EXCOM Meeting

3 - 4 October 1989
Amsterdam, The Netherlands

Agenda

Tuesday 3 October 9:00 AM

Page Number Green

(Lunch)

Page Number

4. Near-term Scientific Objectives (PCOM) 008
   a. Legs in the western Pacific, FY 90
      - Decision on Geochemical Reference Sites
      - Leg 129, Old Pacific
      - Leg 130, Ontong Java Plateau
      - Leg 131, Nankai
      - Leg 132, Engineering II
      - Legs 133, 134, and 134
      - Timing and purpose of Engineering III
   b. Legs in the eastern Pacific; FY 91 choice among:
      - Cascadia Accretion
      - Chile Triple Junction
      - East Pacific Rise Bare-rock Drilling
      - Eastern Equatorial Pacific Neogene
      - Lower Crust at 504B
      - Sedimented Spreading Center

(Coffee Break; immediately after the break there will be a special presentation of Leg 126 results by Dr. Patricia Cooper of the JOIDES Office, who participated)

5. Near-term Scientific and Technological Planning (PCOM) 011
   a. General direction of the vessel four years in advance of April, 1990
      - Preparation and methods of panel rankings
   b. Proposed programs with high thematic ranking, to date
      - CEPAC programs not in FY91 list
      - Remainders from the Atlantic, Southern, Indian, and Western Pacific oceans
   c. Current proposals
   d. Other planning issues
      - Diamond Coring System versus Logging
      - Structure of the Planning Committee
      - Other PCOM recommendations and actions

Wednesday 4 October Page Number

Additional attachments

Agenda Notes for Meeting of the JOIDES Executive Committee

Royal Academy of Arts and Sciences
Kloveniersburgwal 129
Amsterdam, The Netherlands
3 and 4 October 1989

Tuesday Morning 3 October 9:00 AM

Initial Business

1. Introductions

Welcoming remarks, introductions of members and guests, and comments about logistics. The host will suggest appropriate times for coffee breaks, lunch, and the beginning of Wednesday's session, any of which may require adjustments in the Agenda.

2. Adoption of Agenda

The general order of business is to consider first the long-range future of ODP, followed in more detail by the immediate future, the present status, and the immediate past. Each section of the agenda will allow for presentation of information, discussion of important issues, and identification of items for EXCOM action. In response to a request by some EXCOM members, the presentation of the scientific parts of the meeting will be stronger than in meetings of the recent past.

There will be a call for additional items, and then for adoption of the Agenda.

3. Approval of Minutes

The Revised Draft Minutes (attached) of the Joint Meeting of EXCOM and the ODP Council, and of the EXCOM Business Meeting, 31 May - 1 June 1989, at Palisades, New York, have corrections and additions received at the JOIDES Office through 13 September.

There will be a call for additional corrections or additions, and then a call for their approval of the minutes.

Long-term Program Objectives

1. Renewal Timetable (NSF)

At the previous EXCOM meeting, there was a presentation of the stages in the preparation for a post-1993 drilling program, including probable dates of decision points. EXCOM will be given a summary and any new information.

2. Long-range Scientific Planning

a. Scientific input to JOIDES (PCOM)

Planning will be based on drilling proposals that are evaluated in terms of scientific themes published in COSOD, White Papers, and the Long Range Plan. EXCOM will be given a summary of the past and present thematic basis for drilling. The first 26 legs of ODP have addressed many but not all of the scientific themes of COSOD I (tables requested by EXCOM are attached: Evaluation of drilling results in terms of COSOD I objectives; Evaluation of drilling results of past legs in terms of objectives stated in the drilling prospectus). There are existing proposals to address some of the remaining COSOD I themes, and of course, most of the COSOD I themes are within the COSOD II ones.. A start has been made on new COSOD II objectives (e.g., intraplate deformation, Leg 116). Recent White Papers of the present or former thematic panels are published in *JOIDES Journal.*

b. Long Range Plan (JOI)

EXCOM at its last meeting had approved, and passed to JOI, Inc., the final draft form of the Long-range Planning Document that will present the scientific basis for the future of the Ocean Drilling Program. EXCOM asked, however, for a number of modifications and checking, most of which were addressed to JOI. JOI will describe the present status of the document, and how it will be turned into a Long Range Plan..

EXCOM asked PCOM if the balance between basement drilling and sediment drilling proposed in the Plan was indeed appropriate. PCOM did consider the balance at its late August 1989 meeting, and concluded that because the Long Range Planning Document is a general assessment of the research areas where scientific advancement is achievable by drilling, and is not a specific drilling plan, the balance of drilling opportunities does not require revision. The balance of the actual drilling will be determined by the drilling proposals received and the thematic priorities that evolve as science and technology advance.

c. Need for future COSODs (NSF)

The mandate of the Planning Committee calls for sponsoring and convening COSOD-type conferences at intervals determined by the long-range science plans of ODP. At one time a 5-year interval was suggested. COSOD II was July 1987. What is the opinion of NSF and EXCOM about a mid-1992 target date, with respect to the time-table for program renewal and other factors?

Near-term planning (remaining part of FY89-92 Program)

1. Action from Previous Meetings

a. Advisory structure (PCOM)

PCOM asks for EXCOM action approving the following:

• EXCOM had asked PCOM to prepare a general membership statement for its panels that did not have a membership statement in their terms of reference. PCOM approved the following, and asks for the change in wording of the Terms of Reference for Service Panels:

7.1 General Purpose [of Service Panels] is modified by having its last sentence [PCOM appoints the chairman...] transferred from that section to be the first sentence of a new Section 7.1.1. New language is added, so the section reads:

7.1.1 Membership. PCOM appoints the chairman and panelists and keeps membership, including representation from the non-US JOIDES member institutions, under review. **The chairman serves at the pleasure of PCOM, and members serve at the pleasure of PCOM or their non-US appointing member. Representation from all non-US members should be maintained. Panel membership, not to exceed 15, should be maintained as small as is allowed by the range of expertise necessary to meet mandate requirements.** [additions shown in **bold**; transferred sentence shown in plain text]

• In order to provide some greater flexibility to request and receive ad hoc advice, PCOM asks to have its own mandate changed to allow the formation of working groups, by adding 5 words, as follows:

3.2 Mandate. The Planning Committee is responsible for the mandates of the various panels, planning groups, **and ad hoc working groups** and their membership. [addition shown in **bold**]

b. Reviews (JOI)

Presentation of any new or remaining issues raised by recent evaluation reports. A PCOM resolution regarding possible revision of the PCOM structure is a later agenda item.

2. NSF Report

a. Resource issues and budget status

b. Membership

3. Program Management (JOI)

a. Program Plan review

Budgetary and other current information that may affect the current 4-year FY89-92 Program and the 1 year FY90 Program

b. Responsiveness of JOIDES to ad hoc JOI requests

c. Preparation for the next performance evaluation

EXCOM should advise JOI about procedures for selecting and charging the third Performance Evaluation Committee. Apparently, PEC-3 is due in 1990.

d. Preparation for future subcontracting procedures

EXCOM should advise JOI regarding procedures for the selection and identification of post-1992 subcontractors.

e. Interaction with international global geoscience initiatives

The status of efforts to forge formal links.

f. Non-US Liaison in JOIDES Office

Non-US members are to bring nominations to this meeting.

4. Near-term Scientific Objectives (PCOM)

a. Legs in the western Pacific, FY 90

At its late August meeting in Seattle, PCOM discussed but did not change its April decision made at Oslo about drilling legs in the FY90 Program Plan. EXCOM will recall that the Oslo plan differed from the previous one by, in effect, the substitution of a leg of Old Pacific drilling for a leg of Geochemical Reference drilling. The Science Operator announced some adjustments in scheduling, as a consequence of the dry-docking of the vessel planned by SEDCO to take place in Singapore.

- Decision on Geochemical Reference Sites

The debate essentially was between (a) those who believed that the thematic ranking of the Old Pacific program was superior to that of Geochemical Reference Sites program, that PCOM is allowed to change programs when the occasion is justified, and that an extra leg inserted in the program would result in unacceptable delay to

move to the eastern Pacific in preparation for later drilling; and (b) those who believed there was not sufficient justification to have changed the program on short notice, that Geochemical Reference had received the highest priority of a thematic panel, and that the allegedly highest ranking was not reported to PCOM at the time of the vote.

The issue and its resolution may be critical to future confidence in the program. The debate at Seattle is reported in unusual detail in the PCOM draft minutes (attached), as is a summary of the rankings and statements by the Lithosphere Panel and PCOM known to exist in the JOIDES office in minutes and tapes. PCOM has put into effect procedures for ranking of programs that are intended to prevent this type of situation arising in the future.

The formal results are:

PCOM Motion: Reinsert the Geochemical Reference leg in the FY90 drilling schedule. (Motion Kastner, second Malpas; Vote: for 7, against 7, abstain 2 (failed).

PCOM Motion: Replace the Old Pacific leg with the Geochemical Reference leg in the FY90 drilling schedule. (Motion Malpas, second Kastner; Vote: for 1, against 12, abstain 3 (failed).

This is the drilling plan for FY90, and the approximate schedule:

(Late Oct, early Nov 1989 dry dock and transits)

- Leg 129 Nov 89-Jan 90 Old Pacific

Jurassic paleoceanography from sediments and faunas in an oceanic environment; dating of Mesozoic magnetic anomalies; sampling old, altered oceanic crust that formed during fast spreading; Mesozoic plate kinematics and paleolatitudes. Most recent survey was a successful one ending in early September 1989.

- Leg 130 Jan-Mar 90 Ontong Java Plateau

High-resolution paleoceanographic history of surface and bottom waters in the Neogene; relation to preservation of calcareous sediment; Cretaceous and Paleogene paleoceanography; crustal nature, geochemistry, and origin of oceanic plateaus. PCOM recently decided on the order of drilling, resolving a difference between proponents. OHP is asked to resolve a difference of opinion between proponents about the selection of one of the sites.

- Leg 131 Apr-Jun 90 Nankai Geotechnical Experiment

Structural and diagenetic processes in the accretionary prism at the margin of convergent plates; commencement of horizontal and vertical traverses of *in*

situ and down-hole measurements of physical properties and sampling of fluids. PCOM specified the order of drilling of sites, resolving a difference of opinion among various proponents and panels.

- Leg 132 Jun-Aug 90 Science-Engineering Tests

Tests of methods to drill and recover (a) sequences of alternating hard and soft lithologies: chert and chalk at Shatsky Rise, (b) weakly lithified to rubbly limestone: reef rocks at MIT Guyot, and (c) young and brittle basalt: crust at the Bonin Rift, the active part of the back-arc basin. PCOM asked that J. Natland be the Science Co-Chief on the leg.

- Leg 133 Aug-Oct 90 Northeast Australian Margin

Effects of control by sea level and climate on a mixed carbonate-detrital section of a subsiding and equatorward-drifting passive margin; depositional and diagenetic environment of carbonates presumed comparable to host rocks of a major class of lead-zinc ore bodies.

- Leg 134 Oct-Dec 90 Vanuatu Collision Tectonics

Collision of an aseismic ridge and a guyot with an island arc; back-arc rifting; polarity reversal; formation of intra-arc basins; rates of uplift of an island-arc accretionary margin.

- Leg 135 Dec 90-Feb 91 Lau Basin - Tonga Arc

Temporal variation in composition of back-arc basement basalts; pre-basin volcanic basement; volcanic stratigraphy of the arc and forearc; relation of volcanism to basin origin, rift propagation, and vertical movements.

- Leg 136 Feb- April? 91 Transit and Engineering Operations

Transit to eastern Pacific; clear junk from hole 504B in preparation for deepening for lower-crustal objectives; set two guidebases on bare rock of East Pacific Rise in preparation for later drilling of the ridge crest.

b. Legs in the eastern Pacific; FY 91

At its late November 1989 Annual Meeting, PCOM will set a Program Plan for FY91, plus about 2 legs into early FY 92 to allow the Science Operator to plan staffing and logistics. Choice will be from among six programs near the eastern edge of the Pacific. Each will be described briefly for EXCOM's benefit.

- Cascadia Accretion
- Chile Triple Junction
- East Pacific Rise Bare-rock Drilling
- Eastern Equatorial Pacific Neogene
- Lower Crust at 504B
- Sedimented Spreading Center

(Coffee Break; immediately after the break there will be a special presentation of Leg 126 results by Dr. Patricia Cooper of the JOIDES Office, who participated)

5. Near-term Scientific and Technological Planning (PCOM)

a. General direction of the vessel four years in advance of April, 1990

- Preparation and methods of panel rankings.

After consultation with the panel chairmen, and discussion in Seattle, PCOM has adopted procedures designed to reduce possible misinterpretations of panel decisions about priorities and rankings. At the spring meeting each year, PCOM will determine the general track for the next four years in order to carry out a set of drilling programs which one or more of the thematic panels have ranked highly.

Programs come from actual proposals addressing, in a specific locality, a scientific theme that has been published in a planning document, such as a COSOD report or a panel White Paper. Programs must have a good chance of success with regard to present and anticipated site surveys, engineering developments, drilling platforms, and political and safety clearances. Programs may require less than one, one, or more than one leg of drilling; some programs may require back-to-back mega-legs, or perhaps a return to an area periodically.

In advance of every spring meeting, each thematic panel will prepare a single rankings list of the priority of the programs it wants drilled, regardless of region. The lists will be accompanied by a brief paragraph about each ranked program, to reduce the chance that PCOM will misunderstand the aim or importance of the program. Each year, as some proposals mature and as technical developments evolve, panels will update their lists for PCOM.

Each year PCOM will update its general 4-year plan, certainly by adding to the general track at the distal end and perhaps also by modifying the intermediate part, depending on any revised rankings of its four thematic panels, and the state of such developments as site surveys and instrumentation.

b. Proposed programs with high thematic ranking, to date

- CEPAC programs not in FY91 list. In addition to the 6 programs (9 legs worth?) of the easternmost Pacific that are candidates for FY91, and and Old Pacific and Ontong Java that are in the FY 90 program, 6 North and mid-Pacific programs (of about 7 legs?) have had sufficient thematic ranking earlier to cause PCOM

and the panel structure to track them carefully. These include Hawaii Flexure, Atolls and Guyots (two approaches to the objectives), North Pacific Neogene and Older History, Bering Sea History, Shatsky Rise Anoxic Events, and Young Hotspots: Loihi. It is possible that some additions to the list will include a Sea-floor Seismic Observatory ,and the History of the California Current.

- Remainders from the Atlantic, Southern, Indian, and Western Pacific oceans. Several excellent programs exist, in a high state of maturity and with thematic support, that could not have been drilled so far by ODP. There may have been clearance or weather problems, or insufficient time as the vessel progressed through a region. Most of these have been identified. For example, 7 good but undrilled programs will remain in the Western Pacific Region after Leg 135; Geochemical Reference Sites is among them.

c. Current proposals

A complete list of proposals and a list of abstracts of recent proposals are attached. Response to recent advertisements calling for proposals has been encouraging. The lists show that new proposals and revisions of earlier ones are arriving at a rapid rate. They are being sent to the thematic panels for their review, and any proposal that was received at the JOIDES Office by 1 September can receive thorough panel review. Whereas we last reported that for several months proposals had been running about 4 to 1 in favor of the Pacific, for the past three months the ratio has been 3 to 1 in favor of the Atlantic. We have new or recently revised proposals from every ocean and the larger seas as well.

d. Other planning issues.

At its late August meeting in Seattle, PCOM recommended or took action on a number of issues besides ones already identified above (mandates, order of drilling at Nankai and Ontong Java, FY90 reassessment, etc.) The EXCOM Chairman believes the first of the following must be discussed by EXCOM, at least because of its budgetary implications. The second item is a resolution about possible changes in the make-up of the Planning Committee. The first and second items engendered considerable discussion at PCOM (minutes attached). Other PCOM items are listed as well, for EXCOM's information.

- Diamond Coring System versus Logging

PCOM Motion: TAMU shall develop the capability to run the Borehole Research Group suite of logging tools at sites drilled with the

Diamond Coring System (Motion Brass, second Malpas; Vote: for 16, against 0, abstain 0)

PCOM Consensus: The Borehole Research Group is not obligated to develop a suite of advanced logging tools for slimholes drilled with the Diamond Coring System.

- Structure of the Planning Committee

PCOM Motion: PCOM forwards to EXCOM the following resolution. (Motion Watkins, second Austin; Vote: for 12, against 0, abstain 2, absent 2)

PCOM Resolution:

PCOM is cognizant of and sympathetic to the PEC and EXCOM concern regarding "openness" of the JOIDES advisory structure to broad community involvement. Nonetheless, PCOM feels strongly that non-JOI input to its deliberations is already substantial. Approximately 50% of U.S. participants currently residing on JOIDES thematic and service panels come from non-JOIDES institutions. Furthermore, because PCOM feels that the JOIDES institutions represent the primary repositories of marine geological and geophysical expertise in the U.S., any long-term 1-for-1 replacement of their present membership on PCOM by others would both dilute necessary corporate memory and disenfranchise JOIDES institutions. However, because PCOM recognizes that various scenarios for non-JOIDES involvement in PCOM decision-making are possible, PCOM looks forward to further JOI, Inc., input on this matter.

PCOM Consensus:

In order to evaluate the openness of the ODP planning structure to the interests of scientists at non-JOIDES institutions, the Planning Committee requests that the non-JOIDES ODP shipboard participants and those on the JOIDES advisory panels be asked for their impressions of the openness of the program and to comment on means to improve whatever deficiencies may be apparent.

Other PCOM actions:

- PCOM shall designate a liaison to each pre-cruise meeting.
- PCOM disbands the Western Pacific Detailed Planning Group.
- PCOM approved various nominees to serve on panels.

Wednesday 4 October

Present Operational Status of the Ocean Drilling Program

1. **Science Operator Report (ODP-TAMU)**
   a. Principal drilling results in the western Pacific
   b. Status of engineering developments
   c. Status of publications
   d. Other problems and progress

2. **Wireline Logging Services Report (ODP-LDGO)**
   a. Principal logging results in the western Pacific
   b. Status of the Borehole Research Group

Member Country Reports

1. **Federal Republic of Germany**

2. **United Kingdom**

3. **France**

4. **Canada-Australia Consortium**

5. **European Science Foundation Consortium**

6. **Japan**

7. **United States**

(Coffee break)

EXCOM Action on Near-Term Planning

1. **Approving Mandate and Terms-of-Reference Changes**
   - Membership on service panels;
   - Ad-hoc Working Groups allowed in the advisory structure
2. **Filling BCOM**
   - A nominee to replace Jan Stel is required at this meeting.
   - Confirmation of the continuation of Jim Briden and Brian Lewis is requested.

- Appointment of Jamie Austin as the second PCOM member of BCOM is requested.
- The date and venue of the late-winter 1990 meeting must be fixed.

3. Other Action (from discussions during the meeting)

Future Meeting Schedule

- EXCOM and the ODP Council will meet in Washington, D.C., on 20-22 June 1990. JOI will host the meetings.
- EXCOM has an invitation to meet in France in October 1990. The date and venue of the meeting should be fixed.

Other Business

Adjournment

JOIDES EXECUTIVE COMMITTEE and ODP COUNCIL MEETING
31 May - 1 June 1989
Lamont-Doherty Geological Observatory, Palisades, NY

REVISED DRAFT MINUTES

Executive Committee:

C. Helsley, Chairman - Hawaii Institute of Geophysics
C. Barnes - Geological Survey of Canada (Canada-Australia Consortium) (for R. Rutland)
B. Biju-Duval - IFREMER (France) *
J. Briden - NERC (United Kingdom) *
D. Caldwell - Oregon State University
R. Duce - University of Rhode Island
H. Dürbaum - BGR (Federal Republic of Germany)
C. Harrison - University of Miami
B. Lewis - University of Washington (for R. Heath)
A. Maxwell - University of Texas Institute of Geophysics
W. Merrell - Texas A&M University
M. Moss - Scripps Institution of Oceanography (for E. Frieman)
T. Nemoto - ORI (Japan) *
B. Raleigh - Lamont-Doherty Geological Observatory
D. Spencer - Woods Hole Oceanographic Institution (for C. Dorman)
J. Stel - ESF Consortium for Ocean Drilling *

* Also representative for ODP Council

ODP Council Members not included on EXCOM:

D. Heinrichs, Chairman - National Science Foundation
K. Babcock - Geological Survey of Canada (Canada-Australia Consortium)
M. Fratta - European Science Foundation (alternate)
D. Maronde - Deutsche Forschungsgemeinschaft (FRG)
R. van Lieshout - ESF Consortium for Ocean Drilling
R. Vernon - Macquarie University (Canada-Australia Consortium) (for R. Rutland)

Liaisons:

R. Anderson - LDGO Borehole Research Group
J. Baker - Joint Oceanographic Institutions
R. Moberly - JOIDES Planning Committee, Hawaii Institute of Geophysics
P. Rabinowitz - Science Operator, Texas A&M University

Guests/Observers:

R. Corell - National Science Foundation
C. Drake - Dartmouth College
W. Erb - US State Department
J. Ladd - National Science Foundation
B. Malfait - National Science Foundation
B. Munsch - European Science Foundation
P. Peters - Joint Oceanographic Institutions
N. Pisias - Oregon State University

T. Pyle - Joint Oceanographic Institutions
L. Stevens - Joint Oceanographic Institutions
A. Sutherland - National Science Foundation

JOIDES Office

L. d'Ozouville - Executive Assistant and Non-US Liaison
G. Waggoner - Science Coordinator

Wednesday, 31 May 1989
Joint Session of ODP Council and JOIDES EXCOM
(D. Heinrichs and C. Helsley, Co-Chairmen)

460 INITIAL BUSINESS

C. Helsley called the meeting to order and welcomed all participants. Introduction of the JOIDES Office was made by C. Helsley. D. Heinrichs introduced the NSF personnel present. Introductions were then made by all participants. B. Raleigh welcomed everyone to Lamont and explained the logistics for the meeting. He thanked Penny Peters for making arrangements.

ADOPTION OF AGENDA

The EXCOM business session was moved to the afternoon of Thursday June 1 1989. C. Helsley explained that the joint meeting agenda is divided into three parts: Long Range Planning for the Future; Near Term Planning; and Present Status of ODP.

EXCOM Motion

EXCOM adopts the agenda for the 31 May-1 June 1989 Joint ODP Council and Executive Committee Meeting. (Motion Briden, second Maxwell)

Vote: for 16; against 0; abstain 0

461 LONG-TERM SCIENTIFIC OBJECTIVES FOR ODP

D. Heinrichs explained the time frame for ODP renewal (Appendix A). There is a heavy concentration on long-range planning. The Long-Range Science Plan needs to be ready in 1989. The science plan builds on the COSOD documents and the thematic panel white papers. The last COSOD was in 1987 and a new COSOD should occur in 1993. 1989 is a critical year for beginning discussions with the international partners. 1990 will be a critical year for science and budget planning. 1992 is when the discussion of new MOUs will begin. While 1993 seems a long way off, for budget and science planning it is very close.

R. Moberly discussed the status of scientific recommendations to JOIDES. Drilling is based on scientific proposals by groups or individuals from the international science community. The list of proposals for ODP drilling received by the JOIDES Office is given in the Agenda Book. Proposals are evaluated using the scientific objectives of COSOD I & II, although not all COSOD objectives can be matched to the capabilities of the drilling vessel. The thematic panel white papers plan the themes and objectives which are within the present and proposed drilling capabilities. The Agenda Book also shows a matrix of COSOD I objectives and ODP drilling legs. Not all objectives have been met, but a good attack has been made on many of them. COSOD I is the basis for the current phase of ODP but we are now moving the program towards meeting COSOD II objectives. Since ODP is a proposal-driven program, the status of planning at any one time depends on the nature of proposals received and their thematic rankings. There is a good backlog of proposals for meeting COSOD I & II objectives at the present time, with a tendency to focus on problems that might be addressed in the Pacific..

Discussion

H. Dürbaum asked if more use of the drillholes for downhole experiments is planned. R. Moberly said that there are some proposals for these types of experiments. Both the Japan Sea and Nankai drilling legs include downhole experiments, plus there have been proposals to put broadband seismometers in drillholes as part of the international global seismic network and to establish various seafloor observatories. These are areas of development for upcoming drilling plans. Dürbaum thought that downhole experiments should also be included as a line item in the COSOD matrix.

B. Biju-Duval wanted to know if the thematic panels and their white papers address downhole experiments. R. Moberly said that the Downhole Measurements Panel has a thematic component that is concerned with downhole experiments and has been a strong advocate as well. Both the Lithosphere and Tectonics Panels are concerned with the need for various downhole instruments for long-term monitoring, and measurement of stress in the lithosphere.

D. Heinrichs commented that the outline of the thematic objectives given on page 30 of the Agenda Book for the three thematic panels clearly require long-term monitoring of drillholes. N. Pisias pointed out that ODP does not develop long-term monitoring, this function requires outside proposals and development of equipment. R. Moberly said that ODP provides ship time for the experiment but cannot buy the instruments or propose the work. J. Briden wanted to know whether the case was that ODP can't or doesn't buy the equipment. B. Malfait and D. Heinrichs agreed that there was no prohibition against ODP buying the equipment, but allocation of resources based on a priority for drilling had led to this guideline. Briden asked about the VSP experiments. C. Helsley said that the equipment for these experiments comes from outside the program. N. Pisias also pointed out that only a relatively small amount of time is necessary for the VSP, but seafloor observatories require long-term commitment of ship time which will take away from time available for drilling. C. Helsley observed that this function would be at the expense of other parts of the drilling program.

LONG-RANGE PLANNING DOCUMENT

N. Pisias presented the LRP which had been distributed prior to the meeting. Two new figures and a page with corrections were distributed at the meeting. N. Pisias acknowledged the contributions of the thematic panel chairmen, L. Mayer, R. Detrick, I. Dalziel, E. Suess and N. Shackleton, as well as from PCOM members G. Brass, D. Cowan and J. Malpas.

The framework of the LRP comes from COSOD II. The Earth is viewed as nested cells of circulation, with interactions between these cells. ODP, using new theoretical and technological approaches, will contribute in a unique way to our understanding of these components of the Earth circulation system by addressing four major themes: 1) Structure and composition of the crust and upper mantle; 2) Dynamics, kinematics and deformation of the lithosphere; 3) Fluid circulation in the lithosphere; 4) Cause and effect of oceanic and climatic variability. In order to be technically achievable, the scientific objectives require the ability to drill deep holes into sediment and basement, the use of high-temperature downhole instruments, and improved recovery of alternating hard and soft lithologies and coarse, sandy sediments. In addition an alternate drilling platform, such as a jack-up rig, may be required on a contractual basis to drill some objectives.

The implementation and focussing of the next stage of ocean drilling will be a three phase program (Appendix B). Estimates for the cost of this phased development are given in Appendix B. It was noted that additional money beyond the $42M per year currently estimated for beyond 1993 will be needed for both special engineering and operational costs to undertake this program properly.

Discussion

W. Merrell wanted to know why additional money is needed for Borehole Seismometers when the IRIS program is developing them. N. Pisias said that this is the operational costs to ODP for deploying the seismological observatories. C. Helsley asked if this was based on 10 days per year for deploying seismometers. This was a general estimate for deploying seismometers over a 4-year period.

H. Dürbaum wanted to know why additional money is needed for developing high-temperature systems. N. Pisias said that both drilling tools and logging tools need to be developed for high-temperature, high-pressure, corrosive hydrothermal environments that are to be drilled in the future. C. Helsley noted that the bottom line is that the technological development costs required for Phase II of drilling are not covered by the present program's assumed increase to $42M. B. Malfait wanted to know what was covered by the present program's increase. N. Pisias said hopefully the $5.4M in column 1, but not the $11M needed to accomplish deeper drilling objectives. C. Helsley observed that a doubling of the engineering development funds is necessary to go from Phase I to Phase II. C. Barnes wanted to know if these estimates were for the real development costs or only the deployment costs. For some items such as the DCS it is total development cost, for others such as the borehole seismometers, it is the deployment cost.

Both C. Harrison and J. Briden were concerned that the cost estimates, which had been prepared by TAMU, might be too low. TEDCOM has suggested this as well. TAMU Engineering, however, has traditionally been able to do development for less money than industry estimates.

B. Lewis commented that the LRP reads well. He noted that there is an apparent change of emphasis in the program to deep crustal drilling targets. He was concerned that some of the objectives such as lower crust and mantle may not be achieved successfully, but are a major thrust of the proposed science. The future of the program may therefore depend on the success of the technological developments. N. Pisias said that the thrust is not necessarily to go for deep basement, but this is where the engineering development is needed to take the program beyond where it is already. B. Lewis wanted to know if it was the intention of the LRP to change the direction of the program to deep hard-rock drilling. N. Pisias said that the LRP drilling estimates came from what the thematic panels thought was required to achieve high priority objectives, and since crustal drilling takes greater amounts of time it may appear to be more dominant. There is no priority to the list. B. Lewis said that the number of legs associated with paleoceanography is not as large as those associated with hard rocks. N. Pisias said that the scientific effort cannot be equated to drilling effort alone, since high-resolution studies of sediment cores is time consuming. C. Barnes was also concerned with the balance between hard-rock drilling and sediment drilling, as well as the remarkably small biological component in the plan.

B. Biju-Duval was concerned that six years ago the new drilling ship was chosen because it had a riser, however the riser is still not being used. D. Heinrichs wanted to know what plans were being made for using a riser. N. Pisias said a slimline riser needs to be developed for drilling continental margin deep-holes. A total of one year of time needs to be devoted to this drilling.

N. Pisias said that a dedicated alternate platform for APC coring could not be recommended since this would exhaust the drilling community both financially and scientifically.

B. Biju-Duval was concerned that the section on educational opportunities was largely US-oriented and was not appropriate for France. N. Pisias said that he used all the information that was supplied to him and if the non-US partners want to add to the section on educational opportunities they need to prepare something in writing.

B. Biju-Duval said that the LRP was an important document. The section on ODP achievements will be helpful for program managers in maintaining interest in the drilling program. He noted that the future thrust of the drilling program will be in coring, logging, and use of the drillholes for long term experiments. A larger community must be brought into the drilling program. The European community is looking to develop a new complementary vessel, to be used within the JOIDES framework, which will involve a larger community of scientists.

C. Helsley said that the COSOD I objective that needs more emphasis is the detailed understanding of the Earth's magnetic field over the last 200 m.y., which can only come from drilling. This objective has become lost in the present thematic panel structure and needs to be emphasized in the program. J. Briden agreed that paleomagnetism and the history of the Earth's magnetic field has gone hand-in-hand with the development of the drilling program.

J. Briden observed that the document itself does a good job of putting forward the future scientific basis of ODP. It does not, however, win funding for the program. The achievements of ODP needs a glossy, punchy, sexy format. It also reads like a US document and is somewhat patronizing. Emphasis on natural resources and global environment will win support from larger groups. A balanced science program is less likely to win support.

W. Merrell said the document is a science plan and should not have to be exciting and sexy. What to put in the drillholes for long-term monitoring may not be appropriate concerns for ODP; the holes will be available for experiments after ODP. The question of alternate platforms is another question that needs careful consideration. The *Resolution*-type drill ships are now fully utilized and ODP could not get one at the price in the current contract which extends to 1999. ODP should be making full use of the *Resolution* during this period.

H. Dürbaum suggested that the assumption that more money will solve all the technological problems may be incorrect, since some technology problems may be beyond ODP's capabilities to solve. The capabilities of other groups associated with ODP or working on similar problems need to be utilized. Funds outside of ODP may be available for technology development. There needs to be a more international focus to technology development.

J. Baker said that the drilling program can continue to be successful in funding based on the science being proposed. The management of ODP is a real plus. It has a simple structure that does not involve large cumbersome international organizations. The community has direct input to the management. The appearance of the LRP can be improved with a new cover figure and other editorial work. He suggested that the LRP include a paragraph or two about the management of the operations.

D. Heinrichs wanted it emphasized that the purpose of the LRP is to outline the science plans. Other documents should be produced to cover the other aspects of proposing successful continuation of the program.

462 RESPONSES TO PEC II REPORT

Publications

R. Moberly discussed the problems that have been associated with ODP publications. PCOM has adopted a new publications policy. The intent of this policy is to maintain the integrity of the sets of volumes being produced but at the same time speed up the process. The "Initial Results" volumes will now be essentially what comes off the drill ship. The policy is designed to get the "Scientific Results" volumes

published more quickly, and while maintaining cooperation onboard the ship, speed up publications in the outside literature. The main post-cruise meeting will be devoted to science issues. The question of copyrights for material reprinted in the "Scientific Results" volumes can be handled by a standard letter to publishers. There is also a concern over site survey related publications and the extent to which ODP has control of them as well as the rights of the collectors of this data.

Discussion

C. Harrison wanted to know if there would be a problem with getting papers published in the IR or SR before the science journals. R. Moberly said that the problem has been the delay of publishing in the open literature.

H. Dürbaum said there is a perception that there has been nearly no publications in ODP phase. Part C of the PCOM publication policy should be left to the Science Operator rather than IHP. N. Pisias disagreed with that there are no publications, since over 18 Part A and Part B volumes are published. The "Scientific Results" may take over 3 years to publish, but they present important primary data and interpretations. P. Rabinowitz said that the PEC report was concerned that there were no Part B "Scientific Results" at that time. By the time of the renewal of the program there will be 60 volumes published, 39 Part A and 21 Part B volumes. Publication of papers outside of ODP that use information derived from the drilling program is very extensive. D. Heinrichs said that it is the perception that there is a lack of publications that is the problem. The depth of understanding of basic science that has been contributed by the drilling program needs to be communicated more broadly.

J. Briden said that in addition to the permanent record provided by the Part A and Part B volumes, the "fruits of ODP" need to be highlighted in publications. He suggested a collection of papers similar to the Allan Cox book which presented the "fruits of paleomagnetism". C. Helsley, C. Harrison and J. Briden all emphasized the need for open publication of thematic papers.

Technology Development

R. Moberly said that technology development has been covered in the LRP discussion. A phased development schedule has been suggested. PCOM has endorsed continued engineering development legs, however, scientific advise will come from JOIDES. There is a need, as EXCOM has recommended, for an increase in the FY91 and FY92 budget of $2M for technology development.

JOIDES Advisory Structure

The advisory structure has been modified to the extent possible. The 4 thematic panels are ranking drilling proposals, with regional panels eliminated or made into detailed planning groups. A new service panel, the Shipboard Measurements Panel, has been formed. The Terms of Reference problems have been corrected by EXCOM. The question about bringing non-JOIDES representation into PCOM has yet to be decided.

Discussion

J. Briden wanted to know why the panel memberships for the Site Survey Panel (7.2), Pollution Prevention and Safety Panel (7.3) and Information Handling Panel (7.4) were not given in the Terms of Reference as they were for other panels. N. Pisias said that these panels were intended to be small groups to handle specific problems and remain flexible. R. Moberly said that each member or consortium

has the right to a member on each panel or committee. W. Merrell suggested that PCOM write some general statement.

C. Helsley said that a data base is needed to know what percentage of individual COSOD I & II objectives has been achieved. R. Moberly said that this will be prepared.

J. Baker said that it has been suggested to the JOI Board of Governors that the US representation on PCOM be changed from the present 10 JOI members to 8 JOI members and 2 non-JOI members. Details of this proposed change are now under consideration.

463 NEAR-TERM PLANNING

FY90 SCIENCE PLAN

In early May, PCOM changed the plan from the one prepared in December 1988 because of the need for additional time to prepare for the Nankai geotechnical experiments. Because of weather constraints, tool development, and coordination with a Japanese research vessel, the Nankai program had to be delayed until March 1990. Moreover, TAMU Engineering did not want the next engineering development leg for at least a year from the last one. Although proposals were put forward at the PCOM meeting to delay the Nankai and Engineering legs and make better use of drilling time (cut transit time) by the insertion of two highly ranked additional programs (Old Pacific and Atolls and Guyots), the general intention of PCOM remained to move the vessel to the Eastern Equatorial Pacific by Winter 1991. In order to delay the Nankai and Engineering legs and yet stick to the intention of a transit to the East Pacific to prepare for drilling there, a reshuffling of proposed legs was required. The end result of this was that the Old Pacific program was added at the expense of the Geochemical Reference program.

Discussion

B. Raleigh said that he had received several letters about the substitution that were concerned that LITHP was not represented at the meeting and had no direct input. He questioned whether there should be some provision for thematic panels to have a direct input into PCOM meetings. He said he was disturbed by this substitution. R. Moberly agreed that the rescheduling is of significant concern. Panel advice reaches PCOM in the form of panel minutes and through liaison members, which PCOM had. He explained, however, that not having a lithosphere expert present at PCOM was a problem, but it was not known that J. Malpas would not attend the meeting until the last moment. EXCOM members had been asked previously, if possible, to replace retiring PCOM members with appointees with expertise in petrology or seismology, and also to lengthen the tenure of PCOM members to improve corporate memory.

R. Moberly explained that in terms of its thematic ranking, Geochemical Reference did not make the list of high priority legs for SOHP or TECP and that according to the available records, it ranked behind 5 other legs on the LITHP ranking. N. Pisias pointed out that at the December 1988 PCOM meeting Old Pacific did not have complete surveys and there was a question about reaching old crust. In May 1989, however, Old Pacific was highly ranked and surveys had shown that it could be achieved and was therefore the better proposal. N. Pisias also observed that other strong thematic proposals will be drawing the ship back to the Western Pacific area; Geochemical Reference will get drilled if the thematic rankings justify it.

RESOURCES NEEDED

T. Pyle from JOI first discussed the activities of JOIDES over the past 3 years, including: preparation of 3 program plans covering 7 years; 2 program evaluations by outside committees; administrative review committee evaluation; COSOD II, NSB review of program, outside review by accounting management firm; publication of policy manual; and writing of the Long Range Science Plan.

T. Pyle reported on how the ODP FY90 budget (Appendix C) was produced based on the FY90 Science Plan. The budget includes $1.5 M in SOE which meets the EXCOM target of 4% for SOE. He explained how the subcontractors made adjustments to meet the budget. Lamont had to postpone the purchase of a sidewall entry sub and take out contingency funds for the insurance deductible.

SOE have been used to add two copy editors at TAMU to help reduce delay time for publications. Lamont is using SOE to lease the Borehole Televiewer. JOI has designated $53K of the SOE for publishing the LRP, producing an ODP "highlights" brochure and includes "seed money" for thematic publications.

Discussion

C. Helsley questioned the use of SOE to cover insurance costs, which are normal operating expenses. T. Pyle explained that because of the surprise at the size of the increase it was necessary to cover this cost using SOE for this one time.

W. Merrell commented that there is little flexibility if the vessel has problems with the bottom hole assembly or drillstring; a major reshuffling of money will be required. The PPI that the ODP contract with SEDCO uses is the slowest moving index, but there will almost certainly be an increase in the day-rate.

C. Harrison questioned the use of SOE to hire the two temporary copy editors at TAMU since in the BCOM report the statement is made that they are needed regardless of any change in the publications policy and therefore are needed on more than a temporary basis. T. Pyle explained that the backlog of papers required immediate action, and BCOM viewed this as a temporary solution to the problem. N. Pisias said that at the time BCOM met, it was not known what actions PCOM would take. If the editors are needed on more than a temporary basis, SOE should not be used.

H. Dürbaum wanted to know why the total budget for TAMU has gone up about $1.5M from 1989 to 1990 if costs are constant. T. Pyle said that this was mainly in salaries. Technicians are now required to return to TAMU rather than take compensatory time, and now must get paid for this time. There are also increases in salary that are beyond inflation. P. Rabinowitz said that in addition TAMU also has a real SOE of about 4% this year, while last year it was around 1.5%.

C. Barnes wanted to know if the Micropaleontology Reference Center had been entirely deleted from the program. T. Pyle said that a request for proposals will be issued for wider competition for the center. There had been a concern that there had not been an open competition. J. Briden said that there was also a concern that MRC was not in an equal competition with other line items in the FY90 budget.

D. Heinrichs wondered why there was no estimate of day-rate increases in the base budget and if it is simpler to estimate the increase and include it in the base budget. T. Pyle said that if this money is cut out in anticipation of the increase there is less flexibility in the overall budget and part of the program gets cut out. By saving money in some areas such as port calls or fuel costs, money may be shifted to cover the increases. Both D. Heinrichs and C. Harrison said that we know that there will be an inevitable day-rate increase. P. Rabinowitz said that during the first two years of the program there was no

increase. M. Moss suggested that it could be specified that the day-rate increase will come from a certain area. J. Briden said that BCOM felt that it best to let JOI and the Science Operator work this out when needed.

C. Helsley noted that if a 4% SOE is not maintained, program enhancement such as technological development cannot be sustained. If the SOE is used to cover normal program costs, we should acknowledge that the future of the program is being robbed. J. Briden was concerned that the only time that the 4% SOE has been reached in the past, current and next two years of planning was when there was a $2M increase in the budget and even then the increase in insurance rates places this level in danger.

D. Heinrichs was concerned with the 14% overall increase in salary at a constant FTE. A. Sutherland said that the salary increase is 8% if the increase due to the change in technician compensatory time is left out. N. Pisias said that salary increases will be a problem for future years with only a $1M per year increase in the program budget.

B. Lewis discussed the BCOM Report. A copy of the report was included in the Agenda Book and since items of note were included in the previous discussion, there was little new to add. PCOM has accepted the BCOM recommendations.

Bruce Malfait from NSF discussed the resource constraints provided by NSF for a four year program plan. Target funds were $36M for this year, $38M for 1990, $39M for 1991, and $40M for 1992. NSF has taken under consideration the recommendation of EXCOM to reevaluate the out-year increases of $1M. This year's budget has been increased by $250K by NSF resources. The Long Range Plan provides constraints for increased technological development costs.

Discussion

C. Barnes asked if the $5M technological development costs for the next four years was already built into the budgets. C. Helsley said that those costs are predicated on the $1M increase, but are still $3M short under current plans. C. Barnes thought that EXCOM should establish second priority items that can be left out of program if there is not enough money. D. Heinrichs said that the management style that has been adopted is for the contractors to recommend cuts, then any serious shortfalls in the program are examined by NSF to see if they can be covered by US sources.

FY89-FY93 PROGRAM PLAN

R. Moberly presented the scientific objectives. He noted that in a proposal driven program, with 4 times more proposals received since early 1988 for the Pacific than for the Atlantic or other oceans, drilling through 1991 will continue to be in the Pacific. PCOM has decided that high ranking programs in the easternmost Pacific will be drilled in 1991. The general track of the ship through 1993 will be determined at the Spring 1990 PCOM meeting after the thematic panels have ranked proposals without regard to ocean. The thematic panels have been asked to develop a scheme for the common ranking of proposals. Pacific drilling will continue to dominate the program because of the large number of high-ranking maturing proposals. The thematic panels felt that setting an arbitrary limit on time allotted to Pacific drilling was a political decision.

Discussion

B. Malfait wanted to know if all existing proposals would be examined. R. Moberly said that all proposals submitted within the past year and a half will be examined by the thematic panels. In addition, several panels have asked to examine older high ranking proposals that were not drilled. Revised proposals are also being encouraged by both a direct mailing to proponents and notices in the JOIDES Journal.

C. Harrison wanted to know if specific dates had been assigned for the 18 months of CEPAC drilling. R. Moberly said the time begins to accumulate when the drilling is actually done. N. Pisias said that the decision was that 18 months would be allotted for high priority CEPAC drilling.

D. Heinrichs said that the perception of the thematic panels expressed on page 15 of the Agenda book that EXCOM has warned about political considerations is incorrect; EXCOM has reaffirmed that ODP is a proposal driven program. Several EXCOM members have suggested during their country reports that thematic interests could be met equally well in the Atlantic. R. van Lieshout discussed a statement suggesting that it could happen that some European countries might not be as interested in continuing participation in drilling, as they would be if the vessel returned to the Atlantic sometime soon. The way to solve this problem is the approach taken, which is to evaluate proposals on a thematic basis and if Atlantic proposals warrant drilling to do so. C. Barnes suggested that it is somewhat naive to think that science alone will justify the continuation of the program for all participants. PCOM makes decisions based solely on science while EXCOM may have to consider whether the program can continue if there is a loss of members. J. Briden indicated that what is being said is that there is merely danger ahead on this path. J. Baker said that this is a warning to scientists that good proposals from the Atlantic are needed to help insure the continuation of the program. B. Biju-Duval said that there is no problem in France with science keeping the ship away from the Atlantic, good science is done by French scientists in all oceans.

C. Helsley noted that the perception of where the program will be drilling influences the location of the proposals submitted. H. Dürbaum also suggested that because of the effort required to produce a mature proposal, perception of the likelihood of drilling influences submission. He said that good proposals will be forthcoming now that drilling is open. W. Merrell said near the end or perceived end of even a science-driven program, politics inevitably play a part. The way to avoid these problems is to avoid having a distinct end to the program by agreeing to continue it through 1999, the end of the contract for the *Resolution*. In that way the strong and good science in the present mode can continue. D. Heinrichs agreed that brinksmanship should be avoided. B. Raleigh said that in order to keep proposals coming in, a clear intent to extend the program beyond 1993 needs to be given. R. van Lieshout said that to go beyond 1992 the money suppliers need to see a benefit for continued participation in the program and this may be a problem if the ship is far away.

R. Anderson from Wireline Logging Services distributed two handouts and discussed near-term technological development constraints. Logging tools are technologically advanced and use industry designs. A major problem is that the 4-inch DCS hole is incompatible with the modern logging tool suite. The tools available for use in the 4-inch hole are generally not designed for high pressures or high temperatures. If the Schlumberger HEL logging tools are used, modern geochemical and geophysical logging data cannot be attained. The problem of repackaging the present suite of tools for a smaller hole is that dewaring them for high temperatures makes them too big for the 4-inch hole. A possible solution, which has been used by the oil industry, is to cool the hole by circulation of drilling fluids. With a small-diameter hot hole, however, there is not enough of a heat sink to keep the temperatures from quickly rebounding and the hole can only be cooled 20%. This has led to a box for the logging of small-diameter holes. The loggers suggest that the only way out of the box is to make bigger holes by: deploying a larger

diameter DCS on the ship; reaming of the smaller diameter hole to a larger diameter (however, the problems peculiar to reaming usually results in loss of 50% of the holes); or drilling two offset holes, one for core recovery and the other for logging.

Discussion

N. Pisias wanted to know if the situation of loss of logging will occur anyway for very deep crustal drilling, where stepping down of the drill rod size will be necessary. R. Anderson agreed this will cause problems.

T. Pyle from JOI presented clearances, day-rates and other operational constraints (Appendix D). He reported there are no problems not already discussed.

Tuesday, 1 June 1989
Joint Session of ODP Council and JOIDES EXCOM
(D. Heinrichs and C. Helsley, Co-Chairmen)

464 PRESENT STATUS

P. Rabinowitz distributed copies of the Science Operators Report and discussed science operations since the last EXCOM meeting. He reviewed Legs 123 to 125, the details of which can be found in the report. A highlight for Leg 123 was the casing of the 1200-m deep hole at Site 765 to produce the deepest cased hole and provide an excellent natural laboratory for future downhole experiments. One of the surprises was the lack of Jurassic sediments. About 75% of the leg was spent on-site. Leg 123 was the last of the Indian Ocean Legs. Leg 124 was the first of the Western Pacific Legs. A highlight for Leg 124 was the drilling of a single bit hole to 1271 mbsf. Again, about 75% of the leg was spent on-site. Leg 124E was to test engineering developments, primarily the Diamond Coring System. It proved the concept of using a mining coring system for drilling core from the *JOIDES Resolution*. Leg 125 was located in the Mariana and Izu-Bonin forearc regions, where it successfully drilled serpentinite diapirs. Again, about 75% of the leg was spent on-site. The historical average for the drilling program has been about 60% of the time on-site. The 2 knots higher average speed of the *JOIDES Resolution* compared to the *Glomar Challenger* has led to more time on-site even though the transit distances have been somewhat longer. In the 4 years of ODP there have been 120 more days on-site, which translates into about 3/4 of a drilling leg per year. Co-Chief Scientists have been chosen through Leg 133 and staffing has been completed through Leg 128 plus Leg 131. Clearances do not appear to be a problem for the upcoming drilling legs.

Discussion

J. Ladd asked why the hole was cased so deeply at Site 765. P. Rabinowitz said that problems with hole stability made it necessary. There were 12 legs without a loss of Bottom Hole Assemblies (BHA) and the optimism generated by the success of the two deep holes on Legs 123 and 124 may have contributed to the present problem with not setting casing or reentry cones and the 8 losses of BHA in 3 legs.

R. Anderson presented the Wireline Logging Services report on present status. He distributed two reports. Logging of total depth of well is now very good (~90%). Early problems in program of bridging and caving-in of holes have been overcome, in part by changing the drilling mud and by use of the side entry sub (SES). Education of Co-Chief Scientists about the importance of logging has been successful. The planned logging tests on Leg 124E needed a deep hole in a hot environment, which was not available. WLS now requests that logging tests be conducted on the scientific drilling legs with extra time given as the holes and tools are available for testing.

The increased cost of insurance for the logging tools has been a big budget problem. The history of tool losses has involved problems in excentered tool design, which previously used bow springs (which are susceptible to getting hung up) but now use hydraulics. There is a new policy on "fishing" for lost tools and better equipment has been purchased for this purpose. The loss of four tools resulted in ODP being put in a higher risk insurance pool and increased the rates. There is now a lid on coverage set at $275K per tool loss. The next tool loss will cause three problems: 1) premium will increase; 2) deductible will increase; and 3) the difference between the cost of the tool and $275K will have to be covered. In response to a question by C. Harrison about the necessity of insurance at such high rates, R. Anderson said insurance is needed to preserve the logging program, since the loss of three tools without any insurance would shut down the logging program. WLS is looking to see if a lower rate for logging tool insurance can be obtained as part of the TAMU insurance policy. Steps have been taken to stop tool losses. Insurance is not intended to be an SOE for next year.

Logging schools have played an important part in educating the community in the value of scientific logging. Two schools have been held in the US, one in Denver at the GSA meeting (28 attendees) and another in San Francisco at AGU (100 attendees). Outside the US a logging school has been held in Canada and there are schools scheduled for September in the UK and for October with the KTB Group in the FRG. There will also be a logging school next year in Australia and sometime in the future in Japan. The number of scientists requesting logs to do science is increasing. Persons that have completed the logging schools are being asked to participate on ODP legs as JOIDES logging scientists. Logging is vital even when there is 100% core recovery for measurements that cannot be obtained in the laboratory.

Stress measurements are a vital element of the logging program. Stress measurements in ODP boreholes are important for determining the global patterns of stress and constraining the mechanisms of plate tectonics. The formation microscanner provides an order of magnitude higher resolution than the other tools for determining breakout directions, fault orientations, dips, etc.

T. Pyle from JOI presented the present status of the budget. The 1989 program plan budget has had an $150K increase by NSF funds to help cover the PPI day-rate increase. Significant changes in the budget also resulted from the $138K increase in the insurance. This was covered by taking $40K from the BRG's SOE and $98K came from NSF. The logging insurance is being paid out of the JOI office to save the overhead otherwise due to LDGO. The day-rate increase was $480K which was absorbed by TAMU. The end of FY89 will be a very lean stage. In an additional item, an independent producer has plans to use film footage from ODP in one of their education programs on a cable TV network and some money may be paid to ODP.

Discussion

C. Helsley wanted to know what effect the loss of BHAs have had on the program budget. T. Pyle said that in the past unneeded drilling supplies have been used as an extra source of funds and this flexibility may be lost. T. Pyle also said that money saved on port calls and fuel costs has also been a source of extra funds. P. Rabinowitz said that the last port call in Japan ran more than $100K over the average.

R. Moberly presented the present status of PCOM planning which was given in the Agenda Book on pages 11-13, 18 and 111-120. Points emphasized from the last PCOM meeting included in addition to the FY90 Program Plan: the relative costs to attain compatibility between the DCS and the present suite of modern logging tools; policies for future joint science and engineering development legs; the dropping of the "E" designation for the joint science and engineering development legs; the general area for drilling in 1991; the need for sufficient time for submission and ranking of proposals before planning for drilling after 1991; the policy banning enriched stable and radioisotope tracers onboard the *JOIDES Resolution*; the policy on

publications recommended by PCOM; minor changes in the wording of the mandates for TEDCOM, SMP and OHP; and concerns over the procedures used for selection of Co-Chief Scientists.

Discussion

A. Maxwell commented that UNOLS has developed guidelines for the use of radioactive tracers onboard research ships. R. Anderson said that life may be introduced into the drilling environment by the drilling mud and that special care will need to be taken to avoid contamination. J. Briden was concerned that innovative science which would broaden the scientific community involved with ODP was being deterred. He wanted the appropriate panels to be charged with making this experiment possible quickly. C. Helsley observed that there are definite procedures to be followed for drilling-related proposals and this proposed work has not gone through the JOIDES structure. PCOM has encouraged innovative science. J. Briden said that ODP needs to remain flexible to respond to new opportunities when they arise.

The PCOM chairman brought to EXCOM's attention the PCOM concern that the Co-Chief Scientist selection sometimes left the proponents of a project out of the endeavor due to a strict reading of the MOUs concerning "average" participation by Co-Chiefs from each of the participating countries. P. Rabinowitz said that the Science Operator does take into consideration the advice given by PCOM when selecting Co-Chief Scientists. H. Dürbaum wanted to know about the policy now in effect. R. Moberly said that in ODP, PCOM makes nominations to the Science Operator, but these nominations do not have to be taken. D. Heinrichs said that in general the staffing policies are working well, although it is not always possible to satisfy everyone. H. Dürbaum said that the policy does not need to be changed.

465 MEMBER COUNTRY REPORTS

Canada-Australia Consortium

K. Babcock and C. Barnes presented the ODP report for the new consortium. Copies of The *Resolution* Report, v. 5, no. 1, January 1989 which covers the formation of the consortium and the organizational structure were distributed. K. Babcock replaces R. Price as chairman of the Canadian ODP Council. I. Gibson replaces S. Scott as chairman of the Canadian National Committee. The secretariat at Memorial University is fully staffed. Canada will be applying the $1M saved by forming the consortium to site surveys and technological development related to ODP. These include funding seismic surveys of the Cascadia Accretionary Prism in September 1989. Technological development efforts include the LAST Tool and Deep ROV. The ODP Evaluation report is now published and available from the ODP Secretariat.

R. Rutland is the chairman of the Australian ODP Council. D. Green is chairman of the Australian National Committee. The Australian ODP Secretariat is established at the University of Tasmania in Hobart, and is currently seeking a director. Canadian and Australian representation on JOIDES panels have been established in a 2:1 ratio.

A workshop has been planned in Australia for February 1990 to cover sedimentology. In Canada there has been a recent Logging School, and workshops are planned for June 1989 to cover Atlantic drilling proposals and the Sedimented Ridges detailed planning group meets to plan hydrothermal system drilling. In February 22-24, 1990 a Second National Workshop on Scientific Ocean Drilling (NOSOD II) will be held in Waterloo.

J. Briden asked about the Canadian-Australian members on EXCOM and PCOM. R. Rutland will be the EXCOM member with C. Barnes as alternate; J. Malpas will be the PCOM member with D. Falvey as alternate.

ESF Consortium for Ocean Drilling (ECOD)

J. Stel presented the ODP report for the consortium. He expressed a general concern that the EXCOM/ODP Council meeting documents arrive too late for distribution to the consortium members before the EMCO management committee meeting held just prior to the EXCOM/ODP Council meeting.

By the first of July the ESCO scientific committee Secretariat will be transferred from Oslo Norway to Milan Italy. As a consequence for PCOM, Olav Eldholm will be replaced by Maria Bianca Cita-Sironi with Jan Backman as alternate. The secretariat of the management committee EMCO will remain in Strasbourg, but Bernard Munsch will be replaced by Michele Fratta. On EXCOM, J. Stel will be replaced by Leif Westgaard (Norway) with J.L. Almazan (Spain) as alternate. Mats Ola Ottosson (Sweden) will succeed R. van Lieshout as EMCO chairman. The designation of an ESF representative-at-large for the ODP Council is not yet finalized, but P. Fricker (Switzerland) most likely will take over this position.

A meeting organized by J.E. van Hinte was held 7-8 November 1988 in Amsterdam for the purposes of forming regional thematic working groups, bringing together various national databases, and developing Atlantic drilling proposals. A mechanism for generating Atlantic drilling proposals is now installed. There is concern with the deadline of 1 August 1989 for submission of proposals.

R. Moberly explained that all proposals are sent out to the thematic panel chairmen immediately after they are received, but if proposals are received after approximately August 15 they will probably not get reviewed at the fall meeting of the thematic panels. There will be another meeting of these panels early next year before the spring PCOM meeting where the general track of the vessel will be planned for the next four years based on highly ranked mature proposals. If proponents want to be able to revise their proposals, they need to submit them in time for the fall meetings of the thematic panels.

M. Fratta explained that the rules of the ESF require a review of the consortium which has just been done. The overall impression is that the review panel is fairly satisfied with the consortium ad well as the program as a whole. A report will be forthcoming and will be circulated to interested parties.

B. Munsch talked about the polar activities of ESF, which also has a commitment towards the World Ocean Circulation Experiment (WOCE).

Federal Republic of Germany

D. Maronde presented the ODP report for the FRG. A colloquium was held 8-10 March 1989 in Tübingen and coordinated by H. Beiersdorf with approximately 120 participants including guests from several European countries. The meeting included a discussion of the draft of the long range planning document and formation of working groups for further activities in the Atlantic region. There was a positive reaction to the LRP and possible renewal of the FRG participation in ODP.

The 1989 science budget had a disappointing 3.3% increase which more or less corresponds to the inflation rate. The outlook for 1990 is uncertain; the ministers for research and technology have proposed a 5% increase while the ministers for finance have proposed only a 2.5% increase. There continues to be a growing interest in the FRG to participate in ODP as shown by the increasing number of funded projects with 40 applications funded in 1989.

New initiatives related to ODP include: a special collaborative program in Bremen to study the Late Quaternary history of the South Atlantic; filling of open positions at GEOMAR in Kiel (E. Suess, R. von Huene); Kiel proposal to study the response of oceanic circulation to the onset and development of Northern Hemisphere cooling (J. Thiede); formation of the Atlantic working group; French-German submersible expeditions in the Pacific including studies of the Lau Basin. A detailed planning study to consider replacement of the R/V *"Sonne"* is under discussion.

D. Maronde was glad to note that international cooperation was mentioned in the epilogue of the LRP, but thinks it could be intensified. Cooperation with other global Earth Science Programs include the German KTB continental drilling program whose director H . Rischmüller is a member of TEDCOM. The pilot hole has reached 4000 meters in April 1989. Preparation for the main hole will begin in the middle of 1990, provided budget problems are solved. There is an effort to intensify connection with the International Sedimentary Geology Program, International Geosphere-Biosphere Program, International Lithosphere Project and International Geological Correlation Program.

France

B. Biju-Duval reported on French ODP activities. Pierre Papon is the new director of IFREMER. Yves Lancelot is the new chairman of the scientific committee and PCOM representative replacing Jean-Paul Cadet. The news about the science support budget for 1989 is not as good as previously expected. The rapid change in the exchange rate has been a problem.

There have been two colloquia related to ODP activities. In March there was a colloquium in Paris on the circumnavigation of the globe over the past four years by the *Jean Charcot*, which included the contributions to ODP site survey studies. This was a successful meeting. There is talk of another expedition, possibly with the new vessel. The second was a European workshop on intraplate processes. Unfortunately due to the short notice there were few participants from other countries, but it was very successful.

IFREMER has acquired equipment to do modern seismic work and is working on an agreement with CNRS to do the seismic processing.

In the Pacific there have been two multichannel seismic surveys in support of ODP drilling. There is also survey work occurring in the Atlantic.

There has been extensive submersible activity in the Atlantic last year in the Vema Fracture Zone and in the "Snake Pit" area. In the Pacific, French-German studies have been made of the Polynesian hotspots and in the Lau Basin. There has also been a cruise along the Vanuatu collision zone in support of ODP drilling. There are two cruises underway in cooperation with the Japanese; one to the Fiji basin and the other to Nankai which is related to long term monitoring of experiments on the seafloor. With the success of the experiment reoccupying Site 396-B last year, two new proposals have been received to use the *Jean Charcot* to do studies in IPOD drillholes. One is proposed by GEOSCOPE to deploy a downhole seismometer.

The new ship to replace the *Jean Charcot* has been started, and is scheduled to be completed August 1990 with the first cruise in the fall of 1990. The new ship will be equipped with a new large swath multibeam system. A brochure was distributed about the proposed NEREIS European ship for light drilling and on-station experiments. ESF has been asked by IFREMER to look at the European scene to see what kind of support is available.

B. Munsch discussed the ESF exploratory seminar convened to advise on the features which the relevant parts of the scientific community in Europe would like to have available on a research vessel for light drilling and on-station experiments. There is general interest and in some instances it is quite considerable. Further exploratory meetings, including one later this month, are scheduled, as well as a major workshop next year. A cautious approach has been taken since the project does not want to appear to be a threat to ODP, but neither should ODP be a threat to this project.

Japan

T. Nemoto reported on behalf of the Japanese ODP scientific community, who expressed their appreciation at having the *JOIDES Resolution* operating in the waters about Japan for the first time since ODP started. Nearly 700 scientists and engineers visited the ship in addition to roughly 50 publicity people and 30 invited guests when it stayed at the Harumi Pier in Tokyo. Results of the recent drilling in the Izu-Bonin regions on legs 125 and 126 are impressive. Further achievements are anticipated to result from the drilling in the Sea of Japan and Nankai Trough including the downhole experiments.

Preparations for two long-term experiments scheduled in 1989 have progressed. The downhole seismometer in the Japan Sea and the ONDO temperature string project in the Nankai Trough are both in very good shape due to the aid and consultation with ODP engineers. Some of the instruments were tested at sea on cruise KT88-21 of the Japanese Research Vessel *Tansei-Maru*. Further trials of the sonic communication device is scheduled for cruise KH 89-1 of the new research vessel *Hakuho Maru*.

11 Japanese scientists have participated on legs 119 to 124. Especially noteworthy has been the contribution of the 4 Japanese paleomagnetists.

Two site survey cruises have been conducted by the Japanese Research Vessel *Tansei-Maru*. in 1988; one (KT88-9) in the sea of Japan and the other (KT88-21) in the Nankai Trough. Seismic reflection profiles obtained during KT88-9 were used for further detailed site selection and priority evaluation for the Japan Sea drilling program. Heat flow measurements conducted in the Nankai Trough during KT88-21 were used for site selection for the Nankai drilling.

A new research vessel, the *Hakuho Maru*, was completed 1 May 1989. The vessel is equipped with Seabeam, Seamark R and multichannel-seismic profiler.

Four symposia were held relevant to ODP: geoscience of the Sea of Japan; geology and geophysics of the Izu-Ogasawara (Bonin) arc; accretionary prism research; and scientific highlights of ODP. The last symposium held at the occasion of the annual meeting of the Geological Society of Japan in Okinawa was attended by 300 persons. Enthusiastic participation of the audience in the discussion of reports by onboard scientists and future vision of the Ocean Drilling Program was reported to be impressive.

United Kingdom

J. Briden reported on the ODP-related activities in the UK. In terms of shipboard scientific party participation, the UK remains very active. In the matter of proposals, 5 proposals are in the mill and will be forthcoming. The UK will be participating in the meeting in Paris related to formulating Equatorial Atlantic drilling proposals. J. Briden said his participation in the Tokyo port call was useful and informative and he wanted to thank everyone involved. The interest level of the UK scientific community in ODP is high, including the microbiology community.

A special research program on the geology of the last glacial/interglacial has been instituted. This ties in nicely with ODP activities and the polar research activities of the European Science Foundation.

John Bowman is no longer on the ODP Council following his departure from the Natural Environment Research Council. Hugh Jenkyns has replaced Tim Francis on PCOM.

The Research Vessel *Charles Darwin* will be completing its circumnavigation next year. It will be working on site surveys in the Atlantic after coming through the Panama Canal. A major development in oceanography in the UK is the relocation of the IOS from Surrey to Southampton. Building of a new Antarctic vessel has been approved. Participation in JGOFS and WOCE is going well, including the possible stretching of the Research Vessel *Discovery* related to WOCE participation.

There has been a helpful review at the central government level of the UK participation in international programs in general. Their review of how ODP is run was quite favorable. How this can be translated into funds for future participation in ODP remains to be seen.

United States

B. Malfait presented the first part of the US country report. He distributed a handout that summarized budget information and ODP-related science support by NSF. There has been a reaffirmation by the new administration to double the NSF budget on a 5-year time scale. There has not been as quick a matching commitment from congress. Overall the 1989 NSF budget has increased by 9.8%. The 1990 request working its way through congress is for a 13.9% increase. Within the Ocean Sciences Division this translates into a 4% increase in 1990. The increases in the Ocean Sciences Division are for some major new initiatives such as GOFS and WOCE. 1989 overall budget for NSF/ODP related programs is $31.4M. US ODP science support is divided between unsolicited proposals $5.1M and US Science Support/USSAC $4.3M.

B. Malfait discussed changes in the US research fleet. The *Conrad* has been retired. The *Knorr* and *Melville* will be stretched. The keel has been laid for the AGOR-23 which will replace the *Thompson* operated by the University of Washington. The Division of Polar Programs is proceeding to acquire services of an Antarctic research vessel.

The Division of Polar Programs and NSF/ODP Program are jointly supporting a workshop at Woods Hole in late September to plan for future US geology and geophysics work in the Arctic.

In the second part of the US country report T. Pyle discussed some of the work supported by the JOI/US Science Support Program (Appendix E). Workshops supported by this program that help to broaden the science base of ODP include the Downhole Seismometer Workshop held by M. Purdy and A. Dziewonski and the Links Between Geoscience Programs organized by N. Pisias. The Chapman Conference on the causes of changes in sealevel was also important for forming links to other groups. JOI/USSAC also supports Survey Augmentation and Downhole Instrumentation programs.

D. Heinrichs discussed some potential new members for the Ocean Drilling Program. There have been some low-level discussions initiated with South Korea about forming a consortium of Asian nations which could include Taiwan, People's Republic of China and South Korea. Further discussions may occur in September. EXCOM's resolution of last fall concerning participation of the USSR has been presented up the chain at NSF. There has been some low-level discussion with the new administration, but active discussion awaits the installation of Dr. Allan Bromley as science advisor.

466 PERFORMANCE EVALUATION COMMITTEE REPORT

C. Drake discussed the evaluation of ODP made by the committee he chaired. Overall they were impressed with the ODP operations. The suggestions concerning timeliness of publications has been addressed. Publications do not, however, reflect the objectives of the COSOD reports, they remain more problem oriented than thematic.

JOI, LDGO and TAMU were examined in the area of management and found to work reasonably well. JOIDES committees and panels are advisory and report to EXCOM and PCOM who set the policies that run the program. There is a concern that some advisory committees are too closely tied to TAMU, which can foster a microenvironment management style where particular aims are pushed over larger goals of the program. PEC thought that BCOM should not deal directly with the Science Operator, but rather make their suggestions to JOI.

PEC thought that it was time to begin looking towards the future and the continuation of the drilling program. It will not be as easy to get the program continued this time, since other large programs are starved for money and will be in direct competition.

Discussion

A. Maxwell agreed that concerns about the future of the program needs to be taken seriously. The program gets its support by doing good solid science, which has to be published and given higher visibility. The political problems caused by no guarantee of a quick return to the Atlantic must be faced now and a decision needs to be made. C. Drake said that ODP is a showcase of international cooperation in science, however, it depends on the enthusiasm of its members and this interest needs to be maintained.

C. Barnes observed that the other groups that are in competition with ODP are at immature stages in their development while ODP is at a mature stage. This means that ODP will constantly need to show the benefits of the program. The advances that have been made and will be made in the future need to be highlighted. The technological developments may need to be delayed while the program is defined relative to other programs. Politics are part of the renewal process and rumors about the ship not returning can hurt the program. It should be made clear that ODP is global and the vessel will go into the Atlantic, Indian, and Pacific Oceans. It is important that the program does not appear to "come to an end" as did DSDP.

D. Heinrichs said that to get extended the program needs to show an enhancement of the present set of goals.

W. Merrell said that both DSDP and ODP are platform driven programs. Therefore extension through the end of the contract for the vessel is logical, especially since $10M has been invested in it. The present program should be extended through 1999, then we can rethink what the next mode if any should be. The question of which ocean the ship will be drilling in at the time of renewal of the MOUs will no longer be a problem since there will be time to drill in all oceans.

C. Harrison queried concerning the problems with the JOIDES advisory structure and BCOM. C. Drake said that using a microenvironment management mode needs to be avoided. T. Pyle explained that JOI presents the BCOM recommendations to the contractors who respond to them with their own suggestions. The evaluation was done two years ago and things have changed since then. BCOM has a better defined mandate. A. Maxwell said it is appropriate that PCOM should be making suggestions to the Science Operator since it is the science that drives the program.

J. Baker observed that the next performance evaluation would normally happen soon, but wondered if it should be delayed for a while in order to see how the changes are working out. D. Heinrichs said there is some flexibility in the scheduling of the reviews. C. Drake said it would be premature to do one now and more productive to wait a year. C. Barnes said that it would be helpful to have a report in 1992, which means that a review should be done about one year from now. NSF agreed to consider such a change in the review schedule.

J. Baker wanted to know what was the view on publication of Parts A and B of the Proceedings volumes. C. Drake said that they are reasonable documents that are permanent records of the cruises produced in a finite amount of time. What are needed are the results of symposia which give a broader exposure for the program. C. Barnes said that publications that are designed for teaching are needed. A. Maxwell wanted to know what were the opinions about the Part B Proceedings that have been published. C. Drake said that they are good quality. The problem is that the objectives of COSOD are the basis of the program, but the publications do not address how these thematic objectives are being met by the drilling program.

C. Helsley expressed the appreciation of everyone for the efforts of the Performance Evaluation Committee and of Chuck Drake in discussing the report with EXCOM and the ODP Council. A round of applause showed this appreciation.

467 JOIDES RESPONSE TO REVIEWS

T. Pyle presented the JOIDES response to the Performance Evaluation Committee and the National Science Board reviews of the program. Responses have been made in the following areas:

Reorganizing the advisory structure on a thematic basis by: 1) deleting the regional panels; 2) emphasizing thematic panels; 3) splitting SOHP thematic panel into SGPP and OHP; 4) adding SMP service panel; and 5) revising and updating mandates (EXCOM 9/88).

Emphasizing timeliness of publications and need for thematic synthesis publications by: 1)providing funds for temporary copy editors in FY90 (SOE); 2) providing seed money for thematic publications in FY90 (SOE); and 3) adopting a new publications policy approved by PCOM emphasizing easier outside publication and faster publication of Parts A & B by revising post-cruise meeting schedule.

Criticism of JOI and the lines of communication have been addressed by: 1) providing a mandate for BCOM so that its purpose is not misunderstood; 2) clarifying the JOIDES chain-of-command; and 3) clarifying JOI is sensitive to the international character of the program.

Coordination with other Earth Science programs has been proposed by: 1) Forming liaisons with the following groups: Arctic Ocean Drilling; National digital seismic networks (IRIS, POSEIDON, etc.); RIDGE, BRIDGE, FRIDGE; Global Sediment. Geol. Project (IUGS); Continental Drilling; WCRP-WOCE, JGOFS, etc. and 2) Briefings of PCOM by other programs such as the Arctic Ocean Drilling (May PCOM) and Global Seismic Network (proposed for August PCOM).

Question of why there is not deeper drilling: 1) less deep drilling being proposed; 2) some objectives reached earlier than expected; 3) some lithologies still causing drilling problems.

Advice on increasing "dues" has been ignored. ODP will seek more partners.

In addition, the JOI Board of Governors will consider increasing outside representation in the planning structure, for example, by proposing that 2 of 10 US members of PCOM be non-JOI representatives.

468 FUTURE MEETING SCHEDULE

Participants agreed to the following date for the next joint ODP Council/EXCOM meeting:

6-7-8 June 1990 Washington, DC

[Note: Subsequently it was found that these dates were unavailable and a new date, 20-22 June 1990 has been set.]

J. Stel gave some details of the upcoming Fall EXCOM meeting in the Netherlands to be held:

3-4-5 October 1989 Amsterdam, The Netherlands

The meeting will include a boat tour of the canals, a dinner and an excursion to the Delta Works including lunch.

B. Biju-Duval gave some information on the 1990 Fall EXCOM meeting which will be held in France the first week in October, with possibly a visit to the new French research vessel.

As this was Bernard Munsch's last ODP Council meeting, C. Helsley wanted everyone to acknowledge the contributions that he has made to ODP. A round of applause expressed this appreciation. This was also the last meeting for R. van Lieshout. C. Helsley thanked him for his help and guidance. Another round of applause signified everyone's appreciation. C. Helsley also wanted to acknowledge the contributions of J. Bowman who has also been a longtime contributor to ODP.

Thursday Afternoon, 1 June 1989
EXCOM Business Session
C. Helsley Chairman

469 APPROVAL OF PREVIOUS MEETING MINUTES

C. Helsley called for any additions or corrections to the previous minutes. B. Biju-Duval asked for a correction on page 134 of the Agenda Book (last sentence of Minute 458), changing 1991 to 1990.

EXCOM Motion

EXCOM approves the minutes of the 13-15 September 1988 Executive Committee Meeting in Edinburgh as corrected. (Motion Barnes, second Stel)

Vote: for 16; against 0; abstain 0

470 APPROVAL OF AGENDA

C. Helsley asked if there were any additions to the agenda. There were none.

EXCOM Motion

EXCOM adopts the agenda for the Executive Committee Business Meeting. (Motion Maxwell, second Duce)

Vote: for 16; against 0; abstain 0

471 EXCOM ACTIONS ON LONG-TERM PLANNING

Long Range Planning Document

EXCOM discussion first focussed on the Long Range Planning document. B. Lewis was concerned that the move towards deep crustal objectives might not be achievable. J. Briden thought it was an excellent draft plan, but needed adjustments at the editorial level (what audience is being addressed?); the education section (should be more international in scope); a cautionary Foreword should state that the program is proposal driven and therefore the 95 legs are only an example of what might get drilled - many people believed that the balance between sediment and crustal targets was wrong. R. Moberly said that N. Pisias had also received comments that the education section was largely a US statement, but he was unable to get a written response from the non-US members in this area. JOI agreed to polish the document. H. Dürbaum was concerned that modern logging techniques would be dropped if drilling pursues crustal objectives using the DCS. The wording on alternate platforms needs modification. J. Stel thought that the defensive tone needs to be polished away. He also questioned the Phase I technological development costs of $5.4M. T. Pyle said that the JOI office will use this science document as a basis for a more polished one, however, changes need to be written by the concerned parties. C. Helsley said that it is important to have the final document in place by next year. W. Merrell observed that this is a living, working document which needs to get out to the community to show what the science plan is going to be for the renewal. He cannot see any reasons for delaying its publication. C. Barnes was concerned that there is an overall balance problem with hydrosphere, cryosphere and biosphere only being about 1/3 of the drilling plans. W. Merrell said that PCOM thought about and approved this science balance using input from the thematic panels and besides it will get modified as new proposals arrive. C. Harrison wanted to know if PCOM will reconsider the balance. R. Moberly said they will take into consideration these comments. D. Heinrichs emphasized that the science plan is needed right now so that a working plan can be available for presentation to the NSB this fall.

EXCOM Motion

EXCOM adopts the Long Range Plan with modifications as listed below.
Balance; Editorial; Educational Accomplishments and Opportunities; Example Only ~90+ legs; Logging; Alternate Platform; Are Costs in Phase I&II Correct.

(Motion Merrell, second Caldwell)

Vote: for 14; against 0; abstain 1; absent 1

Publications Policy

Discussion next centered on the Publications Policy approved by PCOM. Although he agreed with the first part, H. Dürbaum wanted Part C of the policy deleted, since he thought the Science Operator would be quicker in handling the problems of copyright and lead times than IHP. J. Briden wanted to know who does give the detailed guidelines to the Science Operator. R. Moberly said that PCOM prefers to use the advice given by the JOIDES advisory panels, which were established for this purpose. Some of the issues were identified by IHP and involve science-related issues rather than operational matters. C. Helsley told PCOM to direct its IHP to provide the guidelines; TAMU should get started on what it can. D. Spencer wanted to know if it were possible to shorten the time for publication of Part A even more, since it should be ready when it comes off the ship. R. Moberly said that some things, such as final graphics, require work off the ship. A minimum of 3 to 4 months are probably needed. T. Pyle pointed out that these time figures were based on a thorough survey by the Information Handling Panel.

EXCOM Motion

EXCOM adopts the new Publications Policy, with the deletion of paragraph C. (Motion Dürbaum, second Caldwell)

Vote: for 15; against 0; abstain 0; absent 1

472 EXCOM ACTIONS ON NEAR-TERM PLANNING

FY90 Program Plan and Budget

EXCOM next discussed the FY90 Program Plan and Budget. R. Moberly said that because of letters received about the removal of Geochemical Reference from the FY90 plan, PCOM will reconsider FY90 planning at its August meeting.

C. Harrison was concerned that there was no money budgeted for a day-rate increase. He suggested that money be budgeted for a day-rate increase and placed in a fund that can be used either for this or special engineering projects. B. Lewis said it is better to leave the budget the way it is now, because although BCOM realized this problem, JOI wanted to maintain flexibility to deal with everything. A. Maxwell agreed that BCOM had looked at this carefully and the problem was best dealt with by BCOM and JOI.

EXCOM Motion

EXCOM adopts the FY90 Program Plan, including its budget. (Motion Maxwell, second Caldwell)

Vote: for 13; against 1; abstain 1; absent 1

Radioisotopes Onboard the *JOIDES Resolution*.

EXCOM next considered the matter of handling radioisotopes onboard the *JOIDES Resolution*. J. Briden thought the matter required immediate action and was better resolved by PCOM than being referred to SMP. J. Briden moved that "EXCOM calls on PCOM to resolve the question of radioisotope-handling policy as a matter of urgency". D. Spencer explained that the difficulty arises because of the incompatibility between low levels of C^{14} that occur naturally and the large amounts used by the biological experiments which are up to 10^9 times higher. WHOI has very restrictive policies. There is a very real danger of spreading radioisotopes over the whole ship. PCOM is wise in what it did. If the experiment has to be done immediately, then another vessel should be used. With the advent of tandem accelerator mass spectrometry, it is even more critical that contamination of the *Resolution* be prevented. The policies towards the use of these tracers needs to be looked at critically without pressure from EXCOM. If ***urgency*** means putting a policy in place without working out the proper safeguards then Spencer stated he could not vote for the motion. C. Harrison agreed that contamination could cause tremendous problems. A. Maxwell also agreed that strict policies are needed and suggested that the UNOLS guidelines be examined. J. Briden said he didn't contest the item about the danger of contamination, he was urging that the policies be formulated as a matter of urgency. In the PCOM wording "until such time" suggests delay. R. Moberly said that PCOM does not have a problem if the experiment is done on another vessel or onshore. If however, the experiment was to be done in a van onboard the *Resolution*, then formal procedures that are appropriate to the *Resolution* are required. PCOM would prefer this advice come from its advisory panel. B. Malfait pointed out that Asahiko Taira had volunteered to help locate a laboratory onshore where the experiment could be done. A. Maxwell wanted to know if it were possible to check the vessel to see if it is presently contaminated. D. Spencer said it would not be an easy matter.

EXCOM Motion

EXCOM calls on PCOM to resolve the question of radioisotope-handling policy as a matter of urgency. (Motion Briden, second Maxwell)

Vote: for 9; against 5; abstain 1; absent 1 **(Failed)**

Political Constraints on Drilling

EXCOM next turned to political constraints on drilling. A. Maxwell suggested that a statement be made that the program will be returning to the Atlantic, but the amount of time spent there will depend on the proposals received. W. Merrell said that this would not be good unless the program goes through 1999. C. Barnes suggested that it should be made clear that ODP is a long-standing international program. B. Biju-Duval suggested that ODP reaffirm that it is a global program that is proposal driven. J. Stel said that this will give a signal to the community that the Atlantic is open to drilling proposals. R. van Lieshout said this will open up the possibilities for renewal of the MOU. J. Briden said that the problem is not in the EXCOM resolution but in the perception that the ship is going to stay in the Pacific. EXCOM should reaffirm its original motion. C. Helsley said the minutes will reflect that we are reaffirming the original motion.

EXCOM Motion

EXCOM reaffirms that ODP is a global program of ocean drilling, exploring all oceans and driven by the quality of the scientific proposals within approved thematic priorities. (Motion Barnes, second Stel)

Vote: for 16; against 0; abstain 0

Engineering Development

EXCOM next took up engineering development issues. Because of the concern (see Minute 463) about the apparent incompatibility between the 4-inch diameter hole drilled by the Diamond Coring System (DCS) and the modern suite of logging instruments, A. Maxwell put forward the following motion, "EXCOM directs PCOM to proceed with near term (FY89-93) DCS engineering design that will allow the deployment of modern, geochemical and geophysical logging tools in future ODP drillholes". In the discussion of the motion, B. Raleigh noted that ODP has come to an impasse between logging or return of cores in some instances. He asked what PCOM was planning. R. Moberly said that PCOM was still getting cost estimates for making the systems compatible. We know there are physical limitations on the size of the logging tools, we don't know what the configuration of the DCS will be yet. A. Sutherland said that TEDCOM expresses cautious optimism about a phased deployment of the DCS. Paul Worthington of DMP has said that there would be a great concern for logging if the program developed with a majority of the holes drilled with the DCS.

H. Dürbaum was concerned that use of the DCS may also exclude many of the other downhole measurement tools. T. Pyle said it needs to be clarified whether the motion covers all modern logging tools or just some, since it is subject to interpretation. R. Anderson said the high tech tools are mainly geochemical.

W. Merrell said that the motion would require that the DCS pipe be redone at a cost of $2.72M without first having proven that the DCS can do the job for which it is intended. This motion will slow down the current development. We are not trying to ignore logging, but it may happen that some logging must be sacrificed to return necessary core. R. Anderson said that the concern is that a headlong dive into the DCS, if it is widely used, will result in the exclusion of logging from the program. B. Raleigh questioned if it would be acceptable to drill holes without logging them. D. Spencer said that it is implicit in the motion

that the small-diameter DCS development will cease. W. Merrell said that with this motion logging will become the determining factor in the future direction of the program. B. Raleigh asked if the DCS is where the program is headed. R. Moberly said that Leg 132 will be the test of the DCS, until then we will not know. D. Spencer said that the motion will stop even the design development of the DCS.

EXCOM Motion

EXCOM directs PCOM to proceed with near term (FY89-93) DCS engineering design that will allow the deployment of modern, geochemical and geophysical logging tools in future ODP drillholes. (Motion Maxwell, second Dürbaum)

Vote: for 5; against 8; abstain 3 **(Failed)**

C. Helsley directed that the minutes reflect the concern of EXCOM on this matter. No further action was taken on engineering developments.

473 OTHER BUSINESS

Contract Renewal

In view of the pending program renewal, EXCOM needs to begin thinking about how to conduct a JOIDES review concerning future subcontracts with the Science Operator, Wireline Logging Services, SEDCO and Schlumberger. Little discussion was held since W. Merrell objected to a discussion at this time and the matter was deferred until the next meeting.

Mandates

EXCOM examined the suggested changes in mandates and approved them.

EXCOM Motion

EXCOM accepts the mandate changes for OHP, SMP and TEDCOM shown in the Agenda Book. (Motion Merrell, second Caldwell)

Vote: for 16; against 0; abstain 0

EXCOM Motion

EXCOM adopts the following change of wording in the EXCOM Terms of Reference paragraph 3: replace "**four** non-U.S. countries or consortia" with "**six** non-U.S. countries or consortia"; change **Canada** to **Canada-Australia**. (Motion Dürbaum, second Biju-Duval)

Vote: for 16; against 0; abstain 0

Non-US Liaison in JOIDES Office

J. Briden called on the non-US members of EXCOM to seek for the next meeting possible nominees for the non-US liaison to the JOIDES Office when it moves to the University of Texas at Austin in 1990.

BCOM Members

C. Helsley also reminded everyone that a nominee to replace J. Stel on BCOM will be needed at the October EXCOM meeting. The PCOM replacement for N. Pisias on BCOM will probably be J. Austin to maintain continuity over the next few years.

Co-Chief Scientist Selection

C. Barnes did not think there was much of a problem and the policy should remain the same. H. Dürbaum recommended that the Co-Chiefs be confirmed by EXCOM after being proposed by PCOM. W. Merrell

said that the contract calls for the choice to be made by TAMU and any changes will require renegotiating the contract with JOI. The present approach is reasonable and does not need to be changed. D. Heinrichs said that PCOM has not made a case for there being a problem; in two of three earlier cases since the beginning of ODP, further consideration showed that the proper action had been taken by TAMU. W. Merrell asked that the minutes reflect that no action by EXCOM was needed on this matter. C. Helsley said this is the consensus of EXCOM.

NSF, Budgets and Global Geoscience Programs

R. Corell of the National Science Foundation addressed EXCOM on some common concerns. President Bush has made a commitment to double the science budget over the next five years as initiated by President Reagan.

NSF has taken up the EXCOM recommendation concerning participation of the USSR in ODP. Recent positive developments that bear on this are the signing by NSF of a science and technology agreement with the USSR Science Academy that provides a new framework outlining a science agenda that has common concerns related to ODP. There is a new administration and the new Science Advisor to the President will be Allan Bromley who will have direct access to President Bush. Allan Bromley served as a member of the National Science Board and helped pen the words of the policy on international global environment research programs.

NSF has adopted a policy statement about the importance of global environmental science research. On an international level, NSF has joined with other countries in emphasizing international cooperation in global environmental science. There is optimism about budgets in the coming decade for global earth sciences. ODP is held forth as the model of international science cooperation.

EXCOM voiced its appreciation of R. Corell and his presentation.

Liaisons with other Global Geoscience Initiatives

EXCOM Motion

EXCOM approves of the establishment of liaisons with other global geoscience initiatives. (Motion Briden, second Harrison)

Vote: Approved by acclamation

474 CONCLUSION OF THE MEETING

Since this was the last formal EXCOM meeting for Jan Stel, C. Helsley wanted to acknowledge a good colleague whose efforts were instrumental in forming the ESF consortium and thanked him for his work on behalf of ODP. A round of applause signified everyone's appreciation.

Long-term EXCOM member Chris Harrison will also being leaving. C. Helsley wanted to acknowledge ODP's debt for the assistance and guidance he has provided. Another round of applause signified everyone's appreciation.

EXCOM also wanted to acknowledge the efforts of Bernard Munsch and R. van Lieshout of the ODP Council for whom this was also the last meeting. He thanked them for their help and guidance. Another round of applause signified everyone's appreciation.

The Business session of EXCOM adjourned at 5:30 PM on 1 June 1989.

APPENDICES ATTACHED TO 31 MAY-1 JUNE, 1989 EXCOM MINUTES

A ODP Renewal Actions (D. Heinrichs)

B LRP Phased Implementation and Financial Implications (N. Pisias)

C Production of FY90 Budget (T. Pyle)

D FY90 Clearances (T. Pyle)

E FY89-90 JOI/US Science Support Program Activities (T. Pyle)

LIST OF HANDOUTS AT 31 MAY-1 JUNE 1989 EXCOM MEETING

1. ODP Renewal Actions (D. Heinrichs)
2. Supplements to Long-Range Planning Document (N. Pisias)
3. WLS Far-Term Technological Developments (R. Anderson)
4. WLS Status of Near-Term Technological Developments (R. Anderson)
5. WLS Recent Past Achievements Measured Against Goals (R. Anderson)
6. WLS Present Status Operations: Problems and Progress (R. Anderson)
7. Science Operators Report (P. Rabinowitz)
8. Present Status of Budget (T. Pyle)
9. The *Resolution* Report, v. 5, no. 1, January 1989 (K. Babcock)
10. NEREIS Project (B. Biju-Duval)
11. United States Country Report (B. Malfait)
12. ODP Logging Manual (R. Anderson)

EVALUATION OF DRILLING RESULTS IN TERMS OF COSOD I OBJECTIVES

▼=proposed, not achieved; ■=proposed, partially achieved; ◆=proposed & achieved; ●=achieved but not proposed;

General and Specific Themes	Leg 101	Leg 102	Leg 103	Leg 104	Leg 105	Leg 106	Leg 107	Leg 108	Leg 109	Leg 110	Leg 111	Leg 112	Leg 113	Leg 114
Processes of Magma Generation and Crustal Construction at MORs		■												
Lower Two-Thirds of Layer 2		◆							◆		■			
Nature of the Layer 2/3 Boundary														
Upper Portion of Layer 3									●					
Validity of the Ophiolite Analogy														
Problems of Magma Chambers									◆					
Problems of Magma Migration														
Spacing of Submarine Eruptions		▼				▼								
Periodicity of Submarine Eruptions		▼				▼								
Volume of Submarine Eruptions						▼								
Compositional Heterogeneity of the Mantle						◆								
Mantle Evolution														
Origin of Structural Compexity of MORs									◆					
Evolution of the Crust		◆							◆					
Aging of the Crust		◆												
Formation of Overly Thick Crust														
Flood-Type Volcanism														
Structure of Transform Faults						▼								
Petrology of Transform Faults						▼								
Geochemistry of Transform Faults						▼								
Fracture Zone Offsets						▼								
Processes Operating in Young Ocean Basins							◆							
Initiation of Rifting							◆							
Island Arcs and Backarc Basins							◆							
Crustal Structure of Oceanic Plateaux														
Origin of Oceanic Plateaux														
Tectonic Evolution of Oceanic Plateaux														
Crustal Structure of Aseismic Ridges														
Origin of Aseismic Ridges														
Tectonic Evolution of Aseismic Ridges														
Origin of Intraplate Volcanism														
Configuration, Chemistry and Dynamics of Hydrothermal Systems														
Formation of Ore Deposits on Crust														
Formation of Ore Deposits Within Crust														
Physico-Chemical Distribution of Alteration in Crust in Time						◆			◆					
Physico-Chemical Distribution of Alteration in Crust in Space						◆			◆					
Relationship Between Hydrothermal Activity and Physical State of the Crust						◆			◆					
Relationship between Hydrothermal Alteration and Volcanism														
Early Rifting History of Passive Continental Margins			◆	◆	◆									
Vertical Movements			◆	◆	◆									
Evolution of Passive Continental Margins			◆	◆										
Deep Crustal Structure			■											
Thermal and Mechanical Evolution														
"Global" Unconformities and the Synchronity of Tectonic & Sea-Level Events														
Dynamics of Forearc Evolution										◆		◆		
History of Vertical Movements										◆		◆		

General and Specific Themes	Leg 101	Leg 102	Leg 103	Leg 104	Leg 105	Leg 106	Leg 107	Leg 108	Leg 109	Leg 110	Leg 111	Leg 112	Leg 113	Leg 114
Structure and Volcanic History of Island Arcs										◆				
Tectonic Evolution of Back-Arc Basins							◆							
Stress Field at Active Margins										◆				
Response of Marine Sedimentation to Fluctuations in Sea Level														
Sea Level and Deep Margin Effects														
Relation of Sea Level to Abyssal Currents				◆										
Sea Level and the Shallow Margin														
Catastrophic Sea-Level Events														
Abyssal Circulation; Hiatuses/Unconformities				◆										
Gravity-Displaced Sediments														
Submarine Fans														
Submarine Slides, Slumps & Debris Flows														
Sedimentation in Oxygen-Deficient Oceans	◆													
Geochemical Indicators of Organic Matter Preservation														
Transects of Modern Oxygen-Minimum Zones and Their Neogene Record														
The Red Sea as an Analogue to Eocene and Cretaceous Oceans														
The Mediterranean as an Analogue to Eocene and Cretaceous Oceans								■						
Cretaceous "Anoxic Events"	●													
Phosphatic Sediments												◆		
Carbonate Platforms	◆													
Carbonate Reefs														
Eustatic Sea Level	◆											◆		
Paleogeography												◆		
Vertical Tectonics												◆		◆
Sclerochronology & History of Climate														
High Latitude Marine Sedimentation								◆					◆	◆
High Latitude Glacio-Marine Sedimentation				◆				▼					◆	◆
Rhythmic Sedimentation								▼						
Hiatuses & Unconformities, All Types														
Carbonate Dissolution Profiles														
Tectonic Setting and Sediment Facies														
Global Mass Balancing of Sediments														◆
Sedimentation in the Deep Sea														
Paleogene Sediment Budget														
Basin-Basin and Latitudinal Fractionation													◆	◆
Sediment Masses of the Continental Slope												◆		
Sediment Masses of the Continental Rise														
Large Volume Marine Evaporites														
Diagenesis and Global Cycling of Elements														
Carbon Cycles														
Sulfur Cycles												◆		
Post-Depositional Alteration											◆	◆		
Alteration of Carbonate Minerals												◆		
Silica Diagenesis												◆		
Clays and Related Phases												◆		
Alteration of Organic Matter												◆		
Gas-Hydrates														
Hydrothermal Sediments														
Hydrology														

General and Specific Themes	Leg 101	Leg 102	Leg 103	Leg 104	Leg 105	Leg 106	Leg 107	Leg 108	Leg 109	Leg 110	Leg 111	Leg 112	Leg 113	Leg 114
Ocean Circulation History											◆			
The Jurassic Superocean														
Hypsography of the Mesozoic Ocean														
Sea Level and Oceanic Climate in the Mesozoic														◆
Formation of Deep Water													◆	
Circulation of Deep Water								▼						◆
Gateways and Oceanic Circulation				◆	◆			◆						◆
Surface Circulation														◆
Response to Transient Events					◆							◆		◆
Polar Oceans				◆										◆
Response of the Atmosphere and Oceans to Variations in Planetary Orbits														
Climatic Response to Orbital Variations								◆						
Orbital Tuning														
Geochemical Cycling												◆		
Oceanic Biogeochemistry														
Oceanic Anoxic Events and Organic Carbon Sinks in the Mesozoic Ocean														
Marine Record of Continental Environments								◆						
Patterns of Evolution of Microorganisms														
Speciation and the Tempo of Evolution of Species													◆	
Speciation and the Mode of Evolution of Species													◆	
Macroevolution: Evolutionary Radiations													◆	
Macroevolution: Mass Extinctions											◆		◆	
Macroevolution: Biogeographic Realms														
External Causes of Evolution and Extinction in Biotas				◆								◆	◆	
History of the Earth's Magnetic Field														
Magnetostratigraphic Record		▼												
Record of Polarity Transitions									◆					
Excursions of the Magnetic Field														
Plate Motions														
Reversal Timescales														

General and Specific Themes	Leg 115	Leg 116	Leg 117	Leg 118	Leg 119	Leg 120	Leg 121	Leg 122	Leg 123	Leg 124	Leg 125	Leg 126	Leg 127	Leg 128
Processes of Magma Generation and Crustal Construction at MORs				▼	▼	▼	▼							
Lower Two-Thirds of Layer 2														
Nature of the Layer 2/3 Boundary				▼										
Upper Portion of Layer 3				▼										
Validity of the Ophiolite Analogy														
Problems of Magma Chambers				▼										
Problems of Magma Migration														
Spacing of Submarine Eruptions														
Periodicity of Submarine Eruptions														
Volume of Submarine Eruptions														
Compositional Heterogeneity of the Mantle														
Mantle Evolution														
Origin of Structural Compexity of MORs														
Evolution of the Crust														
Aging of the Crust										■				
Formation of Overly Thick Crust										■				
Flood-Type Volcanism														
Structure of Transform Faults				■										
Petrology of Transform Faults				■										
Geochemistry of Transform Faults				■										
Fracture Zone Offsets				■										
Processes Operating in Young Ocean Basins														
Initiation of Rifting											◆			
Island Arcs and Backarc Basins										◆	◆			
Crustal Structure of Oceanic Plateaux					■	■	■							
Origin of Oceanic Plateaux					■	■	■							
Tectonic Evolution of Oceanic Plateaux					■	■	■							
Crustal Structure of Aseismic Ridges					■	■	■							
Origin of Aseismic Ridges														
Tectonic Evolution of Aseismic Ridges														
Origin of Intraplate Volcanism	◆													
Configuration, Chemistry and Dynamics of Hydrothermal Systems														
Formation of Ore Deposits on Crust														
Formation of Ore Deposits Within Crust														
Physico-Chemical Distribution of Alteration in Crust in Time														
Physico-Chemical Distribution of Alteration in Crust in Space														
Relationship Between Hydrothermal Activity and Physical State of the Crust														
Relationship between Hydrothermal Alteration and Volcanism														
Early Rifting History of Passive Continental Margins					◆	◆	◆	◆	◆					
Vertical Movements							◆							
Evolution of Passive Continental Margins							◆							
Deep Crustal Structure														
Thermal and Mechanical Evolution							◆							
"Global" Unconformities and the Synchroneity of Tectonic & Sea-Level Events							◆							
Dynamics of Forearc Evolution											◆	◆		
History of Vertical Movements												◆		
Structure and Volcanic History of Island Arcs										◆	◆	◆		
Tectonic Evolution of Back-Arc Basins										◆		◆		
Stress Field at Active Margins														

General and Specific Themes	Leg 115	Leg 116	Leg 117	Leg 118	Leg 119	Leg 120	Leg 121	Leg 122	Leg 123	Leg 124	Leg 125	Leg 126	Leg 127	Leg 128
Response of Marine Sedimentation to Fluctuations in Sea Level					◆		◆	◆	◆	◆				
Sea Level and Deep Margin Effects														
Relation of Sea Level to Abyssal Currents					◆									
Sea Level and the Shallow Margin								◆	◆					
Catastrophic Sea-Level Events														
Abyssal Circulation; Hiatuses/Unconformities			▼											
Gravity-Displaced Sediments		◆	◆				◆							
Submarine Fans		◆	◆				◆							
Submarine Slides, Slumps & Debris Flows														
Sedimentation in Oxygen-Deficient Oceans			◆					▼	▼					
Geochemical Indicators of Organic Matter Preservation														
Transects of Modern Oxygen-Minimum Zones and Their Neogene Record			◆											
The Red Sea as an Analogue to Eocene and Cretaceous Oceans														
The Mediterranean as an Analogue to Eocene and Cretaceous Oceans														
Cretaceous "Anoxic Events"								▼	▼					
Phosphatic Sediments														
Carbonate Platforms														
Carbonate Reefs														
Eustatic Sea Level														
Paleogeography	◆													
Vertical Tectonics		◆												
Sclerochronology & History of Climate														
High Latitude Marine Sedimentation					■	■								
High Latitude Glacio-Marine Sedimentation					■	■								
Rhythmic Sedimentation														
Hiatuses & Unconformities, All Types							◆	◆						
Carbonate Dissolution Profiles	◆													
Tectonic Setting and Sediment Facies		◆	◆				◆	◆			◆			
Global Mass Balancing of Sediments														
Sedimentation in the Deep Sea														
Paleogene Sediment Budget														
Basin-Basin and Latitudinal Fractionation														
Sediment Masses of the Continental Slope			■											
Sediment Masses of the Continental Rise			■											
Large Volume Marine Evaporites														
Diagenesis and Global Cycling of Elements														
Carbon Cycles														
Sulfur Cycles														
Post-Depositional Alteration	◆	◆	●											
Alteration of Carbonate Minerals	◆													
Silica Diagenesis														
Clays and Related Phases														
Alteration of Organic Matter			●											
Gas-Hydrates														
Hydrothermal Sediments														
Hydrology														

General and Specific Themes	Leg 115	Leg 116	Leg 117	Leg 118	Leg 119	Leg 120	Leg 121	Leg 122	Leg 123	Leg 124	Leg 125	Leg 126	Leg 127	Leg 128
Ocean Circulation History					◆	◆	◆	◆	◆					
The Jurassic Superocean								▼	▼					
Hypsography of the Mesozoic Ocean														
Sea Level and Oceanic Climate in the Mesozoic					◆			◆	◆					
Formation of Deep Water					◆									
Circulation of Deep Water	◆													
Gateways and Oceanic Circulation			◆		●	◆								
Surface Circulation														
Response to Transient Events	◆					◆								
Polar Oceans														
Response of the Atmosphere and Oceans to Variations in Planetary Orbits			◆		◆	◆								
Climatic Response to Orbital Variations														
Orbital Tuning														
Geochemical Cycling	◆		◆		◆	◆								
Oceanic Biogeochemistry	◆													
Oceanic Anoxic Events and Organic Carbon Sinks in the Mesozoic Ocean														
Marine Record of Continental Environments		◆	◆		◆	◆								
Patterns of Evolution of Microorganisms							●							
Speciation and the Tempo of Evolution of Species							●							
Speciation and the Mode of Evolution of Species														
Macroevolution: Evolutionary Radiations						■	■							
Macroevolution: Mass Extinctions					●	■	■							
Macroevolution: Biogeographic Realms						■	■							
External Causes of Evolution and Extinction in Biotas							■							
History of the Earth's Magnetic Field														
Magnetostratigraphic Record			●			◆				●				
Record of Polarity Transitions														
Excursions of the Magnetic Field	◆													
Plate Motions						◆	◆	◆	◆	◆		◆		
Reversal Timescales								▼	▼					

EVALUATION OF DRILLING RESULTS OF PAST LEGS IN TERMS OF OBJECTIVES AS STATED IN PROSPECTUS

▼-proposed, not achieved; ◆-proposed & achieved; ●-achieved, not proposed
■-partially achieved

Leg 100 (Shakedown)

▼1. Biostrat. ref. sections for Gulf of Mexico.
▼2. Lithostrat.-seismostrat correlations.
▼3. Unconformities as they correspond to seismic reflectors.
**Insufficient penetration.
◆4. Biostrat.-magnetostrat.-global geochronology & sea level.

Leg 101 (Bahamas)

◆1. Evolution of carbonate banks/slopes; "megabank" vs "graben" hypotheses.
◆2. Response of banks to sea level changes.
■3. Cretaceous anoxic events.
■4. Neogene climatic history of platforms.

Leg 102A (Old Oceanic Crust; W. Atlantic; reenter Hole 418A)
Leg 102B (Training)

◆ 1. Velocity structure of old crust; layer 2.
◆ 2. Permeability in old crust.
◆ 3. Porosity vs. depth.
◆ 4. Thickness of magnetic layer.
▼ 5. Presence of convection and underpressure?
▼ 6. Direction & magnitude *in situ* stresses.
◆ 7. Pore-water chemistry.
◆ 8. Temperature vs depth; heat transfer mechanism.
▼ 9. Eruptive history of layer 2.
◆10. Seismic anisotropy in layer 2.
▼11. Presence of sub-basement seismic reflectors?

Leg 103 (Galicia Margin)

◆1. History of rifting & subsidence of starved passive margin.
■2. Initiation of rifting.
◆3. Conjugate N. Am. passive margin history.

Leg 104 (Norwegian-Greenland Sea)

◆1. Early stages of passive continental rifting.
-age & nature of dipping reflectors.
-age & nature of basement below dipping reflectors.
-subsidence & depositional history.
◆2. Paleoceanographic history - currents.
◆3. Paleoclimatic history - glaciation.

◆4. Cenozoic evolution in response to (2) and (3).

Leg 105 (Labrador Sea/Baffin Bay)

◆1. Tectonic development (subsidence history) of region.
◆2. Gateways & history of circulation.
◆3. Timing and nature of paleoclimatic changes.
●4. Rhythmic sedimentation.

Leg 106 (MAR - Kane Fracture Zone)

◆1. Composition of magmas & relationship to erupted basalts.
▼2. Variation in space & time of magma generation & accretion.
▼3. Relationship of (2) to tectonic & hydrothermal activity.
▼4. Effects of transforms.
◆5. Duration & extent of hydrothermal activity; effects of alteration in crust.
◆6. Nature of earliest low-temp. alteration; effect on crustal mineralogy.
●7. Crustal magnetization vs depth; effects of hydrothermal and tectonic activity.
**Insufficient penetration; technical problems-bit failure.

Leg 107 (Tyrrhenian Sea)

◆1. Timing & rate of extension & subsidence.
-stretching phase.
-spreading phase.
◆2. Pre-rift sedimentary section.
◆3. Post-rift sedimentary section.
◆4. Syn-rift sedimentary section.
◆5. Plio-Pleistocene sedimentary section.
◆6. Stratigraphic correlations between Mediterranean & open ocean.
◆7. Back-arc basin evolution; test seaward migration of subduction zone hypothesis.

Leg 108 (E. Equatorial Atlantic)

◆1. History of upwelling intensity; seasonal vertical movement of thermocline:
-Atlantic-wide changes in paleo-productivity.
-variations in global CO_2 budget.
-deposition of organic carbon-rich sediments.
◆2. Late Neogene latitudinal stability of thermal equator:
-southern equatorial divergence zone.
-eastern boundary current & upwelling regions.
-response to major gateway changes.
▼3. Driving factors of tropical SST signals.
◆4. Wind-blown particle abundance; timing of changes in atmospheric circulation-climate fluctuations.

◆5. Neogene history of deep-water exchange between E. & W. Atlantic basins & through Kane Gap; incursions of Antarctic bottom water.
▼6. Changes in global ice volume vs deep water temperature during Tertiary.

Leg 109 (MAR - Kane Fracture Zone; deepen hole 648B)

◆1. Crustal accretion processes at oceanic spreading centers.
-nature and relative abundance of parental and primitive melts; their relationship to evolved basalts in time and space
-definition of magma "batches," small magma chambers, depth of chambers
-depth and extent of low-T alteration, hydrothermal alteration & nature of transition between them; mineralization & effects
-tilting and deformation at depth; effects on magnetic polarity
-comparison of rock type, crustal structure & phys. props. with seismics
◆2. Layer 2.
-In situ velocity structure of young Atlantic crust-porosity vs depth
-permeability
-temperature vs depth; heat transfer by convection or conduction?
-underpressures and downhole flow of ocean bottom water
-re-sample & analyse borehole fluids/pore fluids
-refine eruptive history of Layer 2 extrusives from variations in magnetic susceptibility and NRM intensity, inclination and declination.
**technical problems=sticking, caving,lack of adequate drilling jars
●3. Upper mantle (peridotite in axial valley)

Leg 110 (Barbados Ridge, Lesser Antilles Forearc)

◆1. Mechanisms and conditions by which accretionary prisms develop, specifically, the geohydrological and structural; styles associated with an active accretionary margin.

Leg 111 (Hole 504B, EPR)

■1. Coring and logging the sheeted dike complex, Layer 2C.
◆2. High-resolution studies of Plio-Pleistocene biostratigraphy and paleoceanography of the E. Equatorial Pacific.
◆3. Geochemical studies of the advection of pore waters in the sediments and its effect on sediment diagenesis.
**technical problems-tool damage & failure, bit failure; poor recovery; bad hole conditions-inability to flush cutting from very deep hole, junk in hole, spalling, dense, crystalline nature of dikes.

Leg 112 (Peru Continental Margin)

◆1. Uplift and subsidence history of forearc.
- relate vertical movements to tectonic accretion & erosion
■2. Nature and age of transition zone between lower-slope accretionary complex and metamorphic block of continental affinity.

▼3. Age of metamorphic basement beneath outer Andean margin; P-T conditions of metamorphism through time.
◆4. Vertical movement of continental margin.
◆5. Reconstruct paleoceangraphic conditions of upper-slope basin deposits in terms of response of the biological and sedimentary system to fluctuations in intensity & source of upwelling waters.
◆6. Quantify biogenic and clastic fluxes for evaluation of sea-level, climate & oceanic circulation interaction.
◆7. Conditions leading to formation of dolomites, phosphorites & cherts in upper-slope basin deposits.
◆8. Show that microbial activity persists to considerable depths & contributes greatly to diagenetic environment in carbon-rich sediments.
●9. Presence of subsurface brines & influence on early diagenesis.

Leg 113 (Weddell Sea, Antarctica)

◆1. When did first Antarctic ice sheets form; have they been permanent?
◆2. Timing of marine glacial conditions and formation of Antarctic Bottom Water.
-How have bottom & intermediate water temperatures responded to Antarctic glacial development?
◆3. History of oceanic plantonic productivity.
-How is it linked to Antarctic climatic evolution?
-How is it linked to oceanic environment?
◆4. Evolution of Antarctic planktonic and benthic biota & biogeographic patterns.
-How is this linked to environmental changes?

Leg 114 (Subantarctic South Atlantic)

1. Development and influence of teleconnective passageways to oceanic circulation within the Southern Atlantic Ocean.

Paleoceanographic record:
◆a. Document late Cretaceous-Holocene paleoenvironmental evolution of passageway linking South Atlantic & Weddell basins.
◆b. Determine latitudinal and vertical temperature gradients in subantarctic South Atlantic during Paleogene.
◆c. Document the establishment of the Antarctic Circumpolar Current.
◆d. Record more fully the middle to late Cenozoic Polar Front migrations.
◆e. Obtain records of changes in Antarctic climate and ice volume.

Mesozoic and Cenozoic regional geologic history:
■a. Ages and subsidence histories of Islas Orcadas & Meteor rises, and basin between them.
◆b. Age and nature of basement of Northeast Georgia Rise & its role in the evolution of Malvinas plate.4.
**Severe weather conditions

Leg 115 (Mascarene Plateau - Carbonate Dissolution Profile)

Tectonic:
◆a. Age of volcanism and its petrologic and geochemical character.

◆b. Definition of true polar wander within fixed hotspot framework.

Paleoceanographic & Stratigraphic:

◆a. Interplay between the flux in carbonate production and the dissolution of this material as a function of water depth during late Cenozoic.

◆b. How did intermediate and deep water masses respond to Miocene closing of Tethyan seaway, formation of permanent Antarctic ice cap during middle Miocene, and onset of northern hemisphere glacial/interglacial cycles during late Pliocene.

▼c. Fluctuation through time of boundary between the Equatorial Water and the Central Water.

●d. Diagenetic processes in periplatform oozes.

**Hole instability problems

Leg 116 (Distal Bengal Fan - Intraplate Deformation)

■1. Determine the age of the beginning of intraplate deformation and the subsequent history of the displacement of the fault blocks.

◆2. Characterize the lithofacies present on the distal Bengal Fan and determine the depositional processes responsible for them.

◆3. Nature of early diagenesis (to 1 km) in the submarine fan sediments.

◆4. Establish the provenance of the terrigenous sediments and use facies variations to document Himalayan uplift.

◆5. Relationship between fault zones, bedding planes, fractures and the flow of water as deduced from surface heat flow measurements.

◆6. Effects of regional compressive stress regime and high heat flow on the physical, hydrological and magnetic properties of the sediment and on the diagenetic process.

◆7. Depositional processes and rates through time and the growth of the Bengal Fan.

**Biostrat. for key site poor

Leg 117 (Oman Margin/Neogene)

◆1. History of Neogene monsoonal upwelling; variations in response to changing radiation budgets caused by changes in the earth's orbit around the sun and tectonic evolution of Central Asia.

◆2. Effects of changes in monsoonal intensity and glacio-eustatic sea-level fluctuations on sedimentary facies of organic carbon-rich, biogenic and eolian sediments on Arabian margin.
-extent of diagenesis; dolomite, phosphorite, etc.
-pore-water indicators of evaporitic hydrologic regimes, Oman Shelf.

◆3. Record of paleoceanographic circulation and origin of intermediate water flowing out of the Red Sea.

◆4. Mid-Indus fan record of Tibet-Himalaya uplift.
-depositional history of fluvial sediments in Pakistan.
-erosion of coastal deposits in climatic and sea-level cycles.

◆5. Tectonic origin and uplift history of Owen Ridge.
-tectonic history of Oman Basin.
-tectonic history of continental margin east of Masirah anticline.

Leg 118 (SW Indian Ridge - Fracture Zone Drilling)

▼1. *In situ* sampling and stratigraphy of oceanic mantle.
■2. Magma chamber processes.
-partial melting.
-melt extraction and modification in shallow magma chambers.
▼3. Determine lateral and vertical variability of rock types on floor of fracture zone.
▼4. Nature and distribution of deformation in a fracture zone and determination of whether there is a single slip plane, multiple slip planes or penetrative slip across the entire width of the feature.
◆5. Thermal structure of transform-generated crust; extent of alteration and sea-water penetration.
▼6. Nature and thickness of oceanic crust in the nodal basins where ridge crests meet the transform fault.
◆7. Physical properties, magnetism and seismic velocities of transform-generated crust; documentation of any anisotropy.
**Unstable hole conditions; sites unsuitable for guide-base deployment.

Leg 119 (Kerguelen Plateau and Prydz Bay)

◆1. Mesozoic through Holocene climatic and glacial history of E. Antarctica shelf sediments.
◆2. Role of changing climate in meridional and vertical evolution of water masses and their associated biota in the Southern Ocean.
◆3. Growth of E. Antarctic ice sheet through Oligocene and early Neogene.
◆4. History of glacial erosion of the shelf, an indication of ice sheet volume changes and with implications for bottom-water formation.
◆5. Documentation of other changes in shelf environment (depth, temperature, and sea-ice cover) before and during glaciation, providing secondary indications of climatic change.
◆6. Timing of E. Antarctic-India rifting and subsidence history of Kerguelen Plateau.
◆7. Nature and age of basement in S. Kerguelen Plateau region.
◆8. Documentation of geologic development of N. Kerguelen Plateau.

Leg 120 (Central Kerguelen Plateau)

◆1. The nature and age of Kerguelen Plateau basement at sites located on identified structural elements.
◆2. Nature and ages of the different sedimentary sequences.
◆3. Tectonic history of Kerguelen Plateau.
-ages of unconformities.
-rifting.
-vertical movements.
■4. Paleoceanographic history of the region..
-latitudinal and vertical variations of water masses and biota through time. .
-shift of the polar front.
-initiation and development of Circumpolar and Antarctic Bottom Water circulation.

●5. Patterns of evolution of microorganisms.

Leg 121 (Broken Ridge, Ninetyeast Ridge)

Broken Ridge (response of the lithosphere to rifting processes):

◆1. Age, lithology and depositional depth of the sediments in the dipping and truncated sedimentary sequence at Broken Ridge.

■2. Age, lithology and depositional depth of the sediments making up the subhorizontal sediments which cap the crest of B.R.

■3. Using (1) and (2), determine what parts of the total sedimentary section are pre- syn- and post-rift deposits.

◆4. Use the drilling results as constraints on the timing and duration of the rifting event; determine vertical motion of B.R. as it responded to the rifting process.

**RCB bit failure

Ninetyeast Ridge (origin & tectonic history; plate motion; paleoceanography):

◆1. Obtain petrological and geochemical data from basement rocks to understand the origin of Ninetyeast Ridge and its relationship to Kerguelen Plateau.

■2. High-resolution study of northward motion of India from paleomagnetic inclinations of recovered samples. (POST CRUISE STUDY)

◆3. S-N transect in E. Indian Ocean as a data base for paleoclimatological changes.

Legs 122 and 123 (Exmouth Plateau and Argo Basin)

■1. Understand Late Triassic-Jurassic pre- and syn-rift history and rift-drift transition in a starved passive contiental margin setting.

▼2. Determine the geochemical and and physical characteristics of the oldest Jurassic Indian Ocean crust and the bulk geochemical composition as a reference section for understanding global geochemical fluxes at subduction zones.

■3. Study Late Jurassic-Early Cretaceous to Cenozoic post-breakup development of sedimentation and paleoenvironment from a juvenile to a mature ocean.

■4. Study the temporal and spatial distribution of Jurassic, Cretaceous and Tertiary sequence stratigraphies in order to evaluate the effects of basin subsidence, sediment input, and sea-level changes in an almost complete, undisturbed, classic passive margin section.

▼5. Refine the Mesozoic geological time scale.

■6. Investigate Middle Jurassic and Middle Cretaceous anoxic sedimentation in terrigenous, shallow-water marine and deep-water marine environments.

■7. Document Cretaceous/Tertiary boundary stratigraphy.

■8. Log proposed site AAP1B.

Leg 124 (Southeast Asia Basins: Sulu, Celebes and Banda Sea)

◆1. Determine ages of the SE Sulu, Celebes and Banda Sea basins in order to establish the time of drifting and to test various proposed models for their origin.

◆2. Establish stratigraphic history of the basins, particularly with respect to whether its paleoenvironment reflects a basin with an open, closed, or restricted circulation, and to the timing of major volcanic, collisional, and paleoceanographic events.
◆3. Determine in situ regional stress orientations within the basins and discern whether subduction- or collision-related forces predominate.
●4. Excellent magnetostratigraphic records.
●5. Sedimentary geochemistry/crustal alteration.

Leg 124E (Philippine Sea)

Engineering Objectives:
◆1. Shallow-water concept evaluation of diamond coring system (DCS).
■2. Continued operational evaluation of developmental navidrill core barrel system (NCB).
◆3. Prototype testing of pressure core sampler (PCS), phase I.
■4. Performance testing of the newly redesigned extended core barrel (XCB).
◆5. Performance evaluation of ODP coring systems in deep-water chert sequences.
▼6. Testing and evaluation of Lamont/BRG logging technology.
▼7. Evaluation of deep-water operating capabilities of *JOIDES Resolution*.
*Scientific objectives were secondary.
**Basement too deep; bad weather; hole instability

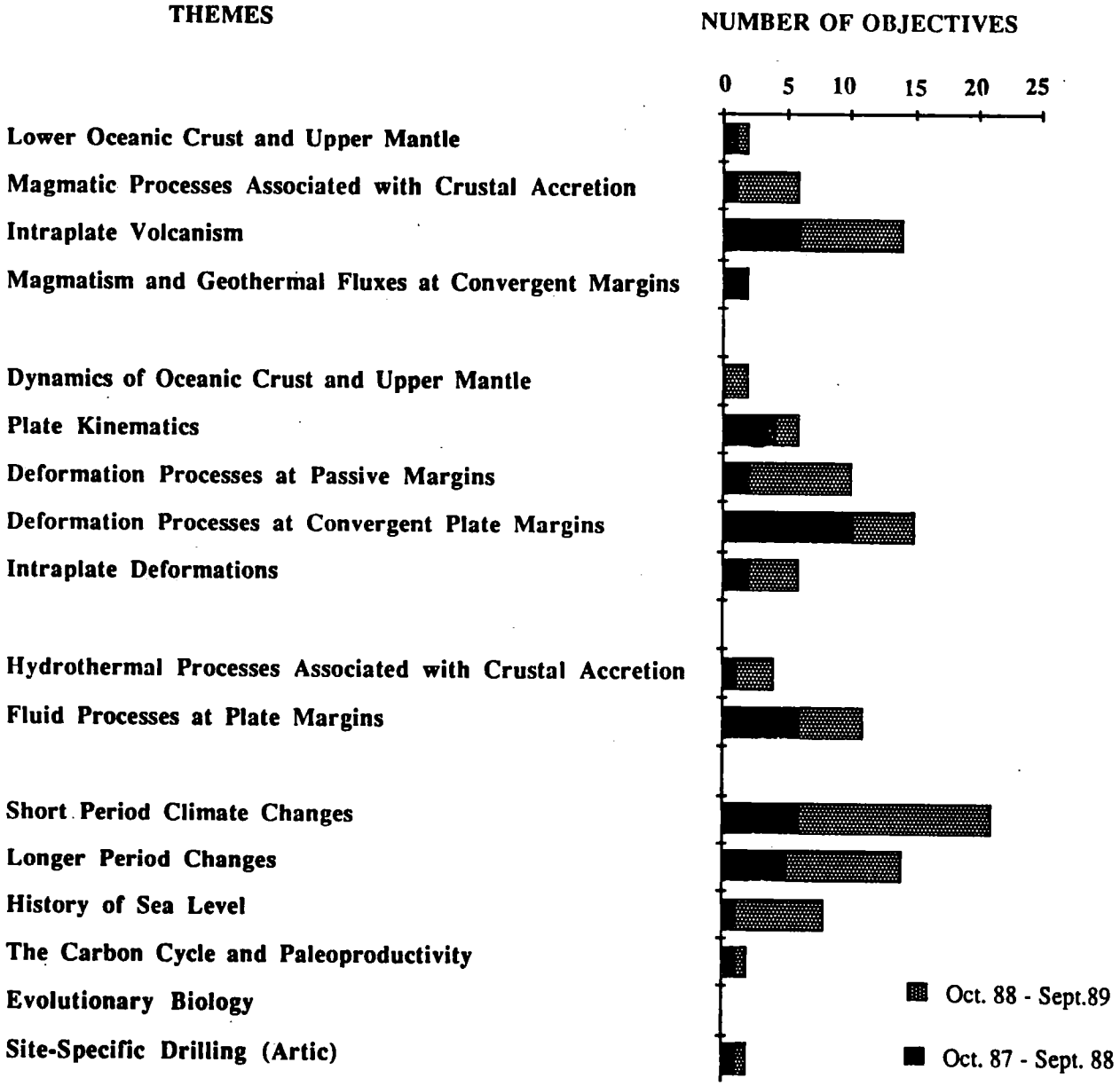
Legs 125 and 126 (Bonin-Mariana Arc-Trench System)

Bonin back-arc:
◆1. The differential uplift/subsidence history of the rift basin and adjacent arc.
◆2. The nature of volcanism and sedimentation in the rift and on the arc.
◆3. The duration of rifting and the nature of the rift basement.
◆4. The chemistry of hydrothermal fluids circulating in the rift basin.

Bonin forearc:
◆1. The uplift/ subsidence history across the forearc to provide information on forearc flexure and basin development, as well as the extent of tectonic erosion.
◆2. The stratigraphy of the forearcs with its record of (a) sedimentation, depositional environment and paleoceanography; and (b) the variations in intensity and chemistry of arc volcanism through time.
◆3. The nature of igneous basement forming the frontal arc, outer-arc high and beneath the intervening basin to answer questions concerning the initial stages of subduction-related volcanism, the origin of boninites, and the formation of the 200 km wide arc-type forearc crust.
◆4. The micro-structural deformation and the large-scale rotation and translation of the forearc.

Mariana forearc:
◆1. The timing and mechanism of emplacement of the serpentinite seamounts, including their internal fabric, facture patterns and flow structures.
◆2. The chemistry and, hence, source of the associated fluids.
◆3. The conditions at depth in the outer forearc from the igneous and metamorphic petrology of the lower crustal/upper mantle rocks.

OBJECTIVES OF RECENT PROPOSALS
(October 1987 to September 1989)
IN RELATION TO THEMES IN THE LONG RANGE PLAN



- 77 proposals have been received by the JOIDES Office from 1 october 1987 to 5 september 1989.
- A proposal can address more than one objective.

11 September 1989

LISTING OF PROPOSALS

Revised: 9/7/89

IOIDES No	Title	Proponents	Country	Date
1	[idea proposal]	-	-	
1/A	Pre-m. Cretac. history of SE Gulf of Mexico	Phair & al.	US	12/82
2/E	Middle America trench and Costa Rica margin	Crowe & al.	US	12/82
4/E	Tuamoto Archipelago (French Polynesia)	Okal & al.	US	6/83
5/A	Struc. & sedim. carbonate platforms	Mullins & al.	US	7/83
7/A	Gulf of Mexico & Yucatan	Buffler & al.	US	8/83
8/E	Southern Chile trench	Cande	US	9/83
9/A	Pre-Messinian hist. of the Mediterranean	Hsu & al.	ESF	1/84
11/A	Porto & Virgo seamounts, Iberian margin	Kidd & al.	UK/FR	1/84
12/A	Tyrrhenian back-arc basin transect	Cita & al.	ESF	1/84
13/F	Water column research lab	Wiebe	US	1/84
14/E	Zero age drilling: EPR 13°N	Bougault	FR	1/84
15/A	Formation of the Atlantic Ocean	Herbin	FR	1/84
16/A	Atlantic-Mediterranean relationship	Faugeres	FR	1/84
17/A	Gorringe Bank, deep crust & mantle	Mevel	FR	1/84
19/A	Eleuthera fan, Bahamas	Ravenne & al.	FR	1/84
20/A	Subduction collision: Outher Hellenic Arc	J.Mascle	FR	1/84
22/A	Rhone deep sea fan	Bellaiche & al.	FR	1/84
23/A	Carribean basins	A.Mascle & al.	FR	1/84
24/A	Barbados transects	A.Mascle & al.	FR	1/84
25/D	New Hebrides arc	ORSTOM team	FR	1/84
28/D	South China Sea	Letouzey & al.	FR	1/84
29/D	Ryukyu Island & Okinawa backarc basin	Letouzey	FR	1/84
31/B	Red Sea, paleoenvironmental history	Guennoc	FR	1/84
32/A	Yucatan basin	Rosencrantz & al.	US	1/84
33/A	Mediterranean drilling [same as 9/A]	Hsu	ESF	1/84
5/A	Barbados ridge accretionary complex	Westbrook	UK	2/84
38/A	Gulf of Mexico (DeSoto Canyon)	Kennett & al.	US	2/84
39/A	Cape Verde drilling	Hill	UK	2/84
40/A	Logging of site 534 (Blake-Bahamas basins)	Sheridan & al.	US	2/84
34/E	Pacific-Aleutian-Bering Sea (Pac-A-Bers)	D.W. Scholl & al.	US	3/84
41/A	N Barbados forearc: Struc. & hydrology	C.Moore	FR/US	3/84
42/D	Sunda Straits area	Huchon	FR	3/84
43/D	SW Pacific drilling outline	Falvey	AUS	3/84
44/B	Andaman Sea: Tectonic evolution	Peltzer & al.	FR	3/84
45/A	Equatorian Atlantic: Paleoenvironment	Ruddiman	US	3/84
47/D	Manila trench, S.China Sea	Lewis & al.	US	3/84
49/D	Eastern Banda arc/Arafura Sea	Schluter & al.	G	3/84
52/D	Solomon Sea	Milsom	AUS	3/84
53/F	Vertical Seismic Profiling	Phillips & al.	US	3/84
54/C	Sub-Antarctic & Weddell Sea sites	Kennett	US	3/84
55/B	Makran forearc, Pakistan	Leggett	UK	3/84
57/B	Deformation of African-Arabian margin	Stein	US	3/84
58/A	West Baffin Bay	Grant & al.	CAN	3/84
59/A	Continental margin instability testing	Weaver & al.	UK	3/84
60/A	Newfoundland basin: E. Canadian margin	Masson	UK	4/84
6/A	Labrador Sea, ocean crust & paleoceanogr.	Gradstein & al.	CAN	5/84
36/A	Norwegian Sea	Hinz & al.	G	5/84
18/A	Off Galicia Bank	Mauffret & al.	FR	6/84
63/A	Madeira abyssal plain	E.J.T. Duin & al.	NETH	6/84
64/A	Site NJ-6	Poag	US	6/84
7/D	Tonga-Lord Howe Rise transect	Falvey & al.	AUS	7/84
68/A	Deep basins of the Mediterranean	L.Montadert	FR	7/84

LISTING OF PROPOSALS

Revised: 9/7/89

JOIDES No	Title	Proponents	Country	Date
69/F	Rock stress meas. in part of Norwegian Sea	Stephansson	ESF	7/84
70/F	Borehole seismic experim. at 417 & 603	Stephen & al.	US	7/84
72/A	Two-leg transect on Lesser Antilles forearc	Speed & al.	CONSOR.	7/84
37/E	Costa Rica, test of duplex model	Shipley & al.	US	8/84
74/A	Continental margin of Morocco, NW Africa	Winterer & al.	US	8/84
75/E	Gulf of California	K.Becker & al.	US	8/84
77/B	Seychelles bank & Amirante trough	Mart	US	8/84
78/B	Indus fan	Kolla	US	8/84
79/B	Tethyan stratigraphy & oceanic crust	Coffin & al.	US	8/84
81/A	Ionian Sea transect, Mediterranean	Hieke & al.	G	9/84
82/D	Sulu Sea	Thunell	US	9/84
84/E	Peru margin	Kulm & al.	US	9/84
85/A	Margin of Morocco, NW Africa	D.Hayes & al.	US	9/84
56/B	Intraplate deformation	Weissel et al.	US	10/84
61/B	Madagscar & E Africa conjugate margins	Coffin & al.	US	10/84
65/B	S. Australian margin: Magnetic quiet zone	Mutter & al.	US	10/84
80/D	Sunda & Banda arc	Karig & al.	US	10/84
87/B	Carlsberg Ridge, Arabian Sea: Basalt obj.	J.Natland	US	10/84
90/B	SE Indian Ocean Ridge transect	Duncan	US	10/84
91/B	SE Indian Ocean Oceanic Crust	Langmuir	US	10/84
93/B	W Arabian Sea: upwelling, salinity etc.	Prell	US	10/84
94/B	Owen Ridge: History of upwelling	Prell	US	10/84
95/B	Asian monsoon, Bay of Bengal	D.Cullen & al.	US	10/84
96/B	Bengal Fan (Indus & Ganges Fans)	Klein	US	10/84
98/B	History of atmosph. circ. (Austral. desert)	D.Rea	US	10/84
99/B	Agulhas Basin paleoceanogr. clim. dynamics	W.Coulbourn	US	10/84
100/B	SE Indian Ridge transect: Stratigr. section	J.Hays & al.	US	10/84
101/B	Ridge crest hydrothermal activity	Owen & al.	US	10/84
102/B	Somali Basin	Matthias	US	10/84
103/B	Laxmi Ridge, NW Indian Ocean	Heirtzler	US	10/84
104/B	90° E Ridge transect	Curray & al.	US	10/84
105/B	Timor, arc-continent collision	Karig	US	10/84
106/B	Broken Ridge, Indian Ocean	Curray & al.	US	10/84
107/B	SE Indian Ridge: Stress in ocean lithosph.	Forsyth	US	10/84
108/C	E. Antarctic continental margin (Prydz Bay)	SOP-Kennett	US	10/84
109/C	Kerguelen - Heard Plateau	SOP-Kennett	US	10/84
110/C	Wilkesland - Adelie continental margin	SOP-Kennett	US/FR	10/84
111/C	SE Indian Ocean Ridge transect (subantarc.)	SOP-Kennett	US	10/84
112/B	Lithosphere targets	SOP-Kennett	US	10/84
113/B	Agulhas Plateau	SOP-Kennett	?	10/84
114/C	Crozet Plateau	SOP-Kennett	FR	10/84
117/B	Northern Red Sea	Cochran	US	10/84
118/B	Cenozoic history of E. Africa	Kennett & al.	US	11/84
76/E	Proposal for axial drilling on the EPR at 13°N	R. Hekinian & al	FR	11/84
62/B	Davie Fracture Zone	Coffin & al.	CONSOR.	12/84
119/B	Early opening of Gulf of Aden	Stein	US	12/84
120/B	Red Sea, Atlantis II deep	Zierenberg & al.	US	12/84
122/A	Kane fracture zone	Karson	US	12/84
123/E	Studies at site 501/504	Mottl	US	12/84
124/E	To deepen Hole 504B	LITHP-K.Becker	US	1/85
125/A	Bare-rock drilling at the Mid-Atl. Ridge	Bryan & al.	US	1/85
126/D	Drilling in the Australasian region	Crook & al.	AUS	1/85
127/D	E Sunda arc & NW Austral. collision	Reed & al.	US	1/85

LISTING OF PROPOSALS

Revised: 9/7/89

JOIDES No	Title	Proponents	Country	Date
28/F	Phys.props. in accretionary prisms	Karig	US	1/85
130/D	Evolution of the SW Pacific (N of New Zeal.)	J.Eade	NZ	1/85
131/D	Banda Sea basin: Trapped ocean crust etc.	Silver	US	3/85
132/D	TTT-Type triple junction off Bosco,Japan	Ogawa & al.	J	3/85
133/F	In-situ sampling of pore fluids	McDuff & al.	US	3/85
135/B	Broken Ridge: Thermo-Mechanical Models	Weissel & al.	US/UK	3/85
10/A	Cenozoic circulation off NW Afric	Sarnthein & al.	G/US	4/85
115/B	Agulhas Plateau and adj. basins	Herb & al.	ESF	4/85
116/B	E & Chagos-Laccadive Ridge drilling	Oberhansli & al.	ESF	4/85
142/E	Ontong-Java Pl.:Equat. Pacific depth trans.	L.Mayer & al.	CAN/US	4/85
88/B	Chagos-Laccadive-Mascarene volc. lineament	Duncan & al.	US	5/85
147/D	South China Sea	Wang & al.	CHINA	6/85
179/D	Daito ridges region: NW Philippines Sea	Tokuyama & al.	J	6/85
21/A	Thyrrenian Basin: Rifting, stretching,accr.	Rehault & al.	FR	7/85
51/D	Sea of Japan	Tamaki & al.	J	7/85
97/B	Equatorial Indian Ocean:Fertil.& carb.comp.	Peterson	US	7/85
136/C	Kerguelen - Heard Plateau	Schlich & al.	FR	7/85
146/D	Toyamu fan, E Japan Sea	Klein	US	7/85
150/B	90°E Ridge & Kerg.-Gaussb. Ridge: hard rock	Frey & al.	US	7/85
151/D	Japan Sea: Mantle plume origin	Wakita	J	7/85
152/F	Borehole seismic experim., Tyrrhenian Sea	Avedik & al.	FR/US	7/85
153/E	Three sites in the SE Pacific	J.Hays	US	7/85
154	Banda-Celebes-Sulu basin entrapment	Hilde	US	7/85
156/D	Kita-Yamam. trough, Japan Sea: Massive sulf.	Urabe	J	7/85
157/D	Japan Sea paleoceanography	Koizumi & al.	J	7/85
158/D	Japan Sea & trench: Geochem & sedimentol.	Matsumoto & al.	J	7/85
159/F	Phys.cond. across trench: Izu-Mariana-...	Kinoshita & al.	J	7/85
160/F	Geophys. cond. of lithosp. plate, Weddell Sea	Kinoshita & al.	J	7/85
161/F	Magn.field & water flow measurement	Kinoshita & al.	J	7/85
162/F	Offset VSP on the SW IO Ridge fract.zones	Stephen	US	7/85
164/D	Japan trench & Japan-Kuril trenches juntion	Jolivet & al.	FR	7/85
165/D	Shikoku basin ocean crust	Chamot-Rooke & al.	FR	7/85
166/D	Japan Sea: Evolution of the mantle wedge	Tatsumi & al.	J	7/85
168/D	Japan Sea: Sedim. of siliceous sediments	Iijima & al.	J	7/85
169/C	South Tasman Rise	Hinz & al.	G	7/85
170/D	Valu Fa Ridge, Lau Basin: Back-arc spread.	Morton & al.	US	7/85
30/B	Davie Ridge & Malagasy margin, Indian Ocean	Clocchiatti & al.	FR	8/85
50/D	Nankai trough & Shikoku forearc	Kagami & al.	J	8/85
73/C	Antarctic margin off Adelie coast	Wannesson & al.	FR	8/85
92/B	Crozet Basin, seismic observatory	Butler & al.	US	8/85
137/B	Fossil ridges in the Indian Ocean	Schlich & al.	FR	8/85
138/B	Rodrigues triple junction, Indian Ocean	Schlich & al.	FR	8/85
139/B	Agulhas Plateau, SW Indian Ocean	Jacquart & al.	FR	8/85
140/B	Central & N. Red Sea axial areas	Pautot & al.	FR	8/85
141/B	Indus Fan	Jacquart & al.	FR	8/85
172/D	Mariana forearc, arc & back-arc basin	P.Fryer	US	8/85
173/B	Seychelles, Mascarene Pl., NW Indian Ocean	Patriat & al.	FR	8/85
174/D	Japan Sea: Forearc tectonics	Otsuki	J	8/85
175/D	Japan Trench: Origin of Inner Wall	Niitsuma & al.	J	8/85
176/D	S.Japan Trench: Migration of Triple Junction	Niitsuma	J	8/85
178/D	Nankai trough forearc	Shiki & al.	J	8/85
180/D	N.Philippines Sea: Kita-Amami basin & plat.	Shiki	J	8/85
181/D	Izu-Ogasaw.-Mariana forearc:Crust & mantle	Ishii	J	8/85

LISTING OF PROPOSALS

Revised: 9/7/89

JOIDES No	Title	Proponents	Country	Date
182/E	Sounder Ridge,Bering Sea: Stratigraphy	A. Taira	J	8/85
184/D	Papua New Guinea/Bismark Sea Region	N.Exon & al.	AUS/US	8/85
185/C	Kerguelen Plateau: Origin, evol. & paleo.	Coffin & al.	AUS	8/85
186/F	SW Ind.Ocean fracture zones hydrology etc.	von Herzen	US	8/85
86/B	Red Sea	Bonatti	US	9/85
187/D	New Hebrides arc region, SW Pacific	F.Taylor & al.	US	9/85
188/F	395A boreh.geophys. & 418A drill.& geophysics	M.Salisbury	CAN	9/85
189/D	Tonga Ridge and Lau Ridge Region	A.Stevenson & al.	US	10/85
191/D	Solomon Isl.: Arc-plateau coll. & intra arc	Vedder & al.	US	10/85
192/E	Baranoff fan, SE Gulf of Alaska	Stevenson & al.	US	10/85
193/F	Upper ocean partic.fluxes in Weddell Sea	Biggs	US	11/85
3/E Rev/1	Flexural moat, Hawaiian Islands	A.B. Watts & al	US	11/85
143/F	In-situ magnet. susc. measurements	Krammer & al.	G	12/85
195/E	Paleoenv. & Paleoclim. in the Bering Sea	C. Sancetta & al.	US	12/85
196/B	90°E Ridge: Impact of India on Asia	J.Peirce	CAN	12/85
197/B	Otway Basin/W.Tasman region	Wilcox & al.	AUS	12/85
198/D	Ulleung Basin: Neogene tectonics & sedim.	Chough & al.	COREA	12/85
199/E	Pelagic sediments in the sub Artic gyre (N.Pacific)	T.R. Janecek & al.	US	12/85
200/F	Borehole magnet. logging on leg 109 (MARK)	Bosum	G	12/85
201/F	High-precision borehole temp. measurements	Kopietz	G	12/85
205/A	Bahamas: Carb.fans, escarpm.erosion & roots	Schlager & al.	ESF	12/85
202/E	N.Marshall Isl. carbonate banks	S.O. Schlanger	US	1/86
203/E	Guyots in the central Pacific	E.L. Winterer & al.	US	1/86
207/E	Bering Sea basin & Aleutian ridge tectonics	Rubenstone	US	1/86
208/B	Ancestral triple junction, Indian Ocean	Natland & al.	US	1/86
209/C	Eltanin fracture zone	Dunn	US	1/86
210/E	NE Gulf of Alaska: Yakutat cont. margin	Lagoe & al.	US	1/86
211/B	Deep stratigraphic tests	SOHP -Arthur	US	1/86
212/E	Off northern & central California	Greene	US	1/86
213/E	Aleutian subduction: accret. controlling p.	McCarthy & al.	US	1/86
214/E	Central Aleutian forearc:Trench-slope break	Ryan & al.	US	1/86
215/B	Red Sea: Sedim. & paleoceanogr. history	Richardson & al.	US	2/86
216/D	South China Sea	Rangin & al.	FR	2/86
217/D	Lord Howe Rise	Mauffret & al.	FR	2/86
218/D	Manila trench & Taiwan collis.zone, SCS	Lewis & al.	US	2/86
219/B	Gulf of Aden evolution	Simpson	US	3/86
220/D	Three sites in the Lau Basin	J. Hawkins	US	3/86
222/E	Ontong-Java Pl.: Origin, sedim. & tectonics	Kroenke & al.	US	3/86
221/E	Equatorial Pacific: late Cenoz. Paleoenv.	N.G. Pisias	US	3/86
83/D	Izu-Ogasawara (Bonin) arc transect	Okada & al.	J	4/86
134/B	Gulf of Aden	Girdler	UK	4/86
171/D	Bonin region: Intra-oceanic arc-trench dev.	B.Taylor	US	4/86
223/B	Central Indian Ocean fracture zone	Natland & al.	US	4/86
225/E	Aleutian Basin, Bering Sea	A.K.Cooper & al.	US	4/86
224/E	Escanaba Trough (Gorda Ridge), NE Pacific	M. Lyle & al	US	4/86
89/B	SWIR, mantle heterogeneity	Dick & al.	US	5/86
121/B	Exmouth & Wallaby Pl. & Argo Abys. Plain	U.von Rad & al.	US	5/86
129/C	Bounty trough	Davey	NZ	5/86
227/E	Aleutian Ridge, subsidence and fragment.	Vallier & al.	US	5/86
228/C	Weddell Sea (E Antarctic contin. margin)	Hinz & al.	G	5/86
229/E	Bering sea, Beringian conti. slope & rise	A.K. Cooper & al.	US	5/86
230/C	Wilkes Land margin, E Antarctica	Eittreim & al.	US/J	5/86
231/E	North Pacific magnetic quiet zone	Mammerickx & al.	US	5/86

LISTING OF PROPOSALS

Revised: 9/7/89

IOIDES No	Title	Proponents	Country	Date
232/E	N.Juan de Fuca R.: High temp.zero age crust	E.Davis & al.	CAN	5/86
26/D	Tonga-Kermadec arc	Pelletier & al.	FR	6/86
144/D	Kuril forearc off Hokkaido: Arc-arc collis.	Seno & al.	J	6/86
145/D	Ryukyu arc: Left-lateral dislocation	Ujiie	J	6/86
148/D	Near TTT-type triple junction off Japan	Ogawa et al.	J	6/86
149/D	Yamoto Basin,Sea of Japan: Active Spreading	Kimura & al.	J	6/86
167/D	Okinawa trough & Ryukyu trench	Uyeda & al.	J	6/86
234/E	Aleutian trench: Kinematics of plate cover.	von Huene & al.	US	6/86
235/D	Solomon Sea: Arc-trench dev., back-arc...	Honza & al.	CONSOR.	6/86
236/E	N.Gulf of Alaska	Bruns & al.	US	6/86
237/E	Active margin off Vancouver Isl., NE Pac.	Brandon & al.	CAN/US	6/86
238/F	Pore pressure in the Makran subduction z.	Wang & al.	US	6/86
239/D	Two sites in the Lau Basin	D.Cronan	UK	6/86
214/E	Gulf of Alaska (Yakutat block) & Zodiak fan	Heller	US	6/86
243/D	Outer Tonga trench	Bloomer & al.	US	6/86
240/B	Argo abyssal Plain	Gradstein	CONSOR.	7/86
245/E	Transform margin of California	Howell & al.	US	7/86
246/B	Mesozoic upwelling off the S.Arabian margin	Jansa	CAN	7/86
247/E	NE Pacific: Oceanogr.,climatic & volc. evol.	D. Rea & al.	US/CAN	7/86
226/B	Equat.Indian Ocean: carb. system & circul.	Prell & al.	US	8/86
244/C	Western Ross Sea	Cooper & al.	US/NZ	8/86
248/E	Ontong-Java Plateau	Ben-Avraham & al.	US	8/86
249/E	Sedimentation in the Aleutian trench	Underwood	US	8/86
250/E	Navy fan, California borderland	M..B. Underwood	US	8/86
251/B	Seychelles-Mascarene-Saya de Mayha region	S.N. Khanna	SEYCH.	8/86
253/E	Shatsky Rise:Black shales in ancestr. Pac.	S.O. Schlanger & al.	US	8/86
254/A	NW Africa: Black shales in pelagic realm	Parrish & al.	US	8/86
255/A	Black shales in the Gulf of Guinea	Herbin & al.	FR/US	8/86
256/E	Queen Charlotte Transform fault	Hyndman & al.	CAN	9/86
257/E	Farallon Basin, Gulf of California	L. Lawver & al.	US	9/86
204/A	Florida escarpment transect	Paull & al.	US	10/86
252/E Rev.	Loihi Seamount, Hawaii	H. Staudigel & al.	US	10/86
258/E	Stockwork zone on Galapagos Ridge	R. Embley & al	US	10/86
260/D	Ogasawara Plateau, near Bonin arc	T. Saito & al.	J	10/86
261/E	Mesozoic Pacific Ocean	R.L. Larson & al.	US/FR	10/86
262/B	Mid Indus Fan	B.Haq	US	11/86
263/E	S.Explorer Ridge, NE Pacific	R.L. Chase & al.	CAN	11/86
206/D	Great Barrier R.: Mixed carb/epiclast.shelf	Davies & al.	AUS	12/86
264/A	Montagnais impact struct.,Scotia Sh.	Grieve & al.	US	12/86
265/D	Western Woodlark Basin	S.D. Scott & al.	CAN/AUS/PNG	12/86
266/D	Lau Basin	Lau Group	CONSOR.	12/86
267/F	Old crust at converg. margins: Argo & W.Pac	C.H. Langmuir & al	US	12/86
268/D	Hydrothermal ore deposition, Queensland Pl.	Jansa et al.	CAN	12/86
269/E	Aleutian pyroclastic flows in marine envir.	Stix	CAN	12/86
27/D Rev.	Sulu Sea marginal basin	Cl. Rangin & al	FR	1/87
48/D Add.	Sulu Sea transect	Cl. Rangin	G/FR	1/87
270/F	Tomographic imaging of hydrotherm. circul.	Nobes	CAN	1/87
271/E	Paleoceanogr. trans. of California current	Barron & al.	US	2/87
272/F	Long-term downh. measurem.in seas a. Japan	Kinoshita	J	2/87
183/D	Periplatform ooze, Maldives, Indian Ocean	Droxler & al.	US	3/87
259/E Rev.	Meiji sediment drift, NE Pacific	L.D. Keigwin	US	3/87
74/D	South China Sea	Zaoshu & al.	CHINA	3/87
275/E	Gulf of California (composite proposal)	Simoneit & al.	US	3/87

LISTING OF PROPOSALS

Revised: 9/7/89

JOIDES No	Title	Proponents	Country	Date
232/E Add.	Clay miner. & geoch.: Juan de Fuca Ridge	B. Blaise & al.	CAN/FR	3/87
276/A	Equat. Atlantic transform margins	J.Mascle	FR	4/87
277/E	Aseismic slip in the Cascadia margin	Brandon	US	4/87
278/E	Blanco transf. fault: Alter., layer three.	R. Hart & al	US	5/87
279/E	Anatomy of a seamount: Seamount 6 near EPR	R.Batiza	US	5/87
280/E	Cretac.Geisha Seamounts & guyots, W-Pac	P.R. Vogt et al.	US	6/87
281/D	Accret.prisms at Kuril/Japan trench&Nankai Tr.	Y. Okumura & al.	J	6/87
282/E	Tracing the Hawaiian hotspot.	N. Niitsuma & al.	J	6/87
283/E	Kuroshio current and plate motion history	R.D.Jacobi & al.	US	6/87
284/E	Escanaba Trough,S-Gorda Ridge Hydrothermalism	Zierenberg & al.	US	7/87
285/E	Jurassic quiet zone ,Western Pacific	Handschumacher & al.	US	7/87
286/E	Return to 504/B to core & log layer 2/3 trans.	K.Becker	US	7/87
287/E	Deep drilling in the M-Series,Western Pacific	D. Handschumacher & al.	US	8/87
288/B	Repositioning of EP2 to EP12,Exmouth Plateau	Mutter & al.	US	8/87
289/E	Mass budget in Japan Arc-10Be Geochemical Ref.	S. Sacks & al.	US/J	8/87
66/F Rev.	Laboratory rock studies to reveal stress	N.R. Brereton	UK	9/87
76/E Rev.	EPR: oceanic crust at the axis	R. Hekinian	FR	9/87
177/D Rev.	Zenisu Ridge: Intra-oceanic plate shortening	A. Taira & al.	J/FR	9/87
224/E Rev.	Escanaba trough (Gorda Ridge), NE Pacific	M. Lyle & al	US	9/87
242/D	Backthrusting & back arc thrust., Sunda arc	Silver & al.	US	9/87
290/E	Axial Seamount, Juan de Fuca Ridge	P.Johnson & al.	US	9/87
291/E	Drilling in the Marquesas Islands chain.	J.H. Natland & al.	US	9/87
292/D	Drilling in the SE Sulu Sea	Hinz & al.	G	9/87
293/D	Drilling in the Celebes Sea	K. Hinz & al.	G	9/87
155/F Rev/1	Downhole measurt.in the Japan Sea	T. Suyehiro & al	J	9/87
294/D	Ophiolite analogues in the Aoba Basin,Vanuatu	J.W.Shervais	US	10/87
46/D	South China Sea margin history	D.Hayes & al.	US	11/87
273/C	Southern Kerguelen Plateau	Schlich et al.	FR/AUS	11/87
295/D	Hydrogeol.& structure,Nankai accr.complex	J.M. Gieskes & al.	US	12/87
296/C	Ross Sea, Antarctica	Cooper & al.	US/NZ/G	12/87
297/C	Pacific Margin of Antartic Peninsula	P.F. Barker	UK	12/87
247/E Rev.	NE Pacific: Oceanogr.,climatic & volc.evol.	B.D. Bornhold	CAN/US	1/88
298/F	Vertical seismic prof. in Nankai Tr. ODP Sites	G.F. Moore	US	1/88
299/F	Self-bor. p-meter: study deform.in accr. sed.	M.Brandon & al.	US/CAN	2/88
300/B	Return to site 735B-SW Indian Ridge	H. Dick & al.	US/CAN	2/88
301/D	Integrated proposal: Nankai forearc	J.Gieskes & al.	US/J	3/88
302/F	Electrical conductivity structure,E-Japan Sea	Y.Hamano & al.	J	3/88
194/D Rev/2	South China Sea	K.J. Hsü & al.	CHINA	4/88
303/E	Fracturing /volcanism on Hawaiian swell	B.Keating	US	4/88
190/D Add.	New Hebrides (Vanuatu) arc-ridge collision	Fisher & al.	US/FR	5/88
163/D Rev.	Zenisu Ridge: Intraplate deformation	S. Lallemant & al	FR	6/88
221/E Suppl.	Equatorial Pacific: L.Cenozoic paleoenviron.	N. Pisias & al.	US	6/88
304/F	ODP Nankai downhole observatory	H.Kinoshita & al.	J	6/88
305/F	Artic Ocean drilling	P.J. Mudie & al.	CAN	6/88
306/E	Old Pacific History	Y.Lancelot & al.	FR/US	6/88
233/E Rev.	Oregon accr. complex: fluid proc. & struct.	L.D. Kulm & al.	US	7/88
307/E	Cross Seamount, Hawaiian swell	B. Keating	US	7/88
308/E	Reactivated Seamounts,Line Island chain.	B.Keating	US	7/88
3/E Add.	Drilling in vicinity of Hawaiian Islands	R.S.Detrick & al	US	7/88
222/E Rev.	Ontong Java Pl.: origin, sedim. & tectonics.	J. Mahoney & al.	US	7/88
155/F Rev/2	Downhole measurement in the Japan Sea	T. Suyehiro & al	J	8/88
309/F	VSP Program at sites Bon-2 and Bon-1	P.Cooper	US	9/88

LISTING OF PROPOSALS

Revised: 9/7/89

'OIDES No	Title	Proponents	Country	Date
10/A	Geochemical sampling ,dippings ,E-Groenland	A.Morton & al.	UK	9/88
311/A	Sedim. equivalent of dippings ,Rockall	D.Masson & al.	UK	9/88
312/A	Potential of drilling on Reykjanes Ridge	J.Cann & al.	UK	9/88
313/A	Evolution of oceanog. pathway: The Equat. Atlan.	E.Jones & al.	UK	9/88
314/D	Fuid flow & mechan. response, Nankai	D.Karig & al.	US	9/88
316/E	To drill a gaz-hydrate hole (West Pacific)	R. Hesse & al.	CONSOR.	9/88
59/A Rev.	Continental margin sediment instability	P.P.E.Weaver & al	UK/NETH/CAN	9/88
3/E Rev/2	Flexural moats, Hawaiian Islands	A.B. Watts & al.	US	10/88
315/F	Network of perm. ocean floor broad band seism.	G.M. Purdy & al.	US	10/88
275/E Rev.	Drilling the Gulf of California	Simoneit (ed.) & al	US	10/88
271/E Rev.	Paleocean. transect of California current	J.A. Barron & al	US	10/88
195/E Suppl.	Paleoenviron. and paleoclim. in the Bering Sea	D.W. Scholl & al	US	10/88
199/E Suppl.	High latitude paleoceanography	D.W. Scholl & al	US	10/88
231/E Suppl.	Plate reconstr. & Hawaiian hotpsot fixity.	D.W. Scholl	US	10/88
225/E Suppl.	Plate-Reconstr.: Bering Sea	D.W. Scholl & al.	US	10/88
317/E Rev.	Northern Cascadian Subduction Zone	R.D.Hyndman & al.	CAN	12/88
318/E Rev.	Chile Margin Triple Junction	S.C.Cande & al	US	1/89
319/E Rev.	An extinct hydrotherm. syst., East Galapagos	M.R. Perfit & al	US/CAN	2/89
320/A	High Northern latitude paleoceano. & paleoclim.	E. Jansen & al	NOR/SWED.	3/89
321/E	The EPR ridge crest near 9°40' N	D.J. Fornari & al	US	3/89
322/E	Ontong Java Plateau-pipelike structures.	P.H. Nixon	UK	3/89
323/A	Gibraltar Arc	M.C. Comas & al	CONSOR	4/89
324/A	Tecton. evol. of W. & E. Mediterr. since Mesozoic	P. Casero & al.	IT/G	4/89
142/E Rev.	The Ontong Java Plateau	L. Mayer & al.	CAN/US/UK	4/89
325/E	High temp. hydrother. site N. Juan de Fuca Ridge	H.P. Johnson & al	US/CAN/UK	5/89
'6/A	Continenetal margin of Northwest Morocco	K. Hinz & al	G	5/89
27/A	Argentine continental rise	K. Hinz & al	G/ARG	5/89
203/E Rev.	Cretaceous guyots in the Northwest Pacific	E. L. Winterer & al	US	5/89
328/A	Continental margin of East Greenland	K. Hinz & al	G	6/89
329/A Rev.	Paleocommunication between N & S Atlantic	J.P. Herbin & al.	FR	7/89
330/A	Mediterranean ridge, accretionary prism	M.B. Cita & al.	I/G	7/89
331/A	"Zero-age" drilling: Aegir ridge	R.B. Whitmarsh & al.	UK/G/FR	7/89
332/A	Florida escarpment drilling transect	C.K. Paull & al.	US	7/89
333/A	Tectonic and magmatic evolution: Carribean sea	B.Mercier de Lepinay &al.	FR/US	7/89
334/A	The Galicia margin new challenge	G. Boillot & al.	FR/SP	7/89
335/E Rev.	Drowned atolls of the Marshall Islands.	S.O. Schlanger & al.	US	7/89
336/A	Artic to north Atantic gateways	J. Thiede	G	7/89
337/D	To test the sedim. architect. Exxon sea-level curve	R.M. Carter & al.	A/NZ/US	7/89
338/D	Neogene sea-level fluctuations: NE Australia	C.J. Pigram	A	8/89
339/A	Drilling transects of the Benguela current	L. Diester-Haass & al.	G/US	8/89
340/D	Evolution of foreland basins: N. Australia	M. Apthorpe & al.	A	8/89
341/A	Global climatic change-Holocene	J.P.M. Syvitski	CAN	8/89
342/A	The Barbados accretionary prism	R.C. Speed & al.	US/UK/FR	8/89
343/A	Drill in window Cret. volc. form. Caribbean	A. Mauffret & al.	FR	8/89
344/A	Western N. Atl. Jurassic magnetic quiet zone	R.E. Sheridan	US	8/89
345/A	Sea level and paleoclim. West Florida margin	J.E. Joyce & al.	US	8/89
346/A Rev.	The Equatorial Atlantic transform margin	J.Mascle & al.	FR	8/89
347/A	Late Cenozoic paleocean., S.Equat.Atlantic	G. Wefer & al.	G/US	8/89
348/A	Upper Paleoc. to Neog. sequence: mid Atl. margin	K.G. Miller & al.	US	8/89
349/A	Clastic apron of Gran Canaria.	H.-U. Schmincke & al.	G/US/UK	8/89
350/E	Gorda deformation zone off N. Calif.	M. Lyle & al.	US	9/89
1/C	Bransfield Strait	D.C. Storey & al.	UK/US/G	9/89

PROPOSALS RECEIVED BY THE JOIDES OFFICE SINCE OSLO MEETING

JOIDES Number: **142/E Rev.**
Title: **The Ontong Java Plateau -- a Proposed Program (PRELIMINARY)**
Proponents: **L. Mayer, N. Shackleton, W. Berger, L. Kroenke, J. Mahoney and J. Resig**

One of the most intriguing results of recent central equatorial drilling is the identification of a series of seismic events that are synchronous over a large area of the central equatorial Pacific. These events appear to correlate with major reorganizations of the oceanic circulation system that are the result of fundamental paleoceanographic changes. Even more intriguing is the apparent correlation of these seismic events with global hiatuses and with the "sea level" events seen in continental margin sections. It is proposed a drilling program that takes advantage of the unique characteristics of the Ontong Java Plateau to directly address these issues In addition to these "Neogene" objectives, it is proposed to address a number of key questions relating to the origin of the plateau and to its pre-Neogene paleoceanographic history. Five detailed site surveys have been conducted between 17 and 31 december 1988 to select sites for the Neogene objectives of the drilling program. Criteria used to select potential sites include:the avoidance of those sites showing evidence of modern or past erosion, displacement or disruption in the sediment column, major faulting and seismic anomalies.

JOIDES Number: **325/E**
Title: **A Proposal to Drill a High-Temperature Hydrothermal Site on the Endeavor Segment: Northern Juan de Fuca Ridge**
Proponents: **H. Johnson, J. Franklin, J. Cann, R. Von Herzen**

The authors propose to examine in detail the sub-surface properties of a high-temperature hydrothermal system, using drilling as part of an integrated, long-term, interdisciplinary study of seafloor hydrothermal processes. The most important objectives of drilling into an active hydrothermal upflow zone at a spreading center are to characterize both the tectonic/geochemical/physical environment in which the flow is embedded, and the dynamic characteristics and parameters of the flow itself. Specific objectives are to determine: (1) What physical and chemical processes control the flow rate and residence time of fluids within a hydrothermal system; (2) to what depth and in what amount do fluids penetrate to the top of a magma chamber (cracking front) and what sequential mineral assemblages are forming with depth within an active system; and (3) what interactions are taking place between high temperature metalliferous fluids and locally advecting unmodified seawater with the wall rocks in the discharge zone. To accomplish these objectives a series of three re-entry and single-bit holes will be drilled on the Endeavour Segment of the northern Juan de Fuca Ridge. Samples of rock and fluid from the sub-surface region, together with simultaneous measurements of the physical and chemical environment of the sampled region will be placed in their full geologic context with a set of companion time-series, co-registered geophysical measurements adjacent to the drill holes. At the Endeavor site, drilling below the surface in the center of this active field has the distinct possibility of initiating a new high-temperature vent system, a prospect that has a wide range of scientific opportunities that this program is prepared to explore.

JOIDES Number: **326/A**
Title: **Proposal for ODP Drilling on the Continental Margin of Morocco/Northwest Africa**
Proponents: **K. Hinz, H. Roeser and W. Weigel**

This proposal reinforces proposal JOIDES Number 74, of the same title, by Winterer and Hinz. A supplemental drill site at the oceanic end of the Morocco transect, in the region between the Tafelney Terrace in the south and the Mazagan Plateau in the north, is proposed for the purpose of determining the nature and age of the oldest volcanic/magmatic products associated with the opening of the Atlantic Ocean.

JOIDES Number: **327/A**
Title: **Proposal for ODP Drilling on the Argentine Continental Rise**
Proponents: **K. Hinz, R. Stein, M. Block, M. Hemmerich, H. Meyer and C. Ronda**

Two sites are proposed for the Argentine continental margin to sample regional seismic unconformities, Mesozoic black shales, and the wedge of seaward-dipping reflectors and its substratum. Specific objectives for a site on the Argentine Rise are the age and nature of a pronounced regional seismic unconformity, which marks a change in the paleoceanography and the depositional environment in the South Atlantic and determination of the litho- and biostratigraphy of a giant drift. Specific objectives for a site on the Argentine continental margin are to obtain a section through the oldest portion of a wedge of seaward-dipping reflectors; at this site the base of the section could be reached. Further, the sampling of black Mesozoic shales and the confirmation of age and nature of the regional seismic unconformities observed at the first site are proposed.

JOIDES Number: **203/E Rev.**
Title: **Proposal for Drilling of Guyots in the Central Pacific**
Proponents: **E.L. Winterer, J. Natland, M. McNutt and W. Sager**

This proposal replaces preliminary proposal 203/E, of the same title, which was submitted in June, 1986, as part of the report of the USSAC-sponsored Workshop on Carbonate Banks and Guyots. Proponents for 203E seek to drill eight holes at the summits of five carbonate-capped guyots in the Mid-Pacific Mountains, Wake Seamounts and Japanese Seamounts in the central and western tropical Pacific. The drilling will address a number of important problems of broad thematic interest including: Early Cretaceous sea-level fluctuations; causes and timing of mid-Cretaceous carbonate platform drowning; extent, magnitude and timing of regional uplift associated with massive mid-plate volcanism in Western Pacific; Early Cretaceous Pacific plate latitudinal changes and plate kinematics; fixity of hot spots; longevity and stability of the "Dupai" anomaly in mantle composition; and, Cretaceous history of the South Pacific "Superswell" and the Darwin Rise. Preliminary targets are: Allison Guyot, and "Huevo" and "Caprina" guyots in the central and western Mid-Pacific Mountains, respectively; "M.I.T." Seamount in the west-central Pacific between Japanese (Geisha) and Wake seamounts; and Charlie Johnson Guyot at the eastern end of the Japanese Seamount chain.

JOIDES Number: **328/A**
Title: **Proposal for ODP Drilling on the Continental Margin of East Greenland, North Atlantic**
Proponents: **K. Hinz, H. Meyer, H. Roeser, M. Block, M. Hemmerich and H. Miller**

Drilling at two sites on the East Greenland continental margin is proposed in order to sample the outer wedge of seaward-dipping reflectors and the regional seismic unconformities observed there. Objectives for the two sites include: (1) Differentiation between kinematic models for the emplacement of seaward-dipping structures (reflectors); (2) investigation of the relationships between dipping-reflector sequences and continental flood basalt, and magnetic anomalies; (3) study of conjugate volcanic features of the East Greenland and Norwegian continental margins; (4) obtain samples of all major volcanic periods/zones, necessary to determine the petrological, geochemical, magnetic and kineamtic variability of extrusive igneous rocks of the Early Tertiary "North Atlantic Volcanic Event" in space and time.

JOIDES Number: **329/A Rev.**
Title: **Cretaceous Paleocommunication Between the North and South Atlantic Seas: Formation of the Atlantic Ocean**
Proponents: **J. Herbin, J. Mascle, L. Montadert, M. Moullade and C. Robert**

In order to study the Cretaceous paleocommunication between the North and South Atlantic seas, the recovery of Mesozoic rocks is proposed from three sites off the intermediate oceanic margins of Sierra Leone, Liberia, and on the Demerara Rise in the largely unexplored Equatorial Atlantic. These sites would provide new and essential data to determine the kinematic and structural evolution and the paleoceanographic, paleoclimatic, and paleoenvironmental conditions. The main objectives for drilling in this region are: (1) To discover the nature and age of the first sediments deposited on the oceanic crust, as well as the age of the crust itself, and to reconstruct the initial position of the continental masses; (2) to study the formation of sedimentary facies during the opening phase as consequences of the kinematic evolution and particularly the black shales that were deposited at one and the same time in the North and South Atlantic up to the Turonian-early Coniacian; and (3) to understand better the relationships between volcanism, sedimentation and tectonic events during the movements of the equatorial fracture zone.

JOIDES Number: **330/A**
Title: **Mediterranean Ridge: An Accretionary Prism in a Collisional Context**
Proponents: **M. Cita, A. Camerlenghi, L. Mirabile, G. Pellis, B. Della Vedova, W. Hieke, S. Nuti and M. Croce**

The study of two accretionary prisms has been planned by ODP for 1989-90 (Nankai Trough and Cascadia Trench). The need to study a wide spectrum of prisms in order to compare data from different tectonic settings provides the framework for this proposal to drill in the Eastern Mediterranean region. Preliminary sites are located along the crest of the Mediterranean Ridge and outer slope of an accretionary prism (southern transect); on the Ionian abyssal plain, outer slope of an accretionary prism and re-occupying DSDP Site 125 (southwest transect); and on the crest and flank of the Mediterranean Ridge (western transect). This proposal will be updated, and additional

drill sites will be proposed after the completion of two site surveys planned for the Fall of 1989 and mid-1990. General objectives are: (1) deformation pattern and fluid circulation in an accretionary prism; (2); fluid circulation in an accretionary prism versus brine circulation; (3) Plio-Pleistocene paleoceanography; (4) the comparison of stress and fluid circulation in areas of different deformational styles; and (5) the history of sapropels and explosive volcanic activity.

JOIDES Number: **331/A**
Title: **"Zero-Age" Drilling on an Extinct Spreading Axis: The Aegir Ridge, Norwegian Sea**
Proponents: **R. Whitmarsh, W. Weigel, H. Miller and F. Avedik**

By drilling at the center of the Aegir Ridge, a sediment-covered, but no longer active (circa 32-26 Ma) mid-ocean ridge in the Norwegian Sea, the proponents hope to avoid problems caused by high temperatures and corrosive hydrothermal fluids anticipated at actively spreading ridges. This work is proposed as a strategic intermediate step pending the development of equipment to overcome the practical problems mentioned above. General objectives are the study of magma processes and hydrothermal processes associated with crustal accretion, and investigation of the structure and composition of the lower oceanic crust and upper mantle. A preliminary site is proposed to drill into the frozen magma chamber (2000-3000 mbsf), into crust which has not undergone substantial normal faulting and within which the fissures have been sealed by secondary hydrothermal mineralization, as well as to sample the result of decaying axial hydrothermalism on sediments in the "dying" rift. The final choice of site will be constrained by sediment thickness in the median valley axis, pending further site survey work.

JOIDES Number: **332/A**
Title: **Florida Escarpment Drilling Transect**
Proponents: **C. Paull and M. Kastner**

The drilling of a three-site, east-west transect across the edge of the western Florida continental margin at 26°01'N is proposed. The objectives of the transect are to determine: (1) Patterns of fluid circulation through the carbonate platform and rates of lateral exchange with seawater, (2) the diagenetic history of the platform edge as it relates to the patterns of fluid circulation, (3) the effects and geologic record of seafloor brine seeps with respect to sulfide mineralization, deposition of chemosynthetically produced organic carbon-rich layers, and the escarpment's erosional history, (4) the stratigraphic development and facies succession across a carbonate continental margin, (5) the paleoceanographic history of the Gulf of Mexico and (6) the facies pattern in the distal submarine fan. A Florida Escarpment drilling program will elucidate the geological and geochemical processes which form and modify carbonate continental margins. Drilling these sections to recover the fluids which circulate between the oceans and its edges should be within the capabilities of the JOIDES Resolution. This drilling program was recommended by the ODP working group on carbonate banks and atolls. (1 Leg)

JOIDES Number: **333/A**
Title: **Tectonic and Magmatic Evolution of a Pull-apart Basin: A Drilling Transect Across the Cayman Trough, Caribbean Sea**
Proponents: **B. Mercier de Lepinay, E. Calais, P. Mann, E. Rosencrantz, M. Perfit and T. Juteau**

This proposal presents a drilling program of six sites for the Cayman Trough, a 1400-km long pull-apart basin and present transform boundary in the Northern Caribbean. The central and eastern parts of the basin are sediment-starved, hence basement structure is accessible to drilling. Drilling in the eastern end of the Cayman Trough (2 sites) provides a unique opportunity to examine the timing and direction of propagation of faulting in a pull-apart setting. Information on age of subsidence, subsidence patterns and basement lithology would assist both in the interpretation of the basement structure of deeply buried (inaccessible) pull-aparts, as well as the interpretation of exhumed and deformed pull-aparts in ancient mountain belts. Drilling on the eastern and western sides of the trough (3 sites) will provide information about the inception and controls on a spreading ridge and a magmatic history test of depth versus age relations. The objectives for a single site in the mid-Cayman Spreading Center is direct sampling of layer 3 and its magmatic evolution. Additional objectives for all sites are the state of stress in strike-slip zones and Caribbean paleoceanography-constant versus episodic plate motions. (1.5 Legs)

JOIDES Number: **334/A**
Title: **The Galicia Margin New Challenge: Drilling Through Detachment Faults, Lower Crust and Crust-mantle Boundary**
Proponents: **G. Boillot, E. Banda and M.C. Comas**

Extensive drilling of basement at the Galicia Margin, N.E. Atlantic, is proposed for two sites, one on the west Galicia Margin and the other on the Iberian Abyssal Plain. Proposed work seeks answers to major geodynamic questions raised by previous drilling at the Galicia margin, Leg 103, concerning the upper lithosphere and the ocean-continent crustal transition. The general thematic objectives of the proposal are: (1) To test the simple shear model for the stretching of the lithosphere during rifting; on the Galicia Margin, the best candidate for this shear zone is the S seismic reflector; (2) to determine by sampling the nature of the basement beneath the S reflector; depending on models and hypotheses, it could be underplated gabbros, stretched lower continental crust, or serpentinite resulting from alteration of the uppermost mantle by synrift and/or postrift hydrothermal activity; and (3) to estimate the westward extension of the serpentinite seafloor.

JOIDES Number: **335/E**
Title: **Drowned Atolls of the Marshall Islands: Paleoceanographic, Lithospheric and Tectonic Implications**
Proponents: **S.O. Schlanger and F.K. Duennebier**

This drilling program in the northern Marshall Islands consists of eight proposed sites atop drowned atolls of Eocene (Harrie Guyot), Cretaceous (Sylvania Guyot) and unknown (SCH Guyot) age now at depths of 1300-1400 m and at nearby deep-water archipelagic apron settings.. This proposal replaces JOIDES Number 202/E, entitled "Geologic Evolution of the Northern Marshall Islands," submitted to JOIDES on 9 January 1986 as part of the report of the USSAC workshop on carbonate platforms. Information from proposed sites will by applicable to a broad set of major problems: (1) Drilling

atop Sylvania and Harrie Guyots will provide information on the chronology of reef growth and drowning related to sea-level paleolatitudinal history and vertical tectonics; (2) investigate the "paradox of drowned reefs"; (3) determine the chronology of volcanic events in the region as related to the passage of the Marshall Islands over thermal anomalies; (4) obtain reliable paleolatitudes and formation dates for these edifices; (5) determine the sources of Marshall Islands basalts and their relationship to the DUPAL/SOPITA anomalies; and (6) drilling at Sylvania, Harrie and related archipelagic apron sites will provide a data base for studies of depositional and diagenetic histories of archipelagic carbonate sequences and the chronostratigraphy of acoustic reflection horizons as related to paleoceanography. (1 Leg)

JOIDES Number: **336/A**
Title: **Arctic to North Atlantic Gateways, Oceanic Circulation and Northern Hemisphere Cooling**
Proponent: **J. Thiede**

The target areas proposed for drilling are arranged in terms of two transects: One transect extends from the Fram Strait along the East Greenland continental margin to the Denmark Strait following the eastern boundary of the East Greenland Current. The other transect extends from the northern Iceland Plateau to the south of the Iceland-Faeroe Ridge. Drilling in the central Fram Strait will provide data on the depth of evolution of the oceanographic gateway and the initiation and evolution of shallow- and deep-water flow through this passage. Proposed sites at the East Greenland continental margin are intended to (1) date the onset of the East-Greenland Current, monitor the deep-water formation and surface waters in the Greenland-Iceland Sea, (3) determine their influence on the variability of the polar front and northern hemisphere paleoclimate, and (4) decipher the evolution of the Greenland ice sheet. Sites on the Iceland Plateau are proposed to describe the paleoenvironmental conditions following the very early rifting stages of the Norwegian Basin. Proposed drilling of the Iceland-Faeroe Ridge will yield key information on the early spreading stages of the southern Norwegian Sea, the subsidence history of the Iceland-Faeroe Ridge and the early phases of warm surface-water inflow from the North Atlantic-a key parameter for northern hemipshere climate. Drilling is the Denmark Strait is proposed for a better understanding of the development of oceanic gateways and their influence on oceanic circulation patterns and climatic conditions during Cenozoic times in the Nordic Seas; it is aimed at determining the exchange rates of water masses between the Nordic Sea basins and the North Atlantic.

JOIDES Number: **337/D**
Title: **Ocean Drilling Program Tests of the Sedimentary Architecture of the Exxon Sea-level Curve**
Proponents: **R. Carter, C. Fulthorpe, L. Carter, J. Beggs, K. Miller and G. Mountain**

A multiple-leg program is proposed consisting of four groups of sites in the New Zealand region. A transect consisting of four sites will cross known mid-late Pleistocene shelf-margin sequences, offshore Wanganui Basin, western North Island. The main objective there is to establish the sedimentary architecture of known sea-level controlled sequence systems tracts, both for its intrinsic importance and for comparison to pre-Neogene sequences. A second transect will cross identified Miocene Exxon-type seismic sequences in Canterbury Basin, eastern South Island. The objectives for this transect are threefold: To establish the facies architecture of presumed pre-Plio-

Pleistocene sea-level controlled seismic sequences, to test the global applicability of the mid-miocene part of the Exxon sea-level curve, and to establish the validity, and document the sedimentology, of a high-frequency part of the Exxon sea-level curve. Two sites, one on the Canterbury shelf platform and one on the flank of the Campbell Plateau, are proposed to establish the paleoceanographic nature of the 29 Ma event in the southwest Pacific. Lastly, a pair of sites in the Great South Basin, southeast of South Island, are intended at establish a high-resolution stratigraphic record through well developed southern hemisphere Paleocene sequences.

JOIDES Number: **338/D**
Title: **Absolute Amplitude of Neogene Sea-Level Fluctuations from Carbonate Platforms of the Marion Plateau, Northeast Australia**
Proponents: **C. Pigram, P. Davies, D. Feary, P. Symonds and G. Chaproniere**

Drilling is proposed along an E-W transect of five sites on the Marion Plateau, the most southerly of the marginal plateaus located along the northeastern margin of Australia. The principal objective of the proposal is to determine the amplitude of Neogene second- and third-order sea-level cycles. This objective, identified in the OH panel white paper, COSOD II, and the El Paso Workshop (EOS, March, 1989), can be achieved in this region because sites that have undergone identical subsidence histories can be located within two phases of platform accretion. Furthermore the Marion Plateau is a low-relief carbonate bank-slope-basin system that OHP considers essential for comparison with proposed Pacific atoll transects. As subsidence can be eliminated as a control on the Marion Plateau, it is an ideal area in which to define the amplitude of Neogene glacioeustatic events. A further objective is to obtain information on the changes in oceanography and climate as the world's ocean changes from an equatorial to a gyral circulation pattern. This information will help decipher the history of evolution of the East Australian Current and the effects of these factors in the development of subtropical platforms.

JOIDES Number: **339/C**
Title: **Preliminary Australian Ocean Drilling Proposals in the Southern Ocean and the Conjugate Margins of Southern Australia and Antarctica**
Proponents: **P.A. Symonds, Australian ODP Scientific Committee Coordinator**

A series of mature proposals are being developed by the Australian ODP Scientific Committee relating to the Southern Ocean and the Australian and Antarctic margins addressing three very broad, main themes: (1) Lithospheric extension between Australia and Antarctica; (2) Magmatism associated with Southern Ocean opening and magmatic signatures of mantle evolution, emphasizing the Australia-Antarctic Discordance; and (3) Climatic and sea-level change in the Southern Ocean. Major scientific drilling objectives are: (1) The development, evolution and sedimentological expression of the Sub-tropical Convergence, the Antarctic Convergence, and the Antarctic Divergence, and the relations of circulation and seafloor erosion to Australia-Antarctica plate tectonic history through an examiniation of the chemical, biological and sedimentological signals; (2) the onset and cyclicity of glaciation which in East Antarctica may have been diachronic; (3) the relationship of sealevel change to distinctly tectonic or glacio-eustatic factors and the ensuing effect on sediment patterns; and (4) the evolution of temperate carbonate margins.

JOIDES Number: **340/B**
Title: **Evolution of Foreland Basins - A Record of Tectonic, Climatic and Oceanographic Change from the Northern Australian Margin**
Proponents: **P.A. Symonds,**
Australian ODP Scientific Committee Coordinator

This proposal is presented as two sub-proposals: Sub-proposal A, entitled Neogene/Quaternary collisional tectonism and foreland basin development across the northern Australian margin; and subproposal B, entitled Cenozoic global climate evolution - the record across the northern Australian margin. Sub-proposal A suggests five drill sites along the strike of the collisional system from Timor Trough in the west to Moresby Trough in the east. At the western sites, in Timor and Aru Troughs, penetration of the Australian continental shelf and slope section beneath the relatively deep-water foreland basin fill will date subsidence and provide information on lithofacies, unconformities and depositional processed during the very early rifting stages of foreland basin development. The geochemistry and diagenetic alteration of the foredeep fill may provide evidence of fluid circulation within the system. The astern site in the Moresby Trough targets the Eocene sag-phase passive margin sequence beneath the foreland basin sequence for post-Oligocene collisional history. Sub-proposal B has as its objective the stable isotope record within sedimentary sequences across the northern Australia margin, i.e., documenting major events in the evolution of global climate during the Cenozoic, as related to northward movement of Australia. The five proposed sites are located on the northwestern margin (Scott Plateau), the northeastern margin (Eastern Plateau) and within the collisional system on the northern margin (southern flank, Timor Trough). A second objective is to obtain a Late Cretaceous biostratigraphic reference section for the eastern Indian Ocean.

JOIDES Number: **341/A**
Title: **Global Climatic Change as Measured Through a Continuous Late Wisconsinan Quaternary Record with Special Emphasis on the Holocene**
Proponent: **J. P. M. Syvitski**

This is a preliminary proposal for drilling the continental shelf of Eastern Canada, in the Saguenay Fiord and in the St. Lauwrence Estuary (Laurentian trough). Objectives for these two sites are: (1) To determine the natural or background climatic trend through the Holocene period through use of proxy indicators such as stable isotopes, character and content of organic carbon, sediment texture, micropaleontology, palynology, mineralogy and other geochemical indices including pore water chemistry. Chronostratigraphy would include dates from C^{14} (AMS on forams, wood), amino-acid dating, thermoluminescence, thorium series dating techniques and oxygen-isotope stages. (2) To determine the deglacial history of the Late Wisconsinan marine sediment sequence in terms of sediment accumulation rates, sedimentary structures and geotechnical parameters. For example, did the Laurentian Ice Conduit slide over a thick package of preglacial unconcolidated sediment? What is the loading history of these preglacial sediments? (3) To determine a high resolution paleomagnetic signal to help calibrate the master curve for the late Quaternary. (4) To calibrate the first earth-system numerical model developed to predict the sediment character of marine deposits affected by ice-sediment-circulation patterns.

JOIDES Number: **342/A**
Title: **Growth Mechanics and Fluids Evolution of the Barbados Accretionary Prism**
Proponents: **R. Speed, G. Westbrook, J. Moore, A. Mascle, X. Le Pichon, S. Dreiss, D. Karig, and M. Langseth**

A series of ODP holes are proposed to address the mechanics and fluids evolution of accretionary forearcs; sites for the proposed investigations are located in partial transects across the Barbados forearc and the immediately adjacent Atlanic ocean floor. The overall goal is an understanding of how accretionary forearcs grow and change progressively with growth, how fluids are sourced in and evolve from the forearc and subjacent crust, and how changing fluid and sediment properties affect forearc growth. The specific objectives are: (1) Outer deformation front processes and controls; (2) wedge-thickening processes; (3) timing in prism growth; (4) accretionary prism-forearc basin tectonic interaction and fluid flow; (5) forearc subsidence; (6) fluid circulation in accretionary prisms and adjacent tracts; (7) fluid sources; and (8) time-dependence of the fluid regime and diagenesis of forearc sediments.

JOIDES Number: **343/A**
Title: **Drill a Window of the Cretaceous Volcanic Formation in the Caribbean Zone**
Proponents: **A. Mauffret and A. Mascle**

No sites are identified because of inadequate seismic surveys, however, seismic data provide evidence of a window in the Cretaceous volcanic flow, offering an opportunity to reach oceanic basement (Horizon B) at a depth more moderate than DSDP 153, and to solve the main problems posed in the Caribbean region. The authors propose to drill in a small depression at the foot of a cliff, trending N-S along the western edge of a volcanic plateau, then to sample the cliff to study the composition of the volcanic rocks below the Coniacian volcanic flow. A second objective is to reach the rough basement at the top of the Pecos Fault Zone, the boundary between the Beata Ridge and Columbian Basin, sampling the Caribbean crust.

JOIDES Number: **344/A**
Title: **Proposal to Study the Western North Atlantic Jurassic Magnetic Quiet Zone by Ocean Drilling**
Proponent: **R.E. Sheridan**

It is proposed that DSDP Site 534 be re-entered and drilled 500 m into basaltic basement or into the sheeted dikes of the crust, and a new site, west of DSDP Site 603, be drilled also to sample Jurassic sedimentary rocks and basement.
The main objective of the proposed work is differentiation between models of the origin of the Jurassic magnetic quiet zone. Documenting the true nature of the Jurassic magnetic quiet zone is critical to our understanding of the geomagnetic dynamo theories, and critical to our understanding of lower mantle convection and the plate tectonic convection in the upper mantle (pulsation tectonics).

JOIDES Number: **345/A**
Title: **Drilling Proposal for the West Florida Continental Margin, Gulf of Mexico: Sea Level and Paleoclimatic History**
Proponents: **J. E. Joyce, H. Mullins, L. Tjalsma, S. Wise**

This proposal to study sea-level change on a passive margin involves the analysis of sequence stratigraphic events within the constraints of a high-resolution chronostratigraphy. Its drilling strategy is a land-sea transect of the margin, with at least six closely-spaced ODP drilling sites, sampling all the key areas including highstand coastal plain, shelf, shelf break, slope, and the conformable extent of the sequence boundary. ODP drilling will recover deep-water pelagic facies on the slope, winnowed sands at the shelf margin, and hardgrounds on the shelf. A second objective is to address changes in paleoclimate/paleoceanography as recorded in the Cenozoic sediments of the eastern Gulf of Mexico. Site-specific objectives are: (1) to develop a high-resolution stratigraphy in a deep-water pelagic section; (2) to penetrate the conformable basinward extent of sequence boundaries; (3) to drill sections down-dip of the prograding clinoforms; (4) to obtain an expanded, possibly complete, lower to middle Miocene section; (5) to estimate the temporal extent of the middle Miocene unconformity and provide evidence of the nature of the toplap surface in contact with the sequence boundary; (6) to study the expanded Oligocene to lower Miocene prograding shelf edge; (7) to study the shelf component of the depositional systems sampled at deeper sites; and (8) to sample low-angle clinoforms associated with out-building of the Paleogene shelf margin.

JOIDES Number: **346/A**
Title: **A Proposal for Scientific Drilling on the Equatorial Atlantic Transform Margin**
Proponents: **J. Mascle, Ch. Basile, J. Herbin, M. Moullade, Ch. Roberts**

This proposal is a revision of 276/A, and is part of an integrated program devolted to study of the structure and evolution of the Ivory Coast-Ghana transform margin. While the focus of this proposal is the evolution of a transform-shear margin, many other global objectives (such as the history of paleoceanographic gateways, control on the history of climate and deep circulation, water-mass distribution, black-shale paleoceanography) can be addressed in this area, as well. Drilling strategy consists of a series of 3-4 deep holes through the sedimentary section complemented by 3 shallow basement holes. The sites constitute a double N-S and E-W transect across the Ivory Coast-Ghana Ridge, the bordering continental margin and deep ocean basins. The objective for the N-S transect is to provide reference sections across the deep ocean basin and the Ivory Coast-Ghana deep basins. The E-W transect should bring constraints on the lateral evolution of a transform margin from an area supposed to rest on a still thick continental crust to an area of thinned underlying continental crust. The three shallow holes are dedicated to sampling the acoustic basement underlying a marginal ridge and to testing the nature of the transition between continental basement and (presumably) Cretaceous oceanic basement at the level of the extinct Romanche FZ.

JOIDES Number: **347/A**
Title: **Late Cenozoic Paleoceanography, South-Equatorial Atlantic**
Proponents: **G. Wefer, W.H. Berger**

Drilling is proposed along 3 transects in the area of the equatorial Atlantic: east and west of the south-equatorial MOR and south-east of São Paulo. The purpose is to reconstruct the dynamics of the transequatorial heat transport in relation to the North Atlantic Deep Water (NADW) formation, intermediate curents, and productivity variations throughout the Neogene. Comparison of records from eastern and western transects allows assessment of east-west asymmetries in the productivity, and of strength of surface circulation. At depth, these comparisons allow reconstruction of NADW and AABW transport patterns. The transect near São Paulo is to recover the record of heat import of the North Atlantic through the South Equatorial Current. Also, a north-south comparison in the west-equatorial region will give clues to the vigour of NADW flow, from the inclination of the abyssal thermocline separating NADW and AABW.(1 leg).

JOIDES Number: **348/A**
Title: **Upper Paleogene to Neogene sequence stratigraphy: the Ice House world and the U.S. Middle Atlantic Margin**
Proponents: **K.G. Miller, N. Christie-Blick, G.S. Mountain**

The upper Paleogene to Neogene section of the U.S. middle Atlantic margin is ideally suited for the study of changes in relative sea level recorded in passive margin sediments. Features unique to the region during this time interval include:

- rapid sedimentation (occasionally above 200m/m.y.) that provides an unusually high-resolution record during a time of known glacio-eustatic change;
- tectonic stability that simplifies subsidence considerations;
- mid-latitude setting that optimizes biostratigraphic potential , and yields sufficient carbonate for Sr-isotope stratigraphy; and
- abundant reconaissance -quality seismic profiles, well samples and logs, boreholes and outcrops that can guide efforts to concentrate on features that best reveal the record of sea-level change.

These unique possibilities will be exploited in drilling 11 possible sites on the shelf and upper slope of the Mid-Atlantic continental margin. The objective will be to determine the geometry and age of Oligocene to Miocene depositional sequences, and to evaluate the role of relative sea-level changes in developing this record. It will be evaluated possible causal links between ice-volume (glacio-eustatic) changes inferred from the deep sea $\partial 18O$ record and depositional sequences dating from this Oligocene to Miocene "ice house world". This program should define precisely the ages of these depositional sequences and test models of sedimentation and relative sea-level changes.

JOIDES Number: **349/A**
Title: **Drilling into the Clastic Apron of Gran Canaria: Evolution of a Linked System Volcanic Ocean Island-Sedimentary Basin**
Proponents: **H.-U. Schmincke, U. Bednarz, A. Freundt, P.v.d. Bogaard, K. Hoernle, M. Menzies, W. Weiger and G. Wissmann**

This proposal presents a drilling program of five holes into the volcanic oceanic island of Gran Canaria (Canary Islands). The drilling targets are the ultimate aim of the

interdisciplinary research project **VICAP** = *Volcanic Island Clastic Apron Project.* The purpose of this project is to study the physical and chemical evolution of a confined system "asthenophere - lithosphere - seamount - volcanic island - sedimentary basin" by drilling into the proximal, medial and distal facies of a volcanic apron, which formed by submarine volcanic activity during the early seamount stage, explosive volcanic activity in shallow water and on land, lava flows and pyroclastic flows enterin g the sea, and erosional activity.
The clastic apron is expected to contain material from throughout the entire evolution of the volcanic complex, including material no longer present on the island and - most importantly - material from the unexposed and unaccessible submarine stage. A major element of the program will be high precision single-crystal age dating with the aim of monitoring the island and basin evolution in time slices as detailed as 100.000 years.

JOIDES Number: **350/E**
Title: **Plio-Pleistocene Sedimentation and Plate Deformation : Gorda Zone Deformation off Northern California.**
Proponents: **M. Lyle, R. Jarrard, S. Halgedahl and R. Karlin**

This proposal is to study the processes of deformation in young ocean crust by examining rotation of crust in the Gorda Deformation Zone through a series of 3 holes along an isochron approximately 4 millions years old. Sedimentary studies will be used to determine the history of rotation of different crustal regions within the plate. It could also be possible to measure the present state of stress in the crust. The Gorda Deformation Zone is also well-located for the study of both palaeoceanographic history of the Californian Current system and the evolution of the chemistry of temperate north Pacific deep waters. Finally, Late Pleistocene turbidite sections can be found nearby to hemipelagic sediment sites of paleoceanographic interests, and sampling of the coupled sites will be important to study the history of turbidite deposition from the northwest coast of North America. (1/4 leg).

JOIDES Number: **351/C**
Title: **ODP Proposal for Bransfield Strait**
Proponents: **J.B. Anderson, P.F. Barker, I.W.D. Dalziel, M.R. Fisk, J.D. Jeffers, R.A. Keller, R.D. Larter, R. Meissner and J.L. Smellie**

This proposal presents a drilling program in the Branfield Strait -an young active back-arc basin that formed during the past 4 Ma along the remaining active portion of the Antartic Pacific margin. Sedimentation is dominated by glacial marine processes and their associated lithologies. It forms an ideal natural laboratory for a multidisciplinary, multinational drilling project and the main objectives are :

- Continental lithosphere extension in a convergent margin setting.
- Driving forces responsible for the formation of ensialic back-arc.
- Petrogenetic processes operating during initial back-arc rifting.
- Global climatic, environmental and sea level changes.
- Hydrothermal systems in active back-arc basins.
- Aspects of Andean-type orogenesis.

It is proposed to address these problems by drilling through sediment into crystalline basement to get a complete sedimentary record of the opening of the strait as well as

samples of crystalline basement for geochemical and petrological studies of the transition from continental to oceanic crust in a back-arc setting. This would set Bransfield Strait as a example of an ensialic suprasubduction zone back-arc basin. (10 sites).

JOIDES PLANNING COMMITTEE SUMMER MEETING
22-24 August 1989
University of Washington
Seattle, Washington

DRAFT MINUTES

Members:

J. Austin - University of Texas at Austin
G. Brass - University of Miami
M. Cita-Sironi - University of Milano, ESF Consortium
D. Cowan - University of Washington
R. Duncan - Oregon State University
H. Jenkyns - Oxford University, United Kingdom
M. Kastner - Scripps Institution of Oceanography
D. Hayes - Lamont-Doherty Geological Observatory (alt. for M. Langseth)
M. Leinen - University of Rhode Island
J. Malpas - Memorial University, Canada-Australia Consortium
C. Mevel - Université Pierre et Marie Curie, France (alt. for Y. Lancelot)
R. Moberly (Chairman) - Hawaii Institute of Geophysics
A. Taira - Ocean Research Institute, Japan
B. Tucholke - Woods Hole Oceanographic Institution
U. von Rad - BGR, Federal Republic of Germany
J. Watkins - Texas A&M University

Liaisons:

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

Guests and Observers:

A. Crawford - University of Tasmania, Australia
J. Delaney - RIDGE, University of Washington
P. Fryer - Hawaii Institute of Geophysics
E. Kappel - Joint Oceanographic Institutions, Inc.
A. Meyer - Science Operator (ODP-TAMU)
M. Purdy - Woods Hole Oceanographic Institution
E. Silver - University of California at Santa Cruz
B. Taylor - Hawaii Institute of Geophysics

JOIDES Planning Office:

L. d'Ozouville - Executive Assistant and Non-US Liaison
G. Waggoner - Science Coordinator

Tuesday, 22 August 1989

793 Introduction

PCOM Chairman Ralph Moberly called the 1989 Summer Meeting of the JOIDES Planning Committee to order. Darrel Cowan welcomed everyone to the University of Washington. Cowan explained logistics including the joint PCOM/USSAC boat cruise and dinner party hosted by the College of Ocean and Fishery Science of the University of Washington. Moberly thanked Cowan for leading a wet but nevertheless enjoyable field trip to the San Juan Islands before the meeting. Moberly welcomed new PCOM members J. Austin, M. Cita-Sironi, and R. Duncan, and the alternates standing-in for this meeting, D. Hayes and C. Mevel. He also welcomed A. Crawford from the Australian ODP Secretariat and who is the Canada-Australia Consortium PCOM alternate for J. Malpas.

794 Minutes of 2-4 May 1989 Oslo PCOM Meeting

Moberly called for comments, corrections and approval of the previous minutes.

M. Cita questioned the wording and general tone of a sentence on page 4 of the minutes concerning the 4th Annual Co-Chief Scientist Review Meeting for legs 119 to 124. The wording was substantiated by L. Garrison. B. Tucholke suggested a clarification be made so that the sentence now reads "There was a concern that Co-Chiefs do not always fully understand the objectives of a leg **as defined by PCOM and JOIDES panels.**" (addition in bold).

PCOM Motion

PCOM approves the minutes of the 2-4 May 1989 Planning Committee meeting with amendments. (Motion Tucholke, second Leinen)

Vote: for 16; against 0; abstain 0

771 Approval of Agenda

Moberly called for additions or revisions, and then for adoption of the agenda for the meeting.

C. Mevel asked that Y. Lancelot's letter of 5 August 1989 to R. Moberly be discussed. This was placed in Item R, Other Business.

PCOM Motion

PCOM adopts the agenda for the 22-24 August 1989 Planning Committee meeting with amendments. (Motion Brass, second Leinen)

Vote: for 16; against 0; abstain 0

772 Reports By Liaisons to PCOM

Reports were presented by the ODP Liaisons to PCOM.

B. Malfait from NSF gave an update on the NSF budget. Overall the 1989 NSF budget has increased by 9.8% (Appendix A). The 1990 overall NSF request has been cut by Congress from a 14% increase to about a 8% increase. This may shrink even

more. Within the Ocean Sciences Division this translates into about a 4% increase in 1990. It will probably be September to October before the budget is finalized. NSF has funded the final increment of the Geoprops probe construction to Dan Karig. Two field programs have been funded: 1) New Jersey Shelf and Slope study by Miller and Christie-Blick and 2) joint funding with MG&G of a study of the Curacao Trench in the Southern Caribbean. The 1990 ODP Program Plan has been officially submitted. NSF is still concerned with the budget and has requested additional information from the program. Al Sutherland has left the NSF Division of Ocean Sciences to be Ocean Projects Manager of the NSF Division of Polar Programs.

Malfait discussed the time frame for ODP renewal (Appendix A). There is a heavy concentration on long-range planning. The main science document is the Long-Range Science Plan which is now being modified by JOI. The last COSOD was in 1987 and a new COSOD should occur in 1993. 1989-1990 is a critical time for beginning discussions with the international partners. 1990 will be a critical year for science and budget planning. 1992 is when the formal discussion of new MOUs will begin. The National Science Board will have a presentation in October 1989.

R. Duncan asked if there were any new developments regarding participation of the USSR in ODP. Malfait said that there has been no new developments. With the confirmation of Presidential Science Advisor Allan Bromley as head of the OSTP, there could be something new in several months.

T. Pyle from JOI discussed the present status of the FY90 Program Plan. NSF has withheld its approval pending additional information on: 1) the raises in salary; 2) how much money has been spent on technological development; 3) negotiation of the fee to Texas A&M Research Foundation.

T. Pyle reviewed the JOIDES response to the Performance Evaluation Committee and the National Science Board reviews of the program. Responses have been made in the following areas:

> Reorganizing the advisory structure on a thematic basis by: 1) deleting the regional panels; 2) emphasizing thematic panels; 3) splitting SOHP thematic panel into SGPP and OHP; 4) adding SMP service panel; and 5) revising and updating mandates.
>
> Emphasizing timeliness of publications and need for thematic synthesis publications by: 1)providing funds for temporary copy editors in FY90 (SOE); 2) providing seed money for thematic publications in FY90 (SOE); and 3) adopting a new publications policy approved by PCOM emphasizing easier outside publication and faster publication of Parts A & B by revising post-cruise meeting schedule.
>
> Criticism of JOI and the lines of communication have been addressed by: 1) providing a mandate for BCOM so that its purpose is not misunderstood; 2)

clarifying the JOIDES chain-of-command; and 3) clarifying that JOI is sensitive to the international character of the program.

Coordination with other Earth Science programs has been proposed by: 1) Developing communications with the following groups: Arctic Ocean Drilling; National digital seismic networks (IRIS, POSEIDON, etc.); RIDGE, BRIDGE, FRIDGE; Global Sediment. Geol. Project (IUGS); Continental Drilling; WCRP-WOCE, JGOFS, etc. These should grow to be some sort of formal liaison. 2) Briefings of PCOM by such other programs as GSGP (partially; Miami PCOM), Arctic Ocean Drilling (Oslo PCOM); and RIDGE and Global Seismic Networks (this Seattle PCOM).

A review of ODP drilling answers the question of why there has not been more of the deeper drilling expected from COSOD I: 1) less deep drilling being proposed; 2) some objectives reached higher than expected; 3) some lithologies still causing drilling problems.

Advice on increasing "dues" has been ignored. ODP will seek more partners.

In addition, the JOI Board of Governors is considering increasing outside representation in the planning structure by proposing that 2 of 10 US members of PCOM be non-JOI representatives. Hayes asked if a decision had been made. Pyle said that the concept has been approved but not a plan. Brass asked what was broken that needed fixing. Pyle stated that the perception to PEC II was that the management level of ODP is a "closed shop". Apparently, one proposal before the JOI Board of Governors is that 2 of 10 US members of PCOM be non-JOIDES representatives. Kastner asked why 2 new members couldn't be added to the present 10. The MOUs state 10. The point was raised, that if a person is selected from outside JOIDES institutions, he or she to be effective as a planner must have had considerable experience in the JOIDES advisory structure or on board the *Challenger* or *Resolution;* therefore comments may continue about an "old boy - closed shop" system. This issue generated considerable discussion among PCOM members. Concerns were expressed about which JOIDES institutions would be left out and how the non-JOIDES members would be selected. Austin said that COSOD input gives outside direction to the program. M. Kastner suggested that PCOM members should take up this issue with their EXCOM members. M. Leinen said that a positive statement about outside participation should be made, but the negative consequences for planning should also be pointed out. M. Kastner suggested that a subcommittee prepare a resolution for PCOM approval; J. Austin, B. Tucholke, M. Kastner and G. Brass volunteered to do this. See later Minute 784.

The Long Range Planning Document has been turned over to JOI for additional work. There has been no written input from the critics. Non-US input on educational impact is needed. PCOM members had been asked and are being asked again to supply a list of what, in their opinion, have been the top ten scientific results of ODP. Some input on the benefits for industry achieved by ODP has been supplied by Ted Moore, Jim Franklin and Dave Falvey, additional information

would be helpful. A brochure to accompany the LRP is also being prepared by JOI for laymen. The non-US partners may want to prepare a similar brochure to address their own particular concerns. The National Science Board will get a briefing 12 or 13 October.

Pyle gave an update on some of the other global geoscience initiatives with which ODP is attempting to form linkages. In the area of global seismology there are plans for a meeting of the joint JOI/IRIS steering committee in September in Washington. There is also plans for a joint JOI/IRIS proposal workshop for the scientific use of abandoned telephone cables sometime around January 1990. John Orcutt is currently at the IASPEI-FDSN meeting to talk about interaction with ODP. J. Delaney of the RIDGE program will be talking to PCOM at this meeting. The Global Sedimentary Geology Project has sent a favorable response. Continental Drilling presents several opportunities for interaction with ODP, including common use of the DOE Long Valley Caldera drillhole for high-temperature tests of ODP equipment. There is a tentative ad hoc meeting scheduled for October with interested DOE personnel to discuss slimhole drilling and high-temperature logging concerns. ODP has several representatives involved with the Nansen Arctic Drilling Program: Garry Brass on the science steering committee, Mike Storms on the technical committee, and Tom Pyle. Leonard Johnson is on the Executive Steering Committee. G. Brass and M. Leinen attended the workshop run by N. Pisias about linkages between the Global Climate Programs and ODP. M. Leinen is on the GOFS steering committee, which wants to make the best use of data from the drilling program. M. Kastner suggested interaction with the Ice Core Drilling Programs.

Other items brought up included: a reminder to send panel minutes to JOI; a reminder that ad hoc workshops at panel meetings should not be set up without prior consultation and approval from JOI; a RFP is being prepared for the Micropaleontology Reference Centers and should go out in a few months; advice on the use of the "seed money" for thematic publications is requested from PCOM and thematic panels.

L. Garrison gave the Science Operator report. Leg 127 ended at Pusan, Korea, several days prior to the PCOM meeting. Good science came out of the cruise, but there were considerable operational problems. At site 794 (J1b-1), which was to be reoccupied on Leg 128 for downhole OBS and Electrical Resistivity experiments, the pipe got stuck and the BHA was left in the hole. Since neither the proper fishing tool nor casing hanger was available onboard, Leg 127 did not spend additional time at this site. The schedule was rearranged to add 10 days to Leg 128 to prepare another hole. At site 795 (J1d-1) swelling of clay prevented logging of the hole. Additionally, 131 joints of 5-inch pipe and the BHA were lost due to a cracked pin connector. A fire in a transformer blacked out the ship and resulted in the loss of dynamic positioning. At site 796 (J3b-1) caving of coarse sand beds prevented reaching the basement objectives, since there was a danger of losing the last BHA onboard. At site 797 (J1e-1), Leg 127 encountered extensive dikes and interbedded sediments and

flows. Problems were encountered using the drilling packer. Successful logging runs were made. Further drilling to deepen this hole resulted in the loss of 34 joints of pipe and the BHA when the drill pipe cracked.

Iron losses in the Western Pacific since Leg 124 have included 10 BHAs and 2 big lengths of drill pipe. These losses are the result of a combination of problems, mainly friable volcaniclastic sediments caving in on the drillstring, and the corrosion and metal fatigue in the 5-year-old drillstring. The immediate solution has been to put the old drillpipe aside and use new premium pipe. In Singapore the old pipe will be taken off the vessel and given a more thorough examination than was done at Tokyo. ODP does not want to throw away this pipe, but it needs to be examined for cracks and other bad places. New drill pipe will be waiting in Singapore and other pipe is currently on order from a contractor in Japan and another bid request will be issued in a few months. If the losses are added up for Legs 124 to 127 about $1M of equipment has been left on the bottom. This may delay the development of the 5-inch DCS capabilities. Drill collars are also getting to be in short-supply.

Garrison discussed the ODP operations schedule (Appendix B). The reason for the change in ports from Niigata to Pusan was twofold. First, the expense for the port calls in Japan was more than twice the average, Tokyo 1 around $185K compared to the average of $75K. Second was the problems caused by Japanese Customs laws, which resulted in time delays getting equipment to the vessel as well as additional cost.

Following Leg 128 the operations schedule has a 9-day transit from Pusan to Singapore, 2 days of preparation before a 10-day dry dock and then a 4-day port call in Singapore. Leg 129 follows a 10-day transit to Guam where the scientific party will come aboard. Drydocking is a requirement after five years of operations.

Because of the long transits from Guam and back to Guam and detailed planning at the pre-cruise meeting, the Ontong Java Leg has been increased to 62 days. Drilling plans made at the pre-cruise meeting indicated additional time was required to drill the four Neogene transect sites and the deep hole to basement. Austin said the site survey proponents wanted to know why the schedule was to drill the deep hole to basement first and then the Neogene transect sites. Austin asked if these changes were substantially different from what PCOM originally approved. Moberly said that as requested, CEPAC had put together two sets of proposals that included the deep basement and pre-Neogene objectives as well as the Neogene transect. Berger has also proposed an alternate site. This discussion was taken up again later during the liaison report about the DMP meeting (Minute 773).

As mentioned previously, 10 days have been added to Leg 128 to accommodate drilling another hole at site 794. The schedule for Leg 128 is constrained by the two rendezvous with other vessels (Appendix B). The first rendezvous will be at JS-2 on 3 September, timed in relation to the UK experiments on biological activity in cores proposed by Parks and Craig. Cores will be transferred to the other vessel for

transport to shore and then by air to the UK within 48 hours. The second rendezvous is the meeting with the Japanese seismic vessels at site 794 on 25 September.

A. Meyer discussed operations at TAMU. Cruise staffing is more or less complete through Leg 131 (Nankai). Staffing of Leg 133 (NE Australia Margin) will begin soon. Staffing of Legs 134 to 135 will begin the end of September. Offers to new staff scientists to replace Suzanne O'Connell and Andy Adamson as well as Elliott Taylor have been made. The new publications policy schedule is being applied to Legs 126 and 127. Leg 125 has also requested the two post-cruise meeting schedule, but is not holding to the 3.5-month post-cruise meeting timetable. Leg 126 will be the first to try the 12-month post-cruise publication time for the Initial Reports volume. It is still too early to decide if this new policy is working. Two editors can now be attached to a volume and therefore the time for editing an Initial Report volume will be cut to 10 weeks. von Rad asked what the present schedule for publication of the Initial Reports. Meyer said that it is around 15 months. Moberly asked that a schedule for publications be supplied to PCOM for future meetings, similar to the Engineering development schedules already supplied as a standard item. This way PCOM can keep track of any progress being made in speeding up publications.

R. Anderson gave the Wireline Logging Services report of the Borehole Research Group. He distributed a written report. Hole instability has been the biggest recent problem for the logging program. The SES would have allowed these holes to be logged if the BHAs had not been lost and prevented use of the SES. The use of salt muds and the SES have resulted in a substantially improved record for logging of holes. The SES is being redesigned to make it safer and more reliable, and the new design is scheduled for deployment in early 1990.

On Leg 127 at site 794 the Formation Microscanner (FMS) was successfully deployed. The FMS generates a large volume of information which gives dips of bedding and faults and can also be used to locate the depth and orientation of cores with respect to the drillhole. A new tool is needed for measuring the resistivity of cores, similar to one that has been built in the UK. SMP will be looking into this. The FMS is the first logging tool that goes into the drillhole. Cita and Moberly suggested that Roger Larson be briefed on the capabilities of the FMS for core orientation. Mevel asked how much time was required to use the FMS. Anderson said it is very fast, measurements are taken at 1200 to 1600 feet per hour. New stress measurements have been made using both the Borehole Televiewer and the Formation Microscanner. Leinen asked what plans had been made to use the FMS on the Old Pacific Leg. Anderson said that current plans are for the FMS to be used in one hole.

A boron/tin sleeve has been developed to improve the geochemical logs. The wireline packer for fluid sampling has been bench tested at TAM and the new AMOCO pumps work. There continues to be a problem with the Calcium sensors which continue to fail after 24 hours of continuous work. New sensors are being ordered. The new temperature tool has produced good results. Tucholke wanted to

know what was being done about downhole magnetics. Anderson said that because of problems with the susceptibility coil the University of Washington tool is not useful for basalts, but the new French high-resolution magnetometer licensed to Schlumberger will be tried. von Rad suggested that the Bochum magnetometer might be useful.

773 Reports By PCOM Liaisons

DMP

Liaison D. Cowan reported on the 23-24 May 1989 meeting. Cowan called PCOM's attention to DMP recommendations 89/9 to 89/13 in the DMP Minutes. Major DMP concerns that Cowan brought to the attention of PCOM are: need for high temperature logging tools; incompatibility between logging tools and the 4-inch hole of the DCS especially for high-temperature logging; the question if should PCOM specifically endorse the logging programs; and the failure of some Co-Chiefs to heed DMP logging plans at pre-cruise meetings. DMP spends considerable time developing a logging program for a leg and these recommendations are then sometimes ignored by both PCOM and at the pre-cruise meeting. Who adjudicates the differences between DMP and the Co-Chiefs? DMP has recommended that someone be hired to evaluate off-the-shelf high-temperature logging tools. DMP has also recommended a workshop on high-temperature logging tools. DMP has suggested that the Navidrill be tested at-sea on Leg 130 since it is required for the Geoprops probe.

Garrison said that the Navidrill is undergoing a major redesign and reconstruction that may take up to a year to complete. The present design, however, will make a hole for the Geoprops. Brass commented that DMP has formulated a third-party tool policy that was approved by PCOM and yet it has not seemingly been applied to Geoprops, especially the part about testing at sea before scheduling a tool's use on a leg. Tucholke reminded PCOM that Nankai is not predicated upon the use of Geoprops.

A discussion was held about the differences between Co-Chiefs and DMP over logging. This is part of a larger problem involving having more direct PCOM input into the pre-cruise meeting. Moberly said that the purpose of the advisory panels is to advise PCOM, it is PCOM's responsibility to integrate these sets of advice into the larger program that may have competing objectives. A preliminary discussion about Yves Lancelot's letter was held but action was deferred until later (Minute 785). Hayes wanted to know how much autonomy the Co-Chiefs have in shaping the final drilling program plan. Brass said there is a clear need for liaisons from PCOM or the most involved thematic panel and in some cases DMP to attend the pre-cruise meeting where the prospectus is prepared. The problem arises when the Co-Chiefs are writing the cruise prospectus and have to cut out parts of the proposed program to fit within the time assigned to a leg, but do not have advice from the planning structure as to the relative importance of the various aspects. Garrison

said that problems may also arise when programs are added to the schedule at a late date. This matter was taken up again in Minute 780.

The discussion once again turned to the question of the order of drilling sites on the Ontong Java Plateau and the location for the deep site. Moberly said that in part the problems arose because of the melding of two programs into one. The Co-Chiefs believe that drilling the deep site first gives all leg participants some material to work on during the leg, and any time gained could be used to deepen the last Neogene site into basement, but on the other hand, if time is lost, the coring and logging of the last Neogene site is jeopardized. Meyer said that it was difficult to make time estimates for drilling until the site surveys were completed. Austin and Kastner maintained that the site surveys on Ontong Java were mainly for a Neogene transect and would not have been funded for basement studies. Moberly pointed out that the Ontong Java Leg was approved at the Miami PCOM meeting from the 1988 CEPAC prospectus, thus including Neogene, pre-Neogene and basement objectives. Garrison asked how the Leg 103 prospectus departed from the program prepared by CEPDPG summarized in the Oslo PCOM Minutes. Austin and Kastner said it departs from the CEPAC plan by having the deep basement site drilled before the four Neogene sites. Kastner, Moberly and Tucholke stated their belief that the Neogene transect drilling probably represents the highest priority of PCOM. *[Note: because of the evident confusion expressed at times about Ontong Java during the Seattle PCOM meeting, the JOIDES Office has reviewed the various proposals, panel minutes, and PCOM minutes and tapes, and is sending with these minutes a summary history of the Ontong Java program during ODP]*

Moberly said that three points apparently need decisions: the order of drilling sites; a survey across the reentry basement site and on to the Neogene ones; and the location for the deep-slope Neogene site. The decision about the order can be made by PCOM or OHP. The location of the deep site OJP-3 vs. OJP-6 should be left to OHP. The survey will tie the various single-channel seismic lines in the area to the holes. Austin commented that the survey tie across the deep hole will be inadequate because the recent site surveys were planned only for the Neogene transect. Meyer discussed the draft drilling plans for Ontong Java (Appendix B). A motion on the order of drilling led to the following discussion.

Discussion

Mevel wanted to know if the Neogene transect was the only priority, since there are obviously some LITHP interests in the basement objectives. The high ranking by SOHP of the Neogene transect may have been the primary reason for scheduling this leg at Miami, but the fact that there was thematic interest in the pre-Neogene and basement also played a role in its acceptance. Cowan said that TECP had questioned if one hole was sufficient to say that basement had been sampled. Moberly said that 300 meters of penetration should be sufficient to establish attaining basement. To date only a few grams of basalt have been recovered from the basement on the Ontong Java Plateau, so any sample would be important.

Leinen wanted to know if Mayer and Berger are sure that the decision has to be either OJP-3 or OJP-6; or, couldn't there be all 5 Neogene sites? It was suggested that because of the time constraints, Mayer and Berger need to convince OHP about one or the other of these two sites. Tucholke wanted to know the time requirements for drilling the four Neogene sites vs. the deep basement site. Meyer said it would take 25.5 days to drill and log the four Neogene sites and 24.8 days to drill and log the deep basement site. The question was called:

PCOM Motion

1) The order of drilling for the Ontong Java Plateau Leg is first the 4 Neogene transect sites followed by the deep basement site; and 2) Decision about the placement of the deepest hole (OJP-3 vs. OJP-6) of the Neogene transect be based on the recommendation of OHP. (Motion Kastner, second Tucholke)

Vote: for 15; against 0; abstain 1

EXCOM & ODP Council

Moberly reported the 31 May- 1 June 1989 EXCOM and ODP Council Meeting. Principal results of importance to PCOM were excerpted in the Agenda Book and include:

- Adoption of the FY90 Program Plan and budget, with concerns discussed about Geochemical Reference Sites and about future program costs.

- Adoption of the Long-range Planning Document with some modifications to come, including a request for PCOM to reconsider the balance of scientific objectives.

- Extensive discussion of the likely incompatibility between the DCS and modern logging, a very troublesome situation.

- Reaffirmation that ODP is a global program driven by proposals that are thematically ranked.

- Adoption of the publications policy forwarded by PCOM, with the exception of the section on details.

- Expression of exceptional concern about both major aspects of the question of radio-isotopes on board the drill ship: the importance of involving new areas of science in the program, and the reluctance to allow possible contamination of the vessel.

- Approval of the mandate changes proposed. EXCOM also asked PCOM to have a general statement on membership where not already present in mandates.

- Decision that no action was needed by EXCOM about the present method whereby ODP-TAMU selects co-chief scientists for drilling legs.

Discussion

von Rad wanted to know why Publication Policy Part C was not approved. Moberly said EXCOM thought some of the recommendations could be implemented by the Science Operator immediately without waiting for IHP to advise PCOM (for example, starting the copyright negotiations with journals). The advice on policy still comes from the advisory panels.

The matter of balance of scientific objectives in the LRP was discussed. Malpas suggested that a short section could discuss the reason for the balance of the plan. Pyle said one concern was that a hard-rock program would not be as interesting to industry. Brass said the balance was cognizant of the level of achievement at the time it was written and where the opportunities will be in the future. Further discussion produced no reason to change the balance and the PCOM position can be stated as below.

PCOM Consensus

Because the Long Range Planning Document is a general assessment of the research areas where scientific advancement is achievable by drilling, and not a specific drilling plan, the balance of drilling opportunities does not require revision. The balance of actual drilling will be determined by the drilling proposals received and the thematic priorities that evolve as science and technology advance.

SRDPG

M. Langseth attended the 13-15 June SRDPG Meeting and his mailed comments were in the Agenda Book. M. Leinen distributed copies of the draft report supplied by R. Detrick. The DPG was viewed as highly successful, and will provide us good information at our November meeting.

SGPP

Kastner reported on the 19-20 July 1989 SGPP meeting. The meeting was primarily to write a new white paper and examine the panel's mandate. Copies of the draft minutes and the white paper were distributed. Kastner wanted it emphasized that liaisons from the other thematic panels need to attend these meetings. The highest priority technological development needs are for: sediment recovery and fluid sampling, and deep penetration of sandy sediments. A subcommittee of SGPP is to establish how pore waters and gases should be sampled to meet the thematic requirements. Because some important thematic objectives require radioisotope experiments onboard the ship, SGPP is going to prepare a paper on these requirements.

PPSP

Moberly reported on the 25-26 July 1989 meeting of PPSP. At the meeting the following were approved: all remaining sites of the Nankai traverse; all newly

surveyed sites for Old Pacific (the remaining two to be decided by M. Ball and L. Garrison); the 5 proposed Ontong Java Plateau sites; and, as a favor to NSF, two non-ODP shallow sites on the Bahama Banks. PPSP also reviewed the geochemistry of all petroleum shows in DSDP-ODP, received information about probable drilling conditions at high-temperature targets, and indicated a need for back-up expertise in petroleum geochemistry.

Of great import to future planning: PPSP reviewed the Exmouth Plateau operations, including their own role in having approved Site 763, with implications against future "twinning" of industry holes or indeed against riserless drilling in known petroleum basins, especially ones with thick syn-rift or early post-rift Mesozoic sections. Brass was concerned that drilling on margins such as Brazil may have a risk associated with them. Garrison said that the goal of PPSP is to keep that risk as low as possible.

774 Reconsideration of FY90 Program and Geochemical Reference Leg

[For reasons that should become evident to the reader, Minute 774 is recorded in more detail than is a typical minute. In places, the order of speakers is given differently here than their actual order, to group respondents to topics that were raised, as PCOM commonly skipped from topic to topic and back again.]

Moberly explained that since the Oslo meeting, the JOIDES Office has received numerous spoken and written communications about removal of the Geochemical Reference Sites leg from the FY90 Program Plan. The range of comments is shown in the set of letters in the Agenda Book. Some complaints are more justified than others, perhaps depending on which rumors were intercepted, for example, an Atolls and Guyots leg was not "removed" from a Program Plan that never included it, and as PCOM has not met since Oslo, PCOM cannot be "stonewalling". These letters were answered, but the answers were not included in the Agenda Book. Most answers were similar to the one to Bob Detrick (copies already sent to PCOM).

There appear to be two issues, here posed as questions. One is the decision itself: with due consideration to real and imagined factors including thematic worth, status of other planning, logistics, weather, and alternatives, *should PCOM reinstate a geochemical reference leg in the FY90 Program Plan?*

The second is the decision-making process: In the thematic panels, DPGs, and PCOM itself, and with respect to rankings, transfer of information, and record keeping, *how can PCOM improve procedures to prevent in the future whatever real (and imagined) faults there were in this planning process?*

Malpas suggested that the decision was the result of political and regional constraints placed on PCOM. In a proposal-driven program with drilling prioritized by themes, themes need to be ranked as well. Panels should put proposals together in thematic areas. If LITHP had put together a solid thematic program for Geochemical Reference then it would have fared better in the transition from

WESTPAC to CEPAC drilling as well as the transition from regional to thematic drilling programs. Brass pointed out that from time to time in ODP, PCOM had been concerned with consideration of themes, for example, how many accretionary prisms around the world would we drill?, but had always had to consider priorities of its regional panels while it was in a regional mode. Malpas said that the decision-making process is not working properly at the PCOM level. The Geochemical Reference Leg was removed without any prior notice or chance for LITHP to have any input into the decision. The prior PCOM motion accepting the Geochemical Reference Leg was overturned, not based on scientific rationale, but for political reasons. PCOM did not discuss the matter with the main people or panels who would have been concerned with the decision.

Austin observed that part of the problem is that there is a perception that the program is going to end if the ship does not appear in the Atlantic. If the program were known to be continuing through 1998, then there would be time to do the important thematic drilling in the various areas.

Discussion turned to ways to improve the process. Moberly said that the basic step to avoid future misunderstandings is to get a common system of ranking proposals and drilling programs. Once prioritized lists of programs are available from panels, PCOM can take the lead for long-range planning. Malpas suggested that the panels may have to go beyond unsolicited proposals to writing their own proposals to cover important themes. Austin thought that proponents of proposals of high thematic interest should be placed on the panels. Cita wondered if there is a good plan and sufficient proposals to carry drilling through to the end of the century. Garrison said that regardless of a set of high thematically ranked proposals, they would have to be superimposed on an ocean-to-ocean scheduling. Otherwise, the ship could spend all of its time drilling high priority objectives in only one ocean. Moberly said that in April of each year we would take the weight of what our various panels tell us, and decide what proportion of time to spend in what ocean over the next four years. Each spring we would be able to reevaluate the next four years. Lienen supported Moberly's proposal of how to decide where the ship should go. Continuing, she agreed with Malpas's contention that panels may have to hustle to get good proposals that address their themes, but that unsolicited ones are important, too. From her experience on the Lithosphere Panel, geochemical reference was not on the panel's list of top problems 5 years ago. It took Langmuir and company's unsolicited proposal to move the theme into the system. Malpas suggested that if LITHP or a DPG had taken the geochemical reference proposal, hustled, and used it as a basis to put together a solid global program of geochemical reference drilling, then it would have looked better to PCOM because the science would hold together better, and it would have fared better. Where necessary, good unsolicited proposals should be taken and put into context by the panels.

Brass said that some concession may have to be made to some regional drilling by doing the high-ranking drilling clustered in one region, then transit to another region to do other high-ranking proposals that are close together there. Kastner

thought that should be stopped if it includes some second-rate priority science just because of logistics. She was supported by Austin; transits may be necessary. Kastner suggested that thematic panels should publish their important themes in EOS, which she thought would have wider distribution among those interested in drilling than JOIDES Journal. That would draw proposals to important themes. Mevel said LITHP had just done so.

Moberly asked again if PCOM could suggest ways other than what he proposed to the thematic chairs for the rankings of programs and reporting to PCOM. There were none, and so the thematic panels will be so notified.

Anderson suggested that the future agenda briefing books contain a single-page matrix of the rankings of the four panels, to aid PCOM memory. Moberly said that such lists or matrix should be in every April's book. Watkins thought that basically the decision-making process was fair, and that the idea of something in writing is good, so we do not lose track of the history.

PCOM turned to the second part of the agenda item, specifically the Geochemical Reference leg. Watkins suggested that after 20 or so legs with no major objections, having one leg decision that raised great objections is not a bad record overall. Austin said that the change in success was partly due to going from the mode of a regional prospectus to a thematic mode. Malpas objected strongly to the decision-making process in this particular case in which there was no prior notice to anyone on LITHP. The motion could have been tabled, and then handled by phone after LITHP could respond. He believed that the previous motion was overturned because one person, new to this Planning Committee, made a strong argument for the change[*]. The overturning of the schedule was without a scientific discussion, and that is what has raised such concern among LITHP members and elsewhere in the community. Kastner suggested that PCOM should admit that a mistake in the process occurred at Oslo and that Geochemical Reference should be reinstated into the FY90 Program. She moved to accomplish this, leading to the following discussion.

Discussion

Cowan said that PCOM was entitled to reverse the Miami decision, for the purpose of keeping to the schedule of preparing for drilling on the EPR and at 504B. As for the repeated comments about lack of scientific advice, it is unreasonable to have all proponents and chairs of all thematic panels present at all PCOM meetings; we have to make do with the people in the room.

Malpas said that the science of the Geochemical Reference Leg had been extensively discussed at previous meetings and the decision was made to include it at Miami. At Oslo, Old Pacific and Geochemical Reference were unfairly compared. Austin said that at Miami, Detrick made a good case presenting the scientific justification for a geochemical reference leg. Mevel said that Geochemical Reference suffered

from being considered as part of CEPAC, rather than WESTPAC where it was LITHP's highest priority.

Cita expressed her concern earlier, that because the drilling program is a strong program with a strong structure, we should not weaken it by undue discussion of a wrong decision which may not be wrong at all. She compared the superiority in planning of ODP with another major oceanographic program, and stressed the importance of good will in keeping the drilling program strong.

Mevel said that the effects of reinserting Geochemical Reference on the FY90 schedule have to be discussed before any vote.

Kastner said that Oslo we received the erroneous information that this leg was never of high priority of any thematic panel[*]. Watkins said that according to his notes, all of the legs were looked at in Oslo. Moreover, it was established at Oslo that there were more legs than can be accommodated in FY90 and still get to the EPR early in 1991. Moberly reviewed that at Oslo, in order to delay Nankai and the second engineering leg, it was initially proposed to insert two legs from the western part of the Central Pacific that were advanced as to thematic interest and existing and planned surveys. PCOM chose to keep the same length of time before transiting to the eastern Pacific by removing two legs from the expanded slate, one of which had already been scheduled. Brass said that an important point was that at Oslo we had a change in the Old Pacific ranking by OHP, which was now favorable. SOHP had always said they would favor the program if surveys could show a chance to get to basement.

Hayes said that he gathered from the many letters that the decision at Oslo apparently was flawed by misinformation that Geochemical Reference did not have high thematic ranking. Moberly said it was ranked by one thematic panel. Kastner said that was not specifically what was said at the Oslo meeting [*]; it was stated as being way down on the WPAC list. Moberly said that it was, and asked how a true statement could be called misinformation; anyone having additional or different information should have brought it forward. Kastner said that for some time it had been the highest priority leg LITHP had in the Western Pacific[*]. Tucholke and Austin agreed.

Anderson thought that this situation could be more likely as ODP moves into a thematic mode, suggested better documentation for such decisions in the future. Moberly said that at the request of Kastner for a more complete record about the Oslo decision, the tapes had been examined carefully and the Oslo minutes have no insertions or important deletions[*]. The tapes can't pick up the nodding or shaking of heads or what is on the board. Garrison pointed out that the issue was to get to 504B and the EPR sooner, and that people had made the comparison between those Eastern Pacific programs and Geochemical References. Austin stated that the best place to plan schedules is at the Annual Meetings, where the panel chairmen are present. Hayes wondered if it was proper to compare regions, CEPAC and WPAC. Brass reminded PCOM that that the PCOM decision came from working backwards

from when it needed to be in the eastern Pacific, to prepare for the highest priority LITHP drilling at 504B and the EPR as soon as possible in 1991, for the long-desired second leg on EPR before the possible end of the project in 1993. Hayes said that a method is needed to merge the priorities of different thematic panels. Did PCOM at Oslo have a comparison by LITHP of eastern and western Pacific? Was that part of the misinformation? Moberly said that he had given the WPAC panel's ranking and its list of the thematic panel rankings. [It was others who had made such comparisons about EPR and 504B; see Olso minutes*]. Malpas said that this decision on how to merge priorities should have been made at the time that PCOM decided to go to a global thematic program. At Miami the decision was to include the Geochemical Reference Leg as part of the Western Pacific program.

Jenkyns wanted to know when Geochemical Reference would be inserted into the program if it were reinstated, since this affects how participating scientists arrange their schedules. Garrison presented two possible scenarios, Leinen noted that the result of either of them would be the delay of getting to the EPR and 504B until April 1991 rather than January which had been the intention of PCOM at both the Miami and Oslo meetings. The question was called:

<u>PCOM Motion</u>

Reinsert the Geochemical Reference leg in the FY90 drilling schedule. (Motion Kastner, second Malpas)

Vote: for 7; against 7; abstain 2 **(Failed)**

Malpas then moved to replace the Old Pacific Leg with the Geochemical Reference Leg as this would not delay the schedule any more than it had already been.

Tucholke said that the effect of this substitution would be the same as what happened at Oslo. Cowan said that PCOM should admit damage was done, but it still remains that the science in the Old Pacific program is the better of the two.

<u>PCOM Motion</u>

Replace the Old Pacific leg with the Geochemical Reference leg in the FY90 drilling schedule. (Motion Malpas, second Kastner)

Vote: for 1; against 12; abstain 3 **(Failed)**

[Later note back in JOIDES Office: as yet we are unable to find a record of its <u>highest</u> priority in the LITHP minutes, e.g. Strasbourg August 1985, plan for crustal evolution of arcs and back-arcs, 12 Mariana and 11 Bonin sites, none east of the forearc. College Station January 1986, 4-leg transects should extend from center of back-arc spreading across arc to undisturbed plate. Seattle April 1986, A minimum of 5 legs to meet LITHP's thematic objectives in the Western Pacific area, unranked but listed in this order are: 2 legs Mariana/Bonin forearc, I leg each Lau Basin, Japan Sea, and reference holes into basement east of Bonin-Mariana trenches. Corvallis July 1986, support of WPAC's Mariana, Bonin, and Japan Sea legs, but concern about Lau Basin slipping in WPAC's ranking, and WPAC's list of only one non-reentry Bonin site for reference; LITHP says Bonin 8 merits at least one-half a leg. London January 1987, LITHP's highest priorities are Bonin I, Lau Basin, Bonin II-Mariana, and Japan Sea; a further paragraph is that LITHP strongly*

endorses the Langmuir-Natland proposal for 6 geochemical reference holes (proposal received in JOIDES Office December 1986). Palisades May 1987, LITHP noted the most serious omission in proposed Western Pacific drilling is the absence of a viable reference-hole program, which has been one of LITHP's top priorities in the area; no ranking. Paris September 1987, there is no ranking of all drilling, but in response to a questions from PCOM about 4 specific programs, , LITHP said that in terms of an extra one-half leg, reference-hole drilling and forearc-diapir drilling are higher priorities than an evaluation of Mississippi Valley-type ore genesis off Australia. Annual Report 1987, the top 6 CEPAC programs are ranked but not WESPAC; again the statement of the serious omission of 1 1/2 legs of reference hole drilling. Honolulu March 1988, extensive discussion but no ranking. Corner Brook September 1988, discussion of a one-leg program; no specific rankings. Miami Annual Meeting November 1988, termed high thematic ranking but no specific rankings. Is termed a part of the Bonin-Mariana drilling, which has had 2 DSDP legs and will have 2 ODP legs; presentation of a proposed 3-hole, >1-leg program. In the tapes Bob Detrick termed the program "a very high part of our Western Pacific drilling". In conclusion, there is no doubt that geochemical reference drilling is of high importance to LITHP; just how high a rank or priority is unknown, except there is no evidence that it was highest. In the "regional mode", it was ranked very low by WPAC.

The Oslo tapes have also been reviewed. The principal part left out of the minutes was the extensive discussion of possible routings and legs during the part of the meeting in which it was proposed to have both Old Pacific and Geochemical Reference in the FY90 program. The pros and cons of the potential results of the straw-vote called for by Eldholm were clearly stated both before and after that vote (and which led to the Brass-Langseth motion for a rescheduling), namely that in effect it would be a substitution of one leg for another, substitution of one theme for another, that there would be long transits, but that it could preserve weather windows and would allow an early transit east across the Pacific. No single person gave a strong argument one way or the other; most of the stronger arguments had to do with moving the vessel rather than leg substitution. The presentation of rankings of WPAC legs by Moberly was as they were given in the 1987 WPAC prospectus. Twice he asked if others, perhaps watchdogs, had more recent information. Moberly sees now that it was not strictly correct to have said that LITHP ranked Geochemical Reference at the bottom of its thematic list for WPAC as a leg in 8th place, whereas he should have been said it was listed below the LITHP themes of the WPAC programs that would take about 7 legs to drill. Pisias said he didn't think it was last, but that it was ranked low. There were no other comments or corrections about that LITHP priority or next about Moberly's presentation of no ranking at all by the other two thematic panels or the regional one. There was support but no objection to Moberly's statements about high thematic priority of Old Pacific by SOHP and TECP. Only two persons spoke about the potential adverse consequences of the Brass-Langseth motion, namely Tucholke and Moberly.]

PCOM next discussed the Nankai Leg. One problem involves the concern of the Borehole Research Group about the first deployment of the wireline packer on this leg in a bare hole environment. Taira suggested that the first deployment should be in pre-perforated casing. R. Anderson said that BRG would have not problem with that first deployment.

Tucholke wanted to know what PCOM's position would be on which holes should be drilled at Nankai. At Miami, specific sites were given (NKT-10 & -1) but the leg has changed now. Should PCOM leave flexibility or make specific recommendations? Taira said that the drilling will depend on whether Geoprops is used or not.

Wednesday, 23 August 1989

Taira presented the options for Nankai drilling (Appendix C). There are both deep and shallow objectives at Nankai. Sampling and measurements at the deep décollement are the main science objective of the drilling. The décollement is fully developed at NKT-2 but is only incipient at NKT-10. DMP prefers NKT-10 while Taira prefers NKT-2. Taira suggests that the best choice is to use the four-hole-per-site concept at sites NKT-2 and NKT-1. The order of drilling might be different if a two-leg Nankai program were assured, to give both the horizontal and vertical gradient of properties. Only one leg is on the program. Tucholke agreed that the very best science will come out of drilling the décollement at site NKT-2 and the leg should not be planned on the basis of having the Geoprops tool available.

PCOM Consensus

The initial ODP leg of drilling at Nankai will be at sites NKT-2 and NKT-1.

775 Engineering and Technical Developments

L. Garrison discussed the engineering and technical developments at ODP-TAMU that were included in the handout distributed at the meeting. Developments discussed included: Diamond Coring System (DCS), Navidrill Core Barrel (NCB), Extended Core Barrel (XCB), Sonic Core Monitor (SCM), Advanced Piston Corer (APC), Drilling and Straddle Packers, Side Entry Sub (SES), Pressure Core Sampler (PCS), Vibra-Percussive Coring (VPC), and High Temperature Drilling. Special note was made that the second generation NCB can be used to deploy the Geoprops tool; it makes a hole but does not recover core. Further information will be provided at the next PCOM meeting on this tool. The concerns about the first deployment of the wireline packer have been mentioned previously. There is a low chance of not being able to retrieve the packer even if it doesn't deflate. It can be used in an open hole on the current leg. The PCB was identified by Kastner as an important tool that has been promised for some time. She suggested that SGPP be asked to identify the important scientific needs for this tool and make recommendations about the types of measurements that need to be made in the Phase II chamber. These recommendations will be sent to SMP for their specifications so that TAMU can proceed with development. PCOM needs to set some priorities for the development of this tool. JOIDES Office will contact the panel chairs; von Rad will see that SGPP considers this matter, while Leinen will see that SMP is also aware of the need.

R. Anderson discussed the implications for logging if the 4-inch hole DCS is used extensively in ODP. Logging tools are technologically advanced and use industry designs. The major problem is that the 4-inch DCS hole is incompatible with the modern logging-tool suite. The tools available for use in the 4-inch hole are generally not designed for high pressures or high temperatures. If the Schlumberger HEL logging tools are used, modern geochemical and geophysical logging data cannot be attained. The problem of repackaging the present suite of tools for a smaller hole is that dewaring them for high temperatures makes them too big for

the 4-inch hole. A possible solution, which has been used by the oil industry, is to cool the hole by circulation of drilling fluids. With a small-diameter hot hole, however, there is not enough of a heat sink to keep the temperatures from quickly rebounding and the hole can only be cooled 20%. This has led to a box for the logging of small-diameter holes. The loggers suggest that the only way out of the box is to make bigger holes by: deploying a larger diameter DCS on the ship; reaming of the smaller diameter hole to a larger diameter (however, the problems peculiar to reaming usually results in loss of 50% of the holes); or drilling two adjacent holes, one for core recovery and the other for logging. BRG recommends the third option. The BRG will then use those tools available to log the DCS slimhole and run the modern logging tool suite in the regular-size non-cored hole.

Cowan wanted to know what losing 50% of the holes meant. Anderson said the hole is lost for other purposes half the time. Brass wanted to know if the higher recovery possible with the DCS would eliminate the problem of not being able to use the geochemical and other high tech tools. Anderson said that a lot of geophysical measurements including VSP must be made in the holes. The modern logging tools give a lot of information that cannot be gained from core alone. Malpas and Brass were concerned that the purpose of the small diameter DCS, to recover core where it is not now possible, is also in danger of being overlooked. PCOM evaluated the three options for making the DCS compatible with the modern logging suite. 1) Deploy a DCS that cores a hole greater than 5 inches. 2) Ream the 4-inch DCS hole to one compatible with logging tools. 3) Drill a second hole without coring next to the DCS slimhole. At the present stage of DCS development, PCOM did not see any purpose in locking in to option #1. Brass suggested that it would be useful for ODP to develop tools to use in slimholes, but it might not be practical under the present budget. Therefore, the BRG should not be required to develop an advanced slimhole logging capability. Garrison suggested that option #2 reaming is not very desirable if you lose half of the holes. Hayes and Brass suggested that the ability to accommodate the logging technology should be a PCOM commitment. Moberly said that the Third Engineering Leg may be an appropriate time to test reaming of the 4-inch DCS hole. Garrison said that land testing of the DCS will also look at reaming. Hayes asked and Moberly agreed that the minutes should reflect that all the options are to be considered by ODP-TAMU to accommodate logging.

PCOM Consensus

The Borehole Research Group is not obligated to develop a suite of advanced logging tools for slim holes drilled with the Diamond Coring System.

PCOM Motion

TAMU shall develop the capability to run the Borehole Research Group suite of logging tools at sites drilled with the Diamond Coring System. (Motion Brass, second Malpas)

Vote: for 16; against 0; abstain 0

776 Second Engineering Development Leg

PCOM has approved a Second Engineering Development Leg for the FY90 schedule. It will be a joint science-engineering leg to test developments aimed at bettering the drilling and recovery of chert-chalk sequences, reefal limestones, and young brittle crust. The JOIDES structure has been asked to find appropriate sites at Shatsky Rise, M.I.T. Guyot, and in the Mariana or Bonin back-arc area, as well as provide appropriate advice on a scientific Co-Chief and other staffing. The science operator has assigned 56 days for this leg, which with transit will give about 3 weeks of operations at each site. D. Rea, S. Schlanger and J. Natland have been asked to provide specific site advice. A prospectus will be prepared by the next PCOM meeting.

Kastner wanted to know if a Scientific Co-Chief had been named. Moberly said that the JOIDES Office has had no answers to the request of panels for site information and Co-Chief and participant nominations; the Office will keep trying. Garrison said that since the leg was an engineering test that may not produce much science, the approach at TAMU will be to have lead scientists invited to participate. Kastner said that the decision at Oslo was to name a science Co-Chief as well, to help ensure success of the legs. Meyer said that there was a concern that naming one of the three lead scientists as Co-Chief might cause problems. Leinen said that Co-Chiefs are named on the science legs where there are multiple science objectives. Garrison said there is also the concern that the science Co-Chief will have his own program that would conflict with the engineering development tests. TAMU wants the engineer in charge of the tests. Leinen said that since there is going to be a prospectus there should be no problem in having different objectives. Kastner said that PCOM had considered this at Oslo and thought it best that there also be a Science Co-Chief on these legs. Austin said this was the reason it was suggested that the Science Co-Chief be someone who was interested in the successful development of the system undergoing tests. Cita suggested that Jim Natland would be an appropriate choice. Tucholke suggested Jerry Winterer, but he might not be available. By acclamation PCOM agreed that Jim Natland should be asked to serve as the Science Co-Chief on the Second Engineering Development Leg. It was also suggested that rather than having a formal watchdog that M. Langseth, who is the PCOM liaison to TAMU, continue his involvement and watch after the leg.

777 Status of Scientific Recommendations

Thematic Basis The JOIDES Office was asked by EXCOM to prepare a detailed table showing the degree to which COSOD I objectives (major as well as minor objectives) have been met in ODP to date. When finished it will also be distributed to PCOM and the panel chairs.

A draft of the White Paper of the Tectonics Panel has been received (version edited for JOIDES Journal was attached to the Agenda Book). The LITHP and SOHP White Papers have been published, and were part of the basis for the Long Range Plan.

SGPP is revising its part of the SOHP document and a first draft was distributed to PCOM.

Proposals The rate of receipt of new and revised proposals has increased slightly. Recent ones are no longer overwhelmingly Pacific. A set of summaries of proposals received by the JOIDES Office since the meeting in Oslo was attached to the Agenda Book. Several new Atlantic proposals have arrived. There also have been proposals for work off Australia. Advertisements soliciting proposals were placed in EOS and the JOIDES Journal. A direct-mail solicitation of new and revised proposals was sent to the "contact" proponent of all proposals received by ODP before this fiscal year.

778 Preparation for One-year and Four-year Planning

At Oslo PCOM decided that the FY91 Program Plan would be selected from among certain eastern Pacific programs. PCOM should become familiar with the scientific objectives and the maturity of these programs. The CEPAC prospectus (mailed separately to PCOM) will aid the discussions which were led by the PCOM watchdogs. Watchdogs should be sure the items are covered that are on the watchdog form that was distributed in Oslo.

Cascadia Accretionary Prism (D. Cowan) Hyndman will conduct a MCS survey of the slope, margin and accretionary prism of the northern part in late August. The work will also cover the Middle Valley section of the ridge. Oregon will be starting their work in September. Canada also plans high-resolution side-scan surveys in 1990. There was an early review of Cascadia by DMP. Realistic time requirements are needed. The present program appears overly optimistic and may require fewer holes and more measurements.

Chile Triple Junction (R. Moberly) This is currently a single leg proposal, but the proponents and TECP will examine to see if a 2-leg program, as suggested by TECP, can be made. All important MCS lines will be ready for examination at the next TECP meeting. (Kastner asked that SGPP get this as well.) J. Austin volunteered to be the new watchdog for this program.

Eastern Equatorial Pacific Neogene Transects (M. Leinen) The site survey cruise is underway. Specific sites will be chosen after the survey work is complete.

East Pacific Rise Bare-rock Drilling (G. Brass) There have been no new developments since Oslo meeting. A revised French proposal has not arrived at the JOIDES Office. There will be a cruise in November to look for hydrothermal activity. Garrison said that sites will need to chosen so that the HRGB can be placed on the third engineering leg.

Hydrothermal Processes at Sedimented Ridges (M. Kastner) M. Langseth has submitted a report of the DPG meeting. Two legs have been proposed and the DPG recommended that they be about one year apart. There was a concern that a site had

been removed by the DPG because of potential clearance problems. This should not be done by the panels.

Lower Crust at Site 504-B (J. Malpas) Hangups have not been at casing joints. Massaging of the VSP data suggests that the transition could be 350 meters closer than previously estimated. There are also some interesting dipping reflectors. R. Anderson reminded PCOM that the fluids in the hole at 504B should be sampled before any of the Engineering operations begin. It would be a shame to loose this valuable information, so plans need to be made accordingly.

Remainder of CEPAC Set of Programs (Former prospectus, less Cascadia, et al. above, and less scheduled Old Pacific and Ontong Java legs). These and others will be considered next April. Some are revised in the new CEPAC Prospectus.

Atolls and Guyots (B. Tucholke) There are two mature proposals. The thematic panels need to rank them and recommend either a 1-leg or 2-leg program. There are concerns for all 4 thematic panels in these proposals since they deal with the mid-Cretaceous atoll drowning, hotspot swells, and other topics.

Bering Sea History (J. Watkins) Nothing new to report.

Hawaii Flexure (J. Malpas) The dating resolution problem has not been settled. Mass wasting may also be a problem. Brass and Leinen said that the thematic panels need to answer the question of whether or not the dating resolution can answer the objectives of this proposed drilling or not. This needs to be done by Spring if it is to continue being considered by PCOM.

North Pacific Neogene (J. Watkins) Nothing reported.

Shatsky Rise (H. Jenkyns) This program requires good recovery to be successful. Engineering II will address the recovery problem. If Engineering II is successful, a future Shatsky program would not necessarily be a full leg of drilling. There are at present no basement objectives, and so a proposal will be necessary to justify drilling basement.

Young Hotspots: Loihi (R. Moberly) No changes to report. Drilling would probably encounter high-temperatures and require high-temperature logging tools. One or two bare-rock guidebases would also be required. A hole for a tele-seismic observatory would not be appropriate here.

Additional Programs. Several proposals of apparently high promise will also be considered next April. These include ones that for one reason or other could not be included in the first circumnavigation of the *Resolution*, as identified by the former regional panels, as well as new ones. For example, attached to the Agenda Book are 1) lists of proposals of the 1988 era that have moved on to SSP consideration, 2) seven leg-length programs remaining from WPAC (including Geochemical Reference), and 3) the list from J. Austin of proposals and programs that were highly

considered by ARP. SOP and IOP did not responded to PCOM's request. The individual members of these two panels, and Co-Chiefs of legs drilled in the Southern and Indian Oceans will be contacted and asked to identify high priority leftovers.

Watchdogs were assigned to the following targets recommended by WESTPAC:

G. Brass	Banda Sea and South China Sea Basins
M. Kastner	Geochemical Reference Sites
D. Cowan	Nankai II
A. Taira	South China Margin
M. Langseth	Valu Fa Ridge
R. Duncan	Vanuatu Back-Arc Rifts
J. Malpas	Zenisu Ridge

Process of setting priorities. The chairmen of the thematic panels were told that there must be a common inter-panel scheme for reporting priorities to PCOM. They were provided a rather long-winded but (we hoped) complete draft set of working definitions and procedures (please see copy in your attachments), and asked to comment on the draft method of setting and listing priorities. The only two respondents are in favor of the draft method,

Essentially, the proposed method is: Each year before the spring PCOM meeting, each thematic panel would send to PCOM a single priority list of programs, with *program* defined as one or more actual proposals addressing a published theme in a specific locality, and with a good likelihood for operational success, in terms of the status of such factors as site surveys, engineering developments, and safety. PCOM agreed that the proposed method was acceptable but wanted details from the panels of how the ranking was produced. Panel inclusion of a brief paragraph of the rationale and underpinning for each decision will give PCOM less likelihood of misunderstanding the rankings.

Malpas suggested that the thematic panels and perhaps DPGs should either solicit proposals in areas of high thematic interest or write their own. Brass said that JOIDES walks a narrow line in terms of its image of being an open or closed shop. As individual scientists we write our own proposals and for the sake of efficiency it may sometimes be necessary for panels to write proposals. Leinen said that the unsolicited proposals will remain the major source of new proposals. PCOM agreed that thematic panels may write proposals for high-ranking themes that otherwise do not have appropriate proposals or that have proposals that are either too broad or too narrow.

779 Reports of Recent Drilling Legs

Leg 124 Southeast Asian Basins

Co-Chief Scientist described the results of Leg 124. Its goals were to compare the evolution of a set of 4 small adjacent basins. For political reasons two of them, Banda and South China, were not drilled. The Science Operator has presented a summary of results. Points here stressed by Silver were that new stratigraphic information about the Celebes and Sulu basins gives a record of volcanic activity, changing paleoceanographic conditions, collision events, and timing of trench formation. The direction and magnitude of stress within the basins was an important discovery.

The Sulu Sea Basin seems to have formed in an intra-arc environment. The Celebes Sea Basin formed in the open ocean, with low sedimentation rates for the first 20 my. The oldest sediments on basaltic basement are deep-sea and similar to red clays, with fairly low sedimentation rates. Comparisons were made by Jenkyns to Mesozoic ophiolites, covered by lime-free sediments, and by Brass and Leinen to present-day red clays, of much slower rates of sedimentation. It was regretted there was no clearance for a shallow hole in the eastern South China Sea.

Leg 125 Bonin and Mariana Forearcs

Co-Chief Scientist Patty Fryer described the goals and results of Leg 125. Part was to determine the physical nature and geochemical processes in serpentinite diapirs of the Mariana forearc and the basement of the Bonin forearc. Unusual pore waters were recovered in the diapirs, i.e., high *p*H, Mg-depleted, and with exceptionally high chlorinities and salinities. Aragonite crystals and hydrocarbons higher than methane were also unusual. The interpretation is that the present fluids come from the dehydration of the serpentinites, but that the ultimate source of those fluids is the sediments that were subducted. The striking feature of the petrology and major-element geochemistry of the Bonin forearc is the interlayering of island-arc boninites and dacites.

Cowan asked if the low recovery compromised the results. Recovery in the diapir summit holes was low, but was higher in the flank holes. There were many comments about the unusual geochemistry of the fluids, and PCOM awaits the post-cruise work.

Leg 126 Bonin Forearc

Co-Chief Scientist Brian Taylor summarized the results of Leg 126. Drilling showed the general structural and magmatic history from the initial rifting through the development of the present arc to the beginning of the next cycle of back-arc rifting. The Izu-Bonin arc formed in mid-Eocene time. The deep forearc basin formed rapidly in the mid-Oligocene

and filled rapidly with turbidites. The Shikoku back-arc spreading commenced about 25 MA and continued for about 10 my. Since the late Pliocene a new rift has started. Back-arc basin basalts were produced within 1 my of the stretching.

PCOM was impressed with the lull in volcanism. Deep erosion of part of the forearc down submarine canyons, combined with the lull in volcanism, suggest that mass balance calculations may be difficult. PCOM also noted the high resolution of paleomagnetism from the high sedimentation rates, the results of logging, heat flow, and VSP experiments, and regretted the loss of bottom-hole assemblies in this very tough drilling.

PCOM congratulated Drs. Silver, Fryer, and Taylor for their success, and thanked them for their presentations.

780 PCOM Liaison to Pre-Cruise Meetings

During the report by L. Garrison in Minute 773 a discussion was held about the necessity of having a more direct PCOM input into the preparation of the leg prospectus at the pre-cruise meeting. A motion was put forward in response to this desire, leading to the following discussion.

Discussion

von Rad was concerned about the additional time and travel commitment this would impose on PCOM members, as well as the additional cost. Other non-US members of PCOM were clearly not at ease. Brass calculated, however, that this motion would require travel to about one meeting every two years for a PCOM member. Besides, there is no specification that the liaison has to be a PCOM member. The liaison could be a member of a thematic panel appointed by PCOM. Meyer suggested that the draft prospectus could also be sent to the appropriate PCOM members for comment. Brass said the idea is to keep everything general and flexible.

Garrison wanted to know why it is assumed that if the program is clear to the liaison, it would not be clear to the Science Operator? Austin said that there have been these kinds of misunderstandings in the past. Hayes said that PCOM is under the obligation of defining, as well as possible, the objectives and priorities of a drilling leg. The liaison method should be given a try and if it is not needed then PCOM should back-off. The liaison to the NE Australia Margin pre-cruise meeting in February will be decided later. The question was called.

PCOM Motion

PCOM shall designate a liaison to each pre-cruise meeting, to provide guidance during the construction of the drilling leg prospectus. (Motion Brass, second Malpas)

Vote: for 10; against 2; abstain 4

781 Role of Detailed Planning Groups

Mark Langseth's memo of June 22, 1989, to the Planning Committee discusses the need to keep the responsibilities for planning and advice separate in JOIDES, and in particular they need to be separate with respect to the function of DPGs. The very name Detailed Planning Group indicates that he is essentially correct in his evaluation of the situation. His recommendations are:

1. DPGs be ad hoc short-lived groups formed by PCOM and reporting to PCOM.

2. Special Working Groups can be formed ad hoc by thematic (and other?) panels with PCOM approval.

Leinen agreed with Langseth that the functions of the two groups should remain separate. Taira, who was on the subcommittee which wrote the mandates, also agreed with Langseth. DPGs provide specific drilling plans; they do not provide advice on other matters to panels. Brass said that DPGs should report through the thematic panels. PCOM should not approve their recommendations until the thematic panels have had a chance to comment on them. Malpas agreed that DPGs should report through the thematic panels. Mevel agreed as well. von Rad feared that having to report a detailed plan through a thematic panel would slow down the process 6 months. Moberly pointed out that PCOM forms DPGs, and can without the request of any one thematic panel. Malpas said that DPGs may have to report through more than one panel. Leinen said that planning by DPGs is usually for some thematic panel and if so should report through the panel. Brass said that a circular planning route should be avoided; a better method would be to have the thematic panels make their comments to PCOM, that way we know where the problems are occurring. Watkins said this is a management problem and PCOM needs to provide specific mandates for DPGs. Cowan asked if the thematic panels should have the right of approval over what comes from the DPG. Brass said that they should not edit what PCOM sees, only comment upon it. von Rad was concerned that these mechanisms would slow down the planning process. Mevel suggested that the thematic panels have a better expertise to evaluate the job done by the DPG. A part of the mandate for DPGs was read aloud: *DPGs provide written documents to those thematic panel(s) specified by PCOM. The DPG documents are transmitted to PCOM with the written evaluation of the appropriate thematic panel.* A straw vote indicated that PCOM did not want any change in the mandate of DPGs.

With respect to the two functions that Langseth wrote about, Watkins wanted it emphasized to the thematic panels that DPGs are not working groups. Cowan said that reconstruction of ad hoc working groups is required. Currently, the JOIDES

structure does not provide for them. Brass requested that the PCOM mandate be changed so as to reconstitute ad hoc working groups. Moberly agreed to draft this language, to be presented the following morning..

Thursday, 24 August 1989

The following change in the PCOM mandate was offered, to reconstitute ad hoc working groups.

PCOM Motion

PCOM approves the change in wording of the PCOM mandate shown below.

3.2 Mandate. The Planning Committee is responsible for the mandates of the various panels, planning groups, **and ad hoc working groups** and their membership. (Addition shown in **bold**)

(Motion Brass, second Watkins)

Vote: for 14; against 0; abstain 0; absent 2

The status of the remaining two regional Detailed Planning Groups CEPDPG and WPDPG was considered. WPDPG has finished its work. The remaining work for the CEPDPG might be done mainly through the mail. The following motion was made.

PCOM Motion

PCOM disbands both the Western Pacific Detailed Planning Group and Central and Eastern Pacific Detailed Planning Group. (Motion Kastner, second Hayes)

Vote: for 1; against 13; abstain 1; absent 1 **(Failed)**

Discussion

Austin said that there will be site survey data coming in for CEPAC programs, requiring some group to evaluate it and pick the best sites. Hayes suggested that SSP was the appropriate panel, but was reminded that EXCOM had carefully reworded the SSP mandate. Cowan said that there are no detailed plans for Cascadia. Brass stated that the proper method would be to have CEPAC meet as soon as possible and pass their report for comments through the thematic panels before our Annual Meeting. Tucholke said that at both Miami and Oslo the decision was made by PCOM to keep the CEPDPG to do the detailed planning. Although CEPAC may not have the ideal constitution, someone has to make these plans and CEPDPG has the corporate memory. Tucholke regretted that under the circumstances, the ideal situation that Brass mentioned would not be possible this fall. As a matter of damage control, CEPAC will have to meet late. Leinen supported Tucholke's logic. Brass then agreed on a matter of pure practicality, and said that PCOM will need these detailed plans in November, to choose 6 legs for FY91 drilling. In some instances we don't even know whether we are talking of a 1-leg or a 2-leg program.

Since there was no need to keep the WPDPG the following motion was made and passed without additional discussion. von Rad wanted Jim Gill thanked for taking over the chairmanship of WPDPG during its uncertain tenure.

PCOM Motion

PCOM disbands the Western Pacific Detailed Planning Group. (Motion Brass, second Kastner)

Vote: for 14; against 0; abstain 0; absent 2

Thematic panels will be told that, because it will not be possible to have either CEPACDPG meet before the thematic panels meet (various surveys in the eastern Pacific will not be completed), or the thematic panels meet again after CEPAC meets in November (the Annual meeting is at the end of November), PCOM realized that in the fall of 1989 it will not be possible to have the evaluations by thematic panels of the next prospectus. Therefore, thematic panels should be careful in stating their objectives for the candidate programs of the FY91 eastern Pacific drilling. Further, Brass suggested that PCOM authorize each thematic panels to send a liaison to the November CEPACDPG meeting, and PCOM agreed to this excellent suggestion.

782 Panel Membership

Kastner suggested that in the future that a short c.v. be supplied when candidates for panel membership are nominated. This will help PCOM construct more balanced panels. This was agreed to be a good idea, and will be expected at future PCOM meetings, whether received from a panel or presented by a PCOM member. Malpas said that it would be helpful to have areas that need strengthening identified so that the non-US partners can also make appropriate appointments. Brass suggested that the nominees should also be informally approached prior to the PCOM meeting in order to know if the candidate will accept if asked by PCOM to join a panel. The nominator (panel or PCOM member) should ask, rather than JOIDES Office, which may sound as if appointment is a certainty. Hayes emphasized that those approached should be made aware that they are only under consideration. Moberly reminded PCOM members that they should be prepared to nominate candidates to ensure that panels are balanced, regardless of whether or not nominations come from panels. Hayes stated that PCOM should avoid putting more than one person from one institution on one panel.

Panel membership decisions were made for the following panels.

LITHP- two new members with expertise in seismology will be asked to join the panel in the order shown: Tom Brocher, James McClain and Paul Silver. It was suggested that Nick Christensen be asked to join the panel after Kier Becker rotates; LITHP Chairman will be asked if that is appropriate.

OHP- one new member with expertise in Mesozoic paleoceanography will be asked to join the panel in the order shown: T. Bralower, W. Poag, R. Parrish. A new panel member with expertise in sealevel change needs to be selected by Chairman Nick Shackleton from the list K. Miller, W. Poag, T. Moore and T. Loutit.

SGPP- one new member concerned with geochemical balancing, Bill Hay, is to be asked to join the panel. Nominations with a brief c.v. are requested for a seismic stratigrapher; Bill Normark will have to fill that category until he rotates.

TECP- one new member concerned with sub-seafloor seismic observatories, Mike Purdy, is to be asked to join the panel. No actions were taken on other panel requests. Further nominations with a brief c.v. are requested to fill gaps in the panel expertise.

DMP- nominations to replace Eddie Howell are requested.

IHP- Ted Moore is asked to continue as chairman of the panel.

PPSP- one new person, Barry Katz, is to be asked to join the panel.

SMP- no actions were needed.

SSP- no actions were needed.

TEDCOM- needs to evaluate whether or not a new panel member is required.

Ted Moore is to be asked to chair the Annual Panel Chairmen's Meeting at Woods Hole in November.

PCOM Motion

PCOM accepts the slate of persons nominated to serve on panels. (Motion Leinen, second Kastner)

Vote: for 15; against 0; abstain 0; absent 1

Moberly stated that he will attend either the fall 1989 or late-winter 1990 meeting of each of the thematic panels, to explain the need for a set of program rankings on a basis common to all panels, and to answer panel questions about the procedures.

In response to a question from Malpas, Pyle said that travel costs of a liaison person are the responsibility of the country of the liaison.

Confirmations of PCOM Liaisons to fall 1989 panel meetings are:

LITHP - Duncan	IHP - Cowan
OHP - Jenkyns	SMP - Leinen
SGPP - von Rad	SSP - Lancelot
TECP - Tucholke	CEPDPG- Leinen
DMP - Cowan	

783 Global Geoscience Programs Other Than JOIDES

FDSN-IRIS

M. Purdy discussed the scientific opportunities for establishing seismic observatories on the seafloor using ODP drillholes. The long-term goal is the placement of 15 to 20 broad-band ocean floor seismographs in areas where no land or island broad-

band observatory is nearby. The scientific goals of the program are to image the global earth structure better, and to constrain models of oceanic upper mantle dynamics and lithosphere evolution. The resolution of the present global tomography is limited by the seismic station coverage. A better spatial distribution is needed to sample the ray paths from large earthquakes. Oceanic islands are also not ideal stations because they are relatively noisy and have anomalous structure beneath them.

Several technical issues remain to be worked out. The ability to operate a seismograph downhole for long periods of time has to be demonstrated. Data retrieval options have to be worked out. Possibilities include use of ocean-floor telephone cables, satellite telemetry, and interval recording. Necessary pilot experiments are planned to test the equipment and make a comparison between ocean-bottom observatories and nearby ocean-island observatories. The pilot program is not planned to be extensive; if it is initially successful, the aim is to commence establishing the stations soon.

There has been a workshop at Woods Hole sponsored by JOI/USSAC to examine the need for the observatories. JOIDES is in the position to help catalyze the process. By placing reentry cones and casing holes, suitable sites for ocean bottom seismic observatories are created. This is of great importance in those areas where there are no seismic stations.

Discussion

Leinen asked if there were any areas that were more important than others for establishing observatories. Purdy said that a station off California would have the largest impact. Hayes wanted to know if the holes would have to be dedicated to the seismometers forever. Purdy said that good coupling in the drillhole may require attachment, but in the early development stages the seismometers would have to be removable.

RIDGE

J. Delaney presented the science objectives of RIDGE and importance of the linkages to ODP. The global mid-ocean ridge system is viewed as forming a single system for energy flow from the interior of the earth. One of the important recent discoveries is the impact of this energy transfer on the biology and chemistry of the ocean. An unexpected discovery that has come out of ridge-crest studies has been the ability of volcanoes to sustain life independent of the energy output of the sun. The ridge system provides a linkage between the mantle and the water column. Science objectives of RIDGE are: the study of mantle flow and associated generation and transfer of melts; segmentation and episodicity of volcanism along ridges; the interaction of seawater with basalts; the complex interplay of hydrothermal systems and organisms. Of fundamental importance is the boundary between the magma chamber and the lithosphere, which cannot be studied other than by drilling. A long-term commitment to study this boundary would generate a leap in knowledge

in a 5- to 10-year period. Another common long-term goal of both RIDGE and ODP is the establishment of ocean-floor observatories at ridge crests. The success of RIDGE depends on having a drilling capability and thus has linkages to ODP.

Discussion

Moberly wanted to know if there were international links to RIDGE. Delaney said that the UK, FRG, France, USSR, Iceland, Japan, Canada and US all have strong interests in cooperating on ridge-crest studies. An international group INTERIDGE has been formed. Two more meetings are scheduled for the international group.

Austin asked if there were any areas for special cooperation between ODP and RIDGE. Delaney said that there were many areas of overlapping interest, since in many ways RIDGE is an offshoot of LITHP. Areas for closer cooperation are seafloor observatories and downhole instrumentation.

JOI Initiatives

T. Pyle suggested a possible model for the JOIDES structure with liaisons to other global geoscience initiatives (Appendix D). The size of a liaison body would be 2-4 members each from ODP and another group. There would be few meetings, with most of the work being done by mail, telemail, FAX, etc. The body would be established to focus the exchange of information and as points-of-contact.

Moberly asked when the best time to have these meetings would be; the annual meeting or this summer meeting? Brass suggested that the summer meeting seemed more appropriate. Brass said that there is already considerable overlap with some of these groups; isn't this sufficient? Pyle said that for appearance a formal liaison is better. Hayes wanted to know what would be the criteria for liaisons between JOIDES and the other groups? Pyle said that they should be international programs open to outside participation and that have an active interest in the science and objectives of ODP. Cita suggested that with big science projects, it is important to have some formal linkage for both political and international reasons. Brass said that the structure of each group is peculiar to that organization and a set formula for the liaison bodies may not work. Leinen said that the perception of the importance of ODP to these programs will also play a role in the form of the linkages. Kastner suggested that Pyle send his diagram to each group and ask them to respond as to how they view the structure. Delaney said that RIDGE views linkages to ODP as vital. There may be a need, however, to demonstrate that having a drilling capability is necessary for the success of other groups' efforts. Moberly asked if Pyle would pursue establishing these linkages to other groups and see what response is given, and then report to PCOM in November. The answer was Yes.

PCOM Consensus

PCOM approves the JOI, Inc., efforts to establish more formal links with appropriate other international global geoscience initiatives.

784 Non-JOIDES Representation on PCOM

During the presentation by T. Pyle in the reports by liaisons to PCOM (Minute 772), a discussion was held about possible action by the JOI Board of Governors to increase outside representation in the planning structure. Austin read some comments by Kastner and Brass. The Planning Committee represents the end of a lengthy process of planning; its members represent stable constituencies, whereas independent members would have no definable constituencies. Perhaps non-JOIDES observers could be invited, and if the balance changes as we hope between US and non-US members, we could open up a more permanent representation. PCOM should poll US members of panels not from JOIDES institutions, to see if there is a problem. Brass said that he had asked that participants on the *Resolution also* be included. EXCOM should be asked to delay their decision until we can find out if the perception is justified. The time of renewal of MOUs, when the numbers of members and proportion of funding might be changed, would be a good time to consider the issue, if it is still perceived as being important. Brass wondered if 2 of 10 would be considered merely a trivial gesture, if we are being questioned about openness. Watkins agreed with Brass's earlier suggestion that non-JOIDES people be polled, and that EXCOM be asked not to act until we found the extent, if any, of the perception. Austin said we must give a clear signal to EXCOM that we will do something, because they are ready to do something if we don't. The subcommittee that volunteered to prepare a resolution for PCOM approval (J. Austin, B. Tucholke, M. Kastner and G. Brass) produced the following motion and led to the following consensus.

PCOM Motion

PCOM forwards to EXCOM the following resolution. (Motion Watkins, second Austin)

Vote: for 12; against 0; abstain 2; absent 2

PCOM Resolution

PCOM is cognizant of and sympathetic to the PEC and EXCOM concern regarding "openness" of the JOIDES advisory structure to broad community involvement. Nonetheless, PCOM feels strongly that non-JOI input to its deliberations is already substantial. Approximately 50% of U.S. participants currently residing on JOIDES thematic and service panels come from non-JOIDES institutions. Furthermore, because PCOM feels that the JOIDES institutions represent the primary repositories of marine geological and geophysical expertise in the U.S., any long-term 1-for-1 replacement of their present membership on PCOM by others would both dilute necessary corporate memory and disenfranchise JOIDES institutions. However, because PCOM recognizes that various scenarios for non-JOIDES involvement in PCOM decision-making are possible, PCOM looks forward to further JOI, Inc., input on this matter.

PCOM Consensus

In order to evaluate the openness of the ODP planning structure to the interests of scientists at non-JOIDES institutions, the Planning Committee requests that the non-JOIDES ODP shipboard participants and those on the JOIDES advisory panels be asked for their impressions of the openness of the program and to comment on means to improve whatever deficiencies may be apparent.

785 Responsibilities of Operations Superintendent vs. Co-Chief Scientists

PCOM discussed Yves Lancelot's letter of 5 August 1989 to PCOM chairman Moberly concerning statements in a memo given to Co-Chief Scientists as part of a notebook at the pre-cruise meeting, stated as coming from the JOI-ODP Policy Manual. These statements discuss the responsibilities of the Operations Superintendent vs. those of the Co-Chief Scientists onboard the *JOIDES Resolution* concerning implementation of drilling and logging plans. The Policy Manual, however, is still in draft.

Moberly suggested that a subcommittee be formed to examine the ODP Policy Manual draft and recommend to JOI any appropriate changes in parts that have to do with the JOIDES role of providing scientific advice. Garrison wanted to know if there was also a problem with the logging statements made in the ODP-TAMU memorandum. There were no objections to that part of the memo. The logging statements are based on the PCOM motion at the January 8, 1987 PCOM meeting. Leinen said that her reading of the letter suggests that the problem is with the vague wording in the memo about the ODP Policy Manual statement.

Brass said that ODP-TAMU is responsible by contract to carry out as best they can projects given them by the planning structure and therefore has the authority to ensure that the Co-Chiefs follow these instructions. Kastner and Austin agreed with Brass. Moberly expressed concerns about situations where there are valid scientific differences of opinion based on knowledge gained during the drilling. Leinen suggested that the wording should be changed. Tucholke said that deletion of the first three sentences of the paragraph commencing with Departmental policy ... and allow the remainder to follow paragraph 562 would remove the problem. [The remainder should begin: This policy statement is not to imply ...] Moberly pointed out there are also some misstatements; *i.e.* PCOM does not approve the cruise prospectus.

Garrison suggested that unless the ODP-TAMU policies go against PCOM policy, these internal documents should not be a PCOM concern. PCOM suggested that the Science Operator use more appropriate, neutral wording which would solve the problem without affecting ODP-TAMU internal policy. PCOM's recommendation to JOI was that the Science Operator be asked to remove the first three sentences of the TAMU paragraph after draft paragraph 562.

786 Future Meeting Schedule

The next meeting will be the 1989 Annual PCOM meeting to be held in Woods Hole, Massachusetts, on 27-30 November, 1989, and hosted by the Woods Hole Oceanographic Institution. It will be preceded by the Panel Chairmen's meeting on 26 November. A field trip is very tentative.

The The 1990 Spring PCOM meeting is to be held in Ville Franche near Nice in the South of France on 24-26 April, 1990. A tentative field trip in the Alps has been suggested.

The 1990 Summer PCOM is to be held in La Jolla on 7-9 August 1990 and hosted by Scripps.

The 1990 Annual PCOM meeting is to be held in Hawaii on 26-29 November, 1990 and will be hosted by the Hawaii Institute of Geophysics. It will be preceded by the Panel Chairmen's meeting on 25 November. The specific venue (Honolulu, Hilo, or elsewhere) is not yet set.

The 1991 Spring PCOM meeting will be hosted by the University of Texas at Austin in April 1991.

The 1991 Summer PCOM meeting will be hosted by the FRG in August 1991.

787 Conclusion of the Meeting

The Planning Committee thanked Darrel Cowan for his efforts towards making this meeting both productive and enjoyable. Thanks were also forwarded to Paul Johnson and the College of Ocean and Fishery Science of the University of Washington.

The 1989 Summer PCOM meeting adjourned at 1:45 PM so that participants could attend the joint USSAC/US-PCOM meeting scheduled for that afternoon.

In the attempt to finish in time for the joint meeting, the following business item on the agenda was overlooked. Through a poll conducted by PCOM chairman Moberly just before the joint session, PCOM approved the suggested change in mandate for those service panels without a statement about membership. [EXCOM had asked that a membership statement be made for all of the panels; the proposed wording had been printed in the agenda briefing book.]

PCOM Poll of Individual Members

PCOM approves the change in wording of the Terms of Reference for Service Panels as shown below, and forwards to EXCOM the recommended change for EXCOM's approval.

7.1 General Purpose [of Service Panels] is modified by having its last sentence transferred from that section to be the first sentence of a new Section 7.1.1, which reads:

7.1.1 Membership. PCOM appoints the chairman and panelists and keeps membership, including representation from the non-U.S. JOIDES member institutions, under review. The Chairman serves at the pleasure of PCOM, and members serve at the pleasure of PCOM or their non-U.S. appointing member. Representation from all non-U.S. members should be maintained. Panel membership, not to exceed 15, should be maintained as small as is allowed by the range of expertise necessary to meet mandate requirements.

Vote: for 13; against 0; abstain 0; absent 3

Conclusion of meeting.

Material distributed at the meeting

Appendix A	NSF budget
Appendix B	ODP operations schedule; site locations of legs
Appendix C	Nankai drilling
Appendix D	Possible structure to include liaison to other global geoscience initiatives

THE FY 1989 and 1990 NSF BUDGET

	88-89 Increase	FY 1990 Request
RESEARCH AND RELATED		
Math.& Physical Sci.	6.6%	+10.0%
Engineering	8.7%	+12.8%
Bio., Behavioral, Soc.	6.0%	+11.7%
GEOSCIENCES	6.9%	+10.0%
Comp.& Inform. Sci.	23.6%	+25.7%
Sci., Tech. & Int.	16.0%	+15.4%
U.S. ANTARCTIC PROGRAM	5.6%	+18.9%
SCI. AND ENGINEERING ED.	23.9%	+11.1%
TOTAL FOUNDATION	9.8%	+13.9%

In GEOSCIENCES (Earth, Atmospheric, Ocean, Arctic Sciences)

Requested Increase	$30M (10.0%)	$31.0M (10%)
Actual Increase	$19.6M (6.9%)	

In OCEAN SCIENCES (MG&G, Bio, Phys,Chem, Facilities, ODP)

Requested Increase	$11.1M (8.2%)	$6.7M (4.1%)
Actual Increase	$11.1M (8.2%)	

OCEAN SCIENCES DIVISION DETAIL

	FY 1988	FY 1989	FY 1990
OCEAN SCIENCES DIVISION	$ 135.3 M	146.2 M	152.9 M
Ocean Sciences Research	67.2 M	71.2 M	74.7 M
Ocean Drilling Program	30.9 M	31.4 M	32.9 M
Oceanographic Facilities	37.2 M	43.6 M	45.3 M
Facilities Detail			
Operations			
Ship Operations	24.9 M*	26.5 M*	27.5 M*
Alvin,Aircraft,etc	2.0 M	1.3 M	2.0 M
Marine Techs	3.5 M	3.4 M	3.4 M
Acquisition and Development			
Science Instruments	1.8 M	1.6 M	1.6 M
Shipboard Equipment	1.0 M	.9 M	.9 M
Technology Development	2.8 M	4.8 M	4.8 M
AMS Center	0 M	1.8 M	1.8 M
UNOLS, ACQ, MISC	1.2 M	3.3 M	3.3 M

* Additional $1.5M provided by Ocean Drilling Program

APPENDIX A

ODP RENEWAL ACTIONS

	SCIENCE PLANNING	PROGRAMMATIC & CONTRACTUAL	MOU-NATIONAL & INTERNATIONAL
1989	LRP ADOPTED AND/OR MODIFIED		BEGIN DISCUSSIONS W/PARTNERS
1990	EVAL. OF OPS & PLANNING ORGANIZATION POST 1993		NSB PROGRAM PRESENTATION DISCUSSION AS NEEDED W/EXISTING & POTENTIAL PARTNERS
1991			
1992		NSF EVAL. & REVIEW OF 93 & 94-96 PROGRAM PLAN	INFORMAL EXPRESSIONS OF INTEREST
1993	COSOD III & LRP UPDATE	START CONTRACT RENEWALS	SIGN NEW MOU'S
1994		EXISTING CONTRACT W/JOI EXPIRES	
1995			
1998		DRILLSHIP CONTRACT EXPIRES	

ODP OPERATIONS SCHEDULE

Leg	Objective	Days At Sea*	Cruise Dates	Port
127	Japan Sea I	58	6/24-8/21	Pusan-8/21-8/25
128	Japan Sea 2	51	8/26-10/16	Pusan -10/16-10/17 (Leg 128 Scientists Off)
---	Transit	9	10/18-10/27	Singapore-10/27-11/11 (dry dock and port)
---	Transit	10	11/12-11/22	Guam I - 11/22-11/23 (Leg 129 Scientists On)
129	Old Pacific Crust	56	11/24-1/19/90	Guam II - 1/19-1/23
130	Ontong Java	62	1/24-3/27	Guam III - 3/27-3/31
131	Nankai	62	4/1-6/02	Pusan - 6/2-6/6
132	Engineering 2	55	6/7-8/1	Guam IV - 8/1-8/5
---	Transit	7	8/6-8/13	Port Moresby-8/13-8/14
133	N.E. Australia	56?	8/15-10/10	Brisbane-10/10-10/14
134	Vanuatu	56?	10/15-12/10	Suva - 12/10-12/14
135	Lau Basin	56?	12/15-2/9/91	?

*Schedule subject to change pending detailed planning after Leg 131.

Revised 8/7/89

APPENDIX B

Proposed Site Occupation Schedule, Leg 128* (Revised 19 July, 1989)

	DATE	Time on Station (days)	Transit Time (days)
Leg 128 departs Pusan on August 26, 1989			
Transit Pusan to JS-2			1
AR JS-2	27 August	6.6 (1.4)	
LV JS-2	3 September		
		← Rendezvous	
Transit JS-2 to Site 794 (J1b-1)			1
AR 794	4 September	10.0	
LV 794	14 September		
Transit Site 794 to J2a-1			1
AR J2a-1	15 September	9.0	
LV J2a-1	24 September		
Transit J2a-1 to Site 794			1
		← Rendezvous	
AR Site 794	25 September	7.0 (6.0)	
LV 794	2 October		
Transit Site 794 to J2a-1			1
AR J2a-1	3 October	12.0 (3.0)	
LV J2a-1	15 October		
Transit J2a-1 to Pusan			1.3
Ar Pusan	16 October, 1989		

*Schedule is constrained by 1) meeting of second vessel at JS-2 on 3 September, and 2) meeting of seismic vessels at 794 on 25 September

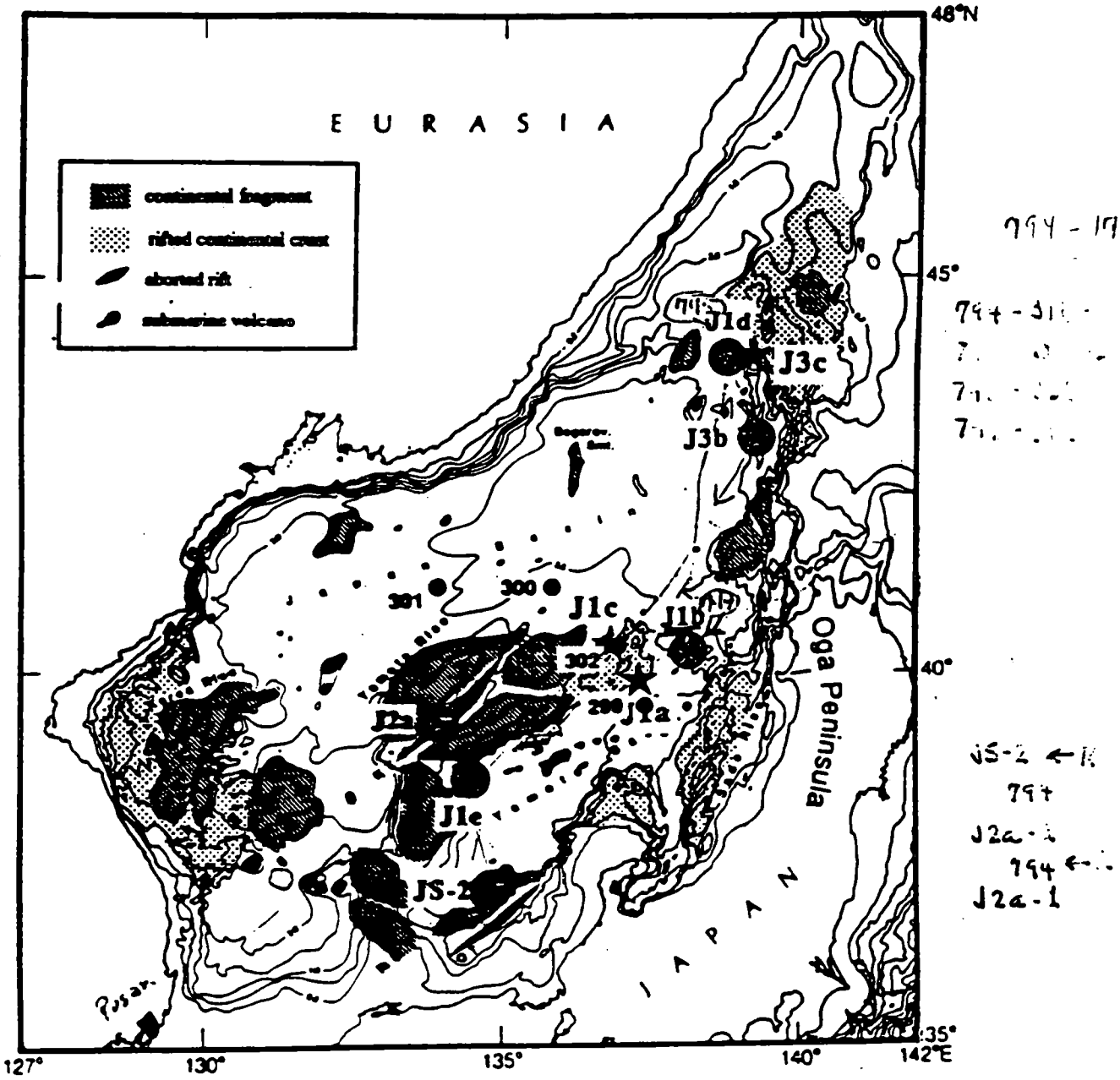

48°N
45°
40°
35°
127°
130°
135°
140°
142°E
E U R A S I A
continental fragment
rifted continental crust
aborted rift
submarine volcano
J1d
J3c
J3b
J1c
J1b
J1a
J1e
JS-2
301
300
302
200
Oga Peninsula
J A P A N
794 - 17
JS-2
794
J2a-1
794
J2a-1

Figure 1.

Table 2. Leg 130 drill sites

Site #	Latitude Longitude	Water Depth (m)	Penetration (m) sed	bsmt	Time Estimate (days) Drill	Log	Total
OJP-5	03°34' N 156°36'E	2820	1350	150	21.2	3.6	24.8
OJP-1	00°19.2'N 159°21.9E	2600	650	- - -	5.9	1.4	7.3
OJP-2	01°13.5'N 160°31.8'E	3200	500	- - -	5.6	1.5	7.1
OJP-3	01°06.3'N 162°35.7'E	4200	200+	- - -	4.4	- - -	4.4
OJP-4	02°26.0'N 160°31.8'E	3400	450	- - -	5.2	1.5	6.7
ALTERNATE SITES							
OJP-6	00°59.0'N 161°35.8'E	3920	200+	- - -	4.2	- - -	4.2
OJP-4a	02°26.0'N 160°31.8'E	3400	250	10	1.5	- - -	1.5

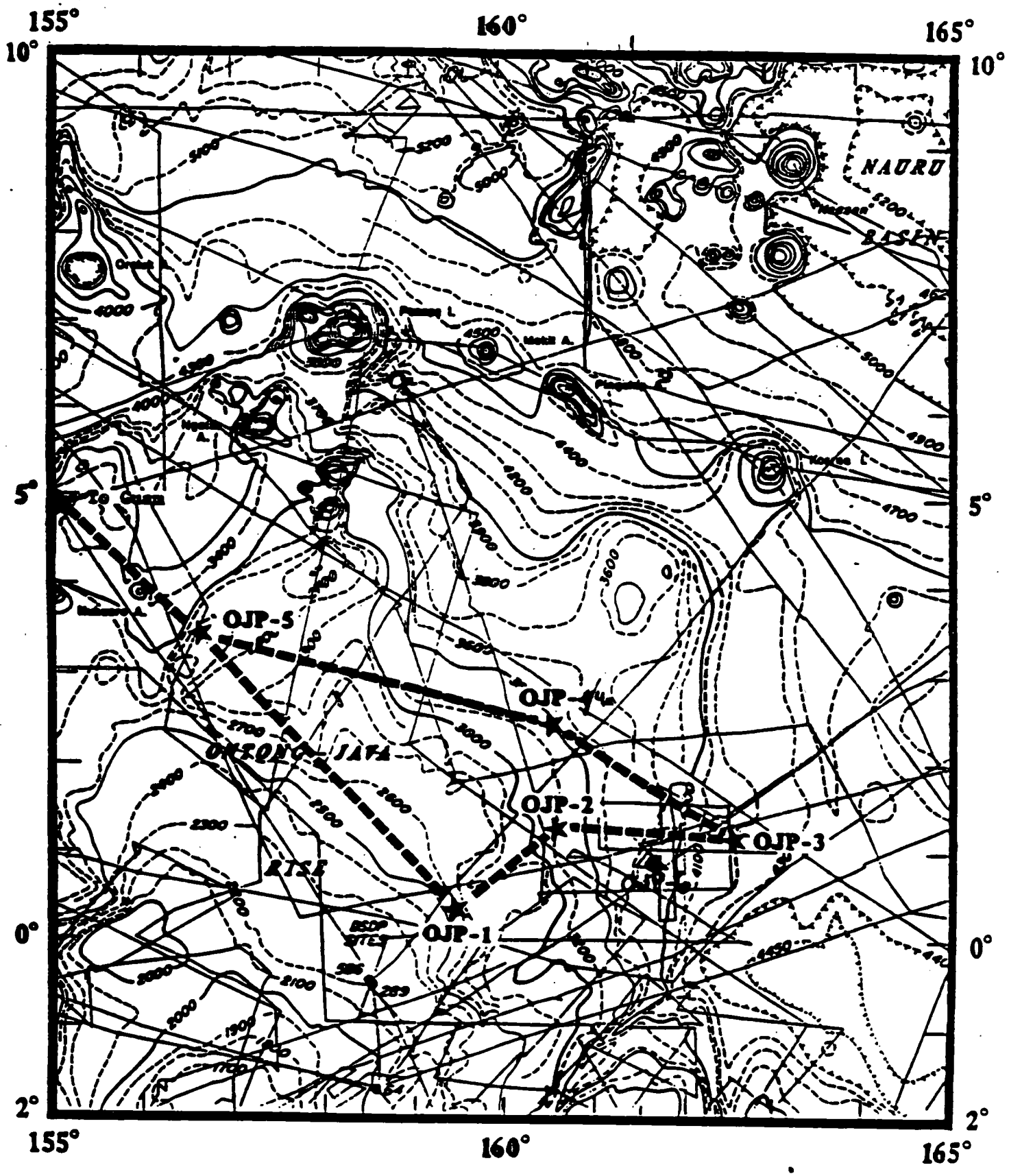
Drilling Plan:

OJP-1 Double APC to 250 m, Third APC to 50 m
XCB to 650 m
OJP-2 Double APC to 250 m, Third APC to 50 m
XCB to 500 m
OJP-3 Double APC to 250 m, Third APC to 50 m
OJP-4 Double APC to 250 m, Third APC to 50 m
XCB to 450 m
OJP-4a Wash to 250 m, RCB to 260 m
OJP-5 APC to 220, XCB to 600, Set Reentry Cone and RCB to 1500 m
OJP-6 Double APC to 250 m, Third APC to 50 m

Logging Plan:

2 Schlumberger runs at OJP-1, 2, 4, 5 and FMS/BHTV at OJP-5

Fig 6. Note OJP 6 may be substituted for OJP-3
- awaiting panel approval -



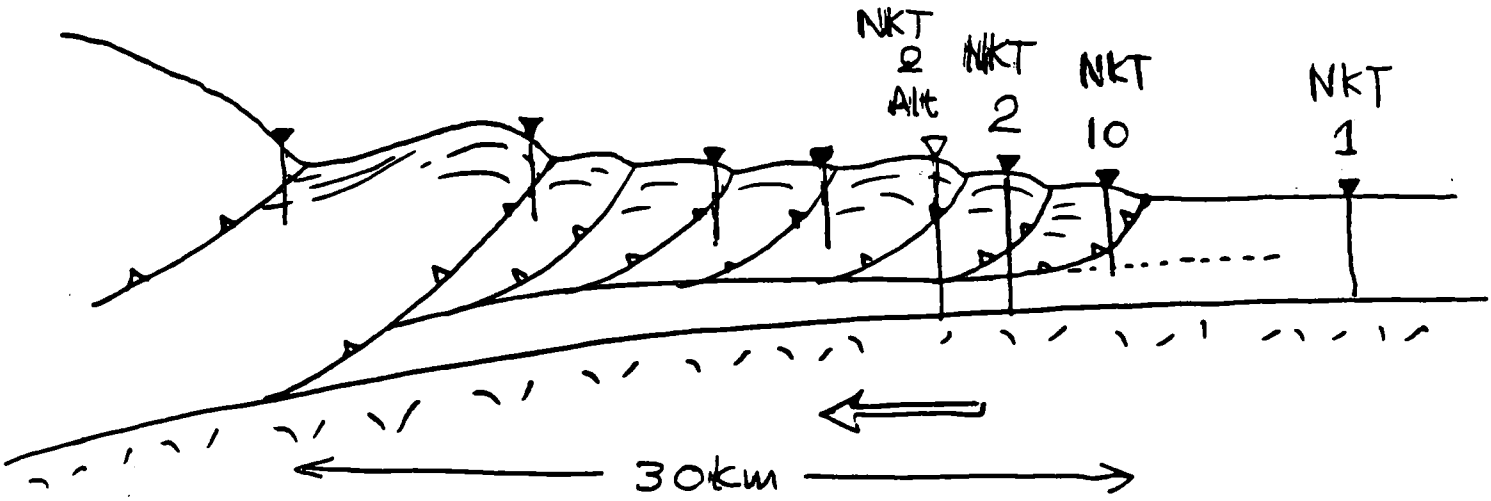
Nankai Drilling Plan

I. Overview

Two Objectives

1. Deep Objectives : Depth Gradient, Decollement & Hemipelagite (+Basement)

2. Shallow Objectives: Lateral Gradient through Offscraped Section



II Leg Scenario

Two Legs

Option 1 { Leg 1 Deep Objectives (Decollement is the most important)
Leg 2 Shallow Objectives

Option 2 { Leg 1 Shallow Objectives
Leg 2 Deep Objectives

Option 3 { Leg 1 Deep + Shallow
Leg 2 Deep + Shallow

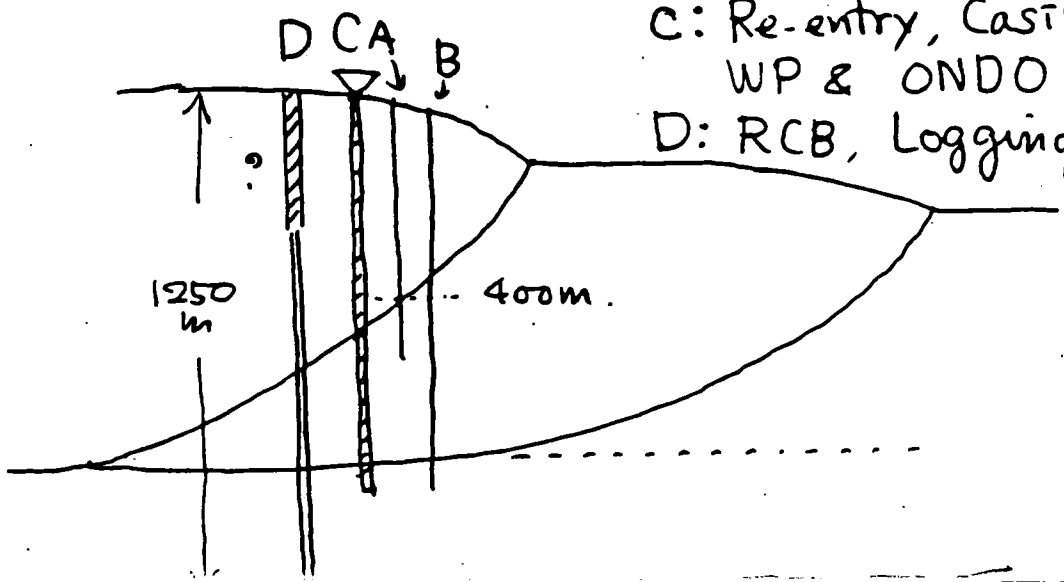
APPENDIX C

I NKT2 vs NKT10

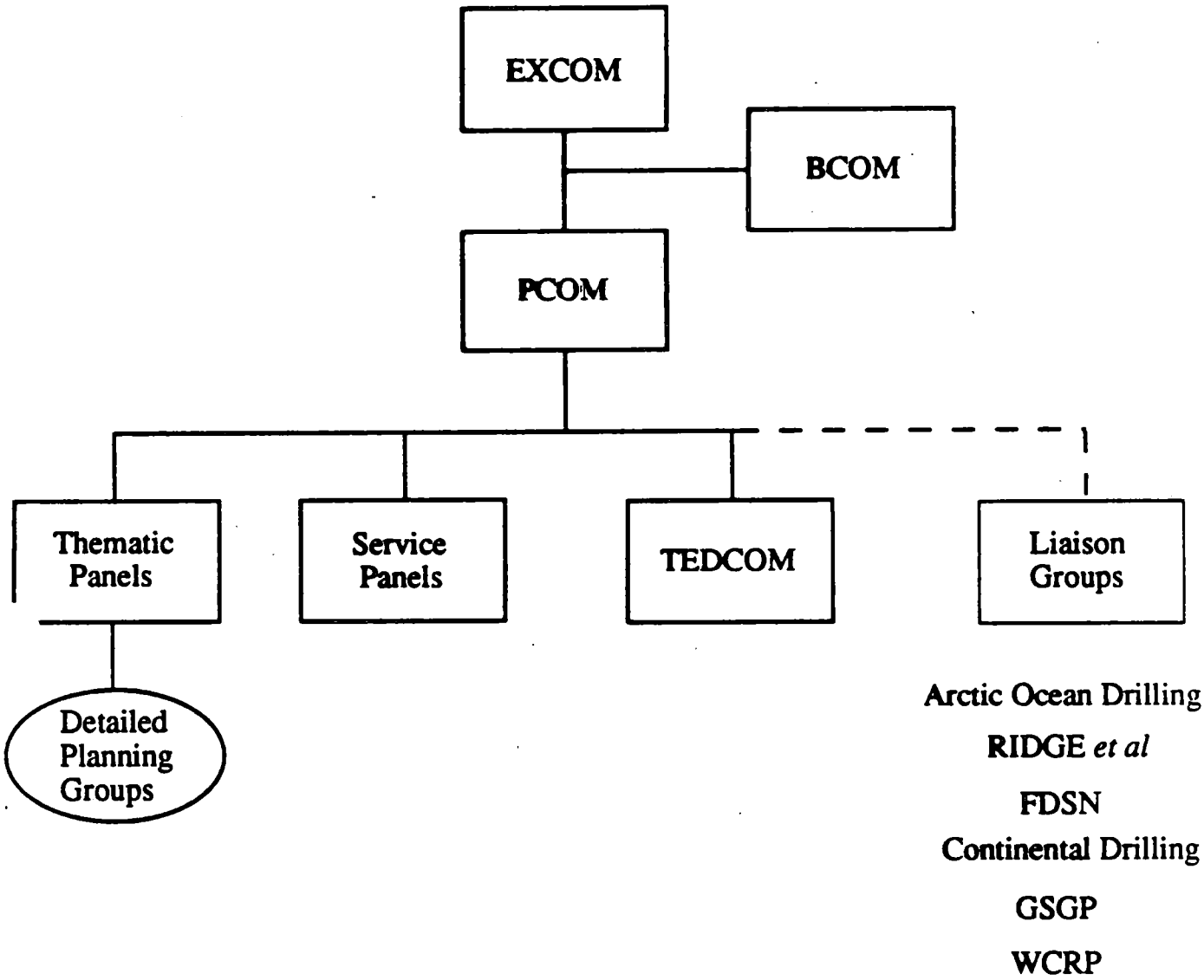
	NKT2	NKT 10
Decollement	fully developed	insipient?
Geoprop Penetration	not to reach decollement	close to reach insipient decollement (deeper structural level)
Re-entry cone setup	OK	Soft substrate
Overall feasibility	Some problem	Possible

IV Drilling Plan

A: APC/XCB Geoprops
B: RCB, Logging, Packer
C: Re-entry, Casing, WP & ONDO
D: RCB, Logging, Packer



Proposed Revision to the JOIDES Advisory Structure



APPENDIX D