report for a possible land test site in France for drilling cherty sequences. I since found out, in passing from a UK colleague, that the British submitted a similar proposal for drilling in cherty sections. We are not getting any formal feedback on these problems. When pressed at the CEPAC Paris meeting Adamson allowed as how the chert problem, to his best knowledge had not yet risen to the top of the technical agenda. Maybe this is not the case but it is CEPAC's perception at this time. I must emphasize that **THE SUCCESS OF MUCH OF THE PACIFIC PROGRAM WILL DEPEND ON OUR ABILITY NOT ONLY TO PENETRATE CHERTS BUT TO RECOVER WHOLE CORES.**

**C. Outlook for the CEPAC program**

1. The Second CEPAC Prospectus contains enough well-based science to take up ~22 Legs of drilling and proposals are still coming in. PCOM needs to firmly and decisively address the problem of the "18 month" syndrome, particularly with the EPR program in mind.
2. Site surveys for many of the CEPAC programs are well in hand but the US system of funding is still inadequate for short-term "filler" survey needs that pop up. JOIDES needs to support USSAC in it's request for funds for "site specific surveys".

## ARP SUMMARY OF ACTIVITIES: 1987

On April 2 and 3, 1987, the Atlantic Regional Panel (ARP) met at Woods Hole Oceanographic Institution, Woods Hole, MA. This was the only meeting of ARP during calendar 1987.

The ARP had several drilling proposals on its agenda for review, but most of the members felt that it would be appropriate to spend time first on a group consideration of the members' regional/thematic interests in order to develop a viable context for the future consideration of such proposals. Each member was then asked to summarize his personal perspectives on important "Atlantic" problems and the best place(s) to consider their study/solution. The group then summarized and grouped these opinions under a number of major "Atlantic" topics. What follows probably constitutes the ARP's first (only?) attempt at outlining a "white paper".

### Topics:

#### I. Continental Break-Up

- A. Sequences of tectonic events (including the effects of episodes of vertical tectonism and the evolution of sedimentary sequences), e.g.'s various (conjugate and non-conjugate) passive continental margins: Galicia (tectonics) and Cape Basin (sediments).
- B. Mechanisms of continental crust deformation and extension during rifting, e.g. Galicia.
- C. Development, evolution and re-integration of (continental) microplates, e.g. Rockall-Hatton-Greenland.
- D. Magmatic events and their evolution (pre-, syn- and post-separation), e.g.'s selected (sediment-starved) margin features: J-Anomaly Ridge and Madeira-Tore Rise.
- E. Identifying asymmetries in crustal structure across conjugate passive continental margins, e.g. Galicia-Newfoundland.
- F. Ocean-continent boundary structure and evolution, e.g.'s a variety of passive margins of different age and structure: particularly Galicia-Newfoundland.
- G. Sheared continental margins, e.g. Gulf of Guinea.

#### II. Evolution of Oceanic Lithosphere

- A. Slow-spreading ridges, including their deformation, hydrogeology and the history of magma chambers, e.g. Kane FZ/MARK area.
- B. Transform-ridge discontinuities, e.g.'s large-offset equatorial Atlantic FZ's.
- C. Cretaceous-Cenozoic intraplate volcanism, e.g. Venezuelan Basin.
- D. Paired aseismic ridges, e.g. Walvis Ridge/Rio Grande Rise.



- E. Emplacement of ultramafics into oceanic crust, e.g. MARK area (Site 670).
- F. Processes of aging in old oceanic crust; comparisons with ophiolites, e.g. Blake-Bahama Basin in vicinity of Blake Spur magnetic anomaly.
- G. Seaward-dipping wedges\*, e.g.'s Rockall-Hatton, SE Greenland. \*ARP felt that this feature could have been listed under Topic I. as well.

### III. Convergence and Collision

- A. Continent-continent, e.g. Hellenic arc/Mediterranean.
- B. Accretionary tectonics on thickly-sedimented oceanic lithosphere with normal convergence, e.g. Barbados.
- C. Strike-slip convergent margins, e.g. North Scotia Ridge [continent-ocean], Azores-Gibraltar Ridge [ocean-ocean].
- D. Fore-arc basin evolution, e.g. Barbados.

### IV. Paleoceanography

- A. Gateways
  - opening, e.g.'s from south to north: Agulhas FZ, Walvis Ridge/Rio Grande Rise, equatorial shear zone, Iceland-Faeroes Ridge, Davis Strait and others.
  - closing, e.g.'s eastern Mediterranean, western Caribbean.
- B. Circulation patterns.
  - 1. History of deep circulation, e.g.'s eastern vs. western basins; northern vs. southern basins.
  - 2. Upwelling, e.g.'s northwest Africa, southwest Africa.
- C. Black shales.
  - 1. Pelagic vs. terrestrial signals, e.g. Madeira-Tore Rise.
  - 2. Distribution in space and time.
- D. Deep Stratigraphic Tests and standard reference sections, e.g.'s every major Atlantic depocenter.
- E. Initiation of glaciation--Arctic vs. Antarctic.

### V. Eustatic Sea Levels Through Time

- A. Timing and magnitude of eustatic sea level events, e.g.'s eastern U.S. and Canada, Cape Basin.
- B. Controls on the sedimentary record: shelf/slope/rise/abyssal plain continuum, e.g.'s transects of various margins.

### VI. Catastrophes

A. Impacts, e.g. Montaignais structure, Scotian shelf off Nova Scotia.

Other Business:

Summary of ARP-endorsed workshop activities:

1. South Atlantic Workshop: funded by JOI-USSAC and conducted April 6-8, 1987, at Woods Hole Oceanographic Institution. Convener: J. Austin. Report to be published fall, 1987.

2. Caribbean Workshop: funded by JOI-USSAC and scheduled for November 17-21, 1987, in Jamaica (Discovery Bay). Convener: B. Speed.

3. Mediterranean Workshop: to be held in Europe (perhaps Greece) in October, 1988. Conveners: J. Mascle, with A. Maldonado (Spain) and Makris (Greece). ARP established an informal subset of itself, consisting of Mascle, Hemleben and Speed, to maintain communication between ARP and the Mediterranean workshop as it develops.

4. Central Atlantic Workshop: proposal not yet written, but Tucholke/Klitgord will either write it themselves or get someone to do it. ARP felt that this workshop should be held no later than late spring-early summer, 1988.

Panel Rotation:

1. After next meeting, K. Klitgord plans to rotate off. Suggested replacements were J. Karson (Duke), J. Fox (U.R.I.) and H. Dick (W.H.O.I.).

Next Meeting:

1. Barring action by PCOM to disband ARP, Austin will request Copenhagen, Denmark as the next meeting spot. Time: mid-late March, 1988. H.-C. Larsen has agreed to host that meeting.

1. 1987 has been an excellent year for SOP, in which the first Antarctic drilling since 1974 has come to fruition, in the shape of two very successful legs. Leg 113 was able to map the development through the Cenozoic of the present circum-Antarctic water mass, with its characteristic siliceous biofacies. We have in prospect a first-class combined stratigraphic record in this water mass, involving siliceous and calcareous microfossils, magnetic reversals, strontium, oxygen and carbon isotopes. There is a record of the separate development of the East and West Antarctic glaciations, and the start of an understanding of Antarctic Bottom Water fluctuation through time. Leg 113 failed to recover Paleogene and Late Cretaceous sediments with a direct record of pre-glacial continental climate, but in recompense found the first evidence from East Antarctica of Early Cretaceous restricted circulation, following Gondwanaland break-up. Underway and basement data seem likely to establish the age and origin of Maud Rise.

Leg 114 recovered excellent siliceous and calcareous pelagic sections from the sub-Antarctic water mass and its southern boundary, throughout the Cenozoic and Late Cretaceous, which will complement and extend those of Leg 113. The effects of opening and further developing the gateway into the South Atlantic, and later Drake Passage, are clearly seen in the sediments, and the origin and evolution of the Northeast Georgia Rise seem likely to be resolved. Particularly in view of the atrocious weather conditions encountered, the achievements of the entire Leg 114 shipboard party are to be applauded.

2. The second half of the planned Southern Ocean drilling offensive is about to begin (in mid-December), and seems in good shape. The most important of the original Southern Ocean Panel targets are preserved within Legs 119 and 120, particularly the north-south paleoceanographic transect of the southernmost Indian Ocean, including Prydz Bay on the continental margin. These legs will provide a valuable check on the results of Legs 113 and 114, and in many instances will greatly improve upon them. Drilling in Prydz Bay stands a good chance of recovering direct evidence of the Paleogene continental climatic decline into glaciation, seen only indirectly by Leg 113, and of testing some of the more end-member hypotheses of glacial history. Leg 120 will also examine Kerguelen Plateau Mesozoic history and basement evolution. SOP applauds the decision to send an ice picket boat with Leg 119, but hopes it will not often be needed.

3. The main lesson of Legs 113 and 114, and the anticipated lesson of 119 and 120, is that high-latitude drilling is no longer encumbered by a narrow "weather window", in that JOIDES Resolution can drill in much worse conditions than could Glomar Challenger. A regular 2- or 3-leg Southern Ocean drilling season could be mounted in any austral summer, with only perhaps one most southerly leg having to be carefully timed to take account of a narrow ice (not weather) window. The question which Southern Ocean proposals always faced previously -

"But can you drill it somewhere else?" - applies now with correspondingly less force. The main technical problem, recovery of coarse, unconsolidated sediment, is common to all latitudes.

4. SOP views its most useful function in the future as a simple projection of what it has done in the past. It wants to continue to act as a strong and semi-thematic supporter and friend of Southern Ocean drilling, with permission to develop or originate proposals as necessary. It does not consider that, with no role or only a book-keeping role for the SOP, Southern Ocean earth science and drilling can be as vigorous and fruitful as it is proving at present. The thematic panels in the past have not always understood the aims or peculiarities of Southern Ocean drilling proposals, before SOP intervention on their behalf.

The SOP believes that with much less drastic revision than the effective neutralising of a host of active scientists in the regional panels, the ODP can achieve a strong thematic drilling program. If the regional panels are neutralised, PCOM will find this more difficult to achieve, not easier, and will be widely seen to be more interested in the cosmetic than in the substance.

5. At its most recent meeting, the SOP examined South Pacific drilling proposals, in advance of any review by the thematic panels under the new regime. There is now a reasonably large body of proposals which appear to be worth consideration by the regional panels. SOP comments are being relayed to proponents, so that proposals may be revised if so desired before any Spring review. Among the more interesting are;

Ross Sea drilling, for East-West Antarctic motion, Transantarctic Mts uplift and its considerable effect on glaciation, and for the continental glacial record.

A composite Australian - Antarctic proposal looking at conjugate margins (1 ice-loaded, 1 not), the Discordance and the early opening history.

A north-south Cenozoic paleoceanographic transect on the EPR flank to map Polar Front and Sub-tropical Convergence growth and migration.

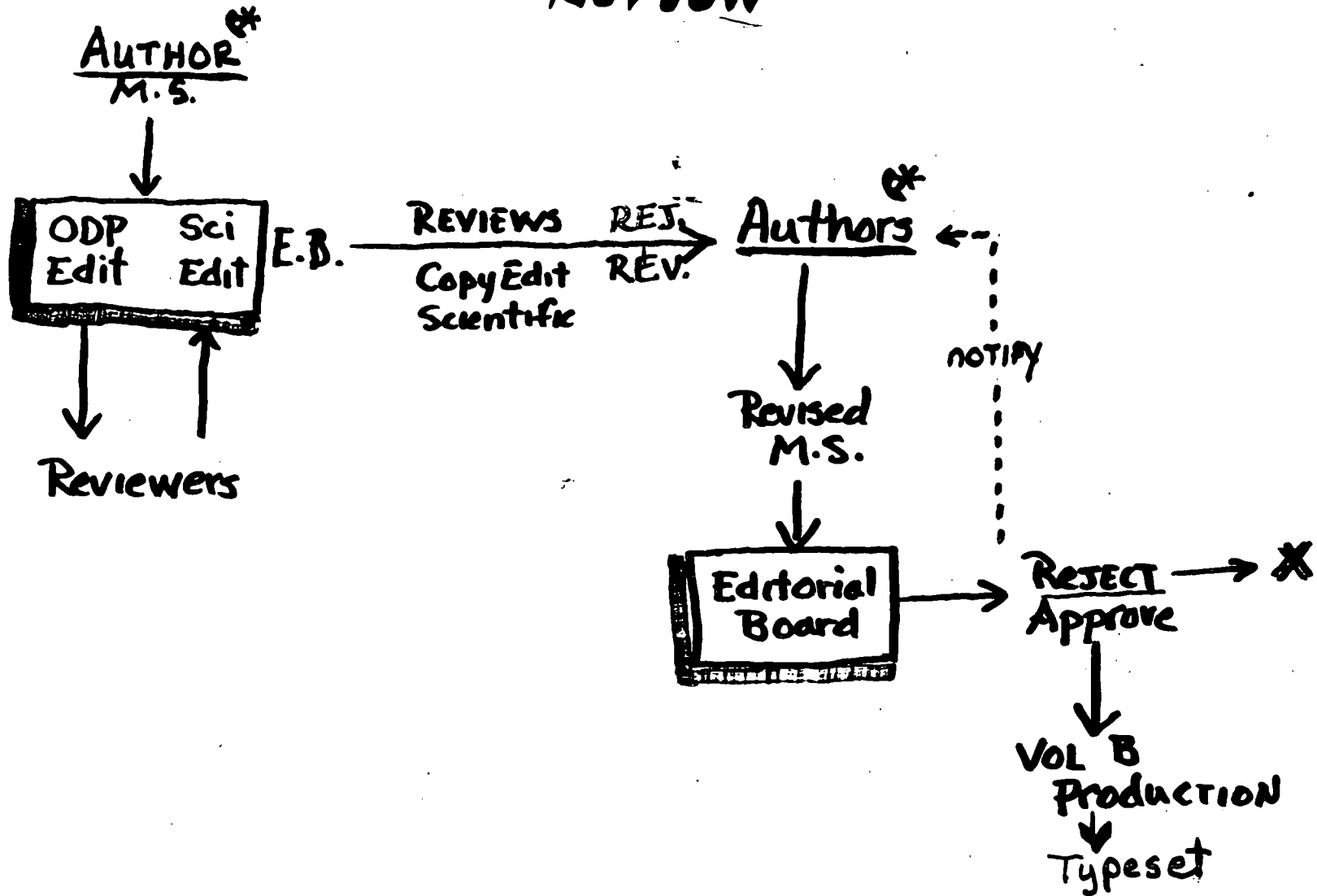
The Chile Triple Junction proposal, growing stronger with each review.

The Antarctic Peninsula margin, a mixture of ridge crest subduction and West Antarctic glacial history, with a young ensialic back-arc basin (Bransfield Strait) nearby.

Note that these are more diverse than previous SOP proposals, reflecting an increased interest in the region and the decreasing influence of the "weather window" effect (3. above). We hope that these and other South Pacific proposals (including the USSAC Workshop output) will be reviewed by the thematic panels in the Spring, since there will be opportunities for more than one Southern excursion while the drill ship is in the Pacific.

P F Barker  
Chairman, Southern Ocean Panel  
21 October 1987

# Vol. B. Manuscript Review



APPENDIX Z

OCEAN DRILLING PROGRAM

**Technology and Engineering Development Committee Report**

Annual P.COM meeting  
by Jean JARRY, Tedcom chairman

I. January 87 PNCHMN Meeting

At the Hawaii meeting, an important effort was done by all the panel chairmen to analyse the science priorities of their panels and to translate them into prior engineering needs. It was a tentative work, impossible to complete in one day, but which gave us some trends. I then asked to everybody to think more about it and to write a short paper which could be discussed during the next may TEDCOM meeting. All panel chairmen were invited to attend or to send at least one representative.

The old idea of a riser workshop was emphasized again, to discuss the reasons of wishing to deploy a riser type system, the mechanics of riser systems and the various options of achieving a riser system.

PCOM agreed to that suggestion and allowed TAMU to organize a three day TEDCOM meeting, the first day being devoted to presentations and discussions on the riser technics ; it was also recommended to all the panels to send delegates.

II. Riser workshop

It took place on April 30th at TAMU. 41 people attended, among which 13 scientists from 9 panels, PCOM, EXCOM, JOI and ODP staff.

After an introduction by Nick Pisas, nine speakers talked successively about theory and hardware, time needed for deployment, cost elements for ship conversion, and several engineering analysis.

All attendees got the report of that meeting during the summer.

### III. TEDCOM meeting

On the next day, May 1st, the 4th TEDCOM meeting was focused on the description by each panel delegate of its science priorities and of the consequent engineering needs : improvement of such or such present tool, and design of new tools adapted to a better efficiency in difficult terrains.

Chairmen or representatives of LITHP, SOHP, ARP, SSP, WPAC and DMP attended, while TECP, CEPAC and SOP had directly sent papers summarizing their priorities analysis. All their inputs are reported in the TEDCOM meeting report.

To summarize the main conclusions of that meeting, it can be said that :

1) present tools are to be improved to drill faster and deeper, and to have a greater core recovery rate.

2) new tools, as packers for porewater sampling, pore pressure meters, etc., have to be designed and/or purchased.

3) new technics are to be studied to reach new goals, such as drilling in chert/chalk sequences, etc...

It was also proposed that, in some cases, land drilling tests could be done faster and cheaper than at-sea-tests, specially with a mining-type system adapted to the cherts. Typical land sites do exist on both sides of the British Channel, which are of convenient access.

At last, it has been asked that formal links between TEDCOM and DOSSEC be established, in order to exchange information on continental and marine drilling, coring, and logging techniques.

### IV. COSOD 2 conference

In May, a small working group of 4 TEDCOM members met in Dallas, Texas. From the basic elements produced at the riser workshop, they prepared a more elaborated paper to be presented in Strasbourg by Barry Harding and Duke Zinkgraf.

Four categories of methods for drilling in hard and fractured rocks or in high pressure areas, had been described at the riser workshops :

1. 18 1/2" oilfield riser system
2. slim line riser system
3. mining system through drill pipe
4. mud lift system on sea-floor.

These four approaches were evaluated in terms of total cost, operational time and cost per hole, for three typical cases :

- . deep stable margin hole
- . deep margin hole through subduction zone thrust
- . zero-age crust.

The first conclusions which were presented in Strasbourg have been the following : (see Annex 1)

- . system 1 is extremely expensive. (more than twice the present system).
- . systems 2, 3, 4 have daily operating costs slightly higher (10 to 15 %) than the present system.
- . system 2 looks the most advantageous, at least in a mid term perspective.
- . Whith any system, 90 days at least per hole are necessary.
- . For system 2, a total investment of \$ 6 millions is needed (see annex 2).

This analysis has been well received by the geologist community gathered in Strasbourg, specially by the enthusiastic crust subcommunity who asked if it could be realistically envisioned to drill through the entire crust into the mantle by the year 2000.

The answer is : probably yes, if we start now, progressing step by step, increasing reasonably on engineering R&D budget, which means nevertheless dramatic choices and decisions at the ODP highest level.

An opportunity exists and is not to be missed. A SEDCO slim line riser is for sale at an extremely low price (\$ 300,000 or less). Its purchase before the end of the year would allow to start R&D at a reasonable level in the limits of the ODP 88 budget. However, in 1989, a larger share of the budget would have to be reserved for the engineering R&D.

## V. Conclusions

1. 1987 outstanding fact is the closing gap between ODP science and engineering. Everybody is now convinced that priorities have to be set up, and big efforts have been undertaken to prepare the necessary choices.

2. It is now generally accepted that new technology will be only possible with a substantial engineering R&D budget increase.

At its NIKKO meeting last august, PCOM has proposed two options. In fact, it is rather one option with two phases.

- phase 1 : 1988-1991

moderate (?) increase of the budget to allow for development of a slim line riser system : \$ 6 million are necessary in 3 years.

- phase 2 : after 1991

If the results are positive and drilling through the crust proven possible, then larger investments will be required.



It is TEDCOM's role to help TAMU to evaluate the level of these future investments, the cost and the schedule of the necessary R&D to be undertaken as soon as possible (e.g. use of composite materials).

3. to improve communication and understanding, attendance of major science panels representatives to the engineering meetings (TEDCOM and/or workshops) must be encouraged.

Closer links with DMP are necessary, specially to better evaluate the problems linked to the high temperatures, and to know the maximal temperatures which are to be handled in the next years. TEDCOM and TAMU need also to learn from ODP which future holes are to be fitted with casings, in the prospect of flying reentry and/or long term down hole measurements.

VI. TEDCOM membership

Our 15 member list is complete. Mr D. WILSON from CHEVRON has been replaced by Mr. W. J. LOWE from the same company since May (nomination made official at the last P.COM meeting).



ANNEX 2

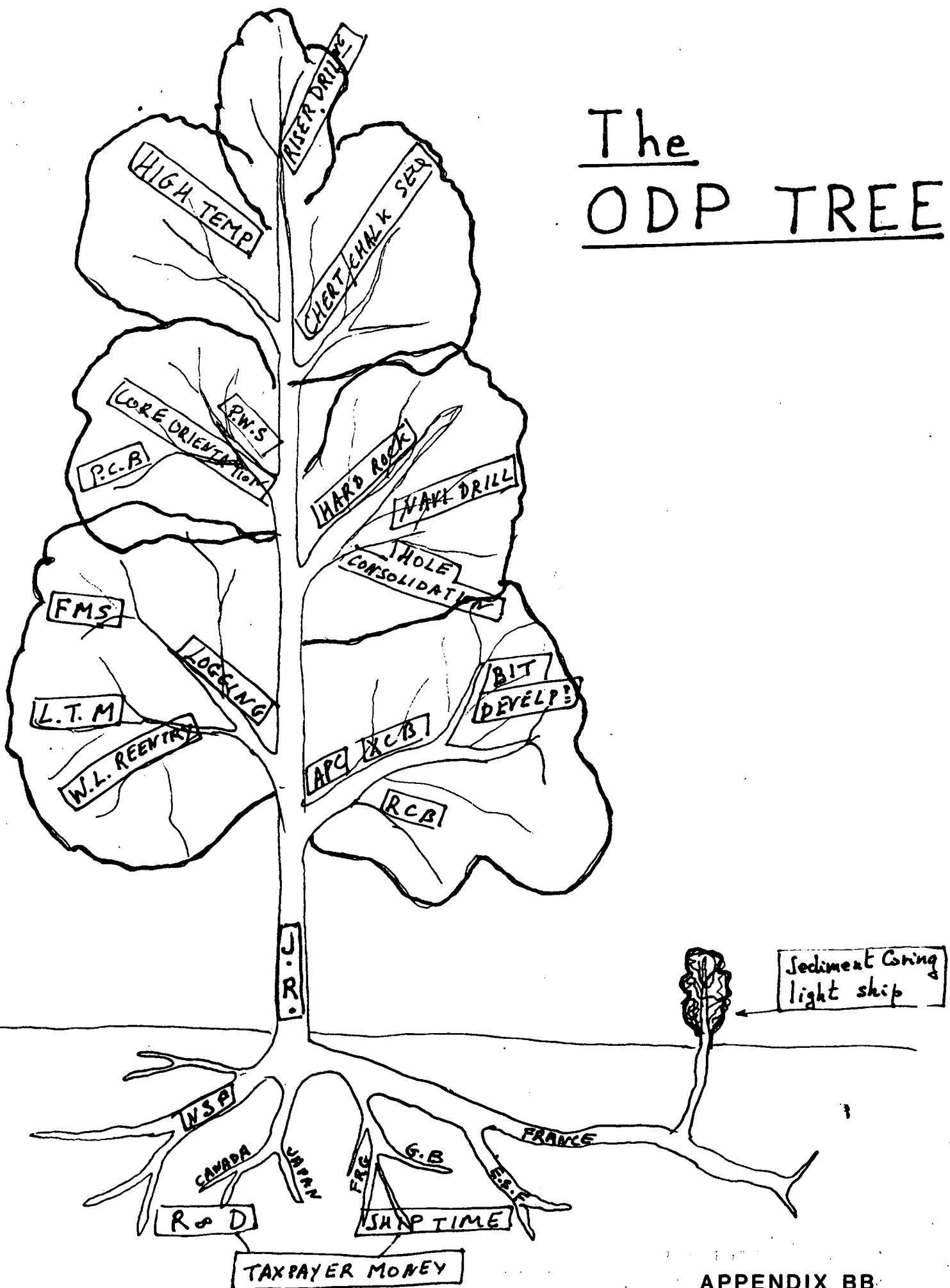
Estimated budget for a slim-line riser system  
(in \$ millions)

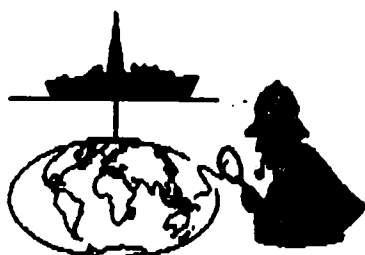
<u>Equipments</u>	
drill string, BOP casings	0,75
riser (used)	0,3
on board equipment	0,13
Mud system	0,15
ship conversion	3,00
R&D in tools	1,6
	<hr/>
	5,9
10 % for contingency	0,6
 <u>Operational Costs</u>	
90 days x 80,000 \$/day	0,7
	<hr/>
TOTAL	7.2

## ANNEX 1

SYSTEM	DAILY OPERATING COST	CASE I EAST COAST-NO. AMERICA 4000 m / 4000 m WATER / PEN.		CASE II NANKAI TROUGH 5000 m / 4000 m WATER / PEN.		CASE III EAST PACIFIC RISE 3000 m / 3000 m WATER / PEN.		INITIAL EQPT INVESTMENT REQUIRED
		.25 SUCCESS PROB. TOT \$	TOT #	.15 SUCCESS PROB. TOT \$	TOT #	.10 SUCCESS PROB. TOT \$	TOT #	
ODP PRESENT SYSTEM	\$82,000	TOT 120 DAYS TO T.D.	39.4 MILLION HOLE COST	TOT 135 DAYS TO T.D.	73.8 MILLION HOLE COST	TOT 100 DAYS TO T.D.	82 MILLION HOLE COST	\$ 0 MILLION
18 1/2" OIL FIELD RISER SYSTEM	\$162,000	TOT 75 DAYS TO T.D.	12.1 MILLION HOLE COST	TOT 80 DAYS TO T.D.	12.96 MILLION HOLE COST	TOT 95 DAYS TO T.D.	15.4 MILLION HOLE COST	\$ 80. MILLION
SLIMLINE RISER	\$90,000	TOT 75 DAYS TO T.D.	6.75 MILLION HOLE COST	TOT 76 DAYS TO T.D.	6.84 MILLION HOLE COST	TOT 90 DAYS TO T.D.	8.1 MILLION HOLE COST	\$ 5.9 MILLION
MINING SYSTEM	\$86,000	TOT 80 DAYS TO T.D.	19.6 MILLION HOLE COST	TOT 90 DAYS TO T.D.	22.1 MILLION HOLE COST	TOT 125 DAYS TO T.D.	10.7 MILLION HOLE COST	\$ 2.9 MILLION
MUD LIFT SYSTEM ON BOTTOM	\$94,000	TOT 82 DAYS TO T.D.	8.56 MILLION HOLE COST	TOT 88 DAYS TO T.D.	10.34 MILLION HOLE COST	TOT 100 DAYS TO T.D.	10.44 MILLION HOLE COST	\$ 6.0 MILLION

# The ODP TREE





ODP SITE SURVEY PANEL

## ANNUAL REPORT OF THE SITE SURVEY PANEL

The SSP has met only once since the January, 1987, ODP Annual Meeting - in Copenhagen in July. Our next meeting is tentatively scheduled for March, 1988, in the U.K.. Hopefully it will overlap by a day with a PPSP meeting.

The SSP continues to be pleased with the quality of the completed site survey work. Although we are still cleaning up some details in the Indian Ocean, the bulk of the problems created by late or non-existent site surveys seems to be behind us. The improvements in site survey quality which we have seen on the Exmouth Plateau are a testament to the value of early reviews prior to the final site survey cruise before drilling. Likewise, in spite of an earlier communication breakdown regarding the NE Australia drilling program, the latest word from the site proponents is that the concerns of the SSP have been met with the just completed surveys.

The first year of planned WPAC drilling does not have any major site survey problems. The entire WPAC program will be reviewed at our March meeting with the Chairman of WPAC in attendance in order to maximize the exchange of information and recommendations.

The CEPAC drilling prospectus has just been issued. SSP watchdogs will be preparing synopsis reports for initial review at the March meeting. By then a fairly clear picture of the major holes in the CEPAC site surveys should have come into focus. Some major US cruises which relate to CEPAC drilling recommendations have already been funded.

The ODP Databank has continued to operate at about the same level of activity in FY 87 as in FY 86. The Databank continues to play a essential role which enables the SSP to function effectively.

Respectfully submitted,

John W. Peirce  
SSP Chairman  
October 30, 1987



# United States Department of the Interior

GEOLOGICAL SURVEY

OFFICE OF ENERGY AND MARINE GEOLOGY  
BRANCH OF ATLANTIC MARINE GEOLOGY  
WOODS HOLE, MA 02543

October 23, 1987

To: Nick Piasias, PCOM Chairman  
From: Mahlon Ball, PPSP Chairman  
Subject: Annual Report of PPSP to PCOM

PPSP, in its role of providing independent advice to PCOM and ODP concerning safety and pollution hazards, met 3 times during 1987 and has a fourth meeting scheduled for 6 December in San Francisco. Meetings involved proposed drill sites for Leg 115: Mascarene Plateau; Leg 116: Central Indian Ocean; Leg 117: Oman Margin, Owen Ridge and Indus Fan; Leg 118: Southwest Indian Ridge; Legs 119 and 120: Prydz Bay and the Kerguelen Plateau. The San Francisco Meeting will cover Leg 121: Ninety East and Broken Ridges. Seventy drill sites have been approved, three disapproved and 15 moved or approved to shallower depths to avoid structurally high positions.

The year's activities have been complicated to a degree by difficulties inherent to drilling in remote areas of the Indian and Antarctic Oceans. Added to this were problems of political unrest and warfare as they related to obtaining permission to drill in certain areas of the northern Indian Ocean. A number of alternate sites had to be proposed and reviewed for safety hazards by phone and postal correspondence. Despite perplexities, PPSP has acted to insure avoidance of unreasonable risks in JOI-ODP drilling operations. The realization must remain that there is always some risk and that final responsibility for safety precautions lies with the personnel aboard the Joides Resolution as the drilling operations are performed.

Over the past year, the quality of presentations for safety review has generally improved both with respect to submission of data, adequately in advance of PPSP meetings, and to completeness of data presented. Anything that can be done to facilitate simplicity and flexibility in the funding of site surveys and analysis of data arising from survey efforts will contribute to sustaining this trend of improvement. An important step aiding analysis of survey data would be to encourage all scientists conducting surveys to acquire their geophysical information on a grid of relatively closely spaced dip lines (parallel to the short dimension of the surveyed features) and more widely spaced strike lines, at right angles to dip profiles.

PPSP, with the approval of the PCOM chairman, has agreed to serve in an advisory role to the Division of Polar Programs of the National Science Foundation. In this capacity, PPSP will conduct safety reviews for Foundation programs involving drilling activities in Antarctica.

*Mahlon M. Ball*

APPENDIX DD

CO-CHIEF RECOMMENDATIONS

(as discussed during PCOM meeting  
at Sunriver, 30 Nov - 4 Dec 1987)

Leg 124: Banda-Sulu-Celebes-SCS

Audley-Charles, K.Hinz, Hilde, K.Hsu, Jongsma, S.Lewis,  
Pautot, C.Rangin, E.Silver, R.Thunnell

Leg 126: Marianas-Bonins

Bloomer, Patricia Fryer, T.Fujii, J.Malpas, J.Pearce, T.Ui,  
(J.Hagerty)

Leg 127: Bonins

J.Hill, Eiichi Honza, Okada, A.Robertson, B.Taylor, T.Ui

UK PCOM, Summer 1988

This will be held in Oxford from 23-25 August 1988.

Note the slight shift of dates. Accommodation will be available in an Oxford College or a hotel, according to choice, and the meeting held in the Department of Earth Sciences. All locations are within walking distance of each other.

A geological field trip along the Dorset coast will be arranged for 26-27 August - your chance to see Milankovitch cycles in the Jurassic, chalk/chert sequences in the Cretaceous (mainly chalk!) etc..

Please indicate your preferences on the form below and return to Tim Francis. There is no obligation at this stage, but I would like firm answers at the April PCOM

NAME :-

ACCOMMODATION :- College (c £27 B+B) OR Hotel (c £50 B+B)

FIELD TRIP :- Interested OR Not Interested.