JOIDES PLANNING COMMITTEE MEETING
25-27 June 1985
Bundesanstalt fur Geowissenschaften und Rohstoffe
Hannover, Federal Republic of Germany

AGENDA

Beginning at 08:30

A. Welcome, Introduction, Adoption of the Agenda

B. PCOM Minutes - Norfolk (10-11 April 1985)

C. EXCOM Minutes - Washington, DC (5-6 June 1985)

D. NSF Report

E. JOI Inc. Report
   1. FY 86 Program Plan

F. Science Operator Report

G. Wireline Logging Services Operator Report
   1. Priority items for future acquisition

H. Report of the JOI Databank Review Panel

I. Reports from Co-chief Leg 103

J. Reports from Panels and Working Groups
   1. SOP
   2. MED-WG
   3. SSP
   4. DMP

K. Long-range Planning
   1. Indian Ocean
      a. Brief review and questions on panel priority summaries
      b. Devise program plan for Indian Ocean

L. Short-range Planning
   1. FY 86 budget limitations and priorities
   2. Leg 106
      a. GPS Navigation
      b. SeaMARC I survey
   3. "Watchdog" Reports Legs 107-114 (including 504B)
   4. Devise drilling schedule for Legs 107-114

M. Panel Membership

N. Appointment of PCOM Liaisons

O. Future Meetings Schedule and Arrangements for Next Meeting

P. Any Other Business

JOIDES OFFICE
GRADUATE SCHOOL OF OCEANOGRAPHY
UNIVERSITY OF RHODE ISLAND
NARRAGANSETT, RHODE ISLAND

DRAFT MINUTES

10-12 APRIL 1985
CENTER FOR MARINE STUDIES
OLD DOMINION UNIVERSITY
NORFOLK, VIRGINIA

PCOM Members:
R. Larson, Chairman (University of Rhode Island)
H. Beiersdorf (Federal Republic of Germany)
R. Buffler (University of Texas)
J-P. Cadet (France)
S. Gartner (Texas A&M University)
D. Hayes (Lamont-Doherty Geological Observatory)
J. Honnorez (University of Miami)
M. Kastner (Scripps Institution of Oceanography)
J. Malpas (Canada)
R. McDuff (University of Washington)
R. Moberly (University of Hawaii)
H. Schrader (Oregon State University)
R. Von Herzen (Woods Hole Oceanographic Institution)

Observer:
A. Taira (Japan)

Liaisons:
G. Brass (National Science Foundation)
D. Fornari (LDGO, Wireline Logging Services)
L. Garrison (ODP/TAMU Science Operator)

Guests:
J. Austin (Leg 101 Co-chief)
M. Salisbury (Leg 102 Co-chief)

Others:
J. Clotworthy (Joint Oceanographic Institutions Inc.)
D. Keith (JOIDES Office)
A. Mayer (JOIDES Office)
D. Rucker (Joint Oceanographic Institutions Inc.)

JOIDES PLANNING COMMITTEE MEETING
CENTER FOR MARINE STUDIES
OLD DOMINION UNIVERSITY
NORFOLK, VIRGINIA
10-12 APRIL 1985

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JOIDES PLANNING COMMITTEE MEETING
CENTER FOR MARINE STUDIES
OLD DOMINION UNIVERSITY
NORFOLK, VIRGINIA
10-12 APRIL 1985

ACTION ITEMS

PAGE	RESPONSIBILITY	SUBJECT
2	JOIDES Office	Amendments to LITHP report in Austin PCOM to LITHP Chairman
6	JOI Inc./JOIDES Office	Inclusion of ODP Databank Ad Hoc Review Panel in Hannover agenda
6	JOI Inc./JOIDES Office	Distribution of the FY 86 program plan to PCOM (Hannover)
7	JOI Inc.	Development of a list of items to which ODP is contractually bound by leasing or other arrangements
12	Science Operator	Development and distribution of public relations material
12	JOIDES Office	Publishing of leg prospectuses, drill site summaries, and results in detail in the JOIDES Journal
14	Wireline Logging Services	Production of a publication with logging time estimates for standard and specialty tools
15	Wireline Logging Services	Investigation of the possibility of converting the onshore logging computer to a sea-going unit
15	JOIDES Office	Refer publication of logging results to IHP and DMP
17	Science Operator	Correction of deficiencies in the satellite navigation system on the D/V JOIDES RESOLUTION
19	ARP Chairman	Development and presentation of a prioritized list of drilling objectives for the Tyrrhenian Sea from MED-WG

22	SOHP Chairman	Prioritization of the 11 first priority sites for NW Africa
24	JOIDES Office	Inclusion of the guidelines for data presentation for safety review in the Special Issue of the JOIDES Journal
27/28	Science Operator	Review arrangements for Legs 104 and 105
29/30	Science Operator	Invite co-chief scientists Legs 103-111
30	PCOM Subcommittee (Larson, McDuff, and Von Herzen)	Development of reference list of prioritized downhole tools
31	PCOM Chairman	Notification of panels concerning the lack of a wireline packer for Leg 110
31	JOIDES Office	Compilation of information for PCOM "watchdogs"
32	PCOM Members/"Watchdogs"	Submit reports to JOIDES Office by 1 June 1985
34	Science Operator	Negotiations with ODP-France for use of MARION DUFRESNE
34	J-P. Cadet	Negotiations with operators of MARION DUFRESNE
38	PCOM Chairman	Ask the SOHP and SOP Chairmen for more detailed information for Indian Ocean drilling priorities
38	PCOM Chairman	Ask the SOP Chairman for more specific details concerning Subantarctic and Weddell Sea drilling
39	PCOM Members	Bring map of favorite Indian Ocean draft drilling plan to Hannover meeting
39	PCOM Members	Invite J. Peirce and D. Cowan to serve as SSP and TECP Chairmen respectively.

527 INTRODUCTION AND OPENING REMARKS

R. Larson, Planning Committee Chairman, convened the 10-12 April 1985 meeting held at the Center for Marine Studies at Old Dominion University. Harris Stewart, Director, welcomed meeting participants to the Norfolk, VA area.

Dr. A. Taira was welcomed as the Japanese representative to the Planning Committee. Dr. Taira presently has observer status until October 1985, when Japan has agreed to sign a full MOU and he replaces K. Kobayashi who is now the Japanese representative to the JOIDES Executive Committee.

The opening remarks were closed by asking meeting attendees to agree to the use of a tape recorder to aid in recording the meeting procedures.

ADOPTION OF MEETING AGENDA

H. Schrader moved (seconded by Moberly) that the Committee adopt the agenda.

Vote: for 12, against 0, abstain 0.

528 MINUTES OF THE AUSTIN PLANNING COMMITTEE MEETING

H. Schrader requested that his affiliation be corrected from the University of Oregon to Oregon State University.

R. Moberly moved that the minutes be amended to include the following listing of major themes by oceans to be added to LITHP report:

1. Atlantic: bare rock drilling at MARK
2. Eastern Pacific: bare rock drilling at 9^{o}-13^{o}N (EPR) and 504B.
3. Western Pacific: young back-arc spreading
4. Indian: single hot spot trace

Vote: for 6, against 2, abstain 4.
(amendment carried)

The Committee suggested that a copy of these amendments be sent to M. Purdy, LITHP Chairman.

It was moved by Kastner, and seconded by Malpas, to adopt the minutes with the requested amendments.

Vote: for 12, against 0, abstain 0.

The PCOM Chairman reported that action items resulting from the Austin PCOM meeting had been completed by the JOIDES Office.

529 JOIDES EXECUTIVE COMMITTEE REPORT

R. Larson, PCOM liaison, reported that at the EXCOM meeting on 18-19 March 1985 in Miami, Florida, the United Kingdom, European Science Foundation and Australia were unable at this time, to join ODP as full or consortium members. However, the possibility of an ESF/Australian consortium may occur in the near future and was strongly encouraged by EXCOM. Further, a resolution was passed by the EXCOM that states that the entry of the United Kingdom to the ODP other than as a full member was not acceptable or in the best interest of ODP or to the other full members. The resolution further urged the UK to become a full member by October 1985.

The EXCOM recommended that the ESF, Australia and the UK continue to be invited to EXCOM as personal guests of the EXCOM Chairman as long as a possibility of membership exists. EXCOM further recommended that all Australian, ESF and UK names be deleted from the JOIDES PCOM and panels. This proviso is dated as of the sailing date of the RESOLUTION. EXCOM did approve the attendance of guests to the panel meetings but only when it was absolutely necessary for scientific planning. Representation on panels was limited to those representatives of member nations except where a scientific specialty was needed. A problem potentially exists with the Mediterranean WG because 4 panel members are from the ESF or the UK; the expulsion of these people could lead to a dismembering of the Working Group.

The EXCOM Chairman read a telex from the President of ESF in which he stated that ESF is prepared to enter ODP as a full member as soon as negotiations with Australia are completed.

Regarding the staffing of scientists from developing countries, the EXCOM agrees with the position taken by the PCOM. In summary, the PCOM stated that wherever possible, scientists from developing countries should be invited on a personal level and that relevant international scientific organizations should be contacted (formally and informally). Panels were also asked to explore opportunities for scientific collaboration with non-ODP members.

Discussion:

Schrader (OSU): What is the present listing of ESF members?

Larson: To date, the ESF consists of 9 countries: Norway, Sweden, Italy, Greece, Belgium, Denmark, Switzerland, the Netherlands and Spain.

Honnorez (UM): What is the status of O. Eldholm as he is a member of the Atlantic Regional Panel, a co-chief scientist and at the same time an ESF representative?

Larson: Eldholm no longer represents the ESF on the ARP. He has been designated as a co-chief scientist on Leg 104 on an ad hominem basis.

Hayes (LDGO): An alternative that was discussed by the EXCOM was that Eldholm participate on Leg 104 as a member of the scientific crew but not in the capacity of co-chief scientist.

It was noted by members of the PCOM that the UK and ESF panel members who were eliminated previously could be reappointed on the basis of their scientific specialities. (More discussion of panel memberships will be found under that appropriate section in the minutes.)

530 NATIONAL SCIENCE FOUNDATION REPORT

G. Brass (NSF) reported.

The Ocean Sciences Section at NSF has been reorganized into 2 co-equal segments. They are the Ocean Sciences Research Section headed by Robert Wall and the Oceanographic Centers and Facilities Section (OCFS) headed by Sandra Toye. OCFS includes all of the activities formerly included in the Oceanographic Facilities and Support program (OFS) plus the ODP and new activities in Ocean Engineering and Oceanographic Technology. Toye will continue to represent the NSF at the JOIDES EXCOM, and as Section Head, will continue to be responsible for the international aspects of the ODP. Program activities within the ODP will reside with G. Brass. A. Sutherland will be in charge of contractual and technical aspects of the program.

MEMBERSHIP

Canada

Canada will sign a Memorandum of Understanding with NSF for full membership in the Ocean Drilling Program on 15 April 1985. With this signing, the ODP now has 3 full members.

Japan

Japan will join ODP as a full member on or before 1 October 1985. At that time, the ODP will consist of 4 full members.

ESF/UK

Draft MOUs are under consideration with the ESF and UK that would continue their participation as candidate members until they make a commitment of full membership to ODP (i.e. Japanese solution). It is expected that if these countries join under the "Japanese solution," a commitment to full membership will occur on or before the beginning of next fiscal year. It is not the intention of EXCOM to allow them to extend their participation in ODP beyond 30 September 1985.

Discussion:

Von Herzen (WHOI): How has the lack of a UK membership affected the financial situation for this year and will things look better in the future?

Brass: Not having the UK (or a 5th member) in ODP has resulted in a $2.5M deficit in the budget. So the Program needs to find one more member. With the number of membership opportunities available, we are optimistic that another member will be found to fulfill the plan of 5 internationl partners.

Von Herzen: Has NSF prepared a document which addresses the lack of a fifth member and its impact on the cost overrun for the construction of the laboratory stack on the RESOLUTION and its effect on the U.S. science program?

Brass: A summary of the cost overrun matter can be found in the minutes of the EXCOM meeting in Narragansett. Brass noted that he did not think that it was entirely appropriate to fully discuss funding activities of the U.S. Science Program in view of the international nature of the ODP.

Beiersdorf (FRG): Is the NSF wholly responsible for the DSDP phase out?

Brass: Monies for the phase out come from co-mingled funds.

Cadet (France): Does the ODP budget contain funds to guard against major problems (e.g. the loss of a couple of drill strings)?

Brass: On both the short- and long-term outlooks, there is not much flexibility in the budget to guard against major problems.

Von Herzen: After reviewing the Narragansett EXCOM minutes, it is still not clear how the cost overrun occured.

Garrison (TAMU): The size of the overrun is still not fully known as negotiations over the costs are continuing.

Brass: This issue is policy and not a planning matter. I have been asked to urge the PCOM to consult with their EXCOM counterparts on this matter.

Hayes (LDGO): Science planning will be affected by the cost overrun and therefore should be addressed by PCOM.

531 JOINT OCEANOGRAPHIC INSTITUTIONS INC REPORT

J. Clotworthy (Vice President, JOI Inc.) reported that JOI has put together a management proposal to cover the next 3 years of ODP. The program plan for FY 86 is not yet complete but is being done with guidance from NSF and input from the subcontractors (TAMU, LDGO, and the JOIDES Office). The program plan (scheduled for completion on 1 May) is being prepared on the basis of 4 international members, and it should be ready for discussion at the EXCOM meeting on 5 June and at PCOM on 25 June. The program proposal will be ready by 1 June.

JOI in its original management program to NSF scheduled a program performance evaluation that was to be conducted every 2 years. Within the coming year, a review panel of 6 members (whose appointments will be filled by the end of April) will conduct evaluations of the drillship at St. John's port call in October and will visit TAMU and LDGO. A report of these findings will be submitted to the President of JOI, J. Baker, and ultimately to NSF.

The report of the ad hoc review panel that met in March to evaluate the ODP Databank will be ready by the June PCOM meeting.

Discussion:

Hayes (LDGO): Will the FY 86 program plan be given to PCOM for comment or on an information only basis?

Clotworthy: If compromises are needed, JOI will approach the PCOM with alternatives and will request guidance for their prioritization.

Brass (NSF): If alternatives exist, they will contain scenarios for budget surpluses as well as budget deficits.

Kastner (SIO): If the program plan is ready by 1 May 1985 and the full proposal by 1 June 1985, is it possible that the PCOM could review both documents at the 25 June meeting?

Clotworthy: It is probable that the program plan will be available and possible that the proposal may be available.

Larson (URI): Will the program plan contain a full budget with options?

Clotworthy: The plan will contain a full budget with alternatives.

Several PCOM members noted that a review of the Miami EXCOM minutes indicated that a number of items are planned to be deferred from the FY 85 budget into FY 86.

Members stressed that it is very important to have PCOM input into the budgetary planning and urged the development of several "crisis" scenarios to be presented at the next PCOM meeting. It was further suggested that a standby committee be formed to address any problems that may occur in FY 86. To aid in financial planning the PCOM suggested that JOI develop a list of items to which ODP is contractually bound by leasing or other arrangements.

532 SCIENCE OPERATOR REPORT

L. Garrison (ODP/TAMU) reported.

CO-CHIEF STAFFING

Leg 106 (MARK I) - J. Honnorez and R. Detrick
Leg 107 (Tyrrhenian Sea) - not yet selected
Leg 108 (NW Africa) - not yet selected
Leg 109 (MARK II) - W. Bryan and T. Juteau

SHIPBOARD SCIENCE STAFFING

Staffing for Leg 104 (Norwegian Sea) under the co-chiefs J. Thiede and O. Eldholm has been completed. For leg 105 (Baffin Bay/Labrador Sea), selections are due after the co-chief meeeting at the end of May.

BARE ROCK DRILLING

Garrison reported that the plans for hard rock drilling are proceeding on schedule and that requests for proposals for the high resolution black and white television system have been issued.

Discussions have been held with Southern International (SI) concerning the drilling operations and a conference between one of the co-chiefs on Leg 106 and S.I. will combine the proposed drilling operation with scientific objectives. Presently, drilling is based on a mud motor design in which the drill pipe does not rotate. The design further calls for the use of an inner core barrel that would simultaneously recover core samples while continuing drilling activities. The rotating design reduces the effect of fatigue and compression during drilling and predicts a very stable configuration.

CLEARANCES

The clearance to drill in Spanish waters has been received which acknowledged the invitations to include Spanish scientists among the shipboard party. However, Spain has requested an additional 4 scientific berths due to their membership of the ESF-ODP consortium. R. Kidd (Manager of Science Operations) will go to Barcelona to clarify the invitation which is one of coastal countries representation and not one of ODP representation. Kidd will also discuss ODP benefits, their participation in ESF and clarify their ODP obligations. It is hoped that this meeting will clarify the issue of participation.

Talks have occurred with the Norwegian Petroleum Directorate (NPD) and the Canadian Oil and Gas Lands Administration (COGLA). In both countries, the protocol is to negotiate with the agencies that administer offshore petroleum activities. TAMU is in communication with both agencies and it appears that many of the requirements will be waived as the RESOLUTION is a non-industry vessel. However, COGLA states that 3 requirements must be met:

1. use of a support vessel for ice spotting and tracking
2. a trained ice observer must be onboard together with a regular weatherman
3. survival suits for all personnel on the RESOLUTION

TAMU is now purchasing the survival suits (at $350/suit) and they will be available for Legs 104 (Norwegian Sea) and 105 (Baffin Bay/Labrador Sea), and all subsequent legs.

Discussion:

Larson (URI): What is the status of procuring the scout vessel?

Garrison: Negotiations are in progress with private and public agencies with regard to the cost of the scout vessel. Presently, estimates are running between $250-300 K for the charter. It has been suggested that the USCG NORTHWIND may be available specifically for the use of ODP.

Brass (NSF): The Coast Guard has been contacted and will consider the suggestion.

Malpas (Canada): Do the costs cover Baffin Bay of Labrador Sea or both?

Garrison: The costs cover both locations.

REPORT ON SHIPBOARD ACTIVITIES

TAMU has developed a 2-part reporting system on the ODP Bulletin Board in the OCEAN.NET system. The first part of the series contains the latitude and longitude of the drillship while the second part, which is addressed to specific individuals, contains a weekly summary of the science report and the operations report. The second part is updated every Monday and it is not on the public bulletin board. However, all PCOM members who wish to gain access to this system will be added to the listing.

Also, TAMU reports the whereabouts of the drillship to the Defense Mapping Agency who in turn notifies the U.S. Navy and other interested parties.

Discussion:

Schrader (OSU): During hard rock drilling will the upper 30-50 m be recoverable?

Garrison: There is no mechanical reason why the upper section cannot be recovered, provided there are no rubble zones. If rubble zones exist then it becomes necessary to stabilize the hole initially with cement. This would make recovery of the upper section difficult.

Honnorez (UM): Since the cementing process is very important in stabilizing the drill hole, are there plans to obtain different types of cements?

Garrison: Studies of the various kinds of cements have been done but these were done in regard to cementing in the guidebase. The data suggests that 2 types of cements are needed.

Kastner (SIO): How long will it take to establish the drill hole?

Garrison: If there are no problems, it should take 2 weeks to stabilize and drill the hole.

Larson (URI): In terms of unrecoverable hardware, what is the cost of those items that will be left on the seafloor?

Garrison: Estimates show that approximately $150-175 K (approximately $60K-hardware + approximately $90 K- cement, gel, casing) worth of material will remain on the ocean floor.

Moberly (HIG): Will the guidebase frame be specially coated for re-entry at a later date?

Garrison: Presently, a standard organic zinc coating is applied. What will happen to the coating in the next 40-50 years is unknown.

Honnorez: What is SEDCO's role in the guidebase project and are they responsible for the selection of the drilling cement?

Garrison: In a couple of weeks, SEDCO will deliver to ODP the design for the guidebase. The selection of drilling cements should be discussed when the co-chief scientists for MARK I and Southern International representatives meet.

Honnorez: Do you have an idea as to scheduling of the system?

Garrison: Two complete systems will be ready by August 1985. A final design for the guidebase will be ready by late April and requests for estimates to build will be sent out shortly thereafter. At about that time, testing of the Meso-Tech sonar and television camera will occur. One proposed camera was eliminated due to the cost (approx. $40K), so if one could be borrowed or rented from one of the oceanographic institutions there is room on the bracket for it.

Schrader: Is the drilling rate slower on the RESOLUTION than on CHALLENGER and will it increase in the future?

Garrison: The rate did start off slower than CHALLENGER but, this is due to a number of reasons - the use of the iron roughneck and various other tools and the inexperience of the drilling crew. At the end of Leg 101 (Bahamas), the rate did increase and was comparable to CHALLENGER.

Schrader: Could you give us an update on shipboard instrumentation and their installation status?

Garrison: The XRF was not onboard for Leg 101 but was onboard for Leg 102. The cryogenic magnetometer will be installed during the Norfolk port call. The underway geophysics lab is complete but cavitation problems exist with the 12.5 kHz and 3.5 kHz transducers. EDO Western has been made aware of the problem and will try to solve it without putting the ship into drydock.

CHANGES TO LEG 103 (GALICIA BANK) DRILLING PLANS

TAMU advised the PCOM Chairman that in early February, based on their best estimates for drilling and recovery rates of the scientific objectives for Leg 103, an additional 7 days was required to be added to the Leg. After consulting with the action committee (Larson, Honnorez, Beiersdorf), it was recommended that 5 days be added to Leg 103 at the expense of 5 days from Leg 102 (W. North Atlantic). This resulted in the abandoning of the scientific objectives at DSDP Site 603. The co-chiefs on Leg 103 were asked to devise other time-saving possibilities to achieve the scientific goals in order and as prioritized at the Austin PCOM.

Presently, plans call for drilling the lherzolite ridge initially within the 7-day time frame as decided in Austin. The original plan was to then drill sites 4A and 4B, with a re-entry cone set at Site 4B for deeper penetration. This has been changed to save time and the consensus is to now drill for the objectives of 4A and 4B at one site.

The plan calls for setting a cone at 4B with continous coring. It should also be noted that depening the site has the approval of the Safety Panel down to a depth of 2 km. The time saved is approximately 2 days.

Discussion:

PCOM members expressed concern over the timing of the request after discussions and decisions were made at the Austin PCOM.

Hayes (LDGO): Scenarios and drilling times were discussed and decided on in mid January at the Austin PCOM. Between then and early February more time is required. How did this happen?

Garrison: The initial drilling estimates presented in Austin contained operational days but no contingency time was built in. More time is required to account for contingencies.

Kastner (SIO): I was informed that the time request is the result of a mistake in the calculation of drilling time estimates and not so much one of contingency times.

Larson (URI): The mistake is the result of miscalculations in determining the time it would take to drill the Cretaceous section of the site. The root of the problem was a misapplication of the drilling rates used during DSDP drilling of the Vigo Seamount. The time request is a combination of correcting the mistake plus contingency time.

Kastner: How much contingency time is planned in the change to drilling the entire section of Site 4B?

Garrison: Those figures are not known at this time. Legs are adjusted to give every leg sufficient operational days to meet objectives and in the case of Leg 103 adjustments had to be made.

Gartner (TAMU): If this time request is over-estimated, can it be used to supplement additional legs?

Garrison: It is unlikely that the time will be used to supplement other legs due to scheduling commitments.

Various PCOM members expressed concern with regard to the trading of days between Legs 102 and 103. It was suggested that perhaps all the PCOM members should have been polled for advice rather than leaving such decisions to an ad hoc committee. There was general agreement that in the future once drilling times were determined to meet agreed scientific objectives there should be every effort made to adhere to them. It was suggested that the ODP reinstate a DSDP procedure in which panels were contacted at such times in order to avoid having a theme suffer.

LEG 106 (MARK I) SITE SURVEY

The site survey for the MARK I area is presently scheduled to be conducted in May 1985. Plans call for using a variety of new equipment on CSS HUDSON to conduct the SeaMARC side scan and deep towed camera surveys.

This section of the meeting closed with requests from PCOM members to the Science Operator concerning public relations material. Requests were also made for the publishing of drill site summaries and results in detail in the JOIDES Journal.

533 WIRELINE LOGGING SERVICES OPERATOR REPORT

Dan Fornari reported that a general summary of logging activities on Leg 101 (Bahamas) is found in the draft minutes of the 18-19 March 1985 EXCOM meeting. Initial logging reports from Leg 102 suggest that logging was very successful with some logging experiments conducted through the drill pipe. Fornari commented that this may be the standard logging operation in the future and that this procedure greatly reduces the chances for losing logging tools.

On Leg 102, the Natural Gamma Tool worked very well and the logging crew was able to resolve the sediment/basalt contact and delineate smectite and basalt through the drillpipe.

The Logging Services Operator wants to ensure that a complete suite of standard logging tools be available for each ODP leg. LDGO has made an agreement with Schlumberger to take 2 of each tool in order to assure that standard logging activities will be conducted. Two of each tool onboard the drillship are being charged ODP at a rate that is $300-400/day less than commercial costs.

Operations in FY 85-86 look favorable as the budget allows LDGO to provide standard and specialty logging services. However, there are some tools (that were unused on the first 2 legs) that are being removed at a substantial savings to the program. These are the temperature log, the Schlumberger pore fluid sampler and the tracer ejection tool. These specialty tools will be reinstated in the future as requests warrant them and after a means to provide funding for them has been found. The decision as to which tools are needed for logging is made by Downhole Measurements Panel with advice from co-chief scientists.

The daily cost of the standard logging operation is $2150 and this includes the cyber unit and standard tools. Within the ODP-Schlumberger contract, there is enough flexibility to remove or replace tools (dependent on availability) as needed with no penalty costs to ODP.

For Leg 103 (Galicia Bank), two gamma spectroscopy tools (GST) as well as a newly trained logging technician will be available and starting with Leg 104 (Norwegian Sea), GST capabilities should be a routine part of logging activities.

At LDGO, the first edition of the logging manual has been published and distributed. Furthermore, shipboard as well as on shore facilities are completely operational. The only major shipboard problem encountered so far has been the inability to get the winch, which lowers the logging tools, to operate sufficiently slowly at the necessary speed of 20 ft./min.

HIGH TEMPERATURE TOOLS

Groups at Los Alamos, Sandia Labs, U.S.G.S. and Lawrence Livermore Labs have expressed considerable interest in the development of high temperature tools. The most promising approach to keeping tools cool appears to be using a tool pusher to circulate cooling fluids. This concept would allow logging operations to be conducted using conventional equipment.

TAM WIRELINE PACKER

There are presently no funds in FY 84-85 for packer development. Agreements have been signed with AMOCO, but there has been no progress due to the lack of funding. AMOCO continues to develop the packer, however, ODP must streamline and miniaturize the unit to fit within the drill string.

There will be no new packer for Leg 110 (Barbados N.); however, the Lynes packer and the TAM drill string packer will be available. The budget for FY 86 will contain funds for the wireline packer development and the tool should be ready by 1987.

HEAVE COMPENSATOR

D. Yurger (WHOI) was contracted by ODP to conduct numerical analyses of the heave compensator and the results were sent to the engineers at Schlumberger. The compensator should be available prior to Leg 105 (Baffin Bay/Labrador Sea) with a more definite date known by the June PCOM.

The result of the analysis indicates that the Schlumberger design is quite functional but data did indicate problems with the controller system. Schlumberger has been made aware of the problems and sees no problems with Leg 105 delivery date.

Discussion:

Kastner (SIO): Why were the 3 logging tools that were removed from the program not used on Legs 101 and 102?

Fornari: On Leg 101, time constraints were such that some tools did not get used.

Honnorez (UM): It was suggested that there was no time to conduct logging due to complaints about the time involved from the co-chiefs on Leg 101?

Fornari: This is not entirely correct. Standard logging activities need a maximum of 36 hours to a depth of 4000 m. The chief scientist should be aware of this time constraint and factor this into the cruise plans.

Schrader (OSU): Are these figures factored into the operational days calculation?

Garrison (ODP/TAMU): Time for logging is indeed scheduled into the calculation.

Kastner: The co-chief scientists should probably be informed on the amount of time it takes to conduct the specialty logging tools.

Brass (NSF): Perhaps, Wireline Services could produce a publication, similar to drilling time estimates, which explains estimates of logging times for standard and specialty tools.

Larson (URI): What is the status of the back-up tools?

Fornari: All the standard tools have a replacement tool with the exception of the multichannel sonic tool and the borehole televiewer. There are funds in the FY 86 budget to purchase a second for each of these tools.

Beiersdorf (FRG): Does this policy include spare cables?

Garrison: Plans now call for the inclusion of spare cables since cable was lost on Leg 101.

Von Herzen (WHOI): What is the status of software development on the ship?

Fornari: On the ship, we have unlimited use of the cyber unit program. However, there is no funding for the logging analysis software on the shipboard computer. The capability to analyze this data exists on shore but not yet at sea. We have asked for funds in FY 86 to extend this capability to the RESOLUTION.

Von Herzen: It was suggested that LDGO explore the possibility of converting the logging computer at Palisades to a sea-going unit in order to facilitate logging analysis at sea.

Fornari further reported that a summary of logging reports for Legs 101 and 102 are being prepared. Also, DSDP logs are being prepared for publication as a catalogue which will be available (along with ODP logs) on an annual or biannual basis.

Schrader (OSU): Will the logging results be part of the ODP site chapters?

Garrison (ODP/TAMU): It has been suggested that they appear in the "blue book" format with a summary of standard logging information and analyses of data and special sections but the format is still in a state of flux.

Larson (URI): The ODP publication scheme presently suggests that the summary of standard logging information would be in the first publication and the analyses and special sections would appear in the second publication.

Consensus: It is the consensus of the PCOM that the data from the standard logging tools be printed as a logging summary in the initial site chapters (Part A) and interpretations and analyses should appear in Part B of the Proceedings of the ODP. This consensus should be referred to the Information Handling Panel and the Downhole Measurements Panel.

Several PCOM members expressed concern over the consensus. It was emphasized that such a general statement cannot be made until the details of the format and the amount of data are known. Further it was asked if the release of the logging data falls within the guidelines as set by the ODP Sample Distribution Policy. Continued debate centered on whether this material should really be handled differently than core photos or core description data. The discussion ended with another consensus.

Consensus: The format question will reside with the IHP and DMP. The PCOM consensus is general advice.

The Wireline Services Report was concluded with the Operator asking advice of the PCOM and making the following closing remarks:

1. Is it necessary to carry an LDGO person on the bare rock drilling tests (Leg 106)?

2. There will be 2 LDGO technicians on the ship until Leg 105; beginning with leg 106 (MARK I) there will only be 1 LDGO technician.

3. LDGO expressed concern over whether the Spanish logging technician on Leg 103 is sufficiently informed about ODP logging capabilities and asked if the LDGO logging technician could be given staff representative status equal to the TAMU staff representative for this leg to assure that the logging program is fully completed.

534 REPORTS FROM CO-CHIEFS ON LEGS 101 AND 102

LEG 101 SUMMARY

J. Austin, Co-chief Leg 101, reported that the objectives of the cruise were to test two hypotheses (graben vs. megaplatform) for the development of the Bahama Banks and to examine types of carbonate slopes in terms of their Paleogene and Neogene evolution.

Attempts at setting a re-entry cone in the Straits of Florida proved to be unsuccessful as surface currents with speeds of 1.5 to 3.5 knots caused vibration problems along the drill string. Of 4 sites proposed only one single bit hole was drilled. Site 626 was the first site and was probably the most difficult technical site. Drilling yielded 460 m of carbonate rubble and resulted in very low recovery rates in the unconsolidated sand (less than 5%). However, HPC work resulted in 80-90% recovery. At Site 627 (Blake Plateau), HPC and EXB systems worked with 97% HPC recovery and 60% XCB recovery. However, there was evidence of drilling artifacts from the XCB. On the first logging attempt with the neutron gamma ray tool, normal recovery of the tool failed. Attempts to recover the tool by fishing failed and the tool was left in the hole which was plugged with cement. Traces of hydrocarbon gas were also found. Site 628 (Little Bahama Bank) was continously cored with the APC/XCB with 73% overall recovery rates and the hole was terminated in nannofossil ooze of L. Paleocene age. Site 629 (Little Bahama Bank) was an unsuccessful attempt to spud in at Site BAH-7. Recovered material consisted of sandy carbonate ooze, lime sand and rubble, and fragments of friable limestone, all of Quaternary age. At Site 630 (Little Bahama Bank), the APC/XCB had an 88% recovery rate and the HPC had a 99% recovery rate. Site 630 provided an excellent record of the off bank transport of fine-grained sediment from the carbonate platform during the last 10 million years. Drilling at Site 631 (Exuma Sound) yielded sediments with very high sedimentation rates, a high organic carbon content, pyritized layers and a large amount of subsurface diagenesis. The APC/XCB had a 65% recovery rate. At Site 632 (Exuma Sound), the APC/XCB system yielded 59% recovery rates. The section was drilled with a rotary bit; however, drilling was terminated because of minor occurrences of hydrocarbons. Recovery of the hole generally was 21%. Site 633 (Exuma Sound) was drilled with APC and XCB coring achieving 48.7% recovery. The section contained aragonite which was interpreted as bank-derived material. Site 634, NW Providence Channel, was drilled with a rotary bit that resulted in 5.8% recovery. The site was abandoned because of poor hole conditions.

In summary, the ship operated quite well, although there are two major problems - a) the navigation system must be upgraded, and b) the core handling area should be protected before a serious accident occurs.

Discussion:

Von Herzen (WHOI): Could you summarize the problems of setting the re-entry cone in the Straits of Florida?

Austin: The major problem was that vibration problems along the drill string prevented setting of the cone. The vibration is the result of a streaming action that was produced when current at depth is going in an opposite direction to that at the surface.

Honnorez (UM): Has there been any improvement in the navigation system?

Garrison (ODP?TAMU): Nothing has been done yet as onboard equipment of that nature is the responsibility of SEDCO. TAMU, in the future, will purchase a GPS system.

Austin: I strongly advise the system be immediately upgraded as Leg 101 lost 6-12 hours waiting for satellite fixes.

PCOM expressed concern over the state of the satellite navigation system and recommended the problem be solved in the following consensus.

Consensus: The co-chief scientist for Leg 101 has identified a serious deficiency in the satellite navigation system. The Science Operator was advised to negotiate with SEDCO in order to correct the situation. The PCOM requests that this issue be reported on at the June PCOM.

LEG 102 SUMMARY

M. Salisbury, Leg 102 Co-chief, reported that Leg 102 had 2 objectives to re-enter Hole 418 A and to conduct borehole geophysical experiments. The hole was successfully re-entered and cleaned to a depth of 5863 m, then washed down to 6232 m. A logging tool that was presumed left in the hole during DSDP drilling was not found and appears to have been sheared off and lost outside the hole while it was being raised.

All logging tools worked well with the exception of the lateral log, which had calibration problems, and the packer, which developed mechanical problems down hole. Also the large scale resistivity experiment was not done.

The 3-axis magnetometer worked very well and produced good data. The susceptibility tool and the LDGO 12-channel sonic tool performed well although the multichannel sonic tool worked better in the lower two-thirds of the section. The borehole seismometer performed well until it experienced an electrical short. The borehole televiewer was deployed but not used due to problems in the hole. Finally, temperature profiles were made in the sediment section and at depth. Water samples were also taken at depth.

The oblique seismic equipment worked very well and produced a spectacular data set for R. Stephen.

Salisbury recommended that the hole be cased within the sediment section to prevent slumping which made the handling of wireline activities delicate and that wireline re-entry not be attempted until the hole is cased.

During subsequent discussions, it was pointed out that 2-3 days were lost due to technical problems with the acoustic unit on the beacon and problems with the re-entry tools. One to two days were lost due to the inexperience of the drilling crew and a few hours were lost due to positioning problems. Further, it was indicated that problems with the speed control on the winch made it difficult to conduct logging of holes at slow speeds.

535 PANEL REPORTS RELEVANT TO SHORT-TERM PLANNING (LEGS 104-114)

ATLANTIC REGIONAL PANEL

R. Buffler reported.

Leg 103 (Galicia)

ARP expressed concern that its September 1984 recommendation to move Site 4B upslope in order to sample oldest syn- and pre-rift sediments in a more abbreviated way was not followed. However, events at this meeting seem to have addressed this concern.

Leg 105 (Baffin Bay/Labrador Sea)

ARP was not aware of recent modifications concerning Baffin Bay/Labrador Sea drilling and asked that in the future all documents related to Atlantic drilling be copied to them.

ARP recommended that the co-chiefs be reminded of the importance of the Paleogene and Neogene paleoceanographic objectives in the region. ARP also recommended that if drilling at BB-3 is going well, the hole should be deepened to a total depth of 1600-1700 m. If Baffin Bay cannot be drilled, then the co-chiefs are advised to set a cone at LA-5 and drill to basement (about 25 days). Then they should proceed to LA-2A (HPC and rotary drilling - 10 days). Finally, ARP advises drilling LA-9A (about 13.5 days). This is Plan C as suggested by Labrador Sea drilling proponents.

Leg 110 (Barbados North)

Co-chief recommendations: C. Moore and A. Mascle.

Leg 107 (Tyrrhenian Sea)

Co-chief recommendatons: J. Mascle and R. Thunell. Alternates: M. Cita, K. Kastens, W. Ryan, Rehault.

ARP has yet to evaluate the drilling plan for the Tyrrhenian Sea because the Mediterranean WG has not yet met to finalize a drilling program. It was noted that a very successful multichannel seismic survey was recently conducted in the area and additional time is needed to process the data. The Chairman of the Med-WG was asked to schedule a meeting before June to supply the ARP Chairman with recommendations and priorities to be presented at the June PCOM and to give the Science Operator sufficient time to prepare the cruise.

After discussion, the PCOM strongly suggested that the data from the area be rapidly processed so that the Med-WG could meet and decide on drilling priorities prior to the June PCOM. L. Montadert (ARP Chairman) should at that time present a prioritized list of drilling objectives to the PCOM. The Committee noted that it is essential that the drilling schedule be presented at this time.

CENTRAL AND EASTERN PACIFIC PANEL REPORT

R. Buffler reported that CEPAC recommended that the Gulf of California drilling proposals be re-entered into scientific planning. The Panel reaffirmed its position that the Chile Triple Junction is conceptually important but more information and extensive marine geological and geophysical work is required before a drilling program can be developed. The Panel suggested that Chile Triple Junction should not be considered for drilling at this time.

CEPAC strongly recommended that two legs be devoted to EPR hydrothermal drilling at 13°N. The Panel continues to view DSDP 504B as exciting science but it remains a lesser objective in the short-term planning than the "new" ridge crest processes.

CEPAC reaffirms that one leg of Peru drilling and two legs of EPR hydrothermal work are of top priority. Further, the 504B and 504B area proposal of Mottl should be the back-up to EPR drilling. The Panel proposed the following:

Leg 111 EPR
Leg 112 EPR 504B and 504B (Mottl) area (back-up)

Leg 113 Peru

At the March 1985 meeting, CEPAC re-evaluated their short-term objectives as decided on at the Oxford, UK meeting in September 1984. This reconsideration has occurred in light of actions taken by the PCOM since September and the availability of new documentation concerning DSDP Hole 504B (Lithosphere Panel Proposal) and 504B area drilling (Mottl proposal).

Discussion:

Von Herzen (WHOI): I thought that two site surveys (U.S. and France) were scheduled for the Chile TJ area?

Brass (NSF): Reviews of the S. Cande proposal have not yet been received in our office and the French survey using the JEAN CHARCOT does not appear forthcoming.

Cadet (France): In view of the delay in a decision being reached on the Cande proposal and from logistical and scientific points of view, IFREMER has decided that it would be very difficult to conduct the site survey.

Larson (URI): Will the ODP position on the Chile Triple Junction (i.e. whether to keep it in the schedule or not) affect funding decisions of the Cande proposal?

Brass: The proposal will be judged based on its scientific merit. The decision of where it will be funded, whether it be in the ODP or Submarine G&G Offices of NSF, has not yet been decided. If the Chile Triple Junction is removed from the drilling schedule, the proposal may be referred to other appropriate areas of NSF.

SEDIMENTS AND OCEAN HISTORY PANEL REPORT

H. Schrader reported that SOHP recommends the development of a "sand core-catcher" to enhance the recovery of unconsolidated sand-dominated sequences, that continous "strip" photography (black and white and color) be considered for all cores recovered, and that a palynologist be included as a part of routine shipboard staffing.

Recommendations of co-chiefs:

Leg 107 (Tyrrhenian Sea): R. Thunell and M. Cita
K. Kastens and J. Mascle
Leg 108 (NW Africa): M. Sarnthein and W. Ruddiman
Leg 109 (MARK II): no suggestions
Leg 110 (Barbados N.): C. Moore
Leg 111 (EPR): no suggestions
Leg 112 (Peru Margin): E. Suess and L. Kulm

Leg 113 (Chile TJ): no suggestions
Leg 114 (Weddell Sea): J. Kennett and D. Futterer

SOHP recommended that, for short-range planning, the PCOM be advised of the following:

Leg 103 (Galicia): Continuous coring at and below the Cenomanian-Turonian boundary (L. Cretaceous).

Leg 105 (Baffin Bay/Labrador Sea): Requested 70 days for BB-3B and LA5 drilling. SOHP emphasized that the Paleogene records from both sites are necessary.

Leg 108 (NW Africa): SOHP strongly endorses a comprehensive L. Paleogene-Quaternary package proposed by Sarnthein/Ruddiman.

Leg 114 (Weddell Sea): SOHP recommends the following site priority rankings:
1-W1, 2-W2, 3-W4, 4-W5, 5-W10, 6-W6, 7-W7, and 8-W8.

SOHP remarked that the above program, in its entirety, ranks above the proposed Subantarctic traverse. SOHP also suggested that the operations times suggested by SOP are very optimistic and when more realistic times are used the proposed sites probably cannot be accommodated in a 70-day leg. Sites W6-W8 would rank above W5 if it can be demonstrated that the objectives can be achieved (i.e. using grain size and magnetic fabric in order to monitor AABW production through time and to examine water masses at different depths). SOHP considers this an important objective and suggests that the method be demonstrated on piston or gravity core samples as part of the site survey requirement.

SOHP recommended that SA8, SA2, and SA3 be drilling items of a lower priority during the Subantarctic transect. However, if W6-W8 cannot be drilled in the Weddell Sea it may be possible to use the three sites as alternatives.

Discussion:

Larson (URI): How do Sites W6-W8 compare to the SOP recommendations?

Schrader: Sites W6-W8 were given equally high priority by SOP. However, their ranking by SOHP is contingent on the demonstration of scientific objectives.

Hayes (LDGO): Did SOHP prioritize the 11 first priority sites proposed for Leg 108 drilling?

Schrader: The present number of priority sites is a distillation from 25 first priority listings.

Moberly (HIG): It must be stressed that if the panels do not prioritize their listings, the PCOM will have to do so. Therefore, it is in the best interest of the panels to do so since they have the expertise.

Consensus: It is the consensus of PCOM that SOHP prioritize the 11 first priority sites proposed for NW Africa.

LITHOSPHERE PANEL REPORT

J. Honnorez reported that LITHP continues its strong support for 504B drilling and for a higher priority to be set for lithosphere drilling within ODP. LITHP also reiterates the need to have K. Becker appointed as a member. LITHP further continues its strong support for TAMU drill pipe TV acquisition but recognizes the complexity of the problem and urges TAMU to take advantage of existing expertise within the community.

MARK I Drilling

LITHP reported that final site selection for MARK I (Leg 106) is presently not practical as the SeaMARC I survey has been delayed until May. However, the majority of LITHP preferred using Legs 106 and 109 to get two holes started rather than concentrating on a single hole.

East Pacific Rise Drilling

Because of the intensive collection of data along the EPR during the summer of 1985 (4 cruises: 2 ALVIN, 1 dredging, 1 MCS), LITHP decided to defer final site selection until early 1986 following the processing of the MCS data. LITHP hoped that other activities, such as staffing and logistics could proceed on schedule and not be delayed by decisions on detailed site selection. The Panel did, however, request that the co-chiefs be appointed as soon as possible so that they can take part in planning activities.

Discussion:

Larson (URI): Are co-chief nominations dependent on LITHP drilling plans?

Honnorez: It was understood by proposal proponents that their selection as a co-chief is not dependent on whether their proposal is or is not incorporated into planning. All proponents are aware of this and all would accept, if nominated, even if their proposals were not included in the drilling package.

Downhole Measurements

As reported earlier, several groups at Los Alamos, Sandia, U.S.G.S and Lawrence Livermore have expressed considerable interest in the development of high-temperature tools. LITHP has been made aware of a concept in which a tool pusher allows fluid to flow around the tools, sufficiently cooling them to a point where they can be used in hot holes. This appears to be extremely promising for using the borehole televiewer, sonic, caliper, 3-axis magnetometer and resistivity measurements using conventional equipment. However, it was suggested that large scale resistivity or OSE was probably not practical and that temperature and water sampling data would probably contain no useful information. Finally it was suggested that one of the major problems associated with EPR drilling lies in protectng the relatively temperature-sensitive logging cable.

LITHP also emphasized the importance of wireline re-entry to the progress of downhole experimentation.

Discussion:

Larson (URI): What is the schedule for the co-chief meeting for Leg 106?

Honnorez: A definite date has not been set but it could occur as early as June but probably in July/August.

Von Herzen: In regard to MARK drilling, is there a preference expressed in the two sites recommended?

Honnorez: Site preference depends on the results of the site survey. Both sites are on the MAR with one located 50 km south of the Kane FZ and the other closer to the Kane FZ to examine lithospheric thinning. The idea is to deploy two guidebases and drill until normal drilling conditions begin. We have chosen drilling in the Kane FZ as an alternative should this fail.

TECTONICS PANEL REPORT

R. Moberly reported that the TECP reconfirmed its priorities for drilling during Legs 111-113, as they were presented at the Austin PCOM. These are Peru drilling as its highest priority, Chile TJ as its second highest priority, and Barbados South as third highest priority.

TECP recommended the following persons for the co-chief scientist positions on Leg 110 (Barbados N.): J. Ladd, A. Mascle, C. Moore, and M. Marlow.

POLLUTION PREVENTION AND SAFETY PANEL REPORT

A. Mayer reported.

Drilling in Hot Hydrothermal Areas

The Panel discussed potential safety considerations from drilling in hydrothermal areas, such as steam flashes. It was agreed that specialist advice should be sought from experts in the area of hot rock drilling such as the Los Alamos Laboratories.

Safety Manual and Related Matters

The Safety Manual is being revised and will need Panel review prior to publication as a special issue of the JOIDES Journal. Early publication is recommended to assist the Science Operator in negotiations for drilling permissions with coastal authorities. It was recommended that guidelines for data to be provided for safety reviews should be included in the "Guidelines" special issue of the JOIDES Journal.

Leg 105 (Baffin Bay and Labrador Sea)

Baffin Bay sites - Approved by the Safety Panel (with conditions) at August 1984 meeting (3B-1, BB-3A, and BB-3B).

LA-5 - Site approved as proposed noting that there may be a need to move around the site in order to avoid boulders (to 1486 m).

LA-5A - Approved on condition of site relocation to the cross-point of lines 12 and 14 (to 650 m). Site was relocated because of poor record quality and lack of crossing line at the proposed location.

LA-9 - Approved with the recommendation that the site be located at the cross-point of lines 8N and 4E (to 850 m). Site was relocated for same reasons as LA-5A.

LA-2A - Approved as proposed to 903 m depth.

LA-2B - Approved as a re-entry site drilling to basement. Relocated 7 kms west to shot-point 6340 on line BGR 17 (to 1835 m).

LA-7 - Not approved because insufficient information was available at this time. If more information becomes available safety review can be obtained by mail.

LA-4 - Approved as proposed (to 600 m).

LA-4A - Approved to a depth of 700 m at shot-point 1186 on line 73 I 13-70164.

Leg 104 (Norwegian Sea)

VOR-2A - Approved to 1500 m and to be drilled first.

VOR-2B - Approved on the condition that there are no significant hydrocarbon shows at site 2A (to 1000 m).

VOR-1 - Approved as proposed to 1400 m on the same condition as 2B.
Note: The Panel expressed concern with the general location of sites 2A, 2B, and 1 at a structurally high position with a large potential drainage area. Drilling was approved on the condition that the down dip location (2A) be drilled first to confirm the absence of a drilling hazard.

VOR-3A - Approved to 1500 m.

VOR-3B - Approved to a depth of 1300 m with a recommendation to move the site N (seaward) to shot-point 1400 on line C/194. A further condition is that site 3A must be drilled before 3B. Site was relocated from the top of a structural high.

VOR-4 - Approved as proposed (shot-point 9600 on line NH-1).

VOR-5 - Approved for hydraulic piston coring to sediment refusal or 300 m, whichever comes first.
Note: Previous drilling in the area (DSDP Site 341) has demonstrated shallow biogenic gas and fluoresence suggestive of migrated hydrocarbon. For this reason, rotary drilling was not approved in this area.

Leg 106 (MARK)

MARK-1A - This is the bare rock site and was approved as proposed.

MARK-1B - Nodal basin drilling was approved as proposed.
Note: Final sites will be chosen following a SeaMARC survey and using TV and imaging sonar.

536 SHORT-TERM PLANNING

LEG 104 (NORWEGIAN SEA)/LEG 105 (BAFFIN BAY/LABRADOR SEA)

Legs 104 and 105 were considered as a single package because decisions based on weather constraints on Leg 105 would impact planning for Leg 104.

At the Austin PCOM, Leg 104 was assigned 47 days (total) with 41 drilling days. PCOM at that time requested that the drillship depart Stavanger, Norway no later than 15 August 1985. After drill times were estimated, the Science Operator developed 2 sets of scenarios:

SITE	ESTIMATED TIME (DAYS)	
	Plan A	Plan B
VOR 2A (re-entry)	22	24
VOR 2B (re-entry)	19	25
VOR 4	5	11
VOR 5 (HPC only)	1	
	47	60

There are presently 47 days assigned to reach the scientific objectives (42 drilling + 5 transit days). The Science Operator found it difficult to achieve cruise objectives with the 47-day time frame and asked that 8 days be added to increase the total number of days to 55 days. These 8 days would come from what was taken from Leg 102 and by delaying the Stavanger departure date (Leg 105) from 15 August to 23 August.

Discussion:

Schrader (OSU): What becomes of the 8 days, if the most optimistic scenario (Plan A) works?

Garrison (ODP/TAMU): In that case we would still leave Stavanger on 23 August instead of 15 and we would not lose any ice-out time because the optimum days for ice out in Baffin Bay occur no earlier than the last week in August and no later than the second week in September.

Von Herzen (WHOI): At Austin, PCOM wanted the ship to leave Stavanger on the 15th in order to get to the Labrador Sea Site (LA-5) and be ready so that when the ice cleared out drilling operations could begin to optimize the time spent in Baffin Bay. This proposal plan may compromise these objectives.

Malpas (Canada): The deferral of the start date means that if the ship goes straight into Baffin Bay (BB-3) from Stavanger, you delay the LA-5 drilling. If you return to LA-9 that results in additional transit time. If that occurs that time puts you in early November which is the beginning of the storm period.

Larson (URI): The real compromise is that the whole Labrador Sea drilling plan is delayed to the point that it conflicts with the storm period.

Malpas: With the additional transit time you may completely lose LA-5. Is it possible that the ship could take on more fuel and steam at 12-12.5 knots into Labrador Sea from Norway in order to save time?

Garrison: This is very easily arranged and estimates show that time could be saved by going at 12 knots and would not really increase fuel costs by very much.

Von Herzen: Could the scientific objectives of Leg 104 be reviewed?

Larson: Voring Sites 2A and B will test the dipping reflector hypothesis and Sites 4 and 5 will address paleoenvironmental considerations and will sample Eocene and Quaternary environments. Voring 2A will sample shallow objectives and 2B will be drilled to basement to sample Reflector K.

Kastner (SIO): Since the objectives of VOR 2B call for drilling 450 m of sediment followed by 1 km of drilling into basement, would ARP consider drilling only 100 m or so into basement?

Austin (UT): At the last ARP meeting, the co-chiefs for Leg 104 suggested drilling VOR 2A then drilling Site 4 with no attempt at Vor 2B. Site 4 is very important in terms of paleoenvironmental objectives.

Larson: How would ARP react if there was an omission of some objectives of VOR 2A and 2B? Would there be serious alterations in the overall objectives?

Austin: ARP would probably place a major emphasis in VOR 2A, if adjustments were in order, then steam to Site 4.

It was the consensus of PCOM that the paleoenvironmental objectives remain as a backup to drilling the dipping reflectors. Presently the plan calls for drilling the dipping reflectors and resolving Reflector K. If these objectives cannot be reached then the ship should go to Site VOR 4. Honnorez moved; Schrader seconded.

MOTION: Leg 104 (Norwegian Sea) includes as first priority objectives drilling at VOR 2A to resolve the nature of dipping reflectors leaving the co-chief scientists the freedom to decide when to stop drilling 2A and dedicate the remainder of the 40 working days to the leg to either resolve the dipping reflectors at VOR 2B or to go to Site 4 to pursue paleoenvironmental objectives.

Vote: for 11, against 0, abstain 1.

Larson: Does the proposed 70-day length of Leg 105 cause TAMU/SEDCO problems?

Garrison: The 70-day length causes problems in 4 areas: weather, morale, logistics and expenses (minor). If Leg 105 is 70 days (based on a Leg 104 at 47 days) then the ship arrives in St. John's approximately 2 November which is the storm season. Discussions with the co-chiefs of Leg 105 indicated that good information could be obtained by doing less at LA-5 which results in a leg that is less than 70 days. A series of options based on a 60-day leg had been discussed between Garrison, the Co-chiefs and the JOIDES Office (Plans A-D).

The co-chiefs for leg 105 (Srivastava and Arthur) have suggested a further compromise plan with 62.5 total days. This compromise, known as Plan E, involves a compromise between the objectives at LA-5 and LA-9. The result is a new LA-5A that is approximately 27 km NE of LA-5. The objectives of this site lie in the upper 650 m of the sequence with the penetration of reflector R2 (Oligocene) as the deepest objective.

During discussion, it was stated that the 8-day delay at the beginning of Leg 105 and the present arrival date in St. John's of late October/early November could combine to affect the attaining of the scientific objectives. Therefore, a 70-day length is needed for Leg 105. The Science Operator replied that if all goes perfectly then 70 days is reasonable but in reality, the weather, problems with the ship and the science objectives combine to make a 70-day leg not feasible.

The PCOM asked if a port call change from Stavanger to Rekjavik would aid the Science Operator in planning logistics. The Science Operator stated that change of ports would create additional problems in resupplying the ship and the time potentially saved does not outweigh the problems that would be created.

The following motion was moved by Malpas and seconded by Moberly.

MOTION: The Science Operator should attempt to arrange that Leg 105 commence on a date such as not to compromise the original scientific objectives of the drilling plan (i.e. 25 days for drilling at BB-3B and 25 days of drilling to basement at LA-5) and to finish in St. John's by the end of October. The port of departure for Leg 105 should be arranged to facilitate operational procedures.

Vote: for 8, against 1, abstain 3.

LEG 106

Leg 106 is designed as an engineering test leg and prepares the groundwork for Leg 109 (MARK II) scientific operations. The backup for bare rock drilling is drilling in the Kane Fracture Zone at the ridge-transform intersection basin. The second priority is drilling along the fracture zone valley wall and to the north of the basin. It should also be noted that all holes are single bit objectives.

In January 1984, the PCOM set a limit of 30 days for bare rock drilling after which the ship was to proceed to other objectives in the fracture zone. Presently, Leg 106 is scheduled to last 40 operational days plus 17 transit days, for a total of 57 days.

J. Honnorez (co-chief) proposed an alternative plan to the January 1984 directive in which he suggested using 30 days to set two guidebases and to proceed with drilling and using the remaining 10 days to drill in the R-T nodal basin. The PCOM indicated that the plan was a reasonable alternative to the January 1984 decision and decided to readdress the issue at the June PCOM after the SeaMARC site survey of the area is completed.

INTERMEDIATE SHORT-TERM PLANNING

Leg 107 (Tyrrhenian Sea) Co-chief Recommendations

PCOM discussed the possible inclusion of an ESF representative (M. Cita) as a co-chief scientist. Discussion reflected a cautious reluctance concerning the inclusion of a non-ODP member to such a position; however, it was indicated that similar situations had occurred during the DSDP. PCOM agreed the following co-chief nominations for Leg 107 as advice to the Science Operator: J. Mascle, K. Kastens. Also nominated were M. Cita, W. Ryan, J-P. Rehault, R. Thunell.

Leg 108 (NW Africa)

M. Sarnthein and W. Ruddiman were nominated as co-chiefs by the ARP and SOHP and PCOM accepted these nominations and passed them to the Science Operator advising him to leave sufficient time for ARP and SOHP to make further nominations in the advent that they decline the invitation. PCOM also requested that a drilling plan with priorities be readied by the co-chiefs and which would be presented at the June PCOM.

Leg 109 (MARK II)

T. Juteau and W. Bryan are the co-chief scientists.

Planning for Leg 109 will begin in April 1986. However, it was indicated that a geophysicist should be added to the science staff.

Leg 110 (Barbados North)

PCOM nominated the following as possible co-chiefs: C. Moore and A. Mascle with alternates J. Ladd, W. Bryant, M. Marlow.

Discussion:

Larson (URI): Is the wireline packer available for Leg 110?

Fornari (LDGO): The packer, which was deferred due to budgetary constraints, will not be ready by Leg 110 because development and engineering will not result in a prototype until 1987. Even if funds were made available, the packer may not be ready by Leg 110.

Von Herzen (WHOI): How much money is needed to develop the packer?

Fornari: If $200K were available, the packer could be developed.

It was the view of PCOM that the delay in the development of the wireline packer is an example of how the lack of appropriate funds is impacting on the science of the program. PCOM suggested that LDGO investigate their present budget and use the funds available to develop the packer. The Wireline Operator's response was that the funds needed for development are not in the FY 85 budget. R. McDuff, PCOM DMP liaison, stated that the DMP was told at the September 1984 meeting that there was no TAM Packer hardware on which to spend FY 85 funds. LDGO suggested that they will refocus their program in FY 86 to develop the wireline packer. It was recommended that a list of tools (with priorities) be established which would facilitate a reference listing when budgetary problems occur. This was officially expressed in the following consensus.

Consensus: A subcommittee should be formed to prepare a PCOM priority listing of items from which short-term decisions on purchasing will be made. The committee will be composed of the PCOM Chairman (R. Larson), R. McDuff, and R. Von Herzen. The list will be compiled after reviewing previous lists and adjustments to the present list will be made as they are needed.

Fornari: The LDGO logging group will develop scenarios that will deal with the lack of funding as of 1 October 1985.

It was further recommended that the panels be notified concerning the lack of the new wireline packer on Leg 110 and suggested that they review the possible impact on their scientific objectives.

Leg 111 (EPR Drilling)

Co-chief scientists recommendations:

LITHP: Bougault/Macdonald (alts. Francheteau, Natland, Thompson, Langmuir, Batiza, Becker, Von Herzen)

CEPAC: no recommendations

It was the consensus of PCOM that Bougault and Macdonald be invited as co-chief scientists for Leg 111 and that there be no prioritization of the alternates. J-P. Cadet abstained from the PCOM consensus.

Leg 113 (Chile Triple Junction)

R. Buffler proposed the following motion which was properly seconded by Beiersdorf:

MOTION: Remove the Chile Triple Junction from the current schedule due to logistical and not scientific issues.

Vote: for 8, against 4, abstain 0.

After further discussion a second motion developed that was proposed by Kastner and seconded by Hayes.

MOTION: Defer the decision on the extra time issue until there is more information on Legs 107-114 (June PCOM).

Vote: for 10, against 0, abstain 2.

Consensus: PCOM agreed that a "watchdog" system be put in place to aid in planning whereby a PCOM member would be assigned to compile a 2-page summary with maps and act as a proponent for one of the legs up to and including the Weddell Sea. The JOIDES Office will compile the information which will be discussed at the next PCOM meeting.

Watchdogs and their assigned packages are as follows:

Tyrrhenian Sea - J-P. Cadet
NW Africa - H. Schrader
MARK I & II - J. Honnorez
Barbados N. - R. Buffler
EPR I & II - R. McDuff (will develop 1- & 2-leg scenarios)
Peru Margin - M. Kastner and H. Schrader
Weddell Sea - D. Hayes
504B - JOIDES Office

("Watchdog" reports are needed by the JOIDES Office no later than 1 June.)

Consensus: There are a sufficient number of important scientific opportunities (palaeoenvironment) in the Chile Triple Junction area that would be lost if some attempt at drilling is not done. Therefore the area should be kept in competition for future science planning.

Schrader agreed to ask SOHP to consider the submission of a proposal to address palaeoenvironment objectives in the SE Pacific as part of a transit leg.

537 PANEL REPORTS RELEVANT TO LONG-TERM PLANNING

WEDDELL SEA DRILLING

There was agreement among the PCOM that the length of the initial Weddell Sea leg be extended to the 70-day limit as suggested by the Science Operator. However, some members of PCOM objected to assigning to the leg the maximum number of total days at this time. It was suggested, on the other hand, that the assigning of the 70 days would be a minimum commitment for which to continue planning.

The PCOM requested that drilling plans be prepared for presentation at the June PCOM.

SOUTHERN OCEANS PANEL REPORT

As the Panel would not meet until 22 April, R. Larson distributed copies of a letter from the SOP Chairman, J. Kennett. The letter stated the following:

"The Southern Oceans Regional Drilling Panel strongly recommends to the Planning Committee that the proposed Subantarctic Leg in the South Atlantic remain as part of the future drilling plans. The scientific objectives are considered to be of high priority, although of slightly lower priority than most of the Weddell Sea objectives. The data from the Falkland Plateau and the anticipated results of Weddell Sea Drilling provide a framework for evaluation and interpretation of Subantarctic sites, and can reasonably be expected to yield as coherent a set of results as that from any other comparable region.

Two legs will also allow full utilization of the brief austral summer weather-window (January-April) while the drilling vessel is making one of its rare visits to the Southern Hemisphere. Given the severe logistic constraints and the large number of scientific objectives, a second Southern Ocean leg in the South Atlantic will be of major importance.

Like the Weddell Sea, very high priority is given to the completion of drilling objectives on the Kerguelen Plateau-east Antarctic margin, including the extension of the north-south transect between Kerguelen Island and Broken Ridge. Our mail vote resulted in the highest priority for the other objectives being given to the transect between Kerguelen Island and Broken Ridge. The next highest ranking was given to the Adelie Land Coast drilling, although realistically it does not compete as an Indian Ocean objective because of its location far to the east. The next priority in the ranking was the Crozet Plateau-Fracture Zone drilling, followed closely by Agulhas Plateau and lastly by the central Antarctic-Australian mid-ocean ridge (cold-spot trace).

Given the remoteness of the Kerguelen-East Antarctic margin area coupled with the large number of drilling objectives, our panel strongly requests the Planning Committee investigate the possibility of crew-change-resupply at Kerguelen Island using a second vessel."

Discussion:

Garrison (ODP/TAMU): SEDCO reports that two 51 1/2-day legs, with a 3-day port call in between (at Kerguelen), are needed in order to conduct the crew change-resupply operation. This assumes the ship would leave from Durban, go to the Kerguelen area, do 40 days of operations, and return to Kerguelen Island. This also assumes that another ship would bring out a new crew and 25 tons of supplies with no new drill pipe. The RESOLUTION would then do another 40 operational days at a different site and then transit 8 days to Perth. The supply ship would need to bring out 110-120 new people to make the crew change. This plan is possible if a supply ship is available.

Cadet (France): The MARION DUFRESNE might be available to fulfill the role of the supply vessel. The MARION DUFRESNE is capable of transporting approximately 90 passengers, 25 tons of cargo and approximately 250K gallons of fuel.

During discussion other ship possibilities were mentioned such as the use of Australian supply ships and former whaling vessels based in South Africa. However, it was decided that the DUFRESNE was the best possibility. The PCOM asked if there would be problems scheduling the DUFRESNE if a decision was delayed until June. TAMU agreed to contact ODP-France to discuss scheduling and the French PCOM representative would contact the group in charge of the DUFRESNE.

INDIAN OCEAN PANEL REPORT

The PCOM received the following revised list of drilling objectives with scores of the voting and estimated drilling legs.

		Score	Legs
1.	Kerguelen-Gaussberg, first leg	9.50	1
2.	90° East Ridge	8.25	1
3.	Neogene Package	8.00	1
4.	Red Sea	7.63	1
5.	SEIR	7.38	<½
6.	Broken Ridge	6.88	½
7.	Kerguelen, second leg	6.75	<1
8.	Argo AP & Exmouth Pl.	6.75	1
9.	Cent. Ind. Basin & Distal Bengal F.	6.25	1
10.	Davie Ridge	5.00	<½
11.	SWIR FZ	4.88	<½-1
12.	Chagos-Laccadive-Mascarene	4.63	<½

13.	Makran	4.50	½-1
14.	Agulhas Pl., 1st site	3.50	<½
15.	Rodriquez TJ	2.88	½-1
16.	Fossil Ridges	2.25	<½-1
17.	Cold Spot (Australian-Ant. Discordance)	1.75	½ ?
18.	Agulhas Pl., 2nd site	1.25	<½
19.	W. So. Australia	1.13	1
20.	N. Somali Basin	0.63	1+

The IOP indicated that these objectives and their arrangement into a schedule are constrained by severe weather limitations, especially for the Kerguelen-Gaussberg (1 and 7) and northern Arabian Sea objectives (3 and 13). The IOP discussed several possible schedules which are presented in the full minutes of the 20-22 March 1985 meeting.

Red Sea Working Group Report

Three themes that are unique to the Red Sea area emerged from the March 11-13, 1985 meeting which was held at LDGO. These are:

1. Evolution of the lithosphere as expressed by the nature of the igneous rocks produced through the transition from continental to oceanic rifting.
2. Hydrothermal activity and metallogenesis in a young rifted margin.
3. Sedimentary history of a young rifted margin.

They then proposed various strategies for addressing these themes and an ideal drilling program involving 11 sites was developed:

1. Axial Trough
2. Atlantis II Deep (natural laboratory)
2a. Thetis Deep (alternative to AII deep)
3. Nereus Deep (possible natural laboratory)
4. Kebrit Deep
5. Mabahass Deep
6. Shaban Deep
7. Bannock Deep
8. Zabargad Ridge
9. Coral Seapeak
10. No. Red Sea Site
11. Main Trough (Sudanese Delta)

The Red Sea Working Group concluded that one leg would be needed to accomplish the primary objectives of the Red Sea.

WESTERN PACIFIC PANEL REPORT

R. Moberly reported that WPAC presented the following preliminary list of priorities for drilling in the western Pacific region. A firmer ranking will result from the next WPAC meeting in August.

Region	Rank
So. China Sea	1
Nankai Trough	2
Banda Sea	3
Okinawa Trough	4
Sulu Sea	5
Japan Sea	6
Bonin Trench (Toe)	7
Sumba Region, Trench Toe	8
Bonin Trench	8
Coriolis Trough	10
Bonin Forearc	11
D'Entrecasteau Ridge	12
Lau Basin	13
South of Taiwan	14
Palawan Toe	14
Ozborn Smt/Louisville Ridge	16

Site surveys needed to better define the high priority regions include: Banda Sea, seismic reflection and swath mapping; Bonins, MCS lines in forearc basin, sampling of serpentine diapirs; and Sumba forearc and South of Taiwan, MCS.

WPAC supports workshops on arc systems (Hawkins) planned for June 1985 in La Jolla and Western Pacific drilling planned for Singapore (Circum-Pacific Min. Resources conference) in 1986.

SEDIMENTS AND OCEAN HISTORY PANEL REPORT

H. Schrader reported that SOHP consulted the COGS-2 document in determining Indian Ocean and Western Pacific Drilling. Rankings are as follows:

Indian Ocean Drilling

1. Amery (Antarctic) margin-Southern Kerguelen transect
2. Oman-Owen Ridge-Somali margin-Indus Cone, Neogene package
3. Somali Basin deep hole (Mesozoic Tethys), one deep hole
4. North Kerguelen-Southeast Indian Ridge transect polar front
5. Exmouth Plateau-Argo Abyssal Plain transect
6. Chagos-Laccadive Ridge (or 90° East Ridge)

Western Pacific

In addition to areas of interest summarized at the last meeting, further discussion (prioritization will await formal liaison with WPAC and CEPAC) revealed strong interests in:

1. Great Barrier Reef program
2. Queensland Plateau-Ontong Java Plateau
3. Scott Plateau and environs
4. Pore water chemistry-diagenesis in accretionary (generic) prisms
5. Volcanic episodicity, eolian transport, tephrochronology (generic)

Riser Targets

1. With stated limitations (1800 water depth; 1992 start)
   a. penetration of evaporite sequences (Med., Red Sea, S. Atl.)
   b. penetration of gas hydrates (Sea of Japan, Sea of Okhotsk, Cariaco Trench, Chilean Margin).
   c. Continental slopes (Niger Delta, NW Africa Mesozoic)

2. SOHP argued strongly that longer riser (3 km) would significantly enhance capabilities and the number of attractive targets.

LITHOSPHERE PANEL REPORT

J. Honnorez reported for LITHP.

Indian Ocean

Priorities are:
1. Red Sea - L1 (Working Group)
2. Aus-Ant Discordance - L6 (Langmuir)
3. SW Indian Ridge Fracture Zone - L4 (Dick and Natland)
4. Carlsberg Ridge - L2 (Natland)

If a good hot spot trace program (e.g. 90° East Ridge) is formulated it would place that second only to the Red Sea. If Brocher can show reasonable possibility of solving technical probelms then Crozet Basin (L7) would be ranked below Dick and Natland but above Natland.

IMPORTANT: These are LITHP's priorities only within the Indian Ocean. Back-arc spreading center drilling in the Western Pacific is considered to be a significantly higher priority than all of the above projects.

Western Pacific

Major progress planned at next meeting when results of Hawkins' workshop are available.

TECTONICS PANEL REPORT

R. Moberly reported on TECP recommendations for Indian Ocean Drilling. A brief justification is provided for the top four choices. The scores, as well as the range of scores and proposal proponents, are also presented.

1. Makran accretionary prism and slope basins (Leggett proposal) 8.75; 6-10. Excellent opportunity to address rates of deformation and uplift in clastic-dominated prism, and transition from slope-basin sediments to basement.

2. Intraplate deformation and fluid flow (Weissel et al.) 8.43; 7-10. Innovative plan to determine timing and rates of deformation of long wavelength flexures in an intraplate setting, and to address how fluid flow influences high heat flow.

3. (tie) Southwest Indian Ocean fracture zone (Dick and Natland) 7.0; 2-9. Opportunity to document vertical sequence of rock types and fabrics, in a setting characterized by slow relative plate motions, for comparisons with deformed parts of ophiolites on land.

4. (tie) Bengal-Indus fans (Curray et al.) 7.0; 3-10. Addresses a fundamental on-land tectonic problem, the uplift history of a collisional orogen, the Himalayas. Distal fan facies may reflect timing and rate of uplift as well as eustatic sea-level changes.

Targets 5-10 were ranked as follows. Comments in the minutes explain that drilling on Kerguelen (7) and in the Red Sea (10) would have ranked higher if proposals at hand had included specific tectonic objectives:

5.	90° East Ridge, Broken Ridge hot spot targets	6.50
6.	Broken Ridge rifting and uplift (Weissel et al.)	6.43
7.	(tie) Chagos-Laccadive ridges (Duncan; Heirtzler)	6.25
7.	(tie) N. Somali Basin (old Tethyan crust)	6.25
7.	(tie) Kerguelen	6.25
10.	Red Sea (proposal of RS-WG presented by Cochran)	6.20

Riser Drilling

TECP suggested that the earlier stages of the rifting process could possibly be addressed during riser drilling.

Discussion:

After the panel presentations discussion centered on a philosophical difference between LITHP and WPAC concerning the plan for focused drilling in a back-arc region. WPAC presently does not believe that the controls are sufficiently understood to allow for detailed planning. It was decided to defer further debate on the issue until after a 25-27 June workshop on the matter has convened and reported on in August.

538 LONG-TERM PLANNING

The PCOM Chairman suggested that since there would not be another meeting before June, it is important for PCOM members to study the complete minutes of the Indian Ocean Panel, the Lithosphere Panel, and the Tectonics Panel in order that detailed planning for the Indian Ocean could be conducted at the next PCOM. The SOHP and SOP chairmen are to be consulted for more detailed information on their panel's high priority objectives and this information will be sent in the June PCOM meeting package. A summary of each panel's objectives for the Indian Ocean is presented in Appendix A.

R. Moberly and G. Brass expressed disappointment that detailed planning of the Indian Ocean, which was the purpose of this meeting as decided in Austin, did not occur at this meeting.

R. Moberly: In view of the general responsibility of planning drilling three years in advance, one of the two main purposes of this meeting was to plan general drilling in the Indian Ocean. I ask that the minutes reflect my disappointment that we were unable to do so.

The PCOM asked the SOP for more specific details concerning Subantarctic and Weddell Sea drilling.

Each PCOM member was asked to bring a map with their own favorite drilling plan for the Indian Ocean.

539 DATE OF NEXT MEETING AND MEETINGS SCHEDULE

Future PCOM meetings are:

25-27 June 1985 - Hannover, FRG
8-10 October 1985 - Narragansett, RI
4-7 February 1986 - La Jolla, CA (with panel chairmen)

PCOM members were advised to plan for three full days at the PCOM meeting in Hannover.

539 OTHER BUSINESS

PANEL MEMBERSHIP

At the EXCOM Narragansett meeting the PCOM Chairman was advised to fill panel vacancies at the April PCOM meeting if the membership issue was not resolved. However, due to the potential for membership by the ESF/Australia consortium and the UK, the EXCOM at Miami advised the PCOM Chairman not to fill those slots within the panels until the June PCOM.

The PCOM Chairman said that it was necessary to fill the chairmanship slots of two JOIDES panels - TECP which was chaired by J. Leggett (UK) and SSP which was chaired by J. Jones (UK).

The following motion was moved by Beiersdorf and seconded by Malpas.

MOTION: The PCOM approves the appointments of J. Peirce as chairman of the Site Survey Panel and D. Cowan as chairman of the Tectonics Panel.

Vote: for 12, against 0, abstain 0.

The PCOM Chairman requested nominations for the chairmanship of TEDCOM as soon as possible.

SCIENCE OPERATOR LIAISON WITH JOIDES PANELS

The PCOM Chairman has approved the attendance of ODP/TAMU Staff Scientists as panel liaisons. In agreeing to this liaison, the PCOM Chairman has advised the staff scientists in the following terms:

Attendance at panel meetings is to facilitate information transfer between ODP/TAMU and the JOIDES panels. Staff scientists are to provide technical and logistical information about the ship, the instruments and the program so that the panel members have a better idea of what's possible, impossible, and equally importantly, marginal. In return, attendance at these meetings gives staff scientists some insight into possible upcoming scientific programs, plans and policies. Staff scientists are to participate in this information transfer but not to participate actively in the formulation of the science. Staff scientists must not mistake scientific programs, plans and policies made by the panels as the final words on these subjects. All of this information is funnelled up to the Planning Committee which is the final arbiter of the scientific program.

Staff Scientist	Speciality	Liaison For
Dr. Andrew Adamson	Igneous Petrology	LITHP
Dr. Christian Auroux	Geodynamics	SSP
Dr. Jack Baldauf	Diatom Micropaleontology	ARP

Dr. Brad Clement	Paleomagnetics	IOP
Dr. Audrey Meyer	Sedimentology	TECP & WPAC
Dr. Amanda Palmer	Radiolarian Micropaleontology	SOHP
Dr. Elliott Taylor	Physical Properties	CEPAC & DMP

Further liaisons will be announced once staffing is completed.

REVISED GUIDELINES FOR PROPOSAL SUBMISSION

Guidelines for the submission of proposals/ideas were revised by the JOIDES Office and were presented to the PCOM for approval.

The guidelines were reviewed by the PCOM and the following changes were agreed:

Reword section C.2 to read:

Proponents are asked to identify available data in three categories:

a) The primary data necessary and sufficient to support the scientific proposal. The ODP Databank is authorized to duplicate and distribute these data as needed for ODP evaluation and planning procedure.

b) Other data relevant to the proposal which may be obtained from publicly accessible data bases in the U.S. and elsewhere.

c) Data which will eventually be available for public access but has release clauses imposed by the data holder (proponent). These data are not normally considered as part of the evaluation of the scientific merit of the related proposal.

Section D should be changed from 24 months to 36 months to be consistent with the flow diagrams shown in Figure 1.

TERMS OF REFERENCE

The JOIDES Office has also revised the Terms of Reference. The revision was presented to PCOM for approval.

The following motion was moved by Moberley and seconded by Buffler.

MOTION: The words "task group" be removed from Section 1, and Section 3.2 and that Section 6 be deleted. Section 9 should replace Section 6 and within that section, the words "task groups" be removed and replaced with "working groups."

Vote: for 12, against 0, abstain 0.

Consensus: The concept of working groups should be revised to the original wording as written at Morpeth PCOM and the Swindon EXCOM acceptance.

The PCOM expressed its sincerest thanks to R. Moberly for his service to the Committee as his period of membership has expired. D. Hussong (HIG) will replace Moberly.

The PCOM thanked H. Stewart for his hospitality in hosting the PCOM meeting in Norfolk and the meeting was adjourned.

INDIAN OCEAN PROPOSALS - PRESENT RANKING BY PANELS

TECP, Mar. 18-20, 1985	Score
Makran	8.75
Intraplate Deformation	8.43
SW Indian Ridge Petrology }	7.00
Bengal-Indus Fans }	7.00
90° East Ridge-Broken Ridge Hot Spot	6.50
Broken Ridge, Uplift and Rifting	6.43
Chagos-Laccadive Hot Spot }	6.25
N. Somali Basin Deep Hole }	6.25
Kerguelen Basement }	6.25
Red Sea	6.20
S. Australia Quiet Zone	6.00
Timor Collision	5.62
S. Australia, Old Ocean Crust	5.50

IOP, Mar. 20-22, 1985	Score
Kerguelen, One Leg	9.50
90° East Ridge Hot Spot and Paleoceanography	8.25
Neogene Package	8.00
Red Sea	7.63
SE Indian Ridge Transect	7.38
Broken Ridge, Uplift & Rift	6.88
Kerguelen, Second Leg }	6.75
Exmouth-Argo Transect }	6.75
Intraplate Deformation	6.25
Davie Ridge	5.00
SW Indian Ridge Petrology	4.88
Chagos-Laccadive Hot Spot and Paleoceanography	4.63
Makran	4.50

SOHP, Feb. 21-23, 1985

Kerguelen-Amery Transect
Neogene Package
N. Somali Basin Deep Hole
Kerguelen-SE Indian Ridge Transect
Exmouth-Argo Transect
Chagos-Laccadive Paleoceanography
Subantarctic Transect

LITHP, Feb. 26-27, 1985

Red Sea
(Hot Spot Trace)*
Cold Spot
SW Indian Ridge Petrology
(Crozet Basin)**
Carlsberg Ridge

*If a good program is formulated.

**If technical problems are solved.

SOP, Apr. 9, 1985 letter from Kennett

Kerguelen-Amery Transect
Subantarctic Transect
Kerguelen-SE Indian Ridge Transect
Adelie Land Coast
SW Indian Ridge Petrology
Agulhas Plateau
Cold Spot

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June 7, 1985

TO: Planning Committee Membership

FROM: Roger Larson, PCOM Chairman Roger

SUBJECT: FY 86 Budget

By now you will have received a memo from Jim Baker dated May 24, 1985 entitled "FY 86 Budget for the Ocean Drilling Program." I believe it is an accurate summary of budget discussions up to the EXCOM meeting just completed in Washington, DC.

At the Washington, DC EXCOM meeting, I presented the attached prioritized list (Figure 1) from the PCOM Budget Subcommittee (Beiersdorf, Honnorez, and myself) that is our top to bottom listing of the importance of items TAMU has eliminated from the program or their operation in order to meet FY 86 budget constraints. I also presented Figures 2, 3, and 4 that are the potential specific and long-term programmatic impacts of eliminating these items from the program plan. It is important for you to understand that none of the items on Figure 1 are included in the present FY 86 draft program plan.

Because of the impacts listed on Figures 2, 3, and 4, I reported to the EXCOM that the PCOM Budget Subcommittee finds the present program plan to fall "clearly short" of a substantial percentage of the original objectives of the program. Therefore, in the opinion of the Subcommittee, the program plan and budget are scientifically unacceptable. That conclusion leads to Figure 5, where we define minimum acceptable, minimum reasonable and optimum budgets. To quote Jim Baker from the transmittal letter for the FY 83 Program Plan, "As with any major undertaking, there is a reasonable degree of latitude between 'optimum' and 'acceptable' though any program has a choke point beyond which the limitations make it inadvisable to proceed." That question is now upon us. The PCOM Budget Subcommittee has deferred that question to the full PCOM membership, but at this time we seriously question the long-term viability of the originally proposed program with the present financial constraints.

After reporting the above to the EXCOM, I think that there was little doubt in their minds that the program should proceed, but I emphasize that this question should also be considered by the full Planning Committee in Hannover. There was also clear concern in the minds of the EXCOM that COSOD objectives were seriously impacted and that new programs and engineering advances were jeopardized. This concern resulted in a motion from the EXCOM to urge NSF "to vigorously pursue a course of action leading to the early re-establishment of a Memorandum of Understanding providing for Soviet Union participation in the ODP." It also led to the formation of an EXCOM Budget Subcommittee that is charged with looking carefully at all FY 86 ODP budgets in conjunction with any drilling program objectives that we might devise. I have invited that Subcommittee consisting of Hans Durbaum (Chairman), Bernard Biju-Duval, and Ross Heath to join us at Hannover for these discussions. I expect this to take place during the latter half of the meeting after we have devised a preliminary drilling plan for the Indian Ocean.

Please bring this memo, Jim Baker's memo, and your favorite schemes for raising or saving money to the PCOM in Hannover.

cc: J. Knauss
H. Durbaum
B. Biju-Duval
R. Heath

Fig. 1

PCOM BUDGET SUBCOMMITTEE

PRIORITIZATION OF ELIMINATED BUDGET ITEMS, FY 86

Essential Items	$ m
Bare rock drilling guidebases	.930
Shipboard drilling inventory	.218
Minimum publications group	.200
11.2% personnel reduction	.600
	$1.948 m

Controversial Items	$ m
Wireline packer development	.040
Engineering subcontracts	.654
Additional publications group	.476
TAMU HQ or other personnel	.100
	$1.270 m

Non-controversial Items	$ m
Repository maintenance	.279
Staff scientist	.043
Shorebased masscomp	.130
Ship/shore core imaging	.465
Shorebased science equipment	1.900
Project specialist	.087
Gulf Coast repository tech	.033
Spare drill string	.500
4% SEDCO day rate increase	.525
Misc. small items	.123
	$4.085 m

Fig. 2

POTENTIAL PROGRAM LOSSES - LEGS 109-111

*MID-ATLANTIC RIDGE

No core bit development will eliminate increased hard rock penetration rates.

*BARBADOS FOREARC

No drill-in casing makes it unlikely that the over-pressured thrust zone can be penetrated and sampled. Principal Objective

No wire-line packer development makes it unlikely that pore pressure can be measured in and near the thrust zone if it is penetrated.
Principal Objective

*EAST PACIFIC RISE

No bare rock drilling guidebases make this program impossible. Principal and Only Objective

No core bit development and high temperature drilling engineering make significant penetration unlikely and logging impossible.
Principal Objective

Fig. 3

POTENTIAL PROGRAM LOSSES - LEGS 112-114

*DSDP 504B

No core bit development eliminates increased hard rock penetration rates.

No high temperature drilling engineering makes additional drilling and logging problematic. (Ambient bottom hole temperature = 170° C.)
Principal Objective

*PERU MARGIN

No drill-in casing or wire-line packer development will have the same impact as at Barbados if a similiar over-pressured thrust zone is encountered.

*WEDDELL SEA

No core orientation development eliminates objectives at the W6, W7, W8 transect to examine deep contour current interaction with Antarctic bottom water formation.

No extended core barrel development impacts this and future paleoenvironmental objectives.

Fig. 4

GENERAL PROGRAM LOSSES

1. Reducing shipboard drilling supplies inventory to zero in late 1986 will have a major impact on the technologically difficult legs planned for that period.

2. Reducing drill string reserve and eliminating the day-rate increase will leave us unprepared for the Indian Ocean in 1987 where fuel and all forms of re-supply will be expensive.

3. Publications. The ultimate products of the Program, viewed both internally and externally, are the Proceedings of the ODP (Parts A and B). To cripple production of these volumes at the beginning will have a long-term adverse effect on the Program.

Fig. 5

PCOM BUDGET SUBCOMMITTEE

TOTAL ODP BUDGET LEVELS, FY 86

	$32.500 m	NSF limit
	1.948 m	Essential items
*MINIMUM ACCEPTABLE BUDGET	$34.448 m	
	$32.500 m	NSF limit
	1.948 m	Essential items
	1.270 m	Controversial items
*MINIMUM REASONABLE BUDGET	$35.718 m	
	$32.500 m	NSF limit
	1.948 m	Essential items
	1.270 m	Controversial items
	4.085 m	Non-controversial items
*OPTIMUM BUDGET	$39.803 m	

REPORT OF THE ODP DATABANK REVIEW PANEL

1. Introduction, Membership, and Terms of Reference

1.1 The ODP (formerly the IPOD) Databank was established in 1975 at Lamont-Doherty Geological Observatory (L-DGO) to provide a resource for the drilling project containing records (navigational, bathymetrical and geophysical) of relevance to drilling targets. The Databank obtains, collates and archives existing marine geological and geophysical data around prospective drillsites and provides packages of these data to co-chief scientists, the science operator and to the JOIDES Pollution Prevention and Safety and Site Survey Panels. Funding for this activity in 1975 was derived from international co-mingled funds through the Science Operator's (DSDP/SIO) prime contract with NSF.

1.2 In 1978, the Databank became directly responsible to JOI Inc. and funding was derived from U.S. sources only. Whilst JOI maintained administrative responsibility, scientific oversight was provided by the JOI Site Survey Planning Committee and it was this group which periodically reviewed activities and assessed the quality of services rendered to the drilling program and operations internal to the unit at L-DGO.

1.3 Recognising the international nature of its service, it was agreed to resume ODP Databank funding from co-mingled funds, with the establishment of the Ocean Drilling Program. The JOIDES Executive Committee passed a resolution to this effect in October 1984.

1.4 During the period of U.S.-only funding, the Databank acted as a repository for data obtained from U.S.-funded site survey activities. There was a more limited use by the wider international community (both as a repository and a data source). With the change of funding in FY 85 it is, therefore, prudent to review the Databank activities and function in support of international drilling activities and, accordingly, the JOI Board of Governors has appointed the Review Panel to conduct this assessment.

1.5 The Chairman of the JOI Board of Governors (A. Maxwell) appointed the following membership of the Review Panel:

K.D. Klitgord (U.S.G.S., Woods Hole), Chairman
B.P. Luyendyk (Univ. of California, Santa Barbara)
A. Mauffret (Univ. P. & M. Curie, Paris)
A.E.S. Mayer (JOIDES Office), Executive Secretary

1.6 The Databank is currently charged with the following specific tasks under the terms of its contract with JOI:

a. Catalog and store data received from past, present and future international site survey activities related to NSF's Ocean

Drilling Program (ODP), and make such data available for JOIDES activities.

b. Assist the Chairman of the JOIDES Site Survey Panel in the preparation and development of the Site Survey Program.

c. Provide data packages to each co-chief scientist for every drilling leg. These packages will consist of sub-bottom and bathymetry profiles gathered during site survey work, as well as any other pertinent data contributed to the Databank. Also provided will be digests, charts, reports and folios derived from these and other data in areas in which the ODP drilling ship will operate with the prospect of drilling. The foregoing will be provided in a sufficiently timely manner to facilitate predrilling planning as well as decisions during drilling. In all, these data will comprise four complete sets in hard copy: two for use on the drilling ship, two for shore-based use of the science operator. As far as possible, these data sets will be of good photographic print quality, or equivalent, and fully readable.

d. Prepare packages of site survey (or any other) data for JOIDES panels and working groups to aid in the proper planning and evaluation of drilling operations. (Note: This has been interpreted to include bonafide individual proponents as well.)

e. Provide data upon request to the designated science operator (Texas A&M University) for the Ocean Drilling Project (ODP) to aid in the planning of the ODP.

1.7 The Databank Review Panel had the following terms of reference:

a. There are differences between operational elements of DSDP and ODP brought on largely by increasing technical and scientific sophistication. Analyze the prescribed Databank functions and determine if they are still consistent with operational needs of the Program recognizing this increase in sophistication. Describe any changes that are needed.

b. Recognizing the operational needs of ODP, determine if those needs are being fulfilled satisfactorily with the existing staff of the Databank or, upon analysis, is an adjustment in staffing advisable?

c. The ODP scientific planning body, JOIDES, has modified its organization and procedures over the past year. In view of these changes, are there any changes which should be made to the Databank's task statement? Are there staffing implications?

d. In the past, responsibility for scientific and technical oversight of the Databank has been vested with the JOI Site Survey Planning Committee with funding provided under the NSF/JOI Contract for U.S. site surveys. Henceforth, support will come from co-mingled funds (NSF plus non-U.S. contributions) under ODP. How should scientific and technical oversight be handled?

e. The Databank serves the international ODP community. In the past, it has suffered from a lack of commitment from non-U.S. nations to deposit site survey data with the Databank while it has been required of U.S. institutions. Similarly, non-U.S. scientists have tended to rely on their national data bases to develop proposals and provide site survey data and to treat these in a proprietary way apart from the Databank. The new co-mingled funding arrangement should encourage non-U.S. scientists to make more use of the Databank, though the problem of depositing data will likely remain. What steps might be undertaken to improve utilization of the facility? How should the Databank develop in relation to the international community? Should the Databank develop stronger links with non-U.S. data bases?

f. Review the budget of the Databank and determine what savings could be made or what additions are required. If additions are required, they should be prioritized.

g. The Panel is asked to report to the JOI Board of Governors and the JOIDES Planning Committee.

1.8 The Review Panel visited the Databank at the Lamont-Doherty Geological Observatory on 6-8 March 1985. During this period, the Review Panel met the staff of the Databank and had discussions with J. Ladd (Principal Investigator) and C. Brenner (Curator). The Review Panel also met R.L. Larson (PCOM Chairman), E.J.W. Jones (JOIDES Site Survey Panel Chairman), G. Claypool (JOIDES Pollution Prevention and Safety Panel), and R. Kidd (ODP/TAMU Manager Science Operations). In addition, the Review Panel met B. Raleigh (Director, LDGO) and D. Hayes (Associate Director, Marine Geology & Geophysics, LDGO). The Review Panel wishes to thank all the above for the time spent in discussing matters related to the Databank and also to thank Dr. Raleigh and his staff for their hospitality.

2. Present Databank Activities

2.1 The ODP Databank, formerly the IPOD Databank, is located at the Lamont-Doherty Geological Observatory. It has served the JOIDES community since 1975 by cataloging, collecting and distributing site survey and other geophysical data to various panels and individuals associated with academic ocean drilling.

2.2 The ODP Databank archives geological and geophysical data such as coring and dredging samples; bathymetric, magnetic field, heat flow, and gravity field measurements; single-channel and multichannel seismic reflection profiles; and crustal seismic refraction and wide-angle reflection measurements. More recently, advanced surveying techniques such as SEABEAM and various side scan sonar systems have been employed during IPOD and ODP site surveys. All these geophysical methods are not appropriate for all sites and specific combinations have been chosen to get the maximum useful information for the minimum cost. Therefore the data set for each site survey that is stored at the Databank is a varying combination of the before mentioned data types.

2.3 At the ODP Databank, underway geophysical data is stored digitally in NGSDC or MDG77 format, and is available either in the form of a magnetic tape or in any of various geophysical data display methods (annotation of geophysical values along ship track, profiles along ship track, etc.). In addition, seismic profiles collected during the surveys are also archived. Contour maps, heat flow charts, bottom photographs and other forms of data presentation compiled in the course of the production of a cruise report are also often available. Single-channel seismic profiles are generally available in the form of large glossy photographs; multichannel seismics are usually presented in analog form and are reproduced by diazo processing. In most cases the Databank does not have access to the original digital tapes of seismic data. Side scan sonar data are available as glossy photographs, sometimes in mosaic form, and SEABEAM data are presented in the form of large sized contour maps.

2.4 In addition to site survey data collected explicitly for the drilling program, the Databank also maintains a vast amount of background underway geophysical and seismic data collected by academic institutions from all over the world. These data are a valuable supplement to the site survey data and are often included in the packages prepared for JOIDES panels and individuals during the course of Databank operations. Also, the Databank has recently acquired access to the SEASAT altimetry and SYNBAPS gridded ocean depth data sets and will soon be taking JOIDES-related requests for computer plots of these gravity and bathymetry data. The output for these data is in the form of contours, or in any of various shading schemes employing either color graphics or more conventional black and white techniques. The plots can be "illuminated" from any angle.

2.5 The Databank has produced a catalogue of its site survey data holdings up to 1983 which is available to answer queries. The Databank produces special data packagaes (four) for ODP/TAMU and for the co-chiefs on any leg; it produces a "safety" package for review by the Pollution Prevention and Safety Panel and it produces packages for other Panels, principally the Site Survey Panel. In addition, data is supplied to drilling proponents and to meet other drilling related enquiries.

3. <u>The Need for a Geophysical Databank</u>

3.1 The Review Panel based its views on the recommendations of the COSOD Steering Committee (1981) who stated that:

"Future drilling must be part of a larger scientific program that includes adequate support for problem definition, site surveying, geophysical experimentation, and sample analyses. Broad-scale problem definition and fine-scale site examination and selection must precede drilling. The cores from the drill hole then become the ground truth that translates these geophysical parameters into geological reality. Lead times of two or three years are required for pre-drilling activities and support is required for post-drilling scientific analyses."

This recommendation was endorsed by the Committee on Ocean Drilling of NAS in its report on Options for Scientific Ocean Drilling (1982) when it stated that:

"....although the proposed programs all require the drill as an essential testing tool, drilling is to be considered only as part of an integrated effort that uses all available tools--geophysical and geological surveys, follow-up analyses, syntheses, etc. This integrated attack upon chosen problems is a very important feature of the proposed program. The drill, albeit required for the tests, is also the most expensive of the various tools available, and it would be wasteful to use it without the guidance provided by the other techniques."

3.2 Problem definition and site surveying are part of the same spectrum and both are relevant to the need for a Databank. In the past, there has been confusion between geophysical studies for both activities arising from the application of the generic term "site surveys" to both.

Garry Brass (in a paper to PCOM, May 1984) defined these activities as follows:

The two classes of geophysical field measurement that have been called site surveys can be divided into Regional Geophysical Field Studies (RGFS) and Site Surveys (sensu strictu) (SS). A RGFS is a study of a potential area of interest to the drilling program by geophysical means which is designed to yield an understanding of the regional geology in sufficient detail to form the basis of or provide reinforcement for a drilling proposal. A SS is a detailed geophysical field study designed to provide the information necessary for the accurate, effective and safe location of a specific drill hole. One of the distinctions between RGFS and SS is based on the point in the planning procedure at which the information provided is required. The RGFS must be available during the proposal formulation and evaluation stage. The SS is required for drilling holes required by a proposal. On rare occasions, particularly where safety questions arise elements of the SS may be required before approval of a leg is given.

3.3 These data must be made available to the JOIDES Scientific Advisory Structure at the appropriate times through a central point, namely the Databank. With time, a major data resource has built up, and will continue to increase, providing a geophysical data repository akin to the core repositories.

3.4 Aside from the operational requirements of the various parts of ODP, the Databank will provide the facility for future post-cruise studies and regional syntheses. The latter are already being encouraged by the USSAC and we can expect this activity to develop within the larger ODP community. Such syntheses will need to draw on both drilling results and the related geophysical data through the Databank.

3.5 The Databank, therefore, occupies a pivotal position in the ODP being the point through which data flows in the formulation of the drilling program (through proposals and their evaluation), in the operations of ODP (through support for the Safety Panel and the co-chief scientists), and in future post-cruise studies and syntheses.

3.6 **We endorse the decision of EXCOM to fund the Databank through co-mingled funds in view of its key role in the overall ODP concept.**

4. Location of the Databank

4.1 Although not within the terms of reference of the Review Panel, we briefly considered the siting of the Databank at LDGO. LDGO is the major centre for the collection, processing, archiving and interpretation of marine geophysical data, particularly seismics.

4.2 The Databank benefits from being sited at an institution where there is an active research interest in a related activity. A symbiotic relationship should and does exist between the Databank and LDGO. Our only concern would be if the host institution made demands on the Databank which prejudiced its ability to serve the ODP community as a whole. **We do not believe that this has or will be the case and our recommendations as to the future operation of the Databank should ensure that this cannot occur.**

5. Role and Function of the Databank

5.1 The primary role of the Databank must be to facilitate the flow of data to users within the JOIDES community (who we define in Paragraph 6). To do this the Databank has the following tasks:

a. to archive data from various sources within ODP

b. to search for data from sources outside ODP
   1. monitoring data available in other databanks
   2. cataloging data relevant to ODP
   3. acquiring and archiving data when necessary

c. to transfer data to fulfil mandated tasks (servicing Site Survey and Safety Panels, co-chief scientists, and Science Operator), to support JOIDES panels, and to aid other appropriate requestors

d. to determine adequacy of data deposited at the Databank

Archiving is the basic function which supports the other identified tasks. This refers to the storage of basic data, compilations of data, and syntheses of data in appropriate form to facilitate transfer of this information to requestors. This data should include information required to support mature drill site proposals, scheduled drill sites, and completed drill sites.

Searching for data is a major time consuming task and this role should be restricted to that necessary for the Databank to fulfil its tasks in providing support for ODP. This role incorporates three levels of information handling, monitoring, cataloging, and acquiring of data available. The monitoring role refers to the identification of geoscience databanks that may have data relevant to ODP, including information about data types, data formats, and points of contact, and the maintenance of up-to-date catalogs of these databanks' holdings. The cataloging role refers to the archiving of information concerning data available at other data banks relevant to mature drill site proposals, scheduled drill sites, and completed drill sites. This includes such items as seismic track line plots, data sample locations, etc. stored in digital and/or hard copy form. The acquiring and archiving role refers to the actual acquisition of certain data to be stored at the ODP Databank and available for transfer to requestors (on either a publicly available or reserved status basis). This last role should be carried out judiciously to provide necessary levels of data required for ODP planning but also to avoid duplicating efforts of other databanks. All search requests to the Databank involving cataloging, acquiring, and archiving data should come through the Site Survey Panel.

Transferring of data is a primary function of the Databank to facilitate researchers acquiring the actual data needed to carry out ODP related research. This should include information concerning other databanks and data relevant to ODP stored at these other databanks, and publicly available and reserved data archived at the ODP Databank.

Determination of data adequacy is a role of the Databank that must be closely coordinated with the Site Survey Panel. This includes both data copy quality and data scientific quality and quantity. Archived data must be in a form that is reproducible and useful to the researcher. Determination of data adequacy to carry out proposed drilling objectives is mandated to the Site Survey Panel. We outline below, evaluation responsibilities other panels have with regard to data adequacy, but these evaluations are ultimately transmitted to the Site Survey Panel. The ODP Databank's primary function must be to facilitate the Site Survey Panel's review of data adequacy for each proposed drill site.

5.2 We have attempted to identify the main sources of incoming data which require archiving. These are:

a. Information on available data in support of drilling proposals (derived from proponents, JOIDES panels, and Databank searches)
b. Data acquired through ODP funds (co-mingled funds), e.g. JOIDES RESOLUTION underway geophysics
c. Data acquired by U.S. funded ODP related activities, e.g. JOI and NSF site surveys (RGFS and SS)
d. Data from mature and approved proposals deposited by proponents
e. Data from other sources obtained by the Databank in constructing data packages
f. Unsolicited data and data exchanges.

5.3 These data will normally fall into three classes namely:

a. data freely available and deposited at the Databank with proposals
b. data relevant to the ODP which may be obtained from publicly accessible databanks in the U.S. and elsewhere
c. reserved data which will eventually be on public access but has release clauses imposed by the data holder. Most commonly, this would include data to be released at the time of the Part B publication or data available only from the data holder.

We return to these categories when discussing the submission of proposals and their path through the JOIDES structure.

5.4 We do not consider that proprietary data should be held by the Databank. The Databank is a publicly-funded resource and should be freely available, primarily to the ODP community.

5.5 It is important for potential users of the ODP Databank to be informed about the Databank holdings. The site survey summaries prepared by the Databank are part of this process. Routine publication of regional location maps of site surveys is needed in the JOIDES Journal and other appropriate earth science news publications in the U.S. and other countries.

6. Databank Access and Users

6.1 The Databank is for the free use of the JOIDES community and we wish to encourage greater use of this resource. Nevertheless, it is necessary to have a priority system for users.

6.2 The Databank has three important mandated tasks. These are to support the Science Operator and the co-chief scientists; to support the JOIDES Pollution Prevention and Safety Panel; and to support the JOIDES Site Survey Panel. **These are its priority customers and we do not recommend any changes to this emphasis.**

6.3 Regional and thematic panels of JOIDES make up the other "in-house" users. Whilst it is important that the Databank can respond to these Panels it is also necessary to ensure that the demands of these Panels do not divert the Databank from its mandated tasks. It would easily occur should a Panel request major search and data transfer operations. **We therefore recommend that such functions should be kept to the minimum principally by providing only information about data availability to these Panels rather than in providing data packages.** Proponents should provide copies of data essential for evaluating proposals. Exceptions will undoubtedly occur and these requests will need to be considered within the management structure of the Databank. Databank staff would not normally be expected to attend meetings of the regional and thematic panels.

6.4 Site proponents and post-cruise investigators are the other major users of the ODP Databank. The Databank should serve as a tool to facilitate ODP-related research, but it must not be used as an alternative to other geoscience databanks. This group of users should have ready access to the results of searches by the Databank and to publicly available data archived at the Databank, but should not be allowed to initiate searches or data compilations. At the initial contact, the Databank should provide a standard low level response by issuing an up-dated catalog of its holdings, results of previous data searches for the area, and general information concerning other geoscience databanks in the U.S. and other countries. The transfer of data should be limited to archived data, with the requestor encouraged to contact the original data source or appropriate databank. It is generally expected that the Site Survey Panel will have requested a data search and assembling of a data package for most mature site proposals, resulting in extensive amounts of information being available to mature site proponents, post-cruise investigators, and proponents of future sites in the same region.

7. Proposal Review by the JOIDES Structure and Interactions with the Databank

7.1 An essential element of ODP is the input of proposals for drilling from the earth science community both within and outside JOIDES. These need to be assessed by the various panels and by PCOM in such a way as to identify good proposals well in advance of drilling; to enable an assessment of both the regional and site specific survey data to be made; for any deficiencies to be identified and made good by JOIDES member countries; and for the new data to be assessed before PCOM gives final approval for drilling.

7.2 The need for a long lead time in preparing for drilling was recognised in the COSOD report which pointed out that past experience in DSDP had been disappointing in this respect. The COSOD report outlined a three-year flow from the ideas stage to drilling (see Annex 1). We have taken this outline and re-worked it (Figure 1) to show the involvement of the various panels and the Databank. **We recommend that JOIDES adheres to this timetable wherever possible.**

7.3 In terms of responsibilities for providing and obtaining data, we see the prime responsibility resting with the proponent who must identify the data to be deposited, relevant publicly available data held elsewhere and relevant "reserved" data. Regional and thematic panels have the responsibility to identify regional and site specific data necessary to achieve the proposed scientific objectives and to identify missing data from that listed by the proponent. It is important that the data (basic data, compilations, and syntheses) which make drill sites scientifically valuable is publicly available. The Site Survey Panel, when it reviews proposals for the first time, should evaluate the data sets identified by the proponents and the panels and issue a request to the Databank to initiate a data search if appropriate. At its second review, the Panel has responsibility for evaluating data, identifying what must be deposited with the Databank and what must be made available on public access and, finally, to define requirements for supporting surveys.

7.4 It will be seen from Figure 1 that the flowchart depends on data not only being made available but being deposited at the Databank. We strongly urge PCOM to revise its proposal guidelines so that proponents not only identify the categories of data which are available (see Paragraph 5.3 above) but agree to deposit data at the Databank as requested and in a format acceptable to the Databank. It is the deposition of data which demonstrates the difference between a "juvenile" and "mature" proposal. **The deposition of data requirement depends on strict enforcement by PCOM. If adhered to, the Databank will develop into a major resource particularly for post-cruise studies and syntheses.**

8. Relationship with the ODP Science Operator (TAMU)

8.1 One of the mandates of the Databank is to provide data to the Science Operator to aid in the planning of the ODP. A similar mandate is the provision of the data package for the co-chief scientists. These are closely related functions which provide the main interface between the Science Operator and the Databank.

8.2 The Science Operator has rather different requirements from those identified in Paragraph 7 which are concerned with science planning as distinct from operational planning and safety. The Science Operator needs different data from the JOIDES structure and at different times and the Databank must be responsive to these needs.

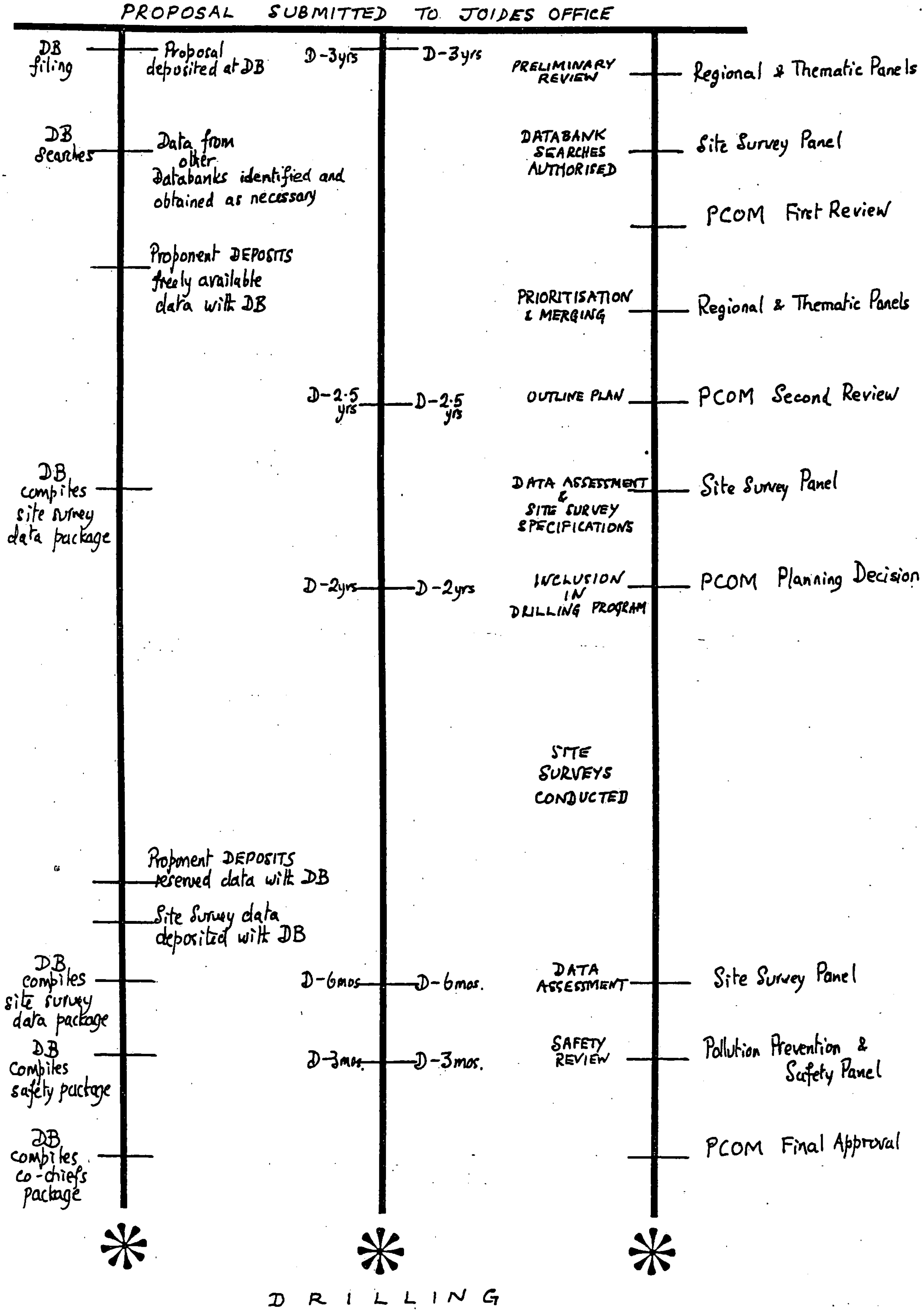


Figure 1: Propo... flowchart for drilling propos...s (show...g the involvement of JOIDES Pa...s and the Databank)

8.3 We do not wish to see a duplication of facilities and data holdings between the Databank and the Science Operator whilst recognising that the latter will need to assemble data collections for operational and safety planning. This is likely to be very site specific data and the Science Operator may well be obtaining commercial data on a confidential basis. The Science Operator's data holdings will not be available for public access.

8.4 We envisage the main input to the Science Operator being derived from the Databank. However, this is not a one-way flow as we recommend that information on data availability identified by the Science Operator should be sent to the Databank and we consider this to be a responsibility of the staff scientist assigned to each leg.

Furthermore, we recommend that underway geophysics should be lodged at the Databank as well as at NGDC (which was the policy with DSDP) and that the Databank must have a knowledge of the dataset held at TAMU.

9. Relationship with the Pollution Prevention and Safety Panel (PPSP)

9.1 The Databank has a mandated task to support the Safety Panel on its safety review which it does by the preparation of safety packages and supporting material which are reviewed by the Safety Panel.

9.2 We discussed the relationship of the Databank with the Safety Panel with the Chairman of that Panel. It is clear that the Safety Panel sees its role as being independent of the scientific planning process. We concur and do not see the Safety Panel as the primary oversight Panel for the Databank.

10. Role of the Site Survey Panel and Its Relationship with the Databank

10.1 The Panel most closely concerned with the activities of the Databank and the one dependent on its services is the Site Survey Panel. The role of this Panel is critical in the evaluation of regional and site specific survey data in processing of proposals from their receipt to the creation of a detailed drilling program (see Table 1). The Databank serves as the primary operational arm of this Panel.

10.2 We recommend that the Site Survey Panel should also have scientific oversight of the work of the Databank in view of the inter-connection between these bodies within the JOIDES structure and bearing in mind the co-mingled funding of the Databank. This promotes international oversight as well as providing an independent view of the Databank activities. This relationship is analogous to that between the Wireline Services Contractor and the Downhole Measurements Panel.

10.3 Independent advice to the Databank as to priorities, authority to meet requests from proponents, post-cruise investigators, and regional and thematic panel chairmen outside the guidelines set down above can be provided to the Databank through the Site Survey Panel chairman. Similarly, the Panel will be able to adjudicate on priorities in terms of fulfilment of the Databank's mandate and advise on duplication of data holdings between the various parts of ODP and between the Databank and other publicly-accessible databanks.

10.4 The role of the Site Survey Panel is to assess the adequacy and quality of data submitted and obtained in support of proposals and to prepare scientific specifications for future regional and site specific surveys which may be necessary prior to drilling. The Panel is currently carrying out this function by the assignment of various proposals to individual members for assessment. The Databank provides the appropriate data package for assessment.

10.5 There has been considerable discussion in JOIDES as to whether this is effective or not. The letter from D.E. Hayes to PCOM on September 21, 1984 summarizing this situation states that "They (the SSP) are all unpaid, busy scientists who are pressed to devote a few days per year to ODP matters....We urgently need to establish day-to-day scientific oversight, advice, communications, and independent assessments of requisite marine geological and geophysical site survey data in support of drilling." If the Panel, which is an unpaid body, is unable to devote the necessary time for this task (e.g. it is estimated that assessment of the Chile Triple Junction data package took approximately 1 week) then it will be necessary for this professional input to be provided by an increase in Databank staff to include a substantial time commitment from a senior scientist. However, even if this approach is needed, it will still be necessary for the Site Survey Panel to review and report on data set adequacy for each site.

10.6 The day-to-day scientific oversight, advice, communication link, and initial assessment of RGFS and SS site survey data recommended by Hayes to PCOM to facilitate data flow and site survey planning do exist in the present Site Survey Panel and Databank structure, but personnel commitments are inadequate to carry them out effectively. Proposed low-level staffing changes at the Databank (Section 11.3 below) should improve the situation, but a greater amount of senior scientist support, either in the Databank or Site Survey Panel is needed. The present level of one month support of a senior scientist at the Databank is inadequate.

10.7 Another important function of the Site Survey Panel is to provide an information exchange and coordination of ship movements and related site survey activity within member nations. This is an important function which cannot be delegated to the Databank or elsewhere as it is assumed that individual members will actively lobby for site survey activities within their own nations and systems.

10.8 We consider that the Site Survey Panel mandate should be further revised to ensure that the functions described above are clearly stated in the mandate.

11. Databank Staffing and Finance

11.1 We examined the budget and staffing of the Databank but did not find any areas of the budget where we could recommend substantial savings. A large element of the budget is L-DGO overheads and could only be reduced if the Databank was re-located elsewhere where overheads could be covered by other activities. We have already stated (Paragraph 4) that there is no scientific justification for re-locating the Databank. There may be some savings in travel by restricting the attendance of Databank staff to Site Survey Panel meetings and, as requested, to meetings of the Safety Panel, but this is unlikely to have any major effect on the budget.

11.2 However, the Databank could increase the efficiency of its operation. Currently, the archivist is stated to spend 75% of her time in photo-copying and ozalid copying tasks and the curator also spends much time in these tasks. We realise that there may be times when it is necessary for everyone to assist with this work because of the urgency of the task in-hand. This should be the exception and not the rule.

11.3 We unanimously recommend a modest increase of the budget to provide for "low-level" support for photo-copying and ozalid copying tasks using undergraduate or high-school students. This should substantially release the archivist to perform her archival functions and this should, in turn, release the curator for other duties including a search function with other databanks, data transfer to proponents, aid to panels and a general intelligence function regarding data holdings and ship schedules. In addition, the curator should be involved in monitoring the flow of data into the Databank to meet the planning schedules.

11.4 The role of additional senior scientist time was a more difficult issue for the Review Panel in making its recommendations. It is clear that there is a need for data to be evaluated as to its quality and whether it adequately meets the needs for drilling, and for scientific specifications to be drawn up for future site surveys. This is mandated to the Site Survey Panel although there are doubts as to whether this will be effective due to the difficulties of obtaining a large time commitment from a voluntary and unpaid Panel. The alternative of increased time for a paid senior scientist at the Databank does involve increased costs.

11.5 At present, the senior scientist assigned to the Databank, is on the basis of one month per annum. This is clearly insufficient to carry out the detailed evaluations of data which we are recommending and as outlined in Sections 10.5 and 10.6. It gives little time for more than an administrative role.

11.6 The options for a senior scientist may be summarised as 1) leave at the present level (i.e. one month p.a.), 2) leave at present level but review in one year's time to monitor the effect of additional low-level support, 3) increase senior scientist time to three months p.a. and review after two years, and 4) increase senior scientist time to six months p.a. to be reviewed after two years.

11.7 Option 1 to leave senior scientist funding at its present level places most of the burden of data oversight (Sections 10.5 and 10.6) on the Site Survey Panel, with no cost increase. As the drilling program progresses and the number of site proposals increase, this will require a substantial commitment of time by the Panel members.

11.8 Option 2 merely puts off the decision for one year. The increased low level of support should allow the Curator to undertake more of the functions outlined in Section 10.6, but most of the site proposal data adequacy review must still be done by the Panel members.

11.9 Option 3 to increase the senior scientist's time to three months coupled with the increased low-level personnel support should allow the Databank to effectively carry out all of the functions outlined in Section 10.6. This in turn would provide additional support, including initial data adequacy appraisals, for the Site Survey Panel to carry out the Site Survey data reviews (Section 10.5) with a moderate time commitment by Site Survey Panel members.

11.10 Option 4 to increase senior scientist's time to six months should guarantee that the Site Survey Panel and Databank could carry out the data management outlined in Sections 10.5 and 10.6 with a low to moderate time commitment by Site Survey Panel members.

11.11 Regardless of the option chosen, it is necessary to have a single identifiable person as head of the Databank, with appropriate responsibilities, therefore the senior scientist position is not one that could be shared by two people.

11.12 We would recommend that if a decision is made to appoint a senior scientist, then this decision should be reviewed in approximately two years when the pattern of workloads will be clearer and the time devoted to the Databank tasks could be adjusted.

11.13 The majority members of this Review Panel (KK and BL) recommend Option 3, considering the small increased cost (about $14,000) to be outweighed by the need for adequate site data adequacy review and the improved usefulness of the Databank to the geoscience community.

11.14 The minority member of this Panel (A.M.) recommends Option 2, considering the increased low level personnel support adequate to improve the Databank's operation effectiveness and the need for the Site Survey Panel members to undertake extensive site survey evaluations, even with increased senior scientist support.

12. Conclusions

12.1 The work of the Databank has been reviewed and is seen as pivotal within the ODP in providing data to both the planning and operational parts of the Program in accordance with its present mandate.

12.2 The Databank should be seen as a resource for the ODP community for site proposal planning, post-cruise studies, and for regional syntheses. In accordance with the COSOD recommendations, drilling should be seen as only part of the Program. The need for adequate geological and geophysical data is of key importance and so enhances the need for the Databank.

12.3 The Site Survey Panel should undertake the scientific oversight of the Databank. The Site Survey Panel's role in reviewing data supporting drilling proposals is of central importance.

12.4 A summary of ODP Databank activities is given in Section 5 and includes data archiving, searching, and transfer functions. Requests for data searches should originate from the Site Survey Panel.

12.5 A flowchart for proposals showing panel and Databank interaction has been suggested. Some support for regional and thematic panels has been identified.

12.6 The Databank should be a publicly accessible resource with links to other public databases. It should not be used as an alternative to other geoscience databanks but rather as a complementary data source.

12.7 Information at the Databank should include publicly available data, reserve data with restricted release, and information about data available at other geoscience databanks.

12.8 The Databank should be one of the repositories for underway geophysical data obtained on JOIDES RESOLUTION.

12.9 Proponents of drilling should be asked to identify supporting data and should be asked to deposit data with the Databank. The primary responsibility for obtaining data must rest with proponents. The regulation requiring deposition of data should be enforced by PCOM.

12.10 Additional low-level personnel support for record copying should be provided to the Databank. This would make more Curator time available for Databank management and evaluation.

12.11 Options have been identified with regard to allocating increased senior scientist time to the Databank. A modest increase is recommended (to three months), noting that there is a financial cost increase (about $14,000).

(MWD). Some half-dozen companies now offer MWD services to the oil industry. Sensors located in the bottom hole assembly (BHA) can measure such parameters as mud pressure, mud temperature, weight on bit, torque on bit, hole deviation, resistivity, and gamma ray. Four different telemetry systems have been developed for transmitting the information from the BHA to the drilling platform: (1) mud pulse, (2) hard wire, (3) acoustic, and (4) electromagnetic.

The role of MWD in improving drilling safety has already been discussed, as has its application to maintaining drilling efficiency in riser drilling. It could also be valuable for formation evaluation in riserless drilling, eventually even replacing the need for conventional logging. MWD has particular potential for ocean drilling for two reasons:

1. When drilling in oceanic depths a considerable amount of time is spent manipulating core barrels. This time would allow the transmission of fairly large amounts of downhole data, even at the low data rates of some MWD telemetry systems.
2. The chance of logging single-bit holes would be considerably improved.

If the full potential of MWD is to be realized, a considerable amount of engineering development would probably be necessary to make it compatible with riserless drilling. Existing MWD systems are not compatible with coring.

Downhole Sampling Tools. The hydraulic piston corer (HPC), in use since 1979, has provided *Glomar Challenger* with the ability to recover undisturbed cores from the unlithified sediment column and has received justified acclaim. A case can be made for developing other types of downpipe sampling tools:

1. *Hard Rock Drill* (HRD). This tool would be a rotary or rotary-percussive drill for drilling hard rock beyond the bit. The drill would be lowered down the pipe and locked into the BHA in the manner of a core barrel. The circulation pumps would provide the power for turning and hammering the drill, as well as for the necessary downward movement. The HRD would have a relatively thin-walled, high-strength drill stem and either a tungsten-carbide or diamond-studded kerf. One objective of the HRD would be to cut a clear and complete core in hard rock. Another, perhaps more important, objective results from the clean hole beyond the bit, which provides an excellent place to sample pore fluids and do flow tests using a small wireline packer. A third use for the HRD might be for overcoring-type stress measurements. The HRD might also be useful in hard or chertified sediments.

A piggy-back drill similar in concept to the HRD is already in use in shallow boreholes (up to 300 meters of penetration in up to 200 meters of water depth) on the continental shelf of the United Kingdom (D.A. Ardus, personal commun.). In this case a drill rod of narrow bore is used inside drill pipe of narrow diameter, so that the latter acts as a riser. This approach could probably not be scaled up to oceanic depths (i.e. a slimline riser is not being proposed), but the technique is obviously relevant to the development of an HRD.

2. *Downhole Vibracorer* (DHVC). Recent experience has shown that the HPC is a poor tool for sampling terrigenous deposits. A DHVC might be the best way to sample sandy and highly friable semi-consolidated sediments. If successful it would greatly extend the depth to which a complete and oriented sedimentary core could be obtained.

3. *Hydrogeological Sampling Tool.* This tool would incorporate a downhole pump capable of pumping fluid in and out of a packed off interval. Control would be exercised by downhole chemical analyzers which would tell the tool when to sample and when to flush. The objective would be to obtain uncontaminated samples of crustal pore water.

4. *High-Temperature Logging Tools.* The upper-temperature limit for most commercial logging tools is 350°F (180°C). However, a range of hostile environment logging tools are available which can operate to temperatures of 500°F (260°C). These temperature limits match the capabilities of logging cables. Ordinary logging cable can be used up to 180°C. Above that Teflon insulated cable is available for use up to 260°C. The only parameter to have been logged above 260°C is temperature itself, to about 320°C by Sandia Laboratories.

If the need arose to log drill holes in the ocean f[illegible] to temperatures above 260°C, special cables would be required in addition to the development of the tools themselves.

D. RELATED GEOPHYSICAL AND GEOLOGICAL STUDIES

Organization of Site Surveys. The range of instrumentation which can be deployed for site-survey work is wide and sophisticated: multichannel seismic reflection profiling, SEABEAM, GLORIA, submersibles, and Deep Tow, to name a few. The cost and variety of ocean drilling is such that full use should be made of all these techniques, where relevant, in the definition of sites to drill. For this to be possible the general area of drilling sites must be known far enough in advance for these techniques to be p[illegible]grammed. In addition time must be available for the site surveys to be interpreted and digested before drilling commences. Only then can the site-survey information make its proper impact upon the choice of drill sites.

The experience of the past few years with *Glomar Challenger* has been very disappointing in this respect. The advance notice of the program on *Glomar Challenger* has been insufficient for either GLORIA or SEABEAM operations to be scheduled in advance of drilling. Site surveys arranged through the JOIDES machinery have had insufficient lead time over the actual drilling. To make matters worse there has even been a lack of interaction between people evaluating the site surveys and those involved in the actual drilling. These organizational deficiencies have to a large extent derived from the 2-year time frame of the program on *Glomar Challenger*. A 5-year time frame would allow better advanced planning and at the same time allow more flexibility into the program. We recommend, therefore, that the following schedule should be adopted within the overall framework of a 5-year drilling program:

D-3 yr General area and objectives of drilling success of the HPC has allowed stratigraphy to be studied on a centimetric scale. The problem now is to choose the best palaeoenvironmental sites for the HPC to sample. This requires a profiling system with a penetration of approximately 200 meters and a resolution of approximately 0.5 meters. Such resolution is impossible with systems operating from the sea surface but is achievable in near-bottom profilers operating at frequencies of a few kHz. A number of oceanographic laboratories have such systems either in use or under development.

Submersibles. Submersibles have a role to play which is likely to increase in the second half of the eighties. At present the United States submersible 'Alvin' is restricted to depths less than 4000 meters. In 1983 the French submersible SM-97 (able to reach 97% of the ocean floor) will become available with a 6000-meter capability.

Submersibles are most valuable in areas of rugged topography. Power and buoyancy limitations restrict their sampling ability. Because of their limited range it is essential that they land in the right place so a necessary pre-requisite to their operation is a good b·'hymetric map (i.e., SEABEAM). In spite of these ɔstraints, two roles can be envisaged for submersible operations:

1. In conjunction with drilling on the axis of a mid-ocean ridge, the submersible can provide a detailed map of the surroundings — the distribution of fissures, fault scarps, etc. It might even be possible for a submersible to construct a spud-in frame for drilling bare rock. Certainly the submersible will be required to locate the best site for such drilling.
2. In a number of places on the sea floor, substantial sections of the sedimentary column are exposed in major submarine escarpments; e.g., the Blake Escarpment of the US eastern seaboard and the Malta Escarpment in the Mediterranean. Sampling of such escarpments by submersible could obviate the need for drilling some margin sites, especially if sufficient seismic coverage is available to trace horizons to outcrop.

Sampling in Site Surveys. The role of submersibles in sampling horizons which outcrop on steep scarps has just been mentioned. Occasionally, horizons identified seismically can be traced to outcrops in more subdued terrain and are accessible to sampling by piston corer (penetration $\leq$15m below sea bed) and/or by dredging. Such opportunities of providing ground truth to aid the interpretation of seismic surveys prior to drilling must not be missed. The more extended time frame proposed for site surveys makes this a practical proposition.

Associated Land Geology. Much of land geology is marine geology and we should not lose sight of the guidance that land geology can give to understanding the results of drilling. The imbricate structures found on active margins exist on land, ophiolites are found above sea level and the tilted blocks of passive margins are also visible on land.

Geologists selected for the shipboard staff should be familiar with the sub-aerial homologues of the rocks they are likely to encounter on a drilling leg. The earlier appointment of scientific staff would allow those not so well equipped to prepare themselves for a drilling leg by suitable field trips on land.

E. CONCLUSIONS AND RECOMMENDATIONS

1. Scientific ocean drilling prior to 1990 will be riserless.
2. Although individuals have their own preferences for the most suitable drilling platform in the next few years, scientific ocean drilling was seen by the whole COSOD meeting as a long-term endeavor stretching well beyond 1990. On this basis and because of its growth potential, *Glomar Explorer* is the preferred drilling platform. The continuation of an internationally funded drilling program is also a factor which bears on the choice of platform.
3. The international collaboration established by the IPOD program has been extremely fruitful and must not be abandoned.
4. Similarly the expertise developed by the Deep-Sea Drilling Project must be retained.
5. Considerable potential remains to be exploited in riserless drilling provided sufficient resources of engineering development and of time are available.
6. The number of items requiring engineering development is considerable — hard-rock base plate, adaptation of MWD technology to riserless drilling, downpipe sampling tools, and fly-in re-entry, to name but a few. As organized at present it is unlikely that the engineering group at DSDP can bring these developments to fruition soon enough for them to be exploited fully in the late eighties (a reflection on their numbers and budget, not on their competence). We recommend increased support for engineering development, with funding separate from the operational requirements of the ship.
7. The present program on *Glomar Challenger* suffers acutely from last minute arrangements and hurried preparation. This indecent haste should be avoided. The time frame of leg planning must be extended to a minimum of three years. This would allow time for the full range of sophisticated site-survey techniques to be deployed and for the results to be interpreted before drilling commenced. Similarly the earlier appointment of both Co-Chief Scientists and the scientific staff would allow them to prepare themselves better for their tasks. Early discussions with the people in charge of drilling operations would also be possible, something which should not be left until the drilling leg actually starts.
8. The extended time frame must not be rigid. As much flexibility as possible must be built into the system to allow for time overruns on difficult, new drilling objectives such as drilling hard rock. Occasionally it will be desirable to return to re-entry holes which were abandoned before the drilling objectives were reached.

F. REFERENCES

Deep Sea Drilling Project Program Review for the National Science Foundation, 29 June 1981.

leg specified.
Evaluation of existing data set.
Recommendation for preliminary site survey by appropriate panel.

D-2 yr	Preliminary Site survey completed. Co-Chief Scientists appointed. Preliminary selection of sites. Contact with Safety Panel to define safety requirements.
D-2 yr to D-1 yr	SEABEAM survey. GLORIA survey (where relevant). Multichannel seismic reflection profiling (where relevant).
D-1 yr	Submersible survey (where relevant). Deep Tow survey (where relevant). Safety Panel preview. Scientific staff selected.
D-6 mths	Completion of site survey interpretation. Drill sites selected. Final Safety Panel review.
D	Drilling leg begins.

The adoption of a schedule such as this would have considerable advantages over the present system:

1. Time is available for surveys to be carried out in the proper sequence and to be interpreted.
2. The early appointment of Co-Chief Scientists allows them to take an active part in the interpretation of the whole range of site-survey activity and thus to become thoroughly familiar with the complete data set prior to drilling. Individuals who are not prepared to participate in this activity are not suitable candidates for the position of Co-Chief Scientist. Indeed it is important that Co-Chief Scientists have sufficient breadth of interest for the job and are not "blinkered" experts interested only in their narrow specialty.
3. Early selection of the scientific staff similarly allows them to prepare themselves adequately for the forthcoming drilling. It is appropriate that the scientific staff include at least one of the geologists/geophysicists involved in site-survey interpretation.
4. Finally, the more extended time frame of site surveys would allow time for the re-direction of drilling objectives as the results of these surveys emerged.

SEABEAM. Just as a field geologist would not think of going into the field without a good topographic map, so drill sites in the ocean floor should not be chosen without the availability of such a map. SEABEAM is the best available tool for producing detailed bathymetric maps and, since this equipment is now being installed in more ships (installation is planned for the Scripps vessel *Thomas Washington* and the German ship *Sonne* in the near future), a SEABEAM survey should be a routine part of the process of site selection.

The value of a SEABEAM survey is particularly great in areas of topography such as encountered in drilling active margins and ocean crust. The recent post-drilling SEABEAM survey of the Leg 78A sites on the Barbados Ridge was particularly impressive. Had this survey been available before the leg, the choice of sites would probably have been different.

Long Range Side-Scan Systems. The long-range side-scan sonar systems are complementary to the SEABEAM system. GLORIA for example cannot produce a bathymetric map but, with an ability to insonify up to 1000 km² of sea bed per hour, it can very rapidly produce a picture of the morphology of a whole region. It has proved particularly suitable for mapping the tectonic fabric of the oceanic basement, sedimentary bed forms and large scale sedimentary features such as slumps and slides. Because only one GLORIA exists at the present time, operated by the United Kingdom Institute of Oceanographic Sciences, it would be impracticable to recommend that GLORIA be used for all site surveys. Nevertheless, site selection would undoubtedly be improved by the availability of GLORIA data.

The value of GLORIA data was demonstrated recently in a post-drilling survey of the Costa Rica Rift, covering sites 501, 504, and 506 (Searle, 1981). This survey demonstrated particularly well the marked contrast between site 505, where many fault scarps are exposed, and sites 501 and 504, where the basement is almost completely buried.

Seismic Reflection Techniques. A wide range of seismic reflection techniques have been deployed for site-survey work in the past, from 3.5 kHz profiling, single-channel seismic reflection profiling with airgun to multichannel seismic profiling. The depth of penetration, resolution and velocity information provided by these various systems vary widely. Ideally a reflection survey in the vicinity of a drill site would give continuous, detailed measurements of velocity so that the depth of reflection events could be accurately determined. The apertures of commercially available multichannel arrays are still too small to provide accurate array velocities, and hence reliable interval velocities, in oceanic depths.

The lack of good interval velocities from seismic surveys in oceanic depths emphasizes the need for velocity measurement on core samples and on downhole logging (WST and long spacing sonic logs) to ensure that reflection times are properly converted to depths.

Wider aperture arrays can be created synthetically by common-depth-point seismic profiling conducted by two or even three ships. By proper spacing of the receiving arrays and control of the shot pattern synthetic apertures ranging from 10 km to 25 km can be produced allowing 96-fold to about 226-fold data. Such multi-ship synthetic aperture measurements will be important in determining deeper crustal structure and will become essential when very deep-penetration drilling in oceanic depths is envisaged.

But the most pressing need in seismic reflection technology for the program of ocean drilling is to provide a system of profiling capable of matching in depth of penetration and resolution the hydraulic piston corer (HPC). Before the advent of the HPC the unlithified sediments were so disturbed by drilling that the coarse resolution of airgun seismic systems operating from the sea surface was adequate. The

Figure 1 shows original Leg 103 drilling locations approved by PCOM and the Safety Panel. Figure 2 shows subsequent drilling locations approved on an emergency basis by the Safety Panel as the result of Early Cretaceous turbidite sands packing off the drill string and requiring the original deep site to be aborted.

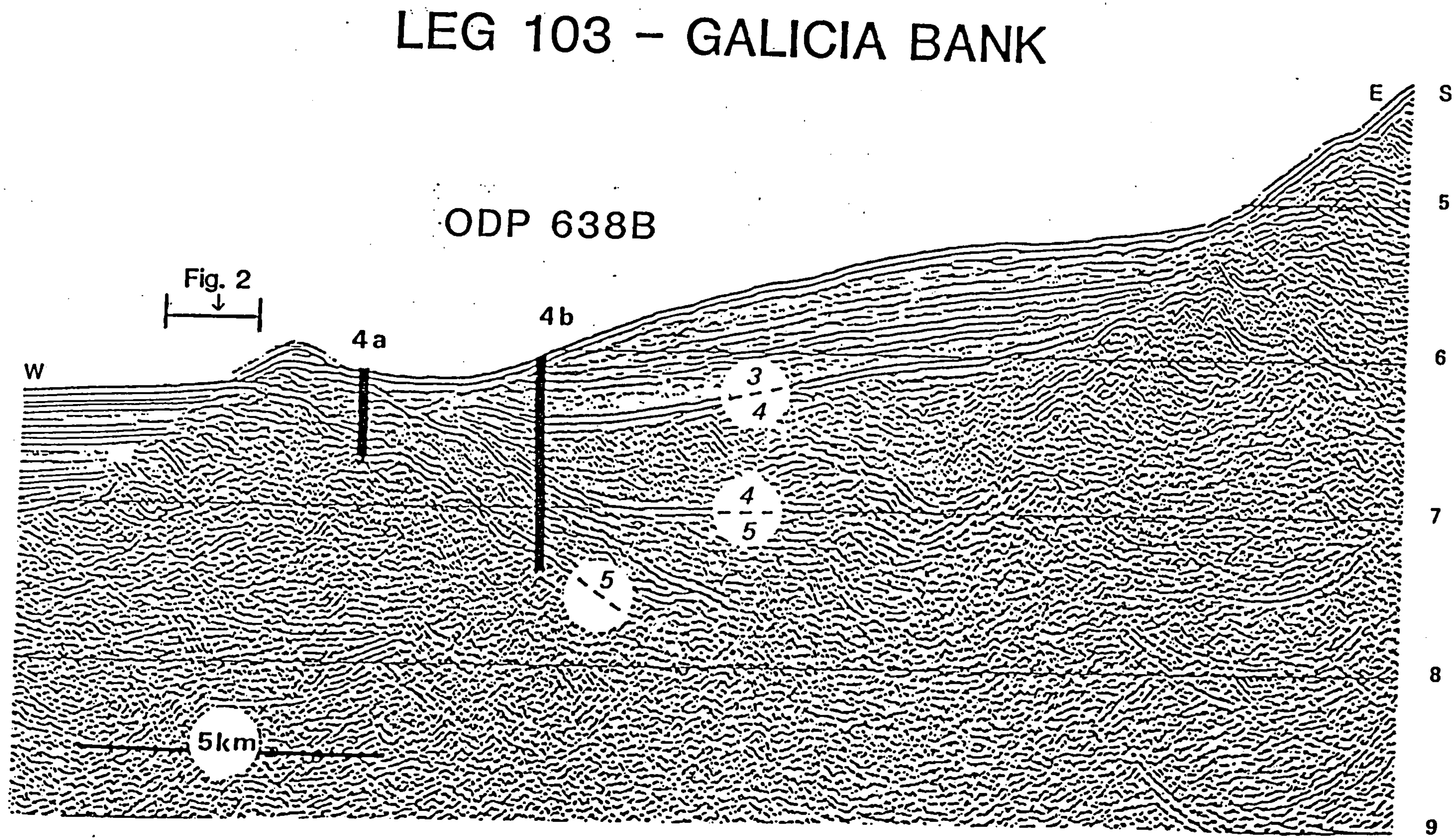
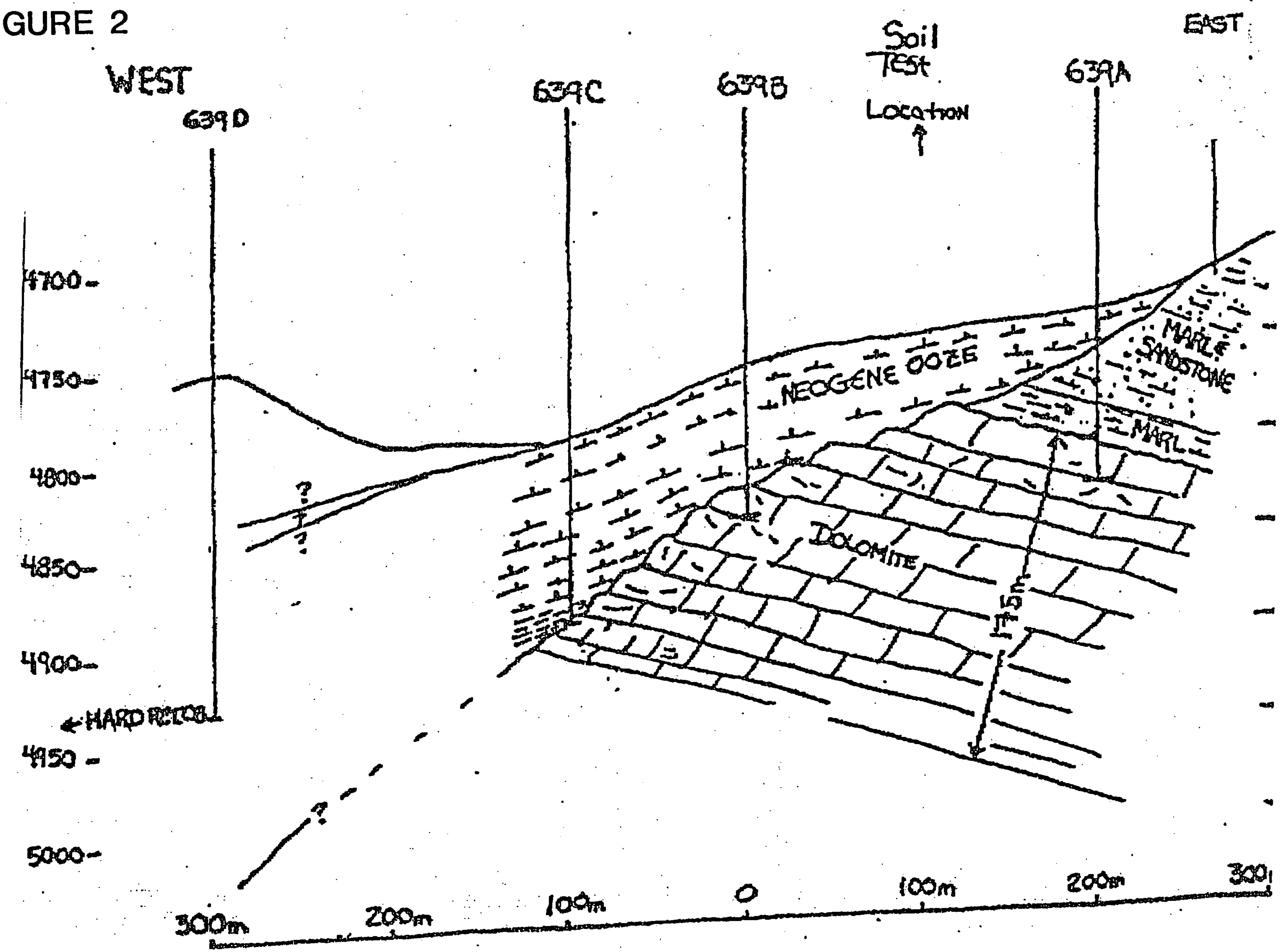


Fig 1 : Locations of target sites GAL-4A AND GAL-4B on a tilted block of the deep Galician margin. Note the pre-rift series (5) tilted with the basement block, and the syn-rift series (4).

FIGURE 2


WEST
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SANDSTONE
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85/495

JOIDES

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MAY 31 1985

Office of Energy and Marine Geology
U.S. Geological Survey
MS 977, Box 25046
Denver, CO 80225

May 29, 1985

TO: Chairman, JOIDES Planning Committee

FROM: Chairman, JOIDES Pollution Prevention and Safety Panel

SUBJECT: Changes in Safety Panel recommendations for ODP Legs 103 and 104.

1. On Leg 104, planning site VOR-1 originally was approved on the condition that the downdip site VOR-2A be drilled first and confirm the absence of migrating hydrocarbons in the dipping reflector sequence. The co-chief scientists requested that site VOR-1 be reconsidered and approved by the Safety Panel for drilling without drilling site 2A first. The Safety Panel approves this request on the condition that VOR-1 is moved downdip 0.5 nautical miles north-northwest to shotpoint 1683 on line Bfb-1.

2. On Leg 103, the Safety Panel approves a new site 639 (shotpoint 3020 on line GP-101). This site is structurally analogous to the Safety Panel-approved site 4c, but is located in a more seaward, less hazardous general setting.

3. On Leg 103, the Safety Panel approves a request to wash down (instead of continously coring) through the uppermost part of the Neogene sequence at planning site 3a.

George E. Claypool
George E. Claypool

Southern Ocean Panel Meeting - Gainesville, Florida

Major points in minutes:

1. Weddell Sea Leg: a. Detailed cruise plan provided; Punta Arenas to Port Stanley (65 days) or Cape Town (76 days). Termination in Cape Town will require loss of one major objective.
   b. Crucial that cruise track be in clockwise direction so that highest priority sites are drilled first and to take advantage of seasonal ice break-out schedule.
   c. Request that logging requirements be waived.

2. Subantarctic Leg: a. Will answer first order Cenozoic-Mesozoic paleoceanographic and paleotectonic problems.
   b. Detailed cruise plan provided; Port Stanley to Cape Town (48 days).
   c. Logistically linked to Weddell Sea Leg because it provides backup opportunity to complete South Orkney Plateau (W6-W8) objectives.

3. Kerguelen-East Antarctic Legs: a. Extremely long transit times to and from region provide the following blatant facts:

   One 70 day leg = ~30 days transit + 40 days drilling.
   Two 60 day legs = ~34 days transit + 86 days drilling.

   Thus, given the large number of high priority objectives for the Kerguelen Plateau-E. Antarctic margin region, two Kerguelen Plateau-E. Antarctic margin legs were developed.
   b. This scenario requires a crew and scientist change at Kerguelen, which seems possible using Marion Dufresne.
   c. Detailed cruise plans provided for an E. Antarctic-Southern Kerguelen Leg and a Northern Kerguelen Leg.
   d. Site surveys in good shape for Northern Kerguelen region (French data); For southern area, Australia is assisting and the French are planning site surveys.

4. Subantarctic Objectives: SOP ranked the Subantarctic Atlantic objectives higher than the Kerguelen-Broken Ridge Transect. A revised priority listing is as follows:
   (i) Subantarctic Atlantic Ocean.
   (ii) Kerguelen-Broken Ridge Transect.
   (iii) Adelie Coast.
   (iv) Fracture Zone Drilling.
   (v) Agulhas Plateau.
   (vi) Crozet Plateau.
   (vii) "Cold Spot."

5. South Pacific Objectives: SOP will propose a workshop on South Pacific Drilling for Spring, 1986.

85/506
RECEIVED JUN 4 1985

SOUTHERN OCEAN PANEL
Minutes of Meeting - April 22-24, 1985
University of Florida, Gainesville

Participants

John B. Anderson	Dennis E. Hayes
Peter F. Barker	James P. Kennett (Chairman)
Brian Bornhold	Yngve Kristoffersen
P. Ciesielski	John La Brecque
Henry J. B. Dick	Lisa Tauxe
David H. Elliot	Jacques Wannasson
Dieter Fuetterer	Jeff Weissel
Louis Garrison	

The Chairman laid out the objectives for the meeting: to establish the order of priority for drilling sites in the Subantarctic of the South Atlantic, review the Weddell Sea leg sites in the light of 1984-85 austral season cruises, develop further the southern Indian Ocean leg(s), and start developing a list of possible objectives for the South Pacific.

The minutes of the previous meeting were approved.

A review of recent developments was given. The PCOM meeting in Virginia in April did not get around to considering Southern Ocean plans. The next PCOM meeting will probably fix the schedule of post-Weddell and pre-Kerguelen legs. PCOM is giving serious consideration to two high latitude southern Indian Ocean legs, with a crew and scientist change at Kerguelen Island (this requires transport by a vessel such as the Marion Dufresne from Reunion to Kerguelen). In a letter to the SOP, Roger Larson asked for plans, including drilling and coring times, for a single 70-day cruise and for a two leg cruise not to exceed a total of 120 days (120 days without refuelling exceeds the cruising capability of the JOIDES Resolution), for both the South Atlantic and Indian Ocean regions. PCOM deliberations suggest there will be 1-1/2 years of post-Weddell pre-Pacific drilling. This means that, with two Kerguelen Plateau legs, there are a maximum of eight legs which would have to accommodate the South Atlantic leg and all remaining Indian Ocean legs.

The panel rankings (SOHP, etc.) for the Indian Ocean sector were circulated. The tectonics panel (as reported by Weissel) lowered the Kerguelen Plateau Leg(s) to #7 on the grounds that basement drilling was not emphasized.

The SOP unanimously endorsed drilling to basement on the Kerguelen Plateau and regard that as a most important tectonic objective for the legs.

The SOHP panel has consistently given the South Atlantic Subantarctic (SASA) leg a low ranking, and it was reported (Tauxe) that the reason is that it is a duplicate of the Southeast Indian Ridge. Consideration of the problem was deferred till later in the meeting.

The SOHP also ranked the Weddell leg sites (most important to least so) Maud Rise (W1, W2) - Margin site (W4) - Weddell Sea (W5) - Bransfield Strait (W10) - S. Orkneys (W6, 7, 8).

Weddell Sea Leg

Kennett	New site survey data will be reviewed, followed by selection of specific sites if new data so warrant, and site priority established.
Kristoffersen	NPI collected MCS data from the Filchner Ice Shelf region including the continental rise, and then from the Maud Rise where lines were run across W2, along a NE transect of the Rise, and then an E-W crossing of W1. Piston cores were obtained from good outcrops along moats. The upper transparent sediment package is apparently draped over older packages. Lavas may be present at or above the basement.
Barker	BAS cruises collected MCS data in the northern Weddell Sea (W5) and on the SE flank of the South Orkneys block (W6, W7, W8).
Anderson	USARP cruise collected single channel data from the West side of the South Orkneys block as well as many piston cores.

There was general discussion of objectives for the South Orkneys sites. The objectives are:

1) Water mass structure and history, and paleocirculation problems.

2) The record of glacial fluctuations as reflected in the IRD and its sources, the biogenic productivity and the siliceous biogenic evolution.

3) A possible high latitude carbonate site and therefore $\delta^{18}O$ record.

The Weddell Sea leg sites were reviewed and a ranking established:

1) Maud Rise (W1, W2)

2) Caird Coast (W4)

3) South Orkneys (W6, W7, W8)

4) Weddell Sea (W5)

Both the Bransfield Strait and Drake Passage sites (W10, W11 respectively) are regarded as much lower priority in terms of the overall objectives for the SOP. The panel slightly favored W11 over W10.

Barker strongly advocated drilling of W5 because it is the best site for ABW timing and fluctuations. Dick advocated drilling to basement, this being the only site where true ocean floor might be recovered on this leg.

Priorities for the South Orkneys were discussed in the light of available drilling time. The sense of the meeting was that the intermediate SOI site (W7) has a lower priority than the Weddell Sea site (W5), even though this detracts somewhat from the potential results to be derived from a transect in varying water depth (700 m, 1300 m, 3000 m) across the margin of the SOI block.

Fuetterer — Astrid Ridge (W3) needs further site surveys. The up-dip termination of reflectors means that the safety panel will require further surveys. W3 is needed as an alternate to W4 in case of bad ice conditions; other W4 site alternatives should be sought. BGR plans to investigate the Astrid Ridge and Caird Coase in the 85-86 season.

The Panel welcomes and strongly supports the BGR plans.

There was general discussion of the best way to run the Weddell Leg in light of the anticipated ice conditions (Caird Coast open in mid to late January and the South Orkneys region later). There is no doubt that the best cruise track would be clockwise from Punta Arenas to W1, W2 - W4 - W5 - W6, (W7), W8 to Port Stanley (65 days) or Cape Town (76 days). A clockwise track would give the most opportunity to achieve the highest priority sites which would be done early in the leg (W1, W2, W4).

The schedule for the leg was discussed at length. An anticlockwise leg taking in all sites (including Drake Passage and Bransfield Strait) would require 88 days. This schedule includes a minimum of logging and Double HPC only at W1, W2 and W8. If logging is required, site W5 will have to be dropped. The attached table gives the cruise schedule with termination at 1) Port Stanley, Falkland Islands and 2) Cape Town.

It was best if the Weddell Sea leg were followed by a Subantarctic leg ending in Port Stanley as this would mean less transit time to Cape Town. Much discussion followed and concluded by Hayes asking if the panel has really considered what information logging could actually provide that might be useful in the Antarctic and Subantarctic programs.

Weddell Sea Leg

		Water Depth	Penetration	Days	
Punta Arenas to W1, W2				8	Transit
	W1	2000 m	500 m	5.5	Double HPC, no logging
	W2	3000 m	500 m	6.5	Double HPC, no logging
W2 to W4				2.0	Transit
	W4	3000 m	900 m	8.5 0.5 1.0	No HPC Basement drilling Logging
	W4A	3000 m	300 m	3.0	No HPC, no logging
W4 to W5				2.0	Transit
	W5	5000 m	1000 m	12.0	No HPC, no logging Minimum basalt penetration
W3 to W6				2.0	Transit
	W6	3000 m	500 m	5.0	No Double HPC, no logging
	W7	1300 m	500 m	3.0	No Double HPC, no logging
	W8	700 m	500 m	3.0	Double HPC
				62.0	
W6 to Port Stanley				3.0	Transit
			Total	65.0	
or W6 to Cape Town				14.0	Transit
			Total	76.0	

NB: No allowance has been made for bad weather.

South Atlantic Subantarctic Leg

La Brecque

The history of subduction related to the North Scotia Ridge, NE Georgia Rise, etc. was reviewed, as well as the plate motions that governed the gateway for deep water flow into the South Atlantic.

General discussion of the objectives for the leg ensued and the consensus was that there are two important parts to the science. One a N-S traverse to link up with (and complete) a N-S traverse started with sites 513 and 514, and second a set of sites related to paleotectonics. The highest priorities were set at

SA2, SA3, SA7	N-S traverse and gateway
SA5W and SA8	paleotectonics

Another site for the traverse and gateway is SA1.

Other sites for the Tectonics and gateway are SA6, and SA9.

Ciesielski and La Brecque will write up the rationale and objectives for the Subantarctic Leg. This is given in Appendix I.

A schedule for a 50 day leg was discussed (on the assumption that a Weddell Sea Leg and a Subantarctic leg could not exceed 120 days). The leg would begin at Port Stanley and terminate at Cape Town. There would be no logging and minimal basement coring. This would allow 5 sites to be drilled (SA2, 3, 5W, 7, 8).

It was noted that the South Orkneys sites (W6, 7, 8) could be picked up on this leg if closed out on the Weddell Sea leg.

It was felt that minor additions and editorial changes should be made to the Atlantic Subantarctic Drilling Program. Hayes suggested adding a statement regarding the adequacy of or plans for site surveys (ACTION - Kennett and Ciesielski). The final document will be sent to PCOM and to the SOHP chairman with a request that SOHP panel members review it and respond to Arthur as to ranking before the next PCOM meeting. A covering letter will indicate that the document is intended to clarify earlier submissions and to correct apparent misunderstandings.

Subantarctic Leg

		Water Depth	Penetration	Days	
Port Stanley to SA 5W				4.0	Transit
	SA 5W	2000 m	800 m	5.5	
SA5W to SA2				2.0	Transit
	SA 2	4000 m	700 m	8.5	Double HPC.
SA2 to SA3				1.0	Transit
	SA 3	4300 m	500 m	7.5	Double HPC.
SA3 to SA7				3.0	Transit
	SA7	4300 m	700 m	7.0	
SA7 to SA8				0.5	Transit
	SA8	2500 m	500 m	5.0	Double HPC
SA8 to Cape Town				3.5	Transit
			Total	48.0	

No logging and only minimal basement penetration

In a letter to Kennett, Larson asked which drilling would have a higher priority for SOP, Subantarctic Indian Ocean or Subantarctic Atlantic Ocean. The panel voted 8 to 2 in favour of South Atlantic drilling.

Kennett — Proponents for the

Weddell Sea Leg: Fuetterer and Elliot
Subantarctic Leg: Ciesielski and La Brecque

Logging requirements

The question of the ODP Logging, Double HPC and basement penetration requirements was discussed at length before Hayes arrived and again in the light of his comments and advice.

Hayes — The question SOP has to address is, "What will those requirements cost in terms of the scientific objectives?" The onus is on the SOP to show that the best science comes from waiving the requirements. Internal relative priorities must be determined and the absolute importance of the sites established.

The SOP reached the view that the requirements are too onerous in the light of time limitations (max 70 days), the long transit times, and the number of sites necessary in order to meet the primary science objectives, and that a request be made for the requirements to be waived.

Kerguelen - E. Antarctica Leg(s)

The panel recognized two major problems in attempting to refine the legs for the southern Indian Ocean sector.

1) the inordinately long transit times from either Durban or Reunion to Kerguelen or Prydz Bay and from Kerguelen to Freemantle.

2) the lack of data for the southern Kerguelen Plateau (the Australians have run surveys this season (84-85) and the French will next season).

Garrison — The operating capabilities of the JOIDES Resolution impose certain constraints. The maximum length of a cruise without refuelling is 106 days, therefore two legs totalling 120 days requires refuelling at Kerguelen.

A crew and scientist change at Kerguelen would require a ship with a carrying capacity of 115 passengers. Extra fuel for the Resolution would be needed (about 100,000 gallons) and 25 tons of supplies.

Transit times are:

Reunion or Durban to Prydz Bay	12.5 days
Kerguelen I to Freemantle	9.5 days
Prydz Bay to Kerguelen I	6.5 days

Therefore

One 70 day leg = ~30 days transit + 40 days drilling

Two 52 day legs = ~34 days transit + 72 days drilling

Two 60 day legs = ~34 days transit + 86 days drilling

On the basis of available site data, two Kerguelen Plateau legs were developed.

S. Kerguelen - E. Antarctic Margin Leg

The Southern Kerguelen Leg would include the Antarctic Margin transect (K1-4), an AABW site (K11), and three sites giving a minimum of depth coverage (K5, K12) together with stratigrahic coverage (K7, K12) including basement penetration (at K7).

Northern Kerguelen Leg

The northern Kerguelen Leg was developed on the basis of the Schlich proposal which was transmitted by Wannasson. Four of the sites were selected on the recent French MCS track data and the other two on the South East Indian Ocean Ridge transect. The Kerguelen Plateau (Heard Plateau) sites were selected to cover the stratigraphy and reflectors identified in the MCS data: Neogene and sediment packages S1 and S2 at site KHP1; Eocene to Cretaceous and sediment packages I1 and top of I2 at site KHP3 alt; Paleocene to basement and package I2 at site KMP4 alt. A deep water Neogene site near the base of the Plateau and at the southern end of the transect at site KHP5 alt, and sites S8b and S8d on the Kerguelen-Broken Ridge transect.

There was discussion of whether it would not be better, from the point of view of the history of the Kerguelen Plateau region, to drop the traverse sites S8b and S8d in favor of K10 and an additional site, adjacent and at greater water depth, in order to provide a more complete coverage of the vertical and horizontal changes in water masses with time.

S. Kerguelen Leg

		Water Depth	Penetration	Days	
Transit to Prydz Bay (Antarctica)				12.5	Transit
	K 1-4			18.0	Total.
K4 - K5		—	—	1.75	Transit
	K5	2850 m	550 m	7.5	
K5 to K11				0.25	Transit
	K11	3840 m	500	8.00	
K11 to K12				1.25	Transit
	K12	1610 m	500 m	6.5	Double HPC
K12 to K7				0.5	Transit
	K7	1090 m	1000 m	7.0	Basement
K7 to Kerguelen I.				2.5	Transit
				65.75	

Less logging time 8
Cruise length without logging 58 days

Northern Kerguelen Leg

		Water Depth	Penetration	Days	
Kerguelen I to KHP1				0.5	Transit
	KHP1	660 m	900 m	6.0	Double HPC
KHP1 to KHP4 alt				0.25	Transit
	KHP4 alt	990 m	700 m	5.00	
KHP4 alt to KHP 3 alt				0.75	Transit
	KHP3 alt	750 m	700 m	6.0	
KHP3 alt to KHP5 alt				0.5	Transit
	KHP5 alt	2310 m	750 m	7.5	
KHP5 alt to S8b				2.0	Transit
	S8b	3135 m	600 m	6.5	
S8b to S8d				2.0	Transit
	S8d	3500 m	700 m	8.0	
S8d to Freemantle				8.0	Transit
				53.0	
	Less logging time			6.0	
	Cruise length without logging			47.0 Days	

The SOP agreed unanimously that PCOM should be requested to plan for the start of drilling at Prydz Bay or the southern Kerguelen Plateau on January 1st, 1988.

Subantarctic Indian Ocean Objectives

The panel reviewed the results of the letter ballot which had been sent to panel members earlier in the spring concerning the ranking of sites in the southern Indian Ocean. The results of the ballot were:

(i) Very high priority placed on Kerguelen to Broken Ridge Transect.

(ii) Adelie Land (though it was recognized that it was located far to the east).

(iii) Crozet Plateau and fracture zones.

(iv) Agulhas Plateau.

(v) "Cold Spot."

Hayes suggested that these priorities, as presented in the letter to Larson, be clarified. (ACTION - Kennett).

Kennett pointed out that the program followed the Indian Ocean is far from established and although there is a tendency to think only in terms of proceeding north of Australia into the western Pacific, the SOP should keep Adelie Coast and the "Cold Spot" as objectives to provide PCOM with alternatives. Hayes pointed out that PCOM was leaning very strongly towards an exit from the Indian Ocean north of Australia because:

(i) no other panels were pushing for southwest Pacific drilling;

(ii) the priority for western Pacific drilling was north of the equator. Kennett pointed out that after 5 years of drilling it was possible (in the most extreme case) that there would have been only two legs drilled in the Southern Hemisphere - Weddell Sea and Kerguelen.

The panel discussed the following new proposals:

(i) Agulhas Plateau - French proposal;

(ii) Fracture zone drilling - Dick;

(iii) Adelie Coast - Wanasson;

(iv) the Australian proposals in Subantarctic areas.

Australian Proposals

It was questioned whether the panel should discuss the Australian sites adjacent to Tasmania and in the Australian Bight. Hayes indicated that the panel should not worry too much about the geographic setting but rather the appropriateness of the objectives to topics that concern the SOP. Fuetterer indicated that Australian Bight drilling was important to establish the time of separation of Australia and Antarctica and that this aspect was better addressed off Australia. Anderson agreed but suggested that other objectives (e.g. Neogene) could be addressed better, on the Antarctic margin. Weissel had reservations about drilling a thick Neogene succession and trying to address early rifting problems at the same site.

Agulhas Plateau

It was pointed out that the Indian Ocean Panel was sent a copy of the Agulhas Plateau proposal and that this drilling could be added to a leg leaving from Cape Town. Weissel pointed out that the IOP ranked one Agulhas site as 14th and two sites 18th in their priority list. Barker felt that the SOP should encourage drilling in the Subantarctic South Atlantic particularly with respect to the Paleogene history. Ciesielski pointed out that the numerous hiatuses would pose problems and that for Neogene water mass studies, Crozet Plateau was more promising than Agulhas.

It was decided that a new priority listing of Subantarctic objectives should be prepared, separating out the Crozet Plateau from fracture zone drilling. A revised priority listing is as follows:

(i) Subantarctic Atlantic Ocean.

(ii) Kerguelen-Broken Ridge Transect.

(iii) Adelie Coast.

(iv) Fracture Zone drilling.

(v) Agulhas Plateau.

(vi) Crozet Plateau.

(vii) "Cold Spot."

It was pointed out that the SOHP was under the impression that the Adelie Coast drilling would duplicate the Prydz Bay objectives. This misconception is to be corrected. (ACTION - Anderson and Wannesson).

Anderson agreed to request site survey data from the Australians for Amery Basin (ACTION - Anderson). The panel agreed to endorse any plans for acquisition of additional survey data in the Amery Basin area.

South Pacific Objectives

Kennett pointed out that it was important for the panel to generate objectives in the South Pacific even if they are for very long-term planning. It was pointed out that the South Pacific has been extremely neglected by previous drilling.

The following list of "Major Drillable Concepts," not in any order of priority, was prepared by the panel:

(i) Adelie margin.

(ii) "Cold Spot."

(iii) Ross Sea - East-West Antarctic rifting history.
- Paleogene - Cretaceous paleoenvironments.
- history of uplift of Transantarctic Mountains.

(iv) Eltanin Fracture Zone - large offset, fast slipping fracture zone.

(v) Louisville Ridge - Is it a "hot spot" or is it fracture zone controlled?

(vi) West Antarctic - Bounty Trough conjugate.
- West Antarctic ice sheet history and Mesozoic rifting history.

(vii) West Antarctic Margin - Tectonic development.

(viii) Chile Current evolution - South American climate.

(ix) Chile Triple Junction.

(x) N-S Transect for paleoceanography.

(xi) Tasmanian Seaway evolution.

(xii) Deep/shallow basin seismic stratigraphy - denudation - western Tasman Basin.

(xiv) South New Zealand - seismic stratigraphy - Campbell Plateau, Bounty Trough area.

(xv) North Island - tephrochronology, Cenozoic record.

(xvi) Campbell Plateau - rifted margin, oceanward of base of scarp.

Future Activities for South Pacific Planning

It was suggested that: (i) input from outside the panel be sought as soon as possible; (ii) ideas be solicited through advertisements, perhaps in EOS, Geology and Nature; and (iii) a workshop follow. It was generally agreed that an advertisement, sponsored by the SOP, should solicit proposals for mid-to high latitude drilling in the South Pacific and announce that a workshop would be held in spring 1986. An attempt would be made to get proposals before the next SOP meeting.

The workshop would be open to all international participants. Funding would be sought from USSAC to cover the organization of the meeting and the costs of U.S. participants; foreign participants would have to pay own expenses.

The organizers of this workshop are: Ciesielski, Weissel and Anderson. Each country would be contacted so that their committees could find participants to make proposals and attend the workshop. (ACTION - Ciesielski, Anderson, Weissel).

The date for the workshop is tentatively set for mid to late April, 1986.

Other Business

The question of presenting SOP concerns at SOHP meetings was raised. Kennett agreed to ask Arthur about the next SOHP meeting and who should represent SOP. (ACTION - Kennett).

It was suggested that there be better liaison between the SOP and the lithosphere panel. (ACTION - Kennett to approach Larson).

Next Meeting

September 23-25, 1985 - Woods Hole Oceanographic Institution.

R. Schlich should be invited to attend this meeting.

Appendix I

SOP Panel Meeting
Gainesville, Fla.
April 24, 1985

ATLANTIC SUBANTARCTIC DRILLING PROGRAM: Summary of major objectives

The Subantarctic Mid-latitude Drilling Program (MLDP) sites address a number of tectonic and paleoenvironmental objectives of wide-ranging importance. The SOP has carefully considered the merits of this suite of sites in the context of ODP contributions to a regional and global history of paleoenvironmental and tectonic development. This document is meant to distill the objectives of the suite of sites. The MLDP incorporates the following objectives:

1. Determine the paleoenvironmental evolution from the Late Cretaceous to modern ocean for the critical passageway linking the South Atlantic and Weddell Basins.

2. Complete a mapping of the Middle-Late Cenozoic Polar Front and surface water mass migrations in this sector; a program begun by IPOD.

3. Test and extend a plate tectonic model based on marine data and Seasat imagery for the development of the North Scotia Ridge and the Andean Orogeny.

4. Examine the development of oceanic crust along a flow line from the generation of dual aseismic ridges at pseudofaults to steady state seafloor spreading.

All sites have multiple objectives within this plan.

MAJOR OBJECTIVES:

1. Determine the paleoenvironmental evolution from the Late Cretaceous to modern ocean for the critical passageway linking the South Atlantic and Weddell Basins:

The Subantarctic region is of critical importance for an understanding of paleoenvironmental interaction between the Weddell and Atlantic basin to the north. The tectonic development in the Subantarctic region during the Cretaceous and Paleogene profoundly restricted deep and intermediate water mass connections between the southern and northern areas. (Figure 1 displays the Santonian reconstruction of the Atlantic sector while Figure 2 displays the Eocene reconstruction of the proposed drilling region.) Continual expansion of this gateway by seafloor spreading resulted from the subsidence of the adjacent ridges and seafloor spreading, but the interbasin connections remained relatively shallow through much of the Paleogene. Sites SA3 and SA7 were selected on Late Eocene ocean crust. The sedimentary sequences in these two locations is expected to provide a history of the re-establishment of intermediate to deep water mass connections between the Weddell and Atlantic Basins during the middle Cenozoic. This history is expected to provide an important basis to interpret South Atlantic basinal sediments of Eocene and Oligocene age.

The effect of this system may be considered in the light of the teleconnective theory of Johnson where a modification of flow in a critical region will effect the environment of a distant region. The interbasin passageway is critical since all bottom water which enters the South Atlantic from the Weddell must pass through this passageway. Present day flow is strongly affected by the regional morphology. We therefore expect that the influence of the regional relief will increase at earlier periods in the basin's history. The age and subsidence history of the aseisimic ridges are exact analogues of the Greenland-Iceland-Faroes Ridge and are no less important than the latter features in understanding the development of Atlantic-Weddell-Indian paleoenvironment.

In total, the program provides three shallow water, one intermediate and four deep water sites for monitoring the vertical development of the water mass through time for the Subantarctic. These sites will provide a unique opportunity to interpret the development of Subantarctic vertical water mass structure because of the significant depth variation in the suite of sites.

Piston cores indicate that we will obtain Messinian carbonates from SA6, the only such site in the Southern Ocean. Because of a severe hiatus, much of the Paleogene and Late Cretaceous sediments from the Falkland Plateau DSDP sites are missing. Because of the different setting of sites SA6 and SA8, we hope to extend Paleogene carbonate sampling to the Late Maastrichtian. It is hoped that further drilling will provide carbonate sediments for stable isotopic analysis. Sites SA5W, SA5E, SA6, SA8 and SA9 are expected to provide a Late Createceous to Miocene carbonate record. Deep water sites SA1-3, SA7, SA9 will recover Eocene to Oligocene carbonate.

2. Map the development of the Polar Front and surface water mass migrations:

Sites SA1-SA3 represent a southward extension of the longitudinal traverse begun with DSDP sites 513 and 514. The traverse is intended to monitor the development and migration of surface water masses and the migrational history of the Polar Front. The long standing program with the South Atlantic working group and the OMD working group is continued by this panel. A continuation of the work already begun is essential to determing the development of mid-latitude water masses and the long and short term migrations of the Polar Front and surface water masses.

3. Test and extend a plate tectonic model based on marine data and Seasat imagery for the development for the North Scotia Ridge and the Andean Orogeny:

The Andean Orogeny generated a Mid-Cretaceous accretionary prism which extends 2000 km from Tierra del Fuego to South Georgia. Figure 3 displays the geometry of a model which predicts the 1000 km of convergence between the Malvinas Plate and the South American Plate. This model could explain the Andean Orogeny and link the North Scotia ridge sediments to Weddell Basin development. The MLDP would provide the important link between marine data sets and land geology.

Success in the MLDP effort will provide a critical link between terrestrial geologic observations and Weddell Basin development. According to the model to be tested, the sediments of the North Scotia Ridge are accreted from the opposing (northern) flank of a spreading center which generated the present day Weddell seafloor. In other words sediments now accreted in the North Scotia Ridge could represent deep water equivalents of the Falkland Plateau sequences recovered by DSDP sites 327, 329, 330, 511, 512 and the sedimentary sequences on the opposing basin margin of the sediments to be acquired by the Southern Weddell drilling.

The crucial test in linking the Malvinas plate model to the Andean Orogeny is the development of a time scale for subduction at the Northeast Georgia Rise. This time scale could then be compared to the timing of geologic events observed in the southern Andean Cordillera. Both sites SA5-W and SA5-E are required to unequically achieve these objectives. Drilling is the only means to develop this time scale.

4. Examine the development of oceanic crust along a flow line from the generation of dual aseismic ridges at pseudofaults to steady state seafloor spreading:

Figure 3 display the Middle Eocene location of the Islas Orcadas and Meteor Rises. These aseismic ridges are direct analogues of the Walvis Ridge-Rio Grande Ridge system. Leg 73 observed the connection between the development of the Walvis-Rio Grande system and the development of pseudofaults at propagating rifts. Subsequent aeromagnetic and ships surveys have substantiated the models. The Islas Orcadas and Meteor Rises are also generated at the pseudofaults of a propagating rift. The Walvis ridge was drilled by DSDP Leg 74 on the Walvis Ridge transect. Sites SA6, SA3, SA7, SA8 will provide another data set analogous to the Walvis Ridge Leg 74 transect in order to monitor the development of the magma chamber along a flow line.

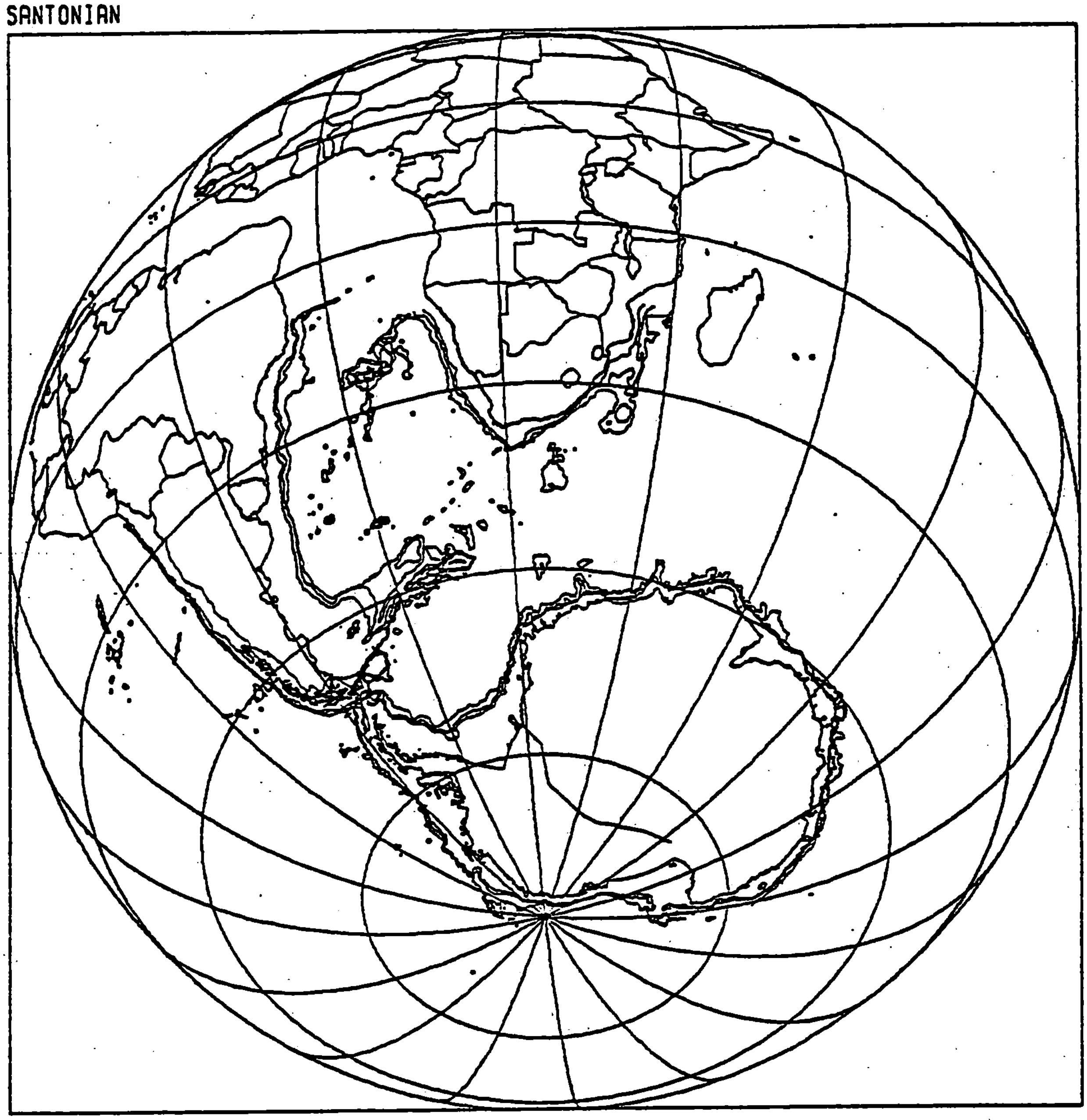
FIGURE CAPTIONS:

Figure 1: Reconstruction of the Antarctic Atlantic sector according to Norton and Sclater, 1979. Reconstruction is with respect to Africa in its present day position. Age of the reconstruction is the Santonian-Campanian boundary or magnetic chron C34.

Figure 2: Reconstruction of the Subantarctic sites for the Middle Eocene. Spreading center locations based on magnetic anomaly location and Seasat gravity field. Supporting data is presented in the OMD Region 13 synthesis.

Figure 3: Detail of Figure 1 at the Campanian-Santonian boundary (Chron C34). Spreading center location determined from magnetic anomaly locations. Convergence vectors show direction and total motion for Chrons C34 and C31 based on the poles of rotation determined from LaBrecque and Hayes, 1979 and Ladd, 1975. Base of the convergence vectors plotted along the North Scotia Ridge and the N.E. Georgia Rise. Note that total convergence may have reached 1000 km near Tierra del Fuego from Santonian to Maestrichtian time. Polarity of the subduction zone was likely southward dipping along the North Scotia Ridge and westward facing along the N.E. Georgia Rise.

Figure 1.



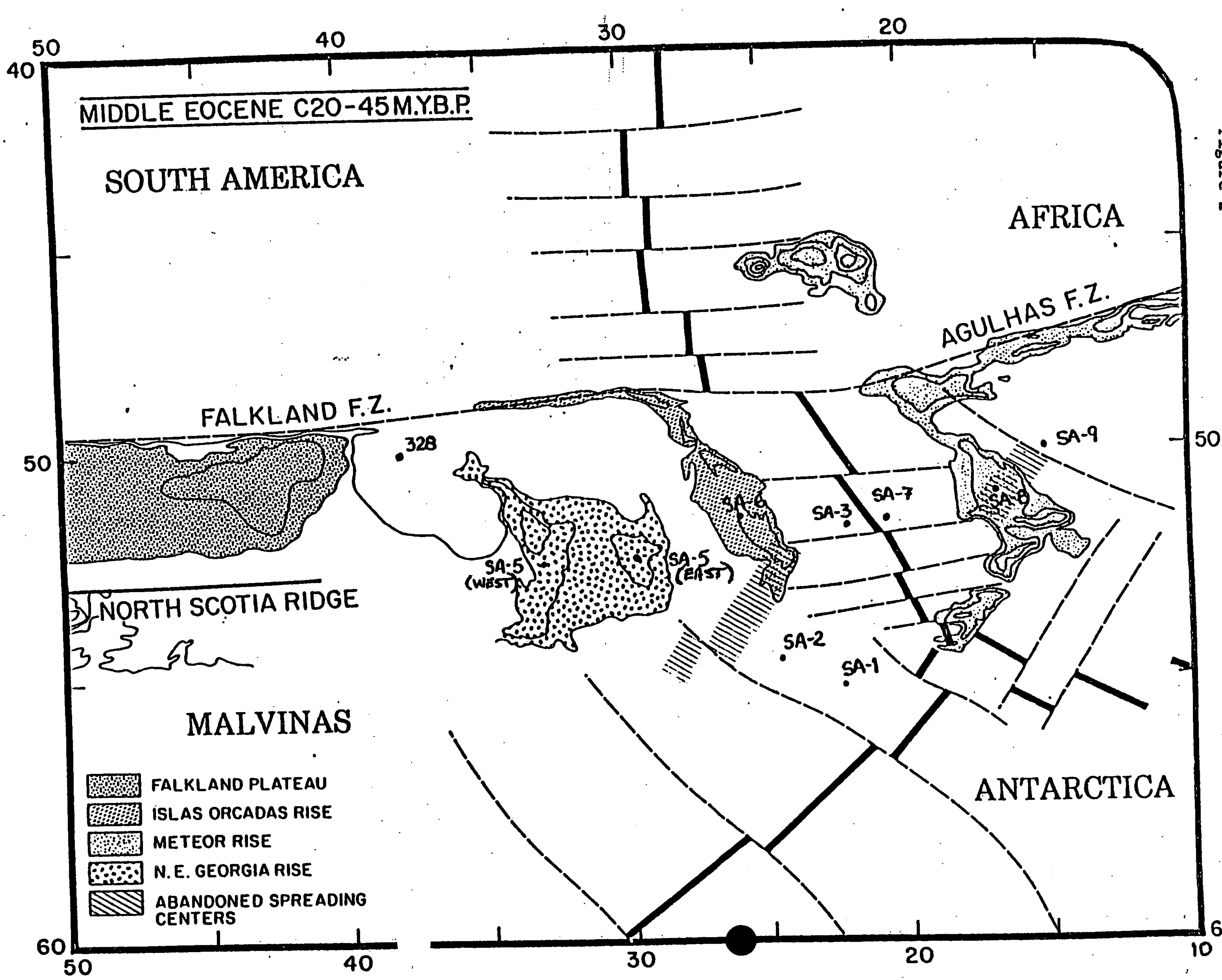
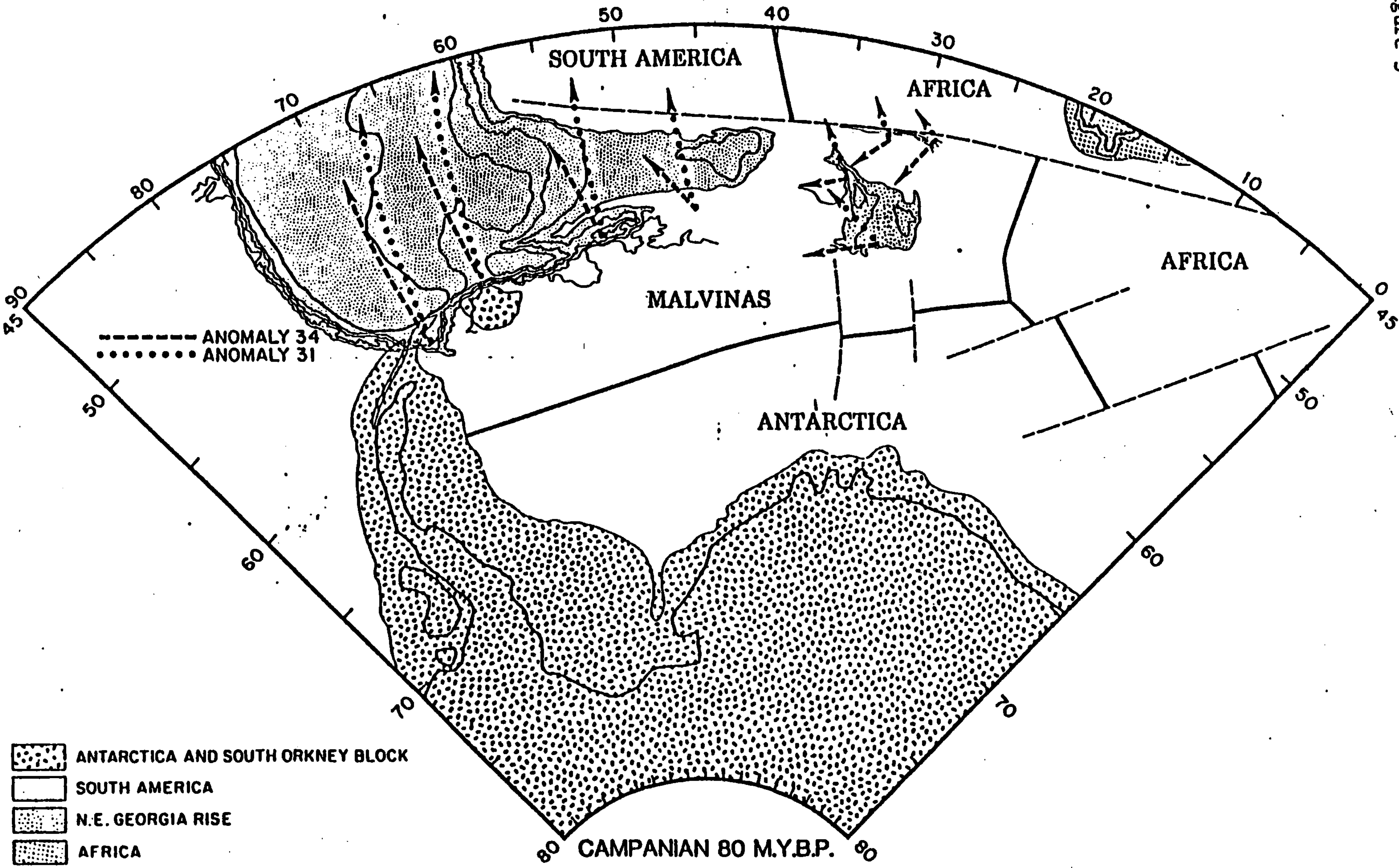

MIDDLE EOCENE C20-45 M.Y.B.P.
SOUTH AMERICA
AFRICA
AGULHAS F.Z.
FALKLAND F.Z.
328
SA-9
SA-7
SA-3
SA-6
SA-8
SA-5 (WEST)
SA-5 (EAST)
NORTH SCOTIA RIDGE
SA-2
SA-1
MALVINAS
ANTARCTICA
FALKLAND PLATEAU
ISLAS ORCADAS RISE
METEOR RISE
N. E. GEORGIA RISE
ABANDONED SPREADING CENTERS
50
40
30
20
10
60

Figure 3


SOUTH AMERICA
AFRICA
AFRICA
MALVINAS
ANTARCTICA
ANOMALY 34
ANOMALY 31
ANTARCTICA AND SOUTH ORKNEY BLOCK
SOUTH AMERICA
N.E. GEORGIA RISE
AFRICA
CAMPANIAN 80 M.Y.B.P.
90
80
70
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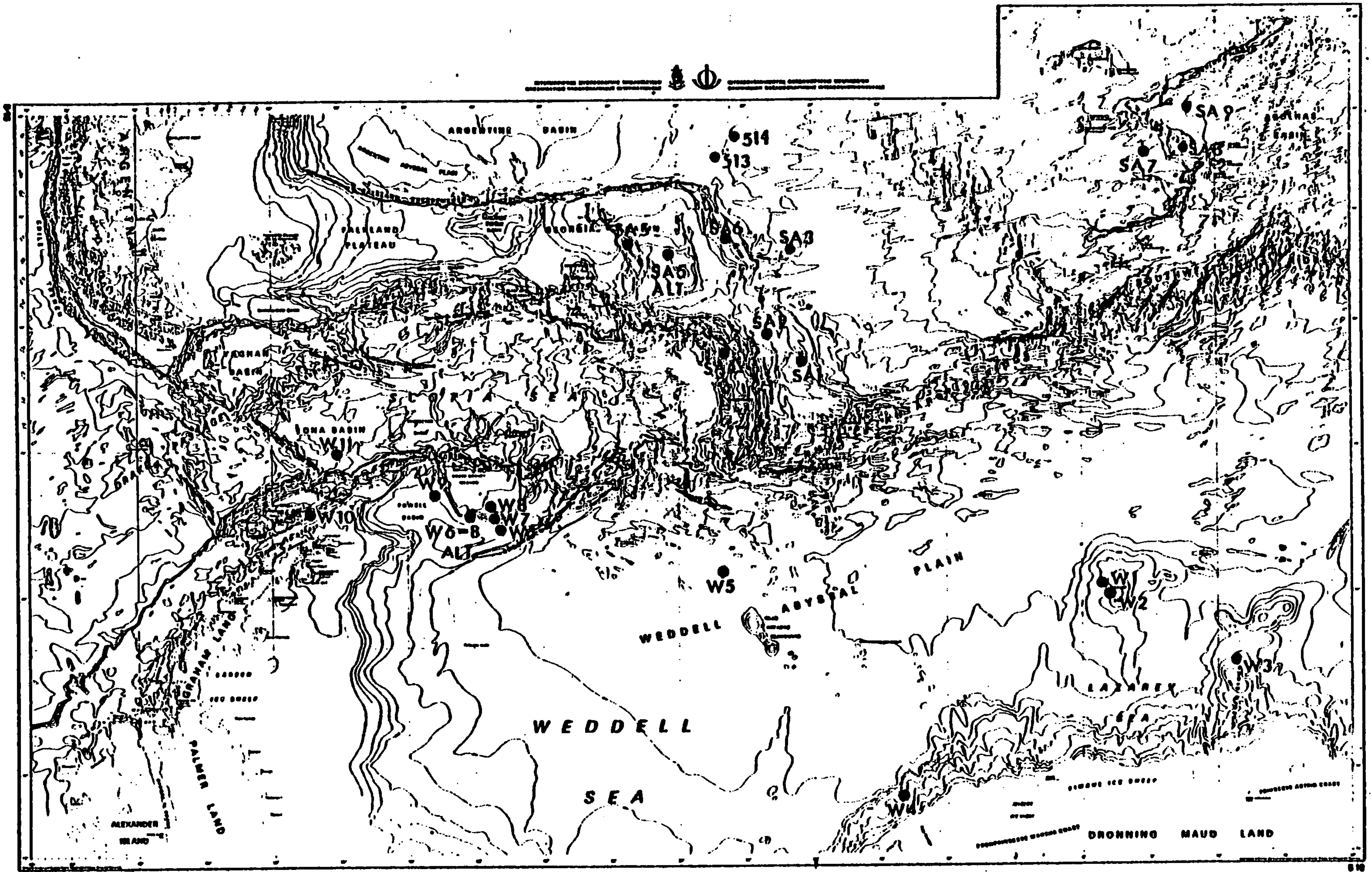


GENERAL BATHYMETRIC CHART OF THE OCEANS (GEBCO)

CARTE GÉNÉRALE BATHYMÉTRIQUE DES OCÉANS (GEBCO)

Recent Piston Coring - Sth Orkney Platform

A recent site survey cruise (by Peter Barker) to the Orkney Platform region recovered piston cores from the vicinity of Weddell sites W6-W8. These cores were taken from the apex of the platform to the base of the slope (3500 m) and cores located at all three proposed sites. Basal sediment ages are Brunhes to upper Matuyama, indicating the absence of major surface sediment erosion and the likely presence of a nearly complete Quaternary record.

Diatom preservation on the slope of the platform is fair to good. Ample pelagic species are present for sufficient age control. Diatom preservation is excellent in a sample examined, from the deepest core at 3500 m. Reworked microfossils are rare in all cores, suggesting minimal downslope transport (mass wasting) which might degrade the quality of W6-W8 Quaternary sections.

MEMORANDUM

TO: Roger Larson, Chairman, PCOM
FROM: Michael A. Arthur, Chairman, SOHP

RE: SOHP comments on Southern Ocean and Indian Ocean Programs (6/7/85)

Because we were unable to meet before the next PCOM meeting, I polled most of the members of the SOHP to obtain the latest opinion on ranking of Southern Ocean objectives. This was particularly important since Jim Kennett provided us with new information and revised objectives and drilling plans for the Weddell Sea program and new perspectives on potential Subantarctic drilling in the South Atlantic region. Below I have summarized our thinking on the Weddell Sea and Subantarctic drilling proposals at this time. In addition, I am providing you with a brief summary of our top 6 priority "legs" for Indian Ocean drilling, as you requested.

WEDDELL SEA

1) The SOHP agrees with SOP, as we always have, that Weddell Sea drilling is of highest priority relative to any Subantarctic drilling. Therefore it is of primary importance to complete the drilling program in the Weddell Sea if at all possible before undertaking Subantarctic sites.

2) Although it is within PCOM's purview to plan the course of drilling, SOHP endorses the proposed sequence of sites to be drilled as outlined in the April, 1985 minutes of SOP. The proposed sequence of drilling optomizes weather and ice windows, guarantees the best opportunity to drill the highest priority sites first, and provides the option of drilling sites on the South Orkney Plateau (W6-W8) at the beginning of a second leg if they cannot be completed on the first one. However, we would modify the program slightly as follows:

a) Retain W4a as an alternate site, as it was originally proposed (i.e. drill only if ahead of schedule).

b) Drill only 2 of the 3 proposed sites on the South Orkney Plateau; our priority would be to drill the 2 deeper sites (W6 and W7), as the objectives would be largely fulfilled with these 2 sites.

c) Drill W10 (Bransfield Straits) at the beginning of the leg. Weather or ice should not be a problem there, and it can be completed during the transit. The objectives at this site include diagenesis of organic matter in a hydrothermal regime undergoing rapid burial.

d) The time saved by not drilling W4a and W8 will allow logging of all sites, which we consider high priority (in disagreement with SOP), and also allow for drilling of W10.

I append the SOHP ranking of the Weddell Sea sites from our last panel meeting (which has not substantially changed) as well as the proposal for Weddell Sea drilling sequence from the April, 1985 minutes of the SOP for your convenience.

SUBANTARCTIC TRAVERSE

The SOHP originally ranked the proposed South Atlantic Subantarctic traverse as second priority relative to both Weddell Sea and to the six highest priority SOHP Indian Ocean programs. However, the recent revised and restated objectives of the SOP for S. Atlantic Subantarctic drilling are very attractive to us. Particularly important is the opportunity to test the paleotectonic/geographic reconstructions of LaBrecque, which suggest that there might have been a nearly continuous barrier to deep-water circulation between the Southern Ocean and the S. Atlantic basins prior to the Late Eocene. Such a model has significant ramifications for the timing of onset of of intensified deep circulation, Eocene-Oligocene hiatuses and contourite drifts, etc. Therefore, SOHP supports the idea of a short Subantarctic leg in the South Atlantic, and we rank that leg above the proposed Indian Ocean Subantarctic traverse (the so-called Northern Kerguelan Plateau-southeast Indian Ridge —polar front transect)

Our ranking of the proposed South Atlantic Subantarctic traverse sites is as follows (consistent with the minutes of our last meeting in February, 1985):

1) SA-8
2) SA-2
3) SA-3
4) SA-5W

Sites SA-8, SA-3, and SA-5W will examine Paleogene-Recent paleoceanographic and tectonic history of the Subantarctic region, and particularly will provide valuable information bearing on the history of bottom-water circulation. SA-2 and SA-3 will also be part of a transect to examine the Neogene-Recent (and perhaps older) history of fluctuations in the polar front.

The SOHP endorses a leg composed of these four sites that could be drilled in transit from Port Stanley to Cape Town, as proposed by SOP. Again, elimination of site SA-7, which is the conjugate to SA-8, would allow logging of all sites, and basement penetration as required. We reemphasize that, should some priority Weddell Sea drilling not be completed during the first leg, it should be done at the expense of some of the SA traverse sites.

Again, we attach the proposed SOP and SOHP priorities and estimated drilling times for reference.

(from SOHP minutes 4/85)

H. Weddell Sea (Leg 114) and Subantarctic Traverse

Drilling times used in SOP ranking and summary are very optimistic; when more realistic times are used the proposed sites probably cannot be accommodated in a 70 day leg.

Priority	Sites	Objective	(meters) Water Depth	(meters) Depth Penetration	New* Estimate	SOP Time
1.	W1 (Maud Rise)	(Mesoz.-Cenoz.	3000	500	5-1/2	3-1/2
2.	W2 (Maud Rise)	(paleoclimates— (most complete record	3500	500	6	4
3.	W4 (Caird Margin)	Antarctic glacial sedimentation on margin	3040	900	8-1/2	6 (dipping reflectors)
4.	W5 (Weddell Basin)	Onset glacial seds.	4950	1000	13 +	9-1/4 (basalt)
5.	W10 (Bransfield Basin)	Quat. high resolution seq. w/hydrothermal alteration of O.M.	2000	600	4	3-1/2
6.	W6)		3500	500	6	4
7.	W7) (S. Orkney Plat.)		2100	500	5	3
8.	W8) (AABW from history)		700	500	2	2
					50 days	

*Estimates based on new tables supplied by ODP; do not include logging or transit.

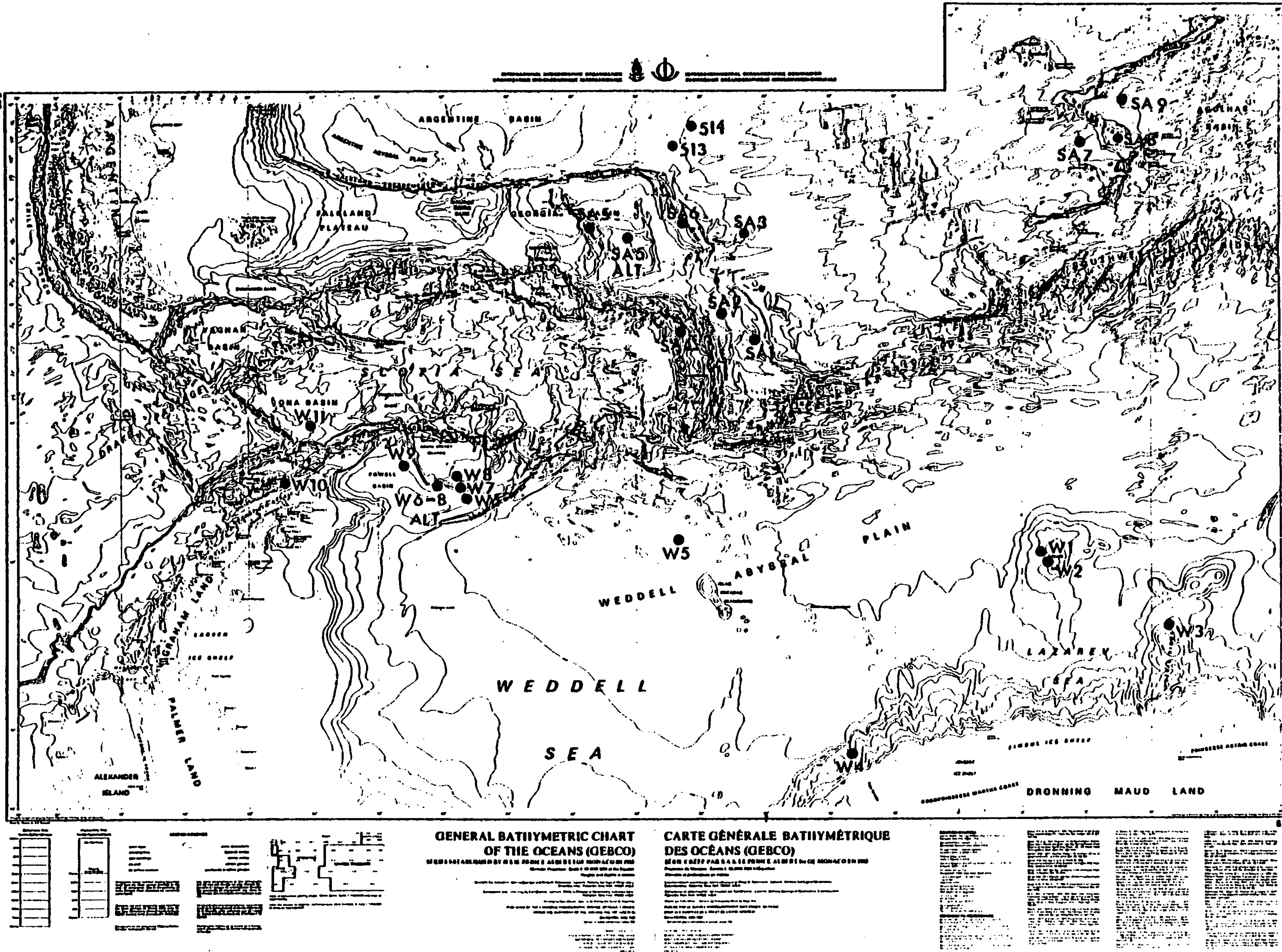
W6, W7, W8 are moved to lower priority; we would rank them above W5 (i.e. priority #4) if it can be shown that the objectives can be achieved (using grain size and magnetic fabric in order to monitor AABW production through time and examine water masses at different depths). We consider this an important objective, but are skeptical of the ability of proposed methods to solve the problem. Part of site survey requirement should be to demonstrate method on piston or gravity core samples. Need feedback from SOP. In addition, SOHP recommends that at least one site penetrate base of contourite stack to date onset of current-induced sedimentation. (Note also that W5 should be moved out of local area of faulting and structure exhibited on seismic lines.

(from SOP minutes 4/85)

Weddell Sea Leg

		Water Depth	Penetration	Days	
Punta Arenas to W1, W2				8	Transit
	W1	2000 m	500 m	5.5	Double HPC, no logging
	W2	3000 m	500 m	6.5	Double HPC, no logging
W2 to W4				2.0	Transit
	W4	3000 m	900 m	8.5 0.5 1.0	No HPC Basement drilling Logging
	W4A	3000 m	300 m	3.0	No HPC, no logging
W4 to W5				2.0	Transit
	W5	5000 m	1000 m	12.0	No HPC, no logging Minimum basalt penetration
W3 to W6				2.0	Transit
	W6	3000 m	500 m	5.0	No Double HPC, no logging
	W7	1300 m	500 m	3.0	No Double HPC, no logging
	W8	700 m	500 m	3.0	Double HPC
				62.0	
W6 to Port Stanley				3.0	Transit
			Total	65.0	
or W6 to Cape Town				14.0	Transit
			Total	76.0	

NB: No allowance has been made for bad weather.


ARGENTINE BASIN
FALKLAND PLATEAU
GEORGIA
SCOTIA SEA
POWELL BASIN
WEDDELL ABYSSAL PLAIN
WEDDELL SEA
LAZAREV SEA
AGULHAS BASIN
GRAHAM LAND
PALMER LAND
ALEXANDER ISLAND
DRONNING MAUD LAND
S14
S13
SA9
SA7
SA3
SA5
SA5 ALT
SA2
SA1
W11
W9
W8
W7
W10
W6-8 ALT
W5
W1
W2
W3
W4
GENERAL BATHYMETRIC CHART OF THE OCEANS (GEBCO)
CARTE GÉNÉRALE BATHYMÉTRIQUE DES OCÉANS (GEBCO)

SOHP RANKING

I. **Subantartic Traverse:**

The SOHP considers this set of sites to rank lower in priority than the entire Weddell Sea program as well as below our first 6 priority legs proposed for the Indian Ocean. We have ranked only the top 3 sites within the transect:

	Objective	Water Depth	Pene-trations	Operation Days
1) SA-8	(Paleocene-Recent carbonate record)	2500m	(500m)	4
2) SA-2	(Neogene polar front migrations	4100m	(700m)	8
3) SA-3	and AABW history)	4300m	(500m)	6
4) 1-5W	Paleogene Tectonics and oceanography	2000m	(800m)	8
			TOTAL DAYS	26

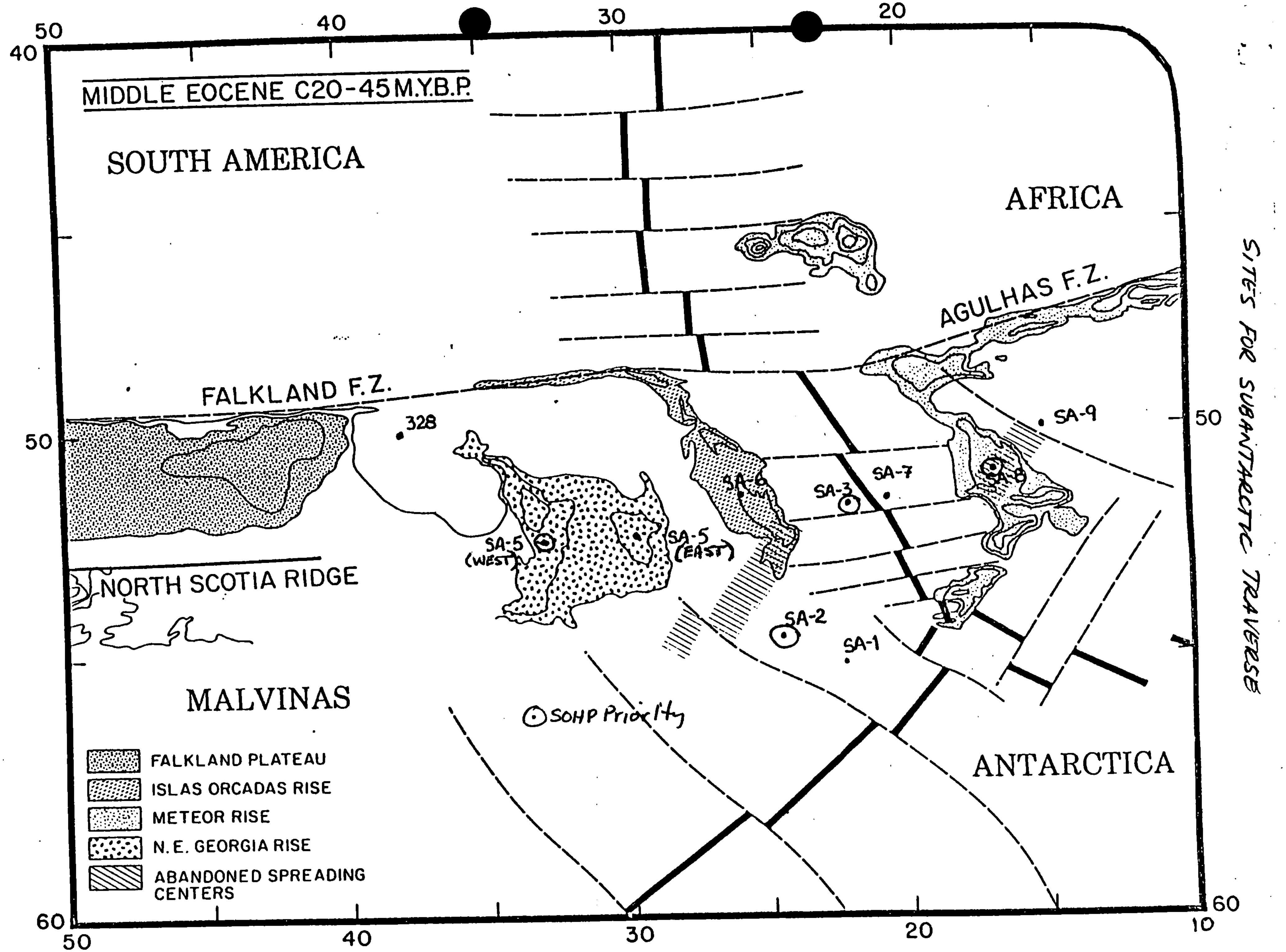
* recommend logging (not included in time estimate)

Subantarctic Leg

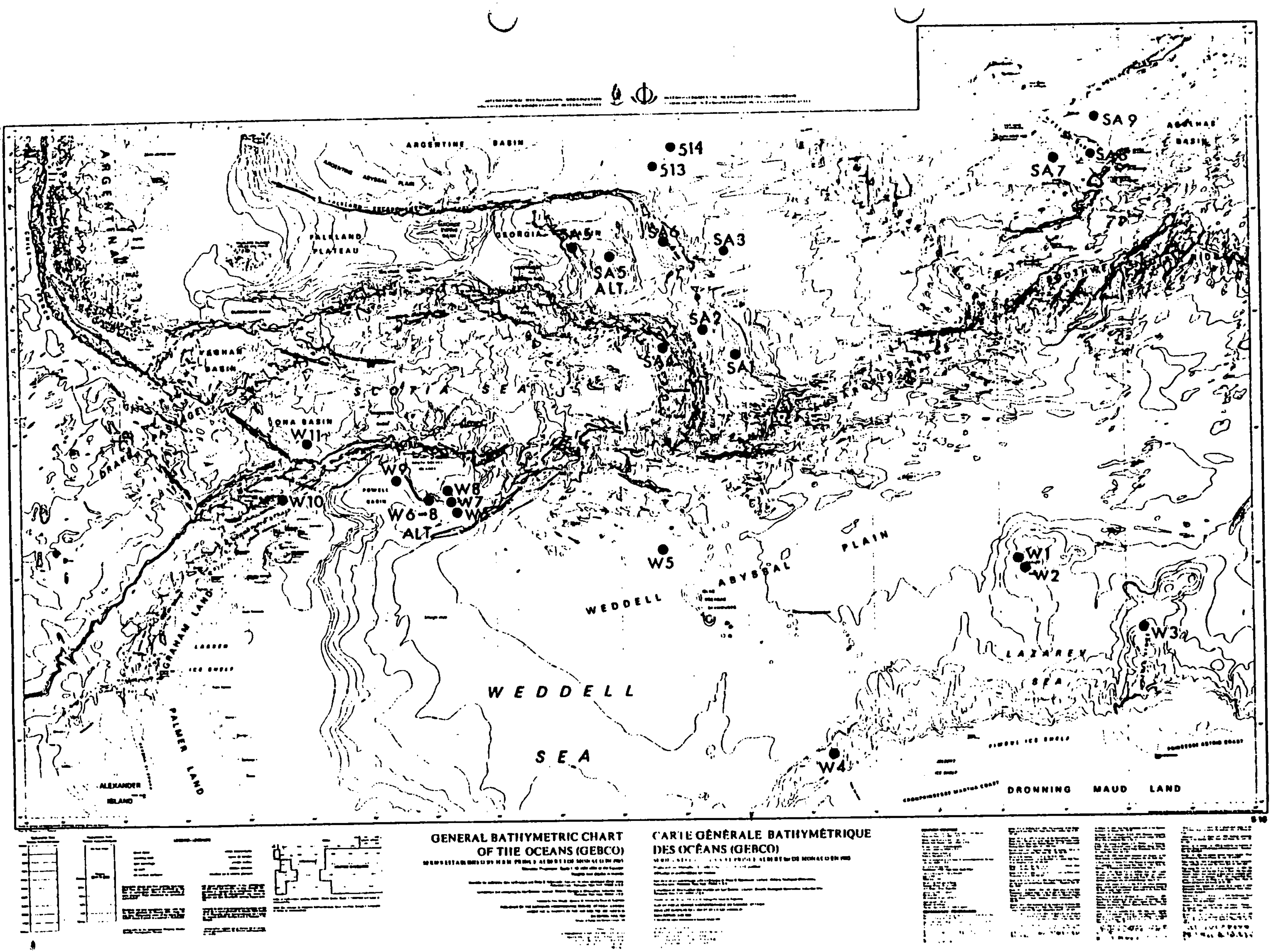
SOP PROPOSAL (4/85)

		Water Depth	Penetration	Days	
Port Stanley to SA 5W				4.0	Transit
	SA 5W	2000 m	800 m	5.5	
SA5W to SA2				2.0	Transit
	SA 2	4000 m	700 m	8.5	Double HPC.
SA2 to SA3				1.0	Transit
	SA 3	4300 m	500 m	7.5	Double HPC.
SA3 to SA7				3.0	Transit
	SA7	4300 m	700 m	7.0	
SA7 to SA8				0.5	Transit
	SA8	2500 m	500 m	5.0	Double HPC
SA8 to Cape Town				3.5	Transit
			Total	48.0	

No logging and only minimal basement penetration



MIDDLE EOCENE C20-45 M.Y.B.P.
SOUTH AMERICA
AFRICA
AGULHAS F.Z.
FALKLAND F.Z.
328
SA-9
SA-6
SA-3
SA-7
SA-8
SA-5 (WEST)
SA-5 (EAST)
NORTH SCOTIA RIDGE
SA-2
SA-1
MALVINAS
SOHP Priority
ANTARCTICA
FALKLAND PLATEAU
ISLAS ORCADAS RISE
METEOR RISE
N.E. GEORGIA RISE
ABANDONED SPREADING CENTERS
SITES FOR SUBANTARCTIC TRAVERSE


ARGENTINE BASIN
ARGENTINE ABYSSAL PLAIN
ARGENTINA
FALKLAND PLATEAU
GEORGIA
AGULHAS BASIN
SOUTHWEST INDIAN RIDGE
SCOTIA SEA
POWELL BASIN
DRAKE PASSAGE
GRAHAM LAND
LARSEN ICE SHELF
PALMER LAND
ALEXANDER ISLAND
WEDDELL ABYSSAL PLAIN
WEDDELL SEA
LAZAREV SEA
DRONNING MAUD LAND
514
513
SA 9
SA8
SA7
SA6
SA5
SA5 ALT
SA4
SA3
SA2
SA1
W11
W10
W9
W8
W7
W6-8 ALT
W5
W4
W3
W2
W1
GENERAL BATHYMETRIC CHART OF THE OCEANS (GEBCO)
CARTE GÉNÉRALE BATHYMÉTRIQUE DES OCÉANS (GEBCO)

55

60

Appendix A

INDIAN OCEAN PROPOSALS - PRESENT RANKING BY PANELS

TECP, Mar. 18-20, 1985

	Score
Makran	8.75
Intraplate Deformation	8.43
SW Indian Ridge Petrology } Bengal-Indus Fans }	7.00
90° East Ridge-Broken Ridge Hot Spot	6.50
Broken Ridge, Uplift and Rifting	6.43
Chagos-Laccadive Hot Spot } N. Somali Basin Deep Hole } Kerguelen Basement }	6.25
Red Sea	6.20
S. Australia Quiet Zone	6.00
Timor Collision	5.62
S. Australia, Old Ocean Crust	5.50

IOP, Mar. 20-22, 1985

	Score
Kerguelen, One Leg	9.50
90° East Ridge Hot Spot and Paleoceanography	8.25
Neogene Package	8.00
Red Sea	7.63
SE Indian Ridge Transect	7.38
Broken Ridge, Uplift & Rift	6.88
Kerguelen, Second Leg } Exmouth-Argo Transect. }	6.75
Intraplate Deformation	6.25
Davie Ridge	5.00
SW Indian Ridge Petrology	4.88
Chagos-Laccadive Hot Spot and Paleoceanography	4.63
Makran	4.50

SOHP, Feb. 21-23, 1985 + 6/10 Letter

Kerguelen-Amery Transect
Neogene Package
N. Somali Basin Deep Hole
Subantarctic Atlantic Transect
Kerguelen-SE Indian Ridge Transect
Exmouth-Argo Transect
Chagos-Laccadive Paleoceanography

SOP, Apr. 22-24, 1985

Kerguelen-Amery Transect
Subantarctic Atlantic Transect
Kerguelen-SE Indian Ridge Transect
Adelie Land Coast
SW Indian Ridge Petrology
Agulhas Plateau
Crozet Plateau
"Cold Spot"

LITHP, Feb. 26-27, 1985

Red Sea
(Hot Spot Trace)*
Cold Spot
SW Indian Ridge Petrology
(Crozet Basin)**
Carlsberg Ridge

*If a good program is formulated.
**If technical problems are solved.

85/348 (x 12)

IOP MEETING
20-22 March 1985
Miami, Florida

SUMMARY

IOP has reordered priorities for the projects it proposes for drilling in the Indian Ocean as follows, with scores of the voting, endorsement by thematic panels, and estimated drilling legs.

		Score	Thematic	Legs
1.	Kerguelen-Gaussberg, first leg	9.50	TS	1
2.	Ninetyeast Ridge	8.25	TSL	1
3.	Neogene Package	8.00	S	1
4.	Red Sea	7.63	TL	1
5.	SEIR	7.38		< ½
6.	Broken Ridge	6.88	T	½
7.	Kerguelen, second leg	6.75	TS	< 1
8.	Argo AP & Exmouth Pl.	6.75	S	1
9.	Cent. Ind. Basin & Distal Bengal F.	6.25	T	1
10.	Davie Ridge	5.00		< ½
11.	SWIR F.Z.	4.88	TL	< ½ - 1
12.	Chagos-Laccadive-Mascarene	4.63	TSL	< ½
13.	Makran	4.50	T	½ - 1
14.	Agulhas Pl., 1 site	3.50		< ½
15.	Rodriguez T.J.	2.88	L	½ - 1
16.	Fossil Ridges	2.25	L	< ½ - 1
17.	Cold spot	1.75	L	½?
18.	Agulhas Pl., 2nd site	1.25		< ½
19.	W. S. Australia	1.13	T	< 1
20.	N. Somali Basin	0.63	S	1+

Estimated drilling times may, in many cases, be variable, and some of the top priorities could be accomplished in partial legs arranged in a logistically feasible ship's track.

Arranging these top-priority projects into a schedule is constrained by severe weather limitations, especially for the Kerguelen-Gaussberg (1 and 7) and northern Arabian Sea projects (3 and 13). Two sample "strawman" schedules are shown, but many others were discussed and are considered in the full minutes of the meeting:

Sample "Strawman" Schedules

19 Month

87	M	Davie
	A M	Neogene
	J J	Red Sea
	A S	Makran Cent. Ind. B.
	O N	Chagos-Lacc. SWIR
88	D J	Kerguelen
	F M	Kerguelen ½ SEIR
	A M	½ SEIR Broken R.
	J J	Ninetyeast R.
	A S	NW Austr.

24 Month

87	M A	Agulhas Pl. Davie R.
	M J	½ Neogene ½ Red Sea
	J A	½ Red Sea ½ Makran
	S O	½ Neogene Cent. Ind. B.
	N D	Chagos-Lacc. Fossil-Mascarene
88	J F	Kerguelen
	M A	SWIR
	M J	Rodriguez T.J.
	J A	SEIR Broken R.
	S O	NW Austr.
	N D	Ninetyeast Fossil-Wharton
89	J F	Kerguelen

85/318

JOIDES LITHOSPHERE PANEL MEETING

February 26-27, 1985

at Scripps Institute of Oceanography

La Jolla, California

SUMMARY

1. MISCELLANEA

a) Strong support for TAMU drill pipe TV acquisition but recognize complexity of problem and urge TAMU take advantage of existing expertise within community.

b) LITHP continues strong support for both 504B drilling and for a higher priority to be set on lithosphere drilling within ODP. Community support will be solicited in an attempt to persuade PCOM of this.

c) LITHP reiterates the need to have Keir Becker appointed as a member.

2. PROPOSAL REVIEW

a) Batiza Volcanoes, Fox-MacDonald EPR (9-10°N), Bougault EPR 13°N and Francheteau-Hekinian EPR 13°N all considered as part of EPR focussed drilling effort.

b) Whitmarsh anelastic strain release: strong support for trials on 106 or 109 to at least determine if orientation problem is manageable with gyro magnetometer.

c) Indian Ocean - see later.

3. EPR DRILLING

a) All efforts focus on choosing best location between 9-13°N: final decision not possible until early 1986 because of crucial summer 1985 seismics acquisition. Request next meeting in France to permit full French participation in planning. Request immediate appointment of co-chiefs to facilitate planning (recommend Bougault and MacDonald).

b) Downhole measurements prospects look good. Panel approved EOS article to further stimulate interest. Yet again wireline reentry capability recognized as vital component of progress here.

4. MARK DRILLING

a) SeaMarc I survey delayed to May so final site selection not practical until summer.

b) Majority of panel preferred using 106-109 to get two holes started rather than concentrating on a single hole.

5. INDIAN OCEAN

Priorities are:

1. RED SEA: L1 (Working Group)
2. AUS-ANT DISCORDANCE: L6 (Langmuir)
3. SW INDIAN RIDGE FRACTURE ZONE: L4 (Dick and Natland
4. CARLSBERG RIDGE: L2 (Natland)

If a good hot spot trace program is formulated we would place that second only to the Red Sea. If Brocher can show reasonable possibility of solving technical problems then Crozet Basin (L7) would be ranked below Dick and Natland but above Natland.

IMPORTANT: These are LITHP's prorities only WITHIN the Indian Ocean. We consider back-arc spreading center drilling in the Western Pacific to be a significantly higher priority than all of the above projects.

6. WESTERN PACIFIC

Major progress planned at next meeting when results of Hawkins' workshop are available.

EXECUTIVE SUMMARY OF TECTONICS PANEL MEETING
March 18-20, 1985; Lamont-Doherty, NY

I. RECOMMENDATIONS FOR INDIAN OCEAN DRILLING

We ranked targets using the voting system adopted in our September 1984 meeting in London. Eight members voting, awarding each target a score of 0 to 10. Score reported is the average, followed (for top four) by the spread. A very brief justification is provided for the top four:

1) Makran accretionary prism and slope basins (Leggett proposal) 8.75; 6-10. Excellent opportunity to address: rates of deformation and uplift in clastic-dominated prism, and transition from slope-basin sediments to basement.

2) Intraplate deformation and fluid flow (Weissel et al.) 8.43; 7-10. Innovative plan to determine timing and rates of deformation of long-wavelength flexures in an intraplate setting, and to address how fluid flow influences high heat flow.

3) (tie) Southwest Indian Ocean fracture zone (Dick & Natland) 7.0; 2-9. Opportunity to document vertical sequence of rock types and fabrics, in a setting characterized by slow relative plate motions, for comparisons with deformed parts of ophiolites on land.

4) (tie) Bengal-Indus fans (Curray et al.) 7.0; 3-10. Addresses a fundamental on-land tectonic problem, the uplift history of a collisional orogen, the Himalayas. Distal fan facies may reflect timing and rate of uplift as well as eustatic sea-level changes.

Targets 5-10 were ranked as follows. Comments in the minutes explain that drilling on Kerguelen (#7) and in the Red Sea (#10) would have ranked higher if proposals at hand had included specific tectonic objectives:

5)	Ninetyeast Ridge, Broken Ridge hot-spot targets	6.50
6)	Broken Ridge rifting and uplift (Weissel et al.)	6.43
7)	(tie) Chagos-Laccadive ridges (Duncan; Heirtzler)	6.25
7)	(tie) N. Somali Basin (old Tethyan crust)	6.25
7)	(tie) Kerguelen	6.25
10)	Red Sea (proposal of Red Sea W. G. presented by Cochran)	6.20

II. PANEL MEMBERSHIP

Panel unanimously feels that our present size maximizes efficiency and that important thematic interests are adequately represented. We recommend no additional members at this time.

III. RECOMMENDATIONS FOR CO-CHIEF SCIENTISTS, LEG 110 (BARBADOS RIDGE)

In alphabetical order: J. Ladd, A. Mascle, C. Moore, M. Marlow

IV. NEXT MEETING

Either: a) St. Johns, Newfoundland in October to enable us to visit JOIDES RESOLUTION after Leg 105; b) Tokyo in October to facilitate briefings by Japanese scientists on Western Pacific tectonic problems. Actual dates await firmer ship schedule.

"EXECUTIVE SUMMARY" of SOHP Meeting

February 21-23, 1985; Cambridge U.K.

I. Recommend to ODP (Equipment/Techniques for Shipboard Use

A) Development of "sand core-catcher" to enhance recovery in unconsolidated sand-dominated sequences.

B) That continuous "strip" photography (e.g. Tom Chase method) be considered for more routine shipboard use.

C) That palynology be considered as a staffing position on board ship more routinely.

II. Recommendations for Co-chiefs (for Legs in which SOHP has strong interest)

A) Leg 107 (Tyrrhenian Sea): Bob Thunell; Maria Cita; Kim Kastens; Jean Mascle

B) Leg 108 (NW Africa): Michael Sarnthein William Ruddiman

C) Leg 109 - no suggestions

D) Leg 110 (Barbadoes North): Casey Moore

E) Leg 111: no suggestions

F) Leg 112 (Peru Margin): Erwin Suess; Laverne Kulm

G) Leg 113: no suggestions

H) Leg 114 (Weddell Sea): James Kennett; Dieter Futterer

III. Recommendations for Panel Membership (new members)

A) John Barron (USGS; diatom biostratigraphy-Pacific paleoceanography) (alternate: R.C. Thunell, University of South Carolina; foraminiferal biostrat-paleoceanography).

B) Pierre Biscaye (LDGO: clay mineralogy, sedimentary processes) (alternate: R.E. Garrison, U.C.S.C.; carbonate diagenesis, sed. proc.)

IV. Short-range Planning Recommendations

A) Galicia(Leg 103): advise continuous coring at and below Cenomanian-Turonian boundary.

B) Baffin Bay(Leg 105): request 70 days for BB-3 and LA-5 drilling; emphasize that paleogene records from both sites are necessary.

C) Northwest Africa (Leg 108): a comprehensive late Paleogene-Quaternary package proposed by Sarnthein/Ruddiman is strongly endorsed.

D) Weddell Sea(Leg 114): Site priority ranking (see detailed minutes for reasoning)

	1. W1	
Entire program ranks above proposed Subantarctic traverse	2. W2	Operations times suggested by SOP are optomistic and should be recalculated by factor of about 1.5.
	3. W4	
	4. W5	
	5. W10	
	6. W6	
	7. W7	Would rank above W5 if it can be demonstrated that objectives can realistically be achieved.
	8. W8	

E) Sub-Antarctic Transect;

1. SA8
2. SA2
3. SA3

Remaining sites not ranked-may be possible to pick-up these 3 sites if W6,7,8 not drilled in Weddell Sea program.

V. Long-term Planning (SOPH considered COGS-2 document for both A & B below.

A) Indian Ocean Drilling: rankings as follows:

1. Amery (Antarctic) margin-Southern Kerguelan transect
2. Oman-Owen Ridge-Somali margin-Indus Cone Neogene package
3. Somali Basin deep hole (Mesozoic Tethys)
4. North Kerguelan-Southeast Indian Ridge Transect polar front
5. Exmouth Plateau-Argo Abyssal Plain Transect
6. Chagos-Laccadive Ridge (or 90oEast Ridge)

B) Western Pacific

In addition to areas of interest summarized at last meeting; further discussion (prioritization will await formal liaison with WPAC and CEPAC); has a strong interest in:

1. Great Barrier Reef program
2. Queensland Plateau-Ontong Java Plateau
3. Scott Plateau and environs
4. Pore water chemistry-diagenesis in accretionary (generic) prisms.

5. Volcanic episodicity, eolian transport, tephrochronology (generic).

VI. Riser Targets:

A). With stated limitations (1800 water depth; 1992 start)

1. Penetration of evaporite sequences (Med.; Red Sea; S. Atl.)
2. Penetration of gas hydrates (Sea of Japan, Sea of Okhotsk; Cariaco Trench; Chilean Margin).
3. Continental slopes (Niger Delta; NW Africa Mesozoic)

B) SOHP argues strongly that longer riser (3km) would significantly enchance capabilities and number of attractive targets.

VII. Next Meeting: July 24-26th, 1985; LDGO

85/307

SUMMARY
Central and Eastern Pacific Regional Panel Meeting
11-12 March 1985

In light of the PCOM actions since our last meeting and the availability of new documentation concerning 504B (Lithosphere Panel Proposal) and 504B area drilling (Mottl proposal) we re-evaluated our Oxford rankings of short-term objectives.

Chile

We still feel Chile is conceptually important but more information and extensive MG&G work is required before a drilling program can be critically evaluated. Because of the logistical and timing constraints, we do not feel that Chile should be considered for drilling at this time.

The panel also believes that, should only a partial leg be available, it should not be used to begin work off Chile. In the spirit of COSOD we believe any 'mini-leg' should be added to either the EPR or Peru drilling in an effort to flush out those programs. In all likelihood, we will not have the opportunity to return to Peru until the mid-1990's.

EPR

With regard to the 13°N hydrothermal work, we are in agreement with the Lithosphere Panel's objective to review all the data in the 9-13°N area. We endorse their efforts to bring the proponents together and review the data prior to final site selection. We believe the young hydrothermal objectives remain the top priority for the first EPR drilling program. This will require drilling an absolute minimum of three 200 m holes and more likely four to five. Lou Garrison reviewed the technical problems of bare rock drilling. Because of the time consuming task of setting the base cone and the shear magnitude of drilling cement, mud and casing required, **we are advised that only two 200 m bare rock holes should be expected per leg. Thus the panel strongly recommends that two legs be devoted to the hydrothermal study.** It is in the spirit of this new drilling program to commit enough time to complete this objective.

504B

The panel continues to view 504B as exciting science but less so in the short-term than the "new" rise crest processes. Thus we re-affirm our ranking of 504B (which should include the Mottl proposal) as the alternate to two legs of hydrothermal drilling.

The panel passed the following motion by D. Scholl and seconded by J. Sinton.

CEPAC re-affirms that one leg of Peru drilling and two legs of EPR hydrothermal work are our top priority. Further the 504B and 504B area proposal of Mottl should be the back-up to EPR drilling. 10 for, 0 against.

Thus the ranking remains:

Leg 111 EPR)
) 504B and 504B Mottl back-up
Leg 112 EPR)

Leg 113 Peru

Status of efforts to stimulate workshops, proposals, etc.

NE Pacific- An INPAC workshop was held in mid-February.

North Pacific- Scholl is organizing a workshop for this fall.

Old Pacific- Ralph Moberly is heading a group which will promote old Pacific problems in a workshop, possibly before the end of the year. Winterer plans a workshop on guyots and carbonate plateaus worldwide. This will certainly include a subset of the Old Pacific problems.

South Pacific- J. Mammerickx and E. Okal are working to form a core group to stimulate interest in this area.

MINUTES OF THE WESTERN PACIFIC PANEL OF ODP
January 18 to 20, 1985

Sheraton Makaha Resort and Country Club, Hawaii

List of persons present:

Panel Members:

Eli Silver (Chair)
Reinhard Hesse
James Ingle
Marc Langseth
Kazuaki Nakamura (TECP)
Claude Rangin
Jacques Recy
Hans Schluter
Brian Taylor (Rapporteur)

Liason

Ralph Moberly (PCOM)

Invited Observer:

Keith Crook (Australia)

Absent:

Michael Audley-Charles
Margaret Leinen (LITHP)
Derk Jongsma
Audrey Wright-Meyer(TAMU)
Hideo Kagami
James Natland

APPENDIX

RESULTS OF THE VOTING ON PRIORITIES OF DRILLING TARGETS

The list of regions considered for voting at the meeting and their total vote count is shown in Table 1. Each voting member was given this list and 100 points to distribute among the competing regions. No one region could be given more than 10 points per voter. The results should be considered as **PRELIMINARY.** Not all of the regions considered have formal proposals associated with them (e.g. the Lau basin); in some cases, no distinction was made between separate proposals for the same region (e.g. Sulu sea has both tectonic [Schluter, Rangin] and paleoceanographic [Thunnel] proposals); in some cases proposals were broken in a number of separate aspects (e.g. Bonins), while in others numerous proposals and problems were lumped together into one category (e.g. South China Sea).

A ranked listing is given in Table 2. The results of these tabulations can be interpreted in a number of ways, although they should be taken most simply as they appear on Table 2. Moberly has prepared a map (Fig. 2) to depict the regions of strength.

Taylor noted a natural grouping of 10 strong areas which accounted for over 80% of the votes. From north to south these were: Japan Sea, Nankai, Bonins, Okinawa, South China Sea, Sulu-Palawan, Banda, Sumba, New Hebrides, Lau-Tonga. Another five areas of lesser priority accounted for nearly all the remaining votes: the forearcs of Kurile-Japan, Taiwan-Manila, Sunda; the Solomons-PNG, and Coral Sea-Great Barrier Reef).

Silver notes that of the top 20 priority regions, all are either marginal basins or forearcs, with marginal basins showing a somewhat larger total vote.

NOTE:
[Audley-Charles, who was not present and is not now an active member, supports the vote but would rank Tanimbar higher].

MARGINAL BASINS						FOREARC TECTONICS				COLLISION TECTONICS				OTHER	
(A) ARC		(B) CONTINENT		(C) OTHER		(D) VERT. TECT.		(E) TOE PROCESS		(F) TYPE		(G) ARC REV./FOSSIL		(H)	
Lau	25	Coral	9	Banda	55	Tonga	19	Nankai/Zenisu	58	Tanimbar	9	N.Am-Eur.Bdry	0	Arafura/Sunda	10
Mariana	0	South China	61	Woodlark	10	Mariana	7	Sumba	38	Timor	5	New Hebrides	9	Lord Howe	0
North Fiji	2	Japan	45	Sulu	50	Bonin	34	Sumatra/Java	16	Osbourn	20	New Ireland	0	G.B. Reef	5
Manus	14	Okinawa	54	Solomon	5	Japan	10	Bonin Serp.	43	D'Entrecasteaux	28	Solomon	0	Fryer	5
Bonin	38	Tasman	0	Norfolk	0	Kurile	18	S. Taiwan	22	Ogasawara	0	Cape Vogel B.	0		20
Coriolis	37		169		120	Ryukyu	16	Manila	9	Palawan	0	Loyalty B.	3		
South Fiji	0					Manila	12	Japan Sea	1	NE Japan/Kurile	12		12		
W. Philippine	3					Japan Sea	13	Palawan	22	Solomon-Huon	6				
	119					Palawan	5		209	Ontong-Java P.	2				
						Sunda Strait	8			Philippine-Negros	12				
						Weber	4				94				
						New Hebrides	11								
							157								

Table 1.

TABLE 2

List of regions considered by the panel for Western Pacific Drilling, in order of vote totals. Those with fewer than 9 points were not included, but all regions considered are shown on Table 1.

REGION	TABLE #	POINTS	RANK
SOUTH CHINA SEA	B	61	1
NANKAI TROUGH	E	58	2
BANDA SEA	C	55	3
OKINAWA TROUGH	B	54	4
SULU SEA	C	50	5
JAPAN SEA	B	45	6
BONIN TRENCH (TOE)	E	43	7
SUMBA REGION, TRENCH TOE	E	38	8
BONIN TROUGH	A	38	8
CORIOLIS TROUGH	A	37	10
BONIN FOREARC	D	34	11
D'ENTRECASTEAU RIDGE	F	28	12
LAU BASIN	A	25	13
SOUTH OF TAIWAN	E	22	14
PALAWAN TOE	E	22	14
OZBORN SMT/LOUISVILLE RIDGE	F	20	16
TONGA FOREARC	D	19	17
KURILE FOREARC	D	18	18
RYUKYU FOREARC	D	16	19
SUMATRA/JAVA	E	16	19
MANUS BASIN	A	14	21
JAPAN SEA THRUST	D	13	22
MANILA TRENCH FOREARC	D	13	22
CENTRAL PHILIPPINE COLLAGE	F	12	24
NE JAPAN/KURILES	F	12	24
NEW HEBRIDES FOREARC	D	11	26
JAPAN FOREARC	D	10	27
WOODLARK BASIN	C	10	27
ARAFURA SEA/SUNDA SHELF	H	10	27
CORAL SEA	B	9	30
TANIMBAR	F	9	30
MANILA TRENCH TOE	E	9	30
NEW HEBRIDES ARC REVERSAL	G	9	30

Lithosphere Panel Priorities in the Indian Ocean
(prepared for June PCOM in haste by G.M. Purdy)

Introduction

1. These priorities are priorities within the Indian Ocean only. LITHP considers back-arc spreading center drilling in the Western Pacific to be a higher priority than all the projects listed below.

2. LITHP emphasis is on objectives that are either unique to the Indian Ocean (e.g. Red Sea, Aus.-Ant. discordance), or objectives involving problems particularly good or type examples of which exist there (e.g. hot spot trace).

3. LITHP priorities for drilling anywhere in the oceans are the COSOD priorities, and all the projects below must be (and are) related to those.

PRIORITY 1: The Red Sea

Neither the Bonatti and Ross proposal, nor the Zierenberg et al., proposal (the two Red Sea proposals LITHP has reviewed) satisfactorily addresses all the problems that could be addressed by drilling in the Red Sea. Consequently, this priority does not apply to a specific proposal but to a coherent program of drilling (to be devised by the Red Sea Working Group) addressing the principal LITHP objectives, which in this region include:

1. The petrology and geochemistry of hydrothermally altered basalts, the hydrography and composition of hydrothermal fluids and the nature and extent of sub seafloor mineralization.

2. The study of processes associated with the initiation of rifting, specifically its progression toward the northern Red Sea.

PRIORITY 2: Australian-Antarctic Discordance (AAD) (Cold Spot Trace): Langmuir

This is an effort to study as a function of time the nature and geometry of a known chemical discontinuity in the oceanic crust. Because of its geometry and morphology the AAD is interpreted to be a 'cold spot trace'. Preliminary dredging reveals three important characteristics worthy of further investigation.

i) Zero age crust in this region exhibits geochemical discontinuities which correlate with the major tectonic boundaries.

ii) Basalts from the AAD have geochemical signatures similar to basalts from bathymetric highs over hot spots.

iii) Samples from the propagating rift tip to the east of the AAD show a different kind of chemical anomaly from that observed at eastern Pacific propagators. The two major questions that can be addressed by drilling are:

a) The cold spot seems to have a similar chemical signature to hot spots elsewhere. If this signature is preserved along the trace then profound implications for the geometry of mantle heterogeneity exist because it is difficult to reconcile a cold spot trace with a deep mantle plume.

b) Zero age ocean crust consists of petrologic provinces which can persist over hundreds of kilometers along a ridge. Do these provinces persist with age? If so the possibility exists of mapping discrete mantle compositional provinces. The importance of mapping the scale of mantle domains, documenting their chemical signature and establishing the nature of their boundaries must remain a fundamental lithosphere objective. It was one of the highest COSOD priorities.

Ten single bit holes are proposed.

PRIORITY 3: SW Indian Ridge Fracture Zone (Dick and Natland)

This proposal combines aspects of both upper mantle geochemistry and fracture znoe tectonics, both high COSOD (and thus LITHP) priorities. The first principal objective is to drill mantle peridotites as close to a plate boundary as possible and to determine the shallow mantle stratigraphy and variations in crustal structure along the floor of the fracture zone. There is strong evidence from dredging that peridotites outcrop on the fracture zone walls in this region much more pervasively than at any other known fracture zones. Thus, there is the opportunity to sample the upper mantle in a vertical sense by drilling into the uppermost few hundred meters as well as laterally away from the fracture zone (to study the transform edge effect on melting in the mantle) by comparing results of drilling in the axis with dredging results on the fracture zone walls.

The second principal objective is to determine the crustal structure of a fracture zone valley at a very slow spreading ridge. Fracture zones dominate slow spreading ridge morphology and a full understanding of the accretion process is impossible without an understanding of fracture zone tectonics. A further important objective is to determine the nature and variability of alteration of the material beneath the fracture zone trough: a knowledge of the extent to which mantle rocks are serpentinized or otherwise altered is crucial to models of fracture zone processes.

Lastly is the fundamental objective of assessing the validity of some ophiolite comparisons by contrasting the stratigraphic variations in the shallowmost mantle and the lower gabbros and basal cumulates.

Four to five single bit holes are proposed.

PRIORITY 4: Arabian Sea-Carlsberg Ridge (J. Natland)

The objective is to sample basalt erupted prior to and following a major known change of ridge crest circulation and spreading rate.

Basalt drilled in the Arabian Sea and Somali Basin from DSDP Sites 220, 221, 236 and 240 (as well as 212 in the Wharton Basin) erupted along approximately E-W trending ridge segments when the Indian Ridge spreading rate was much faster (3-4 times) than the present. At about the time Anomaly 5 occurred a major reorganization of the ridge occurred and the spreading rate slowed.

It appears likely that the changes in spreading rates and ridge orientation affected the processes of basalt production and fractionation. Present day Carlsberg Ridge basalts fall much closer to the norms of abyssal tholeiite composition. The objectives of the drilling would be to document how precisely the changes in basalt composition correspond to the changes in ridge orientation and spreading rate, and to establish more firmly what this means in terms of melting processes, rates of magma production, and mantle source compositions.

Six to eight single bit holes are proposed, distributed on both sides of the ridge and straddling the plate reorganization at Anomaly 5.

OTHER PRIORITIES

Without doubt LITHP's number two priority in the Indian Ocean would have been a hot spot trace drilling program had a strong coordinated plan been put forward. The principal objective of such a program would be studies of upper mantle geochemistry. Strong signals have been sent out from our last meeting to encourage the formulation of such a plan, but at the time of writing none has emerged.

The Brocher Crozet Basin proposal to emplace a downhole seismometer at the antipode of the Nevada nuclear test site to study the core and core mantle boundary is exciting and important science. However, it is dependent upon two major technical developments (Fly-in re-entry and a long-term recording downhole seismometer package) and until these are achieved it seems inappropriate to prioritize this effort. If significant technical progress was made, this would be rated our number 4 in place of Arabian Sea-Carlsberg Ridge.

MEMORANDUM

TO: Roger Larson, Chairman, PCOM
FROM: Michael A. Arthur, Chairman, SOHP

RE: SOHP comments on Southern Ocean and Indian Ocean Programs (6/7/85)

Because we were unable to meet before the next PCOM meeting, I polled most of the members of the SOHP to obtain the latest opinion on ranking of Southern Ocean objectives. This was particularly important since Jim Kennett provided us with new information and revised objectives and drilling plans for the Weddell Sea program and new perspectives on potential Subantarctic drilling in the South Atlantic region. Below I have summarized our thinking on the Weddell Sea and Subantarctic drilling proposals at this time. In addition, I am providing you with a brief summary of our top 6 priority "legs" for Indian Ocean drilling, as you requested.

WEDDELL SEA

1) The SOHP agrees with SOP, as we always have, that Weddell Sea drilling is of highest priority relative to any Subantarctic drilling. Therefore it is of primary importance to complete the drilling program in the Weddell Sea if at all possible before undertaking Subantarctic sites.

2) Although it is within PCOM's purview to plan the course of drilling, SOHP endorses the proposed sequence of sites to be drilled as outlined in the April, 1985 minutes of SOP. The proposed sequence of drilling optomizes weather and ice windows, guarantees the best opportunity to drill the highest priority sites first, and provides the option of drilling sites on the South Orkney Plateau (W6-W8) at the beginning of a second leg if they cannot be completed on the first one. However, we would modify the program slightly as follows:

a) Retain W4a as an alternate site, as it was originally proposed (i.e. drill only if ahead of schedule).

b) Drill only 2 of the 3 proposed sites on the South Orkney Plateau; our priority would be to drill the 2 deeper sites (W6 and W7), as the objectives would be largely fulfilled with these 2 sites.

c) Drill W10 (Bransfield Straits) at the beginning of the leg. Weather or ice should not be a problem there, and it can be completed during the transit. The objectives at this site include diagenesis of organic matter in a hydrothermal regime undergoing rapid burial.

d) The time saved by not drilling W4a and W8 will allow logging of all sites, which we consider high priority (in disagreement with SOP), and also allow for drilling of W10.

I append the SOHP ranking of the Weddell Sea sites from our last panel meeting (which has not substantially changed) as well as the proposal for Weddell Sea drilling sequence from the April, 1985 minutes of the SOP for your convenience.

SUBANTARCTIC TRAVERSE

The SOHP originally ranked the proposed South Atlantic Subantarctic traverse as second priority relative to both Weddell Sea and to the six highest priority SOHP Indian Ocean programs. However, the recent revised and restated objectives of the SOP for S. Atlantic Subantarctic drilling are very attractive to us. Particularly important is the opportunity to test the paleotectonic/geographic reconstructions of LaBrecque, which suggest that there might have been a nearly continuous barrier to deep-water circulation between the Southern Ocean and the S. Atlantic basins prior to the Late Eocene. Such a model has significant ramifications for the timing of onset of of intensified deep circulation, Eocene-Oligocene hiatuses and contourite drifts, etc. Therefore, SOHP supports the idea of a short Subantarctic leg in the South Atlantic, and we rank that leg above the proposed Indian Ocean Subantarctic traverse (the so-called Northern Kerguelan Plateau-southeast Indian Ridge --polar front transect)

Our ranking of the proposed South Atlantic Subantarctic traverse sites is as follows (consistent with the minutes of our last meeting in February, 1985):

1) SA-8
2) SA-2
3) SA-3
4) SA-5W

Sites SA-8, SA-3, and SA-5W will examine Paleogene-Recent paleoceanographic and tectonic history of the Subantarctic region, and particularly will provide valuable information bearing on the history of bottom-water circulation. SA-2 and SA-3 will also be part of a transect to examine the Neogene-Recent (and perhaps older) history of fluctuations in the polar front.

The SOHP endorses a leg composed of these four sites that could be drilled in transit from Port Stanley to Cape Town, as proposed by SOP. Again, elimination of site SA-7, which is the conjugate to SA-8, would allow logging of all sites, and basement penetration as required. We reemphasize that, should some priority Weddell Sea drilling not be completed during the first leg, it should be done at the expense of some of the SA traverse sites.

Again, we attach the proposed SOP and SOHP priorities and estimated drilling times for reference.

INDIAN OCEAN SUMMARY (HIGHEST PRIORITY SOHP PROGRAMS)

Priority

1) Amery-margin southern Kerguelen transect
2) Oman-Indus Cone-Owen Ridge-Somali margin (man-mountain-monsoon-Milankovitch-Neogene package)
3) Somali deep hole - Mesozoic history and seismic stratigraphy
4) Northern Kerguelen Plateau-southeast Indian Ridge (polar front)
5) Exmouth Plateau-Argo Abyssal Plain transect (2 sites; EP-5 and AAP-1 from Australian COGS document
6) Chagos-Laccadive Ridge (latitudinal and depth HPC transects on aseismic ridge.)

1) Amery margin-southern Kerquelen Plateau
Polar front paleoceanography and high latitude carbonates (3 sites)(Kerguelan); Mesozoic-Cenoizoic history of Amery margin (3 to 4 sites)

Essentially we are in agreement with SOP on objectives and logistic concerns. The E. Antarctic margin portion of the Leg is of greatest importance as it will examine the breakup history of Indian - Antarctic continents and the Cretaceous through Neogene paleoclimate history at high latitudes.

2) Arabian Seas (Man.- mountain - monsoon - Milankovitch)
(Essentially as proposed by Prell to Indian Ocean Panel)

N.B. list

1) the evolution of monsoonal upwelling, 2) the history of anoxic sediments in the Oman margin oxygen minimum zone, 3) the long-term evolution of the Indus Fan in response to changes of climate and uplift rate of the Himalayas.

A. Monsoonal Upwelling

The Owen Ridge contains a section of pelagic sediments that record the strength of upwelling induced by SW monsoon winds.

Two double HPC sites to 300 m are required to obtain the past 5 m.y. to 10 m.y. record of upwelling. Continuous recovery and complete sections are required to test existing ideas on the control of monsoon inducted upwelling.

B. Anoxic Sediments

The margin of Oman contains anoxic sediments in the upper slope oxygen minimum layer. These sediments record the proximal monsoon upwelling, the diagenesis of organic-rich sediments, and are high-resolution paleoclimate records.

C. Indus Fan

The distal Indus Fan should contain a record of the changes in fan sedimentation over long time intervals in contrast to the proximal fan. Because the Siwalik sedimentary basins at the base of the Himalayas are so well dated, the Indus Fan sediments offer the best chance to related continental uplift and climate patterns to deep-sea terrigenous deposition patterns. Sediment mass balance and sea level components also tie seismic stratigraphy to upper fan.

Requires two HPC cores to about 500 m to obtain high-quality sections for paleomagnetic, sedimentologic, and biostratigraphic studies.

Western Somali Basin

The opening of the Western Somali Basin marked the initiation of the present-day Indian Ocean. Recent geophysical studies of the area have dated the ocean crust of the Western Somali Basin at between 165 and 120 Ma and have characterized the crust of the basin as seismically oceanic (yet thinner than normal).

A site T-2c proposed by Indian Ocean Panel-similar to Coffin/Channel proposal, situated in the center of the Western Somali Basin at approximately 4°S and 48°E, would penetrate the igneous crust at Anomaly M12. The hole would provide more exact dating for the Mesozoic magnetic sequence and would provide an age for the Western Somali Basin. In addition, the stratigraphy of the hole would yield the first information in much of the Mesozoic evolution of the embryonic Indian Ocean, as part of Tethys.

The hole would have additional paleoceanographic concerns. The low-latitude Indian Ocean is rather poorly understood; bottom water flows energetically through the Amirante Passage into the Western Somali Basin and/or the Comoro Basin, but the history of this circulation and its path beyond the passage are mysteries.

Drill to Mesozoic basement to examine seismic sequences on possible remnant of Tethyan crust, and to constrain paleolocation of Madagascar. Good Seismic lines are vital to selecting this site.

This is part of the global "deep hole" program proposed by SOHP (formal proposal forthcoming).

-long Mesozoic-Cenozoic record-adjacent to Africa

also tectonic history.

-2-3 km hole-companion to Moroccan Rise deep hole

monsoonal upwelling (part of Arabian Sea transect)

if site can be moved north

-relationship between Neogene-Quat. continental and marine climate (as porposed by Kennett et al.)

4) N. Kerguelan - S.E. Indian Ridge
We endorse the basic program proposed by SOP (see 4/85 minutes).

5) Exmouth Plateau - Argo Abyssal Plain

Exmouth Plateau (1 site) (As per COGS proposal)

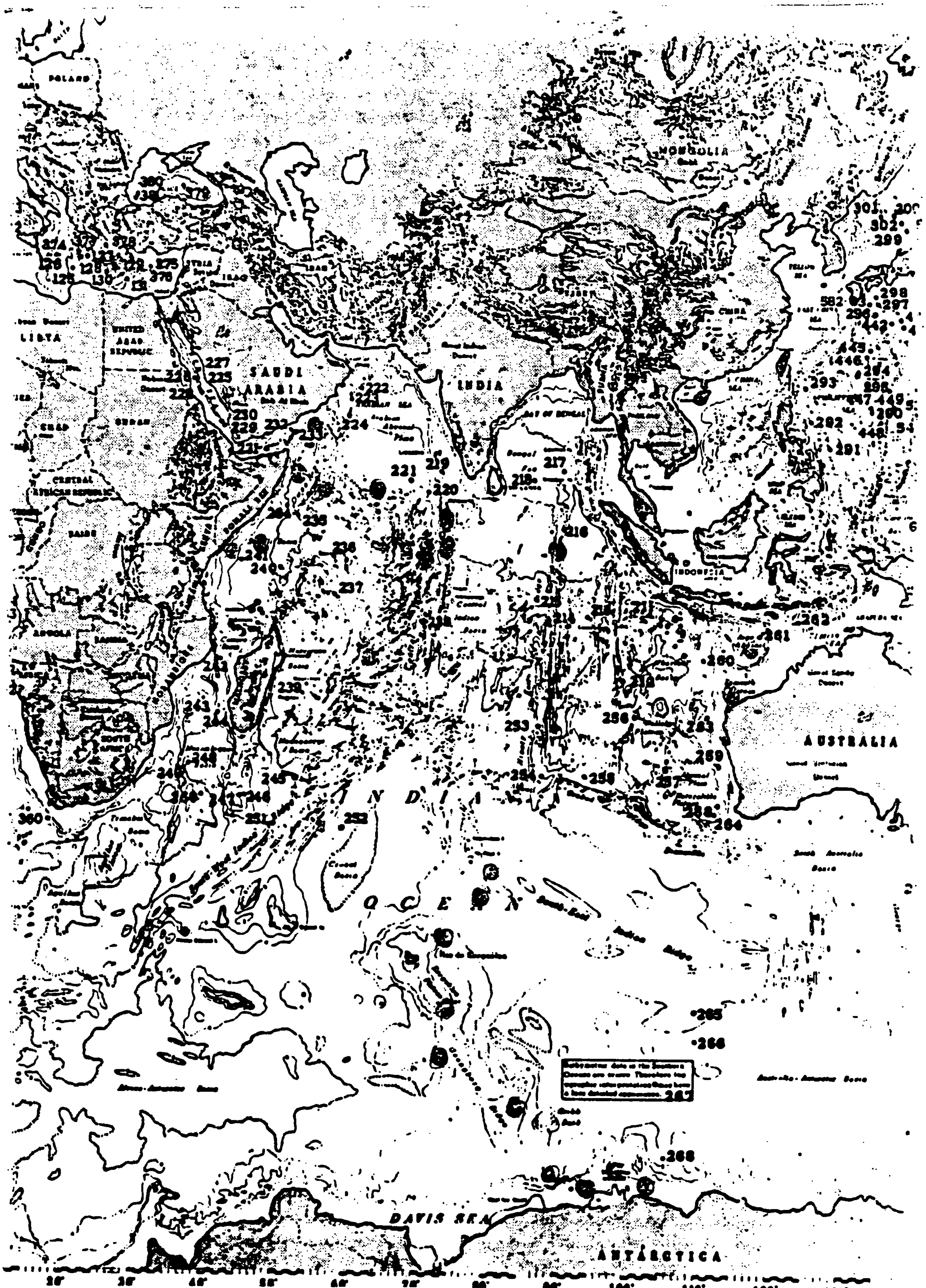
Exmouth Plateau is one of the best examples of an extensional marginal plateau at a very old (155 Ma) starved passive margin, where the pre-rift, early-rift, breakup, and post-breakup subsidence history of a rifted, sediment-starved, wide margin can be easily studies by deep-sea drilling (it is certainly the only such margin in the Indian Ocean). It is also probably the best-studied margin of this type. The following objectives should be addressed by ODP drilling.

Argo Abyssal Plain Site (1 site)

Mesozoic-Cenozoic paleoceanography and paleobiogeography. Oldest crust of Indian Ocean (M-25, ca. 155 Ma). Dating of M-anomalies. Site 261 has only been spot-cored (23% recovery) and is younger than M-25 crust.

Remnant of Tethys Superocean, Comparison with Sites 534, 105, 603, 367 in Atlantic. Paleogeography. Superocean connections. Jurassic abyssal communities; part of SOHP deep-hole proposal.

6) Chagos - Laccadive Ridge - 3 - 4 site depth transect paleogene - Recent history of an aseismic ridge (subsidence history) and changes through time in deep-water chemistry (CCD, dissolved oxygen, paleotemperatures). Site location not certain, but should sample several paleodepth tracks and have a spread in latitude.



POLAND
MONGOLIA
LIBYA
UNITED ARAB REPUBLIC
SAUDI ARABIA
INDIA
CHAD
SUDAN
CENTRAL AFRICAN REPUBLIC
ANGOLA
SOUTH AFRICA
INDONESIA
AUSTRALIA
I N D I A
O C E A N
DAVIS SEA
ANTARCTICA

LEGS 107 - 114

'WATCHDOG' SUMMARIES

LEGS 106 - 109

MARK I & II

J. Honnorez

RSMAS

A. Scientific Objectives of Leg 106 and 109

ODP Legs 106 and 109 will concentrate on the first of the 12 COSOD "top priority program recommendations: "processes of magma generation and coastal construction at mid-oceanic ridges" (pg. 2).

The need to be able to spud-in on the bare rock of zero age crust of the mid-oceanic ridges had also been identified by COSOD (pg. 106). Specific questions to be addresed under these objectives:

a) What is the origin, nature and evolution of oceanic crust at zero age in a slow spreading mid-ocean ridge environment?

b) What are the processes of magma generation and crustal accretion?

1. Nature and relative abundance of parental and primitive melts; and their relation to 'evolved' basalts in time and space.

2. Definition of magma 'batches' and associated small magma chambers; depth of chambers.

3. Depth and extent of low-T alteration, of hydrothermal alteration, nature of the transition between the two, presence of possible mineralizations, effects of alteration on magnetic signature, when do these processes start affecting the crust.

4. Nature of tilting and deformation at depth; effects on magnetic polarity.

5. How does the crustal structure, rock type and physical properties of the rocks compare with inferences from seismic models and survey ship measurements?

The scientific objectives of the back-up program in the Kane Fracture Zone is to sample layer 3 plutonics (mainly gabbroic rocks) and, possibly, oceanic mantle ultramafics.

B. Program Philosophy for Legs 106 and 109

It is essential that flexibility be built in the program plans with the initiative being left with the co-chiefs.

The 3 most effective scenarios are as follows:

1. If Leg 106 succeeds in defining the first downhole lithostratigraphic contrast (e.g. change from extrusives to intrusives, permeaility contrast, or change in alteration type or intensity, etc.) by drilling one hole in a zero age crust, then Leg 109 repeats the operation at a second location giving an along strike transect.
2. If Leg 106 is unsuccessful at carrying out the above objective (no contrast is reached) but succeeds in spudding-in on a zero age crust then Leg 109 deepens this hole until it can define the contrast.
3. If Leg 106 cannot spud-in on bare rock after attempting during 24 working days, the ship goes to the Kane Fracture Zone where the SW nodal basin is drilled during the remaining 16 days. Leg 109 starts scenario #1.

This means that even if Leg 106 is a total disaster with respect to the bare rock spudding techniques, Leg 109 must try again and, hence, TAMU should make all efforts to be ready for another bare-rock spud-in attempt during Leg 109.

C. Site Locations and Alternatives

Best locations appear to be about 22°53'N and 44°56'W in the median valley (zero-age) of the Mid-Atlantic Ridge. (See Figs. 1, 2, 3)

- 1st location is apparently free of perturbations in magnetic anomalies and bathymetry; appears to be on saddle in median valley which should be the principal locus of upwelling of basalt magma; this also is locus of low-velocity zone suggestive of magma chamber. Previous sampling indicates basalts are geochemically and petrographically MORB - indeed this is a 'type locality' for "normal MORB". This site is located between DSDP Sites 395 and 396.

- 2nd location would be between the 1st location above and the Kane Fracture Zone, possibly in the rift mountains, west of the median rift valley. This site offers shallower waters and possibly a sediment cover thick enough to spud-in.

The final decision about site locations depends on the results of the site survey which is going on at the time of this writing (see site survey paragraph).

- The 1st Kane Fracture Zone back-up site is located in a 6.1 km water depth "nodal basin" with high sedimentation rates (slumpings) but the actual thickness of the sediment cover is still unknown (site survey). Some basaltic rubble should be expected because the basin is located at the foot of a 30° slope. Can a >6000 m drill string be hung?

- The 2nd back-up site in the Kane Fracture Zone is located at about 44°W longitude, east of the south MAR segment/Kane Fracture Zone intersection. Here magma is extruded at the ridge axis within the Fracture Zone. There at least 200 m of sediments.

D. Leg 106 - Time Estimates

(modified by J. Honnorez after TAMU's April 17, 1985 first estimate)

Assume total of 40 working days for Leg 106:

1 - Time required to set one guide base and core to total penetration of 200 m: (scenarios #1 and #2, assuming a lithostratigraphic contrast is found within 200 m penetration)

Set 1st guide base - 8 days

Set 2nd guide base - 8 days

Spud, drill 18 1/2" to 30"

Case 16", drill out - 8 days

Core 14 1/2" to 100", Case 11 3/4", drill out - 8 days

Core 10 1/2" to 200" - 8 days

- The maximum time to be spent during Leg 106 at attempting to spud-in and drill into zero age crust will be 24 days.

- After such a time, if the attempts are unsuccessful, the ship will spend the remaining 16 days, carrying on the back-up program in the Kane Fracture Zone (scenario #3).

Minimum logging (J. Honnorez suggested no logging at all) and no downhole experiment during Leg 106 because no penetration exceeding 200 m is expected. Lithosphere panel recommends that DSDP Hole 395 be logged during Leg 109.

E. Staffing of Leg 106 and Leg 109

	Leg 106	Leg 109
Co-Chiefs	Bob Dietrick (URI) Jose Honnorez (RSMAS)	Bill Bryan (WHOI) Thierry Juteau (Fr.)
TAMU Rep.	A. Adamson (TAMU)	A. Adamson (TAMU)
Paleomag.	N. Petersen (FRG) G. Smith (Minnesota) A. Woodbridge (student trainee RSMAS)	H. Kinoshita (Japan) Y. Hamano (Japan) S. Levy (OSU)
Phys. Prop.	Kiyohiko Yamamoto (Jap)	H. Kinoshita (Jap)
Tect./Instr.	Pat Ryall (Canada) E. Kapell (LOGO)	R. Searle (UK)
Logging Sci.		H. Lee/H. Olson (USGS)
Downhole Expt.		R. Normark (LDGO?) K. Becker (RSMAS) R. Stephen (WHOI)

PETROLOGISTS/GEOCHEMISTS

	Leg 106	Leg 109
Basalts	Tsugio Shibata (Jap)	T. Grove
		L. Griffen
Plutonics/Ophiolites	J. Malpas (Can)	
	D. Elthon (U. Houston)	
	C. Mevel (Fr)	
Alteration/Metamor.	H. Staudigel (SIO)	L. Viereck (FRG)
	S. Humphris (WHOI)	J. Stix (Can)
		D. Stakes (USC)
		G. Thompson (WHOI)
XRF (Inorg. Geochem.)	G. Brass (NSF)	M. Rhodes (U. Mass)
	U. Bednarz (FRG)	U. Bednarz (FRG)
	R. Hebert (Can)	R. Hebert (Can)
		P. Stouff (Fr)
		L. Dosso (Fr)

F. The Site Survey Team

Bill Ryan, Bob Dietrick, Kim Kastens, Larry Mayer, Jeff Fox, Jeff Karson and Pat Ryall (Laura Cong, Dave Genaro and other students).

Pre-cruise and S.S. meeting schedule.

The Site Survey team should meet at the end of July. A preliminary report could be available for the Lithosphere Panel meeting in Strasbourg at the end of August (Aug. 28 - 29).

Middle of August (Aug. 21?) Bob Dietrick, Bill Ryan and Mike Purdy will meet at WHOI.

The pre-cruise meeting is tentatively scheduled for the 1st week of September, in TAMU. At this meeting, the Prospectus will be drafted, the sampling requests will be reviewed, and the staffing finalized.

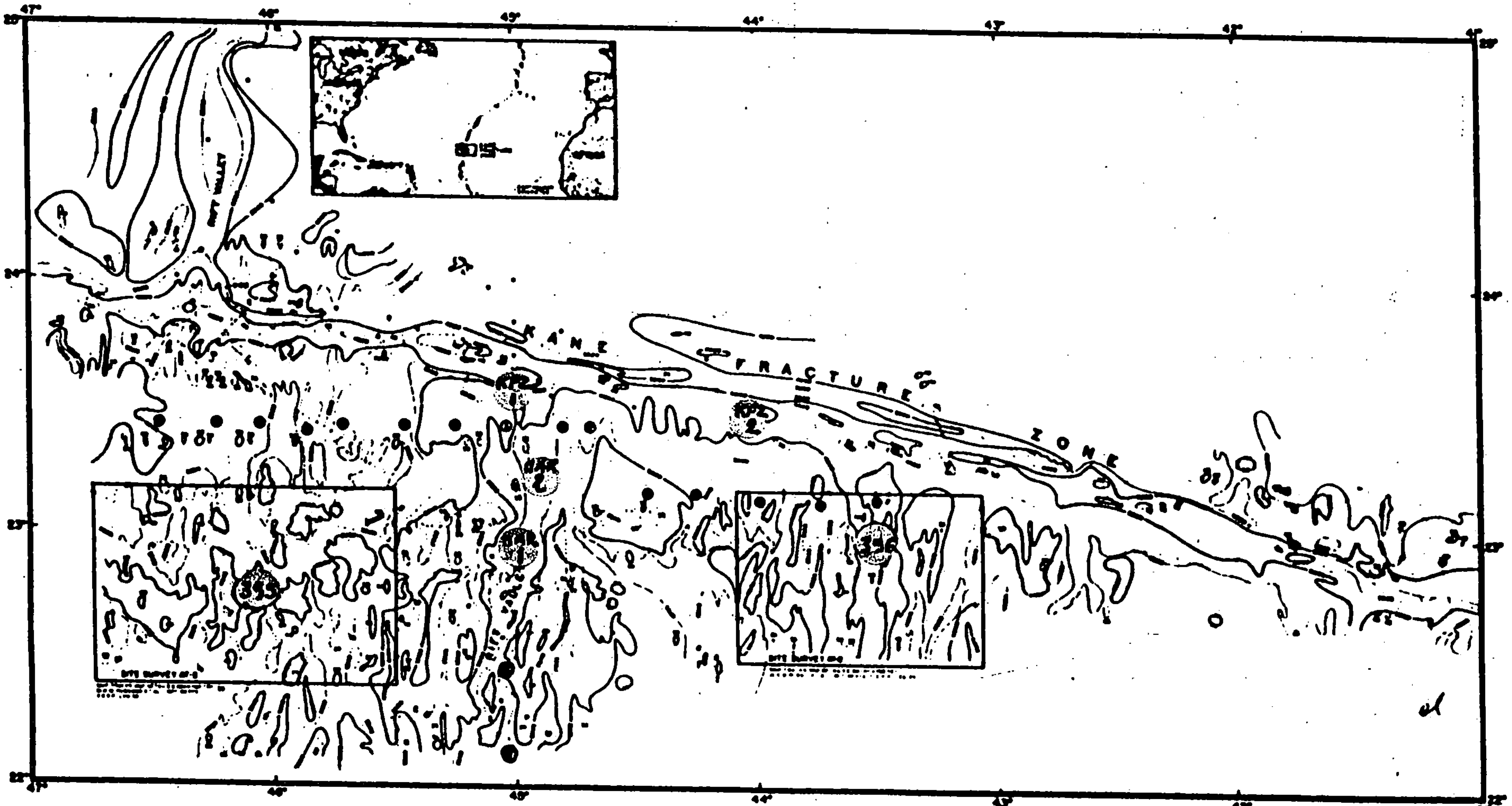
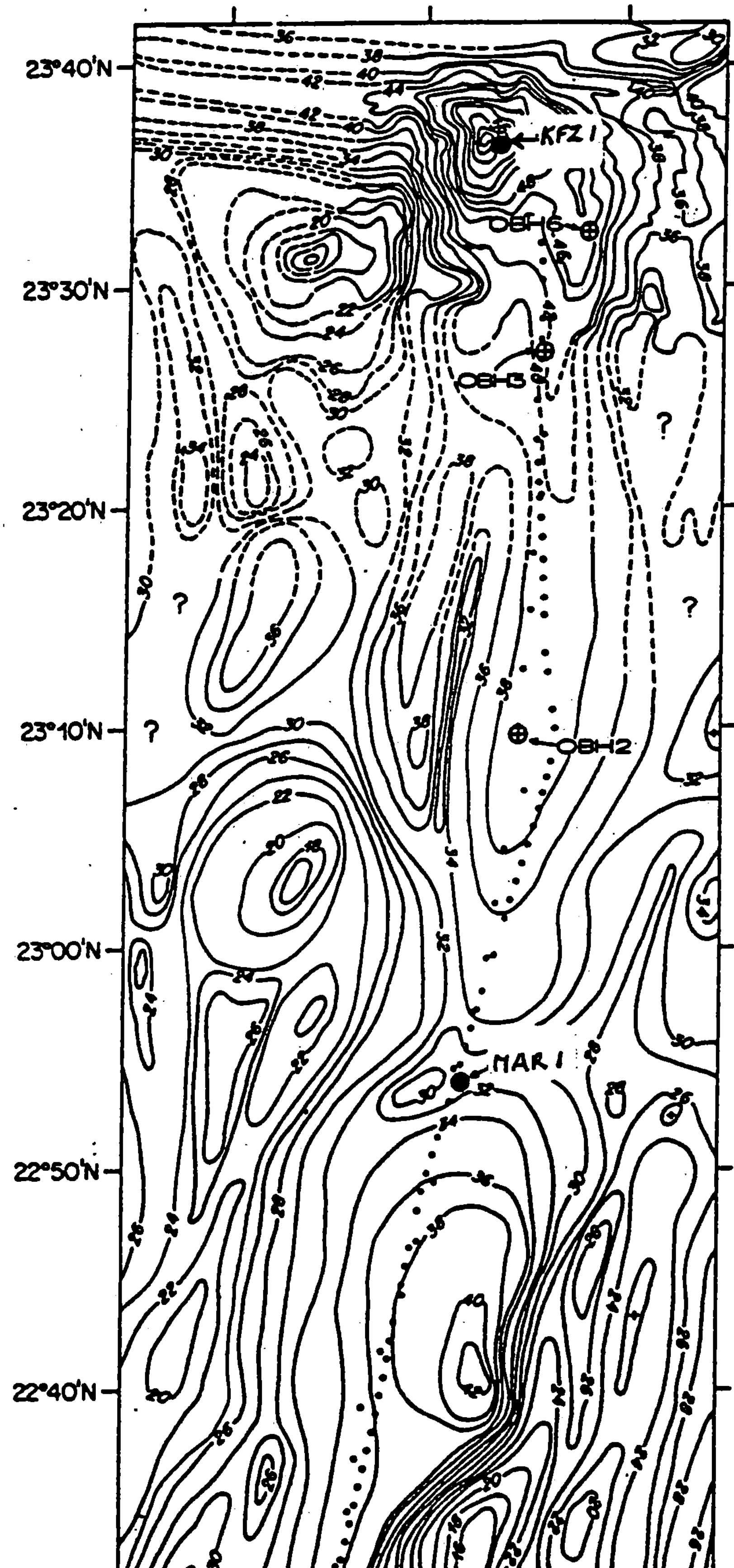
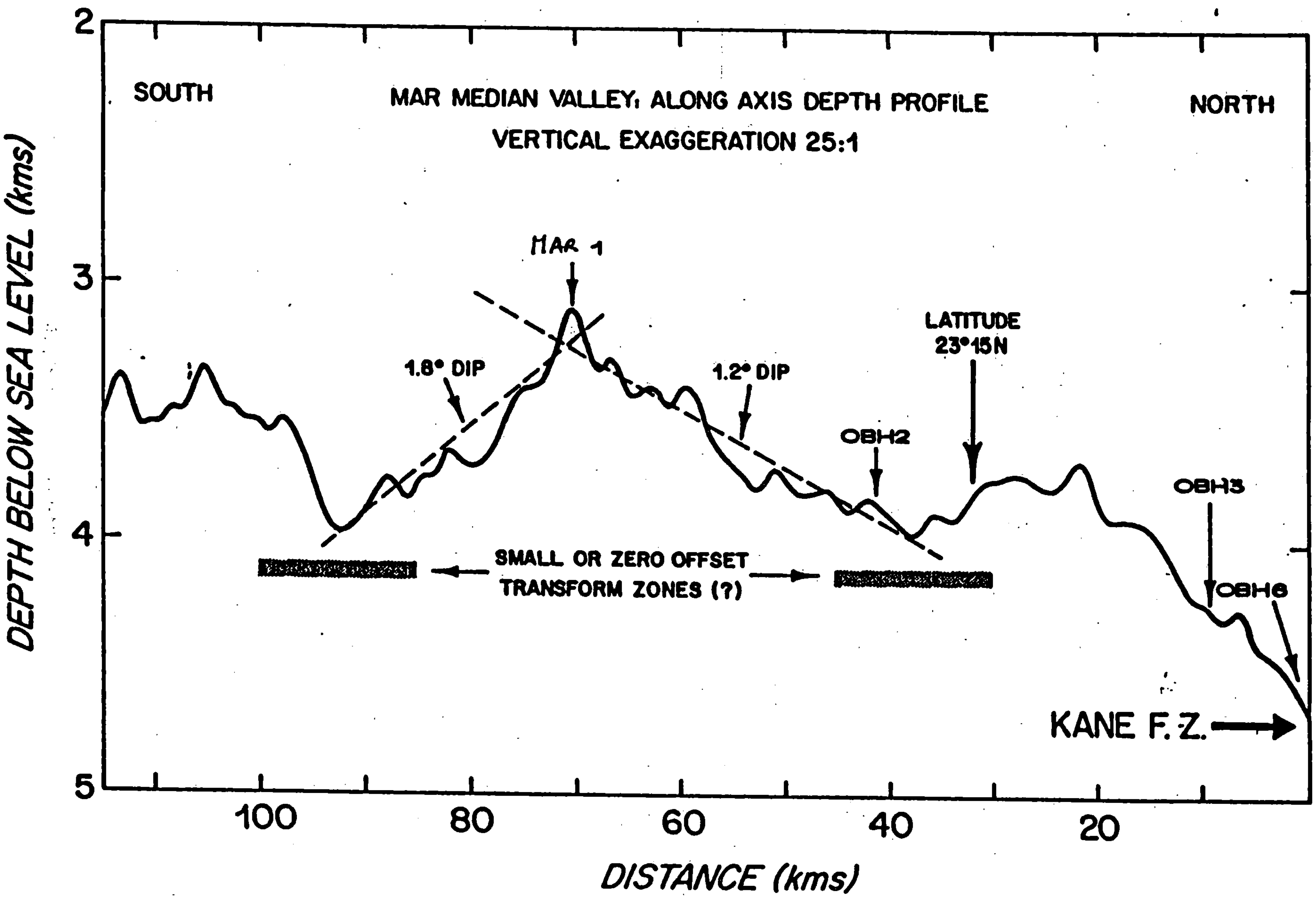


Figure 1. *Bathymetry of the Kane fracture zone and Mid-Atlantic Ridge; contour interval is 500 meters, corrected. Location of Sites 395 and 396 shown by asterisks; small black squares are USGS earthquake epicenters. Shaded stripes are a smoothed fit to the location of the positively magnetized blocks required as sources for the anomalies (see text). Boxed areas are approximate 1° squares where results of site surveys are given in Hussong* et al, *and Purdy* et al, *(both this volume). The insets give details of sea floor and ocean crust in immediate (approximately 10-mile square) vicinity of drill site.*



23°40'N
23°30'N
23°20'N
23°10'N
23°00'N
22°50'N
22°40'N
22°30'N
45°10'W
45°00'W
44°50'W
KFZ 1
OBH6
OBH3
OBH2
MAR 1



SOUTH
MAR MEDIAN VALLEY: ALONG AXIS DEPTH PROFILE
VERTICAL EXAGGERATION 25:1
NORTH
MAR 1
1.8° DIP
1.2° DIP
LATITUDE 23°15N
OBH2
OBH3
OBH6
SMALL OR ZERO OFFSET TRANSFORM ZONES (?)
KANE F.Z.
DEPTH BELOW SEA LEVEL (kms)
2
3
4
5
100
80
60
40
20
DISTANCE (kms)

J-P. Cadet

LEG 107 DRILLING OBJECTIVES SUMMARY

NOTICE

The final choice of the sites and prioritization will be done during the Mediterranean Working Group Meeting (Paris, June 10-11, 1985) after the processing of the 2000 km multichannel seimic profiles recorded between March 9 and 29 by the "Le Suroit" IFREMER Research Vessel.

I. INTRODUCTION

The Tyrrhenian Sea is a young marginal basin whose evolution is ruled by both its colliding boundaries (to the East Apennines chains, to the SW Sicilides), and its still active subduction boundary (to SE of the Calabrian arc).

By many characters the Tyrrhenian Sea can be compared with others back arc basins; it shows :

- a 450 km deep Benioff zone dipping West to Northwestward beneath the Calabrian arc, and Tyrrhenian basin,
- a belt of calkalcaline volcanism,
- a deep bathymetry as young oceanic basins (>3600m),
- an highly thinned crust on the margins linked to a large uprising of the upper mantle and the astenosphere beneath the central part of the basin,
- a large positive gravity anomaly (250mgal),
- a distensive volcanism with tholeïtic lavas into the central basin,
- a high heat flow.

The collisions on both boundaries introduce however several characteristic processes. Particularly the timing of its progressive opening is controlled by the progress of the neighbouring collision as well as its external growth is ruled by the blocking effect of both Apennines and Sicilide borderlands.

Previous work on the Tyrrhenian Sea included a variety of geophysical surveys and geological samplings, also with submersible observations (Cyana cruise "Cyrrhene" in August-Sept. 1984) and detailed SEABEAM maping of the central plain and surrounding margins. Drillings were performed by "Glomar Challenger" on leg 13 (DSDP, Site 132) and on leg 42A (Site 373 A).

Site 132, located in the westernmost bathyal plain, produced a fairly undisturbed and continuous sequence of Pliocene-Pleistocene sediments and penetrated the topmost part of the evaporitic interval, demonstrating the late Miocene (Messinian) age of the panmediterranean event.

Site 373A was a quick hole (1.5 days) that reached a buried magnetic basement. This was penetrated for more tfhan 200 m with rather poor recovery of MOR-type basalts and breccias dated 7.3-3.5 M.y. by radiometric measurements.

II. SCIENTIFIC OBJECTIVES

The Tyrrhenian being a young (6 My) oceanic area, the post rift sequence, covering previous structures, remains rather thin. Besides correlating the evolution of the area with respect to that of the Apennines, this provides a very good opportunity to study the evolution of a young continental Atlantic type margin with a very narrow transition oceanic continental zone. This is particularly relevant to test model of subsidence and continent crust stretching.

The relatively starved margin of the Western Tyrrhenian and the relative small cover of the central basin gives the possibility of solving the following:

a) Relationship between the Tyrrhenian basin distensive evolution and the different phases of the Apenninic collision/Calabrian Arc subduction.
After the Burdigalian tectonogenic crisis (and probable first rifting) the evolution of the Tyrrhenian basin is characterized by a succession of long continuous distensive periods (upper Tortonian-Messinian; upper Messinian-lower Pliocene; upper Pliocene-lower Quaternary) separated by paroxysmal short ex-tensive events related to well documented compressive phases occuring either in the Apennines-Sicilides (lateral boundaries) in Messinian and Calabrian time or along the whole outer arc (Middle Pliocene time).

b) Multirifting evolution.
A various set of data/coring, dredging, previous, drilling, seismic stratigraphy and unconformities lead to conclude that the main rifting phase occured between 10 and 6 My ago. There is still however indication that a previous rifting (of small amplitude) may have occured between 18 and 10 My. The oceanic crust and related tholeïtic volcanoes (drilled at site 373A) started to generate only since the last 6 My. Drilling could successfully help to decipher if early rifting phase was first widespread to the whole basin and then (10 My) concentrated to the central area.

c)Multispreading history.
The Central Vavilov basin is believed to be generated somewhere around 6 My (Hole 373 and further dredging have allowed to recover tholeïtic basalts of oceanic type dated from 7 to 3,5 My).
In the Marsili basin, no direct datation of tholeïtic material exists but heat flow data as well as seismic stratigraphy support a possible younger age. Drilling in both restricted oceanic areas should definitively solve the mechanism and periodicity of oceanic spreading.

d) The starved (thin postrift P.Q. sequences) Sardinian margin is a very young atlantic type margin with a narrow transition to oceanic crust.
Dating precisely the different prerift and synrift sequences appears very important for any modelisation of continental crust stretching and subsequent subsidence. Then a very valuable comparison for timing of stretching and rifting can be made with others Atlantic type margins where possibly prerift/synrift sequences could be obtained by drilling (such as Galicia or NW Africa).

e) Previous holes drilled during legs 13 and 42 have only recovered a discontinuous Plio-Quaternary Pleistocene sequence. Time section for Plio-Pleistocene are in Europe on land and therefore due to weak magnetic signal and weathering, it is not possible to establish magnetic and tephra stratigraphy in these sections. The different proposed holes and particularly reoccupation of former site 132 appear very important for such purpose.

III. SITES LOCATION ALONG A TYRRHENIAN TRANSECT

The general objective is to obtain a full transect across the Tyrrhenian Basin, from the upper margin to the transition zone and possibly to the two oceanic basins along the direction of maximum extension (N120E).

A - *Synrift and Prerift sediments, basement: -Sites 1, 3 and 4 are on tilted blocks of the starved Sardinian margin.*

a) <u>The upper margin</u>

Site 1: The westernmost planned sites (TYR 1A and 1B are alternate); The first objective is to penetrate pre-Messinian sediments (on areas without evaporites) and to reach the basement of the sedimentary basins bordering Sardinia and directly facing the deep bathyal plain. Determining the age foundering in these areas may help in assessing their nature and structural setting, that is fore-arc basins of the older Western Mediterranean Basin vs. early stages of stretching of the Tyrrhenian basin.

b) <u>The lower margin</u> (transition zone) facing the Central Vavilov basin.

Sites 3 and 4 are combined in order to avoid reentry. They are located on the last tilted blocks occuring West of the major feature called central fault, on the more stretched continental crust. There, synrift sediments can be reached in areas devoid of evaporites, and their age will provide the timing of phases of stretching, and of crustal thinning in the central area. Site 3 is complementary to Site 4 since the former can be continuously and HPC cored to have a complete Pliocene-Quaternary record. The occurence of discontinuities are related to the more recent paroxysmal phases of the rifting process.

B - Paleoenvironment: Site 2 (penetration 200 m)

The proposed site TYR 2 is a reoccupation of DSDP site 132, using double HPC for a full recovery. The primary objective is to recover a continuous Plio-Pleistocene sequence consisting a "deep sea stratigraphic type section" in order to establish definitive correlation between P.Q. land-based stratotypes and the open ocean record.

C - Oceanic crust objectives: Sites 5 and 8

Oceanic crust occurence is still not clearly evidenced. One of the objectives is to test the datation of the first distensive magmatism located in the bathyal plain. This objective is important to conclude in the reality of a typical oceanic expansion, even restricted, in the Tyrrhenian, with a linked solution for biostratigraphic and radiogenic datations of the first accretion phase.

Site 5 (penetration 900m or more) is located on Vavilov basin oceanic basement and point directly to ascertain the age and nature of the oceanic crust in the central basin where crustal thickness and velocity distribution, magnetics and heat flow characters concurrently indicate its occurence. The paleontologic age of the basaltic crust should be correlated to the magnetic signature, fairly well known in the drilling area.

Site 8 (penetration more than 700-800m) is located in the eastern Marsili bathyal plain. It should provide the stratigraphy of the southeastern basin information on timing of rifting and type of crust in the area where the Moho is also slhallower than 10km. Many indications suggest that the Marsili basin may be younger than the Vavilov basin.

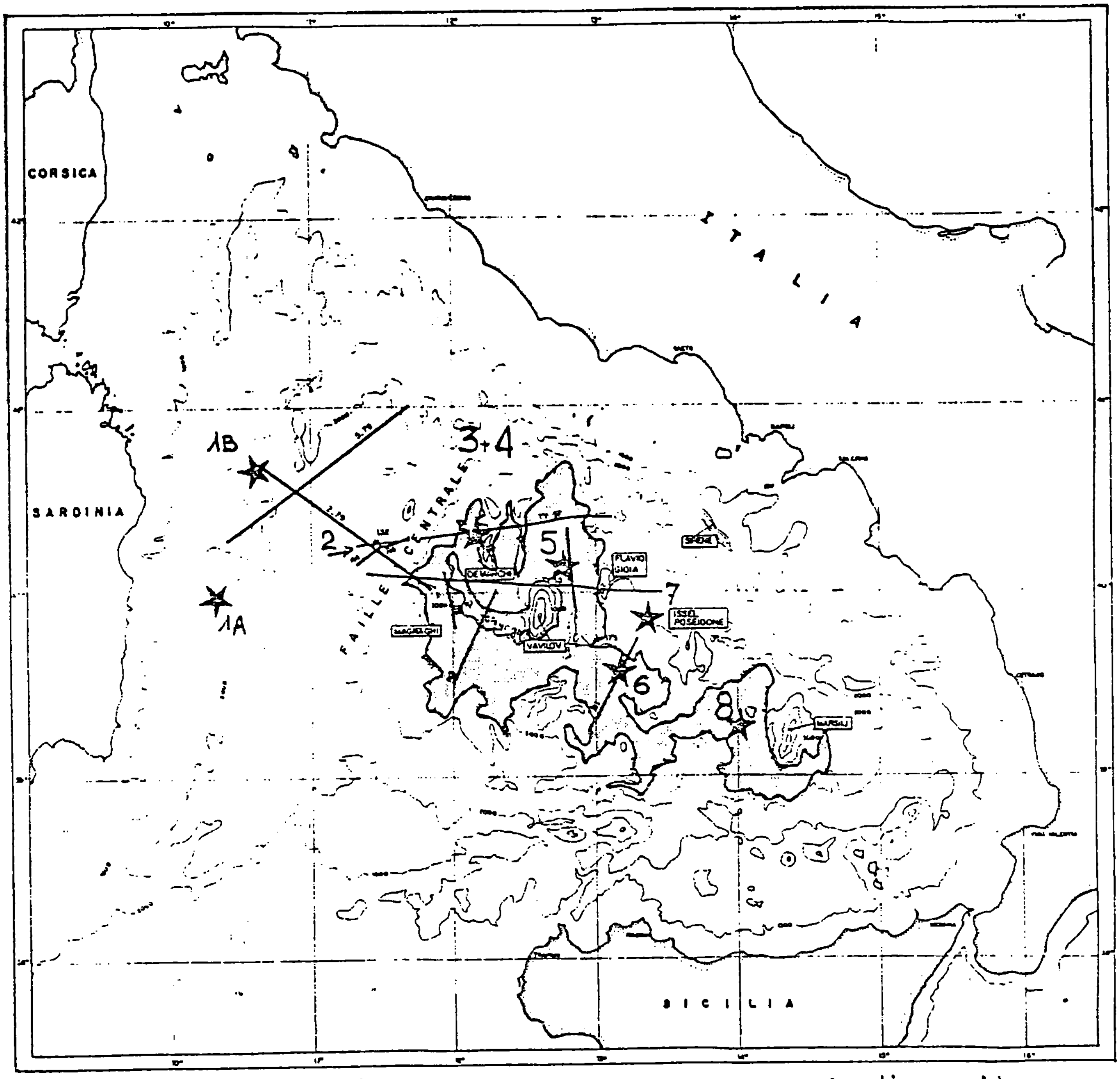
D - Sites 6 and 7.

Site 6 (penetration 950m) and **site 7** (penetration 4-500m) are located on an area of intermediate crust thickness between the two oceanic basins. An objective also adressed is to document the age and nature of the oldest, acoustically layered sediments overlying the basement (Messinian ? Pre-Messinian ?).

IV. EARLY PRIORITIZATION

Priority 1: sites 2, 3, 4, 5, 8.

Priority 2: sites 1A, 1B, 6, 7



> 3400 m deep basin outlined in grey. —— main refraction profiles

H. Schrader

Watchdog Summary: Leg 108; May 1985

ODP 108

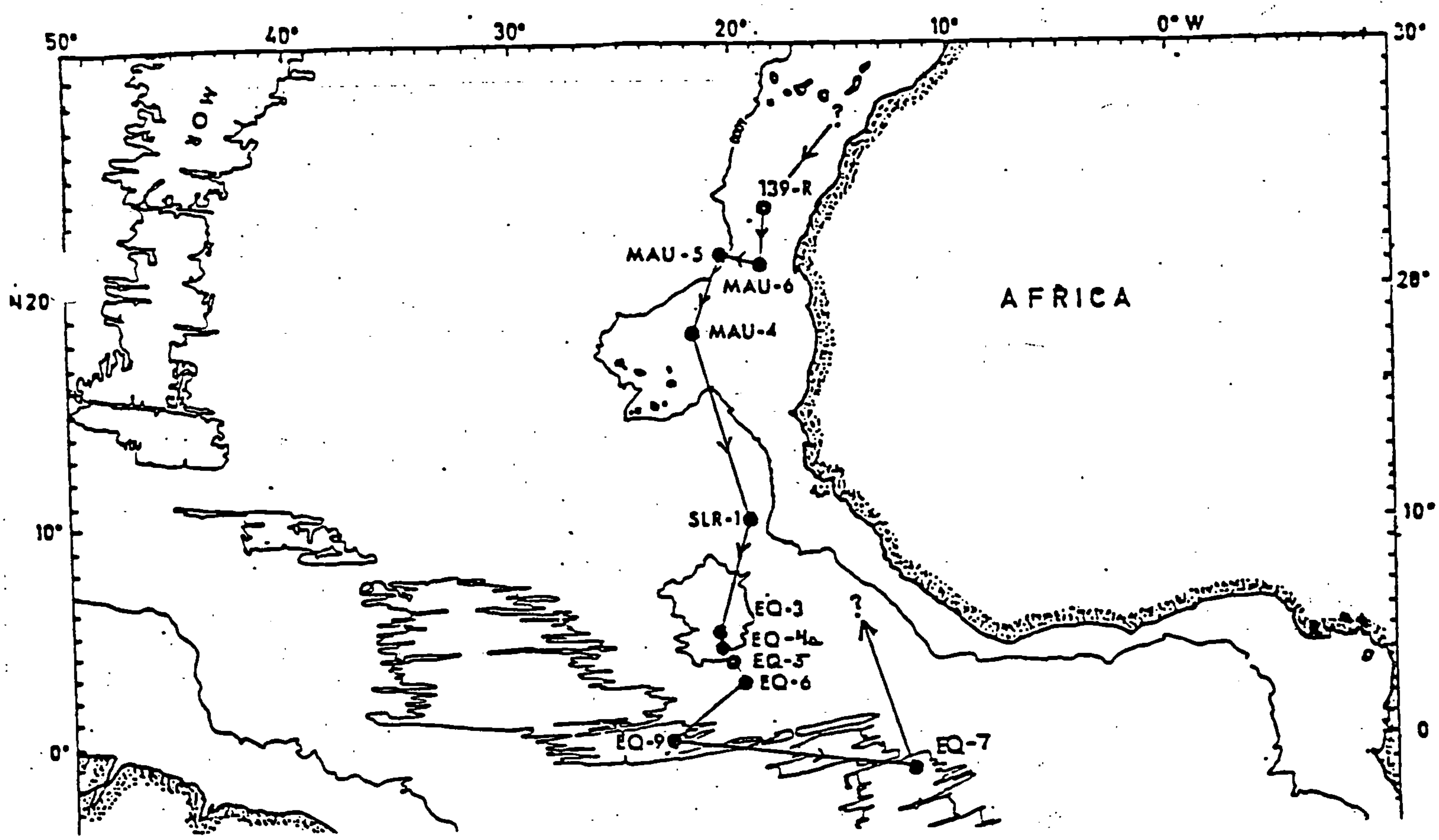
Proponents: Sarnthein, Geol. Inst. Univ. Kiel, Ruddiman, LDGO

Drillsites: 11 proposed double HPC, XBC, minimum logging, sites prioritized 1-11

Reviewed: SOHP, ARP

Tentative time requirements: Travel time Marseille-Dakar, 21.5, Drilling time 37.4, Logging time 7.2 days. Total: 66.1 days.

Scientific Rational: Eleven high resolution "complete" Cenozoic sections will be cored by HPC/XBC in the Eastern Tropical/Subtropical Atlantic Ocean forming a North South transect 2°S to 23°N. Records of surface and deep-water paleoceanography and records of zonal and meridional paleo wind air circulation are the major scientific thrusts. Sites can be grouped into 3 catagories: (1) Upwelling history off Cape Blance [139-R, MAU-6, MAU-5], (2) Atmospheric circulation [139-R, MAU-6, MAU-5, MAU-4, SLR-1, EQ-3, EQ-9, EQ-7], (3) Bottom water and surface water paleo-responses [SLR-1, EQ-3, EQ-4A, EQ-5, EQ-6, EQ-9, EQ-7].



SITE	PRIORITY	LOCATION	WATER DEPTH (M)	NEAREST LAND MASS (N.MI.)	LOCATION	MAXIMUM PENETRA. (M)	DRILLING TIME (DAYS)	PRIMARY OBJECTIVES
139-R	10	23°22.3'N 18°25.5'W	2887 (Ex. Spanish Sahara)	100	Outer rise off ex-Spanish Sahara	350 (Middle Miocene)	3.7/0.61	Reference position for non-upwelling location in Canary Current; Trade wind history; Contour current.
MAU-6	2	20°56.5'N 18°40.0'N	2662	93 (Cape Blanc)	Upper Rise W of Cape Blanc	300 (Middle Miocene)	3.2/0.5	Persistent Upwelling Cell; Trade wind history; Fluvial sediment supply from Central Sahara
MAU-5	1	21°20'N 20°45'W	4023	220 (Mauritania)	Outer Rise W of Cape Blanc (close to Site 140)	250 (Early Miocene)	4.1/0.74	Reference location for non-upwelling conditions in outer Canary Current. Eolian-sand lenses.
MAU-4	3	18°04.5'N 21°01.5'W	3050	130 (Cape Verde Islands)	Cape Verde Rise (close to Site 368)	300 (Miocene basalt)	3.7/0.51	Deepwater paleoceanography; Circulation history of Saharan Air Layer
SLR-1	8	9°58.9'N 19°15.3'W	4300	220 (Guinea-Bissau)	Northeastern Sierra Leone Rise; Kane Gap	300 (Middle Miocene)	4.8/0.75	Bottom-water circulation between southern and northern East Atlantic; Trade wind history
EQ-3	5	04°45'N 20°58'W (at DSDP site 366)	2650	480 (Sierra Leone) Sahara)	South Slope of Sierra Leone Rise	400 (Upper Eocene)	3.0/0.60	Bottom-water response eolian, and surface-water fluxes.
EQ-4a	7	04°12'N 20°35'W	3900	500 (Sierra Leone)	South slope of Sierra Leone Rise	150 (Late Miocene)	2.8/0.70	Bottom-water response
EQ-5	6	03°30'N 20°10'W (at WHOI core 36GG)	4300	520 (Sierra Leone)	South slope of Sierra Leone Rise	150 (Late Miocene)	2.5/0.75	Bottom-water response
EQ-6	11	02°45'N 19°04'W (at WHOI core 29GGC)	4800	540 (Sierra Leone)	South slope of Sierra Leone Rise	150 (Late Miocene)	3.6/0.79	Bottom-water and surface-water responses
EQ-9	4	00°12'S 23°09'W (at L-DGO core V30-40)	3706	810 (Sierra Leone)	West flank Mid-Atlantic Ridge	180 (Late Miocene)	3.0/0.60	Surface-water and eolian responses.
EQ-7	9	01°21'S 11°55'W (at L-DGO core RC24-7)	3899	390 (Sierra Leone)	East flank mid-Atlantic Ridge	150 (Late Miocene)	3.0/0.62	Surface-water and eolian responses.

TOTAL: 37.4/7.17 + Travel time: 21.5 = 66.07

85/471

The University of Rhode Island, Narragansett, RI 02882-1197
Graduate School of Oceanography, Narragansett Bay Campus

RECEIVED MAY 24 1985

MEMORANDUM

TO: Roger Larson, PCOM Chairman DATE: May 24, 1985

FROM: Michael Arthur, Chairman SOHP

RE: Site prioritization for NW Africa (Leg 108)

Our panel supports the priority list provided to you by Ruddiman and Sarnthein. We recognize the time limitations, but hope that the Leg can achieve more than the somewhat pessimistic estimates given by ODP. At any rate, we have every confidence in the two fine co-chiefs to put together a great Leg.

Priority List (Reiterated)

MAU-5	(highest)
MAU-6	
MAU-4	
EQ-9	
EQ-3	
EQ-5	
EQ-4a	
SLR-1	
EQ-7	
139-R	
EQ-6	(lowest)

gc

85/419

Lamont-Doherty Geological Observatory of Columbia University | Palisades, N.Y. 10964

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Palisades New York State
TWX-710-576-2653

Telephone: Code 914, 359-2900

May 6, 1985

Dr. Roger Larson
Ocean Drilling Program
Graduate School of Oceanography
Narragansett, Rhode Island 02882-1197

Dear Roger:

We have been advised that the revised Leg 108 proposal submitted in April, 1985 by Michael Sarnthein on behalf of the two of us may underestimate the time required for drilling. Working out all the details of a new schedule will take some time. In the meantime, following a phone conversation with Michael on May 3, we submit the following relative ranking of all the sites:

From top priority to lowest priority:

MAU-5, MAU-6, MAU-4, EQ-9, EQ-3, EQ-5, EQ-4a, SLR-1, EQ-7, 139-R, EQ-6.

In view of the time that would come available if the Chile Triple Junction Leg does not take place, we request that a pro-rated share be allotted to Leg 108. We have a number of first-rate paleoceanographic problems to address on this cruise before the ship leaves the Atlantic for many years.

With best regards,

Bill

William F. Ruddiman
Senior Research Scientist

cc: Hans Schrader, OSU
Michael Sarnthein, Kiel
Lou Garrison, Texas A&M
Jack Baldauf, Texas A&M
Mike Arthur, URI
Dennis Hays, L-DGO

INSTITUTE FOR GEOPHYSICS
THE UNIVERSITY OF TEXAS AT AUSTIN
4920 North I.H. 35 · Austin, Texas 78751-2789 · (512) 451-6468, 458-4238 · Telex: 910-874-1380 UTIG AUS

Memorandum

May 28, 1985

TO: PCOM

FROM: Dick Buffler RTB

RE: Barbados Watchdog

Enclosed please find a summary of the proposed Barbados sites as put together by Casey Moore. This is based on previous proposals, consensus of the Caribbean Working Group, consensus of the proponents, and discussions with TAMU. There is much more drilling outlined than can be done on one leg, but the sites are priortized. Note that Casey was told by TAMU that each hole needs to be a re-entry hole if the present packer system is to be used. This, of course, adds more time.

As for the drill-in casing, the proponents, as well as the Tectonics Panel, feel very strongly that this should be a high-priority item for use on Leg 110. Evidently a latch or something failed on Leg 78 and the TAMU people have ideas how the problem can be corrected. This modification definitely can be done by Leg 110 if money is available. This tool is critical for getting through the decollement zone, which is one of the main objectives of LAF-1.

If for some reason this tool cannot be provided, the proponents and panels (see attached letter from Tectonic's Panel) feel that Leg 110 still should be drilled, as many high priority objectives could be accomplished, such as 1) making actual quantitative pressure, temperature and fluid composition measurements at the decollement zone in two places plus other structurally defined localities, 2) drilling a complete transect across an accretionary zone and thus document the lateral variations in the various properties (T^{o}, P, etc.) plus structural changes, and 3) provide permanent laboratories for later measurements. They feel we are still very much in the learning phase about this type of geologic setting and need some basic quantitative data as well as trial runs to gather experience for future drilling. Thus, there is widespread support for not abandoning this leg all together.

RTB:km

Copy: Darrel Cowan
Lou Garrison
Casey Moore

Casey Moore
May 17, 1985

NORTHERN BARBADOS FOREARC TRANSECT: STRUCTURAL AND HYDROGEOLOGICAL PROCESSES

BACKGROUND

The northern Barbados forearc transect is designed to examine structural and hydrogeologic processes in an active accretionary environment. A key objective is to penetrate completely through the toe of the prism, including offscraped sediment, underlying underthrust sediment, and the active decollement separating these differing structural regimes. Emplacing a re-entry cone and casing string to the decollement here would provide the basis for long-term measurements of tilt and fluid characteristics in this environment. To evaluate lateral variations in fluid properties and structural features a series of additional sites are planned up to 23 km landward of the deformation front.

Operating time estimates were derived with the assistance of Glenn Foss and Stan Serocki at ODP. The time required for transit and to accomplish all objectives exceeds the normal cruise length by about 50 percent. A normal cruise should complete the first priority site at the toe plus at least one other hole; with luck several of the upslope holes could also be drilled.

SITE OBJECTIVES AND OPERATIONS

The proposed sites for the northern Barbados forearc transect are listed below in order of priority.

LAF 1: Base of Slope near Site 541, Three Km from Deformation Front

Specific Objectives: Completely penetrate from imbricately thrusted offscraped sediment through active (and probably overpressured decollement) to underthrust stratified sequence, finally to oceanic crust. Determine sequence of structural features including biostratigraphic definition of faults, use televiewer to image structural features downhole. At selected structurally defined localities measure geotechnical properties and fluid pressure, composition, temperature and flow rate.

Establish cased hole with a re-entry cone that could serve as a permanent observatory for down-hole monitoring of subduction zone.

Operations: Achievement of objectives will require two re-entry cones and setting of casing, both standard and drill-in variety.

A-Hole: Penetrate about 500 m to decollement, setting re-entry cone, and casing as necessary to unstable zone in decollement. Measure fluid pressure and compositions associated with faults in offscraped sequence and decollement at base of offscraped section. Compliment drilling with logging, televiewer runs, and packer and geotechnical experiments. 17.5 days

B-Hole: Set re-entry cone, drill and case as necessary to decollement. Span unstable decollement zone with long section of drill-in casing. Focus logging, televiewer runs, packer and geotechnical experiments in stratified sequence **below** decollement. 18 days

Note: It is possible that the base of the A-hole would remain stable long enough to continue through the decollement with drill-in casing and therefore save 8 days necessary to set another re-entry cone and to case to the decollement. Therefore the total time to complete all objectives could range from 25.5 to 35.5 days.

LAF 2: Eight Km Upslope from Deformation Front

Specific Objectives: Investigate lateral variations in structural features, physical properties, and pressures, composition, and temperatures of fluids in offscraped material and in decollement zone.

Operations: Single hole designed to penetrate 850 m to decollement using casing as necessary and re-entry cone (required for current packer). Continuous coring with complete program of logs, televiewer runs, and packer and geotechnical experiments at selected localities. 18 days

LAF 3: Twenty-Three Km Upslope from Deformation Front

Specific Objectives: Penetrate landward dipping reflectors (fault?) at top of lower slope. Establish arcward reference point for variations in structural style, fluid properties, and temperature. Test for active fluid movement along faults well arcward of deformation front.

Operations: Single hole designed to penetrate 500m to prominent series of landward dipping reflectors. Re-entry cone required to use packer. Full suite of logs planned plus borehole televiewer and geotechnical experiments. 11 days

LAF 3A: Fifteen Km Upslope from Deformation Front

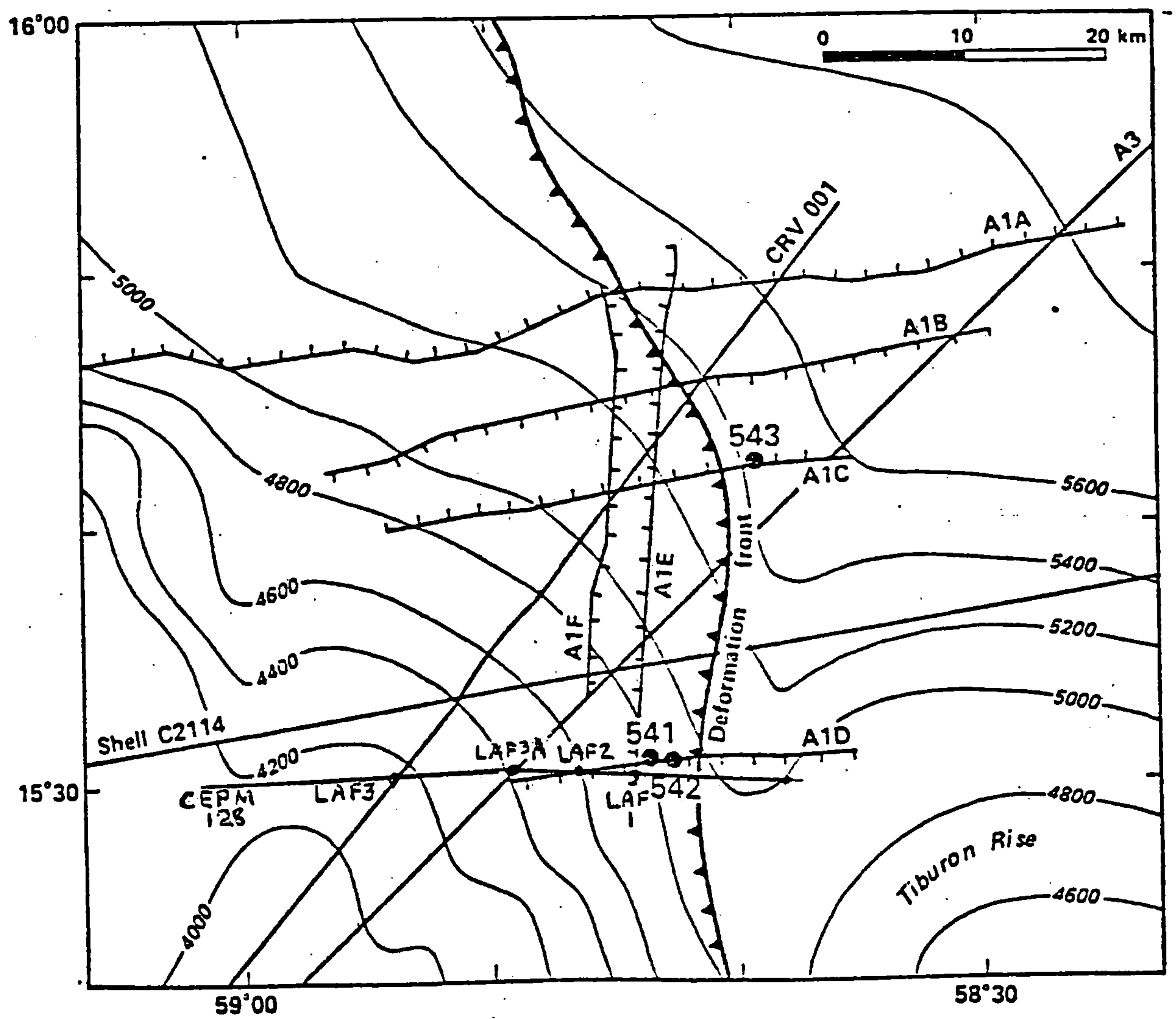
Specific Objectives: Penetrate landward dipping reflectors in order to establish structural style, fluid pressure, temperature and composition. Test for active fluid movement along landward dipping reflectors (fault?). LAF 3A is designed to complete transect and provide control on lateral gradients of fluid properties and structural style should LAF 2 and 3 also be drilled.

Operations: Single hole designed to penetrate 600m to landward dipping reflectors. Re-entry cone required to use packer in this environment. Full suite of logs planned plus borehole televiewer and geotechnical experiments. 13 days

TABULAR SUMMARY

Site	Water Depth (meters)	Penetration (meters)	Time Required (days)	Comments
LAF1	5025	860	25.5-35.5	Two holes
LAF2	4800	850	18	
LAF3	4275	500	11	
LAF3A	4650	600	13	
			67.5-77.5	
		Estimated Transit	7	
		Total	74.5-84.5	

Note: All sites require re-entry cones, and have significant associated experimental programs.



• 541..3 Leg 78A SITES

• LAF 1...3 Proposed Sites

UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON 98195

Department of Geological Sciences, AJ-20

May 22, 1985

Dr. Richard Buffler
Institute of Geophysics
University of Texas
4920 North I. H. 35
Austin, TX 78751

Dear Dick:

I am responding to the JOIDES Office's request for TECP to re-evaluate Leg 110 drilling on Barbados Ridge in light of the probability that there will be no wireline packer or re-engineered drill-in casing available. I polled two panel members by phone and got one mail reply.

TECP recommends that drilling of the Barbados Ridge on Leg 110 should proceed, and furthermore, our priorities remain as established in our September 1984 London meeting: highest priority is LAF-1 at the toe of the slope; then LAF-2 and LAF-3 moving progressively upslope.

We believe that important problems concerning accretionary processes can still be addressed using a standard packer in a re-entry hole, and, if necessary, whatever drill-in casing equipment is available. The nature and role of fluids in accretionary prisms is a fundamental question, and the interesting if highly preliminary and incomplete results from Leg 78A demand that we probe further at these sites. The extra time required to set up a re-entry hole is worth the potential payoff if we can sample fluids, measure fluid pressure, and record temperatures in the hole.

Drilling through the decollement is still a desirable objective. It is not known whether casing will be required. Indeed, a key justification for Leg 110 is that it is bound to provide engineering data that will be useful in planning for future drilling in this tectonic environment; physical properties and drilling characteristics of the decollement and overlying sediments were incompletely documented on Leg 78A and further data are necessary. We view Leg 110 in one sense as an experimental engineering leg, the results of which can be used to refine procedures for future drilling in accretionary prisms.

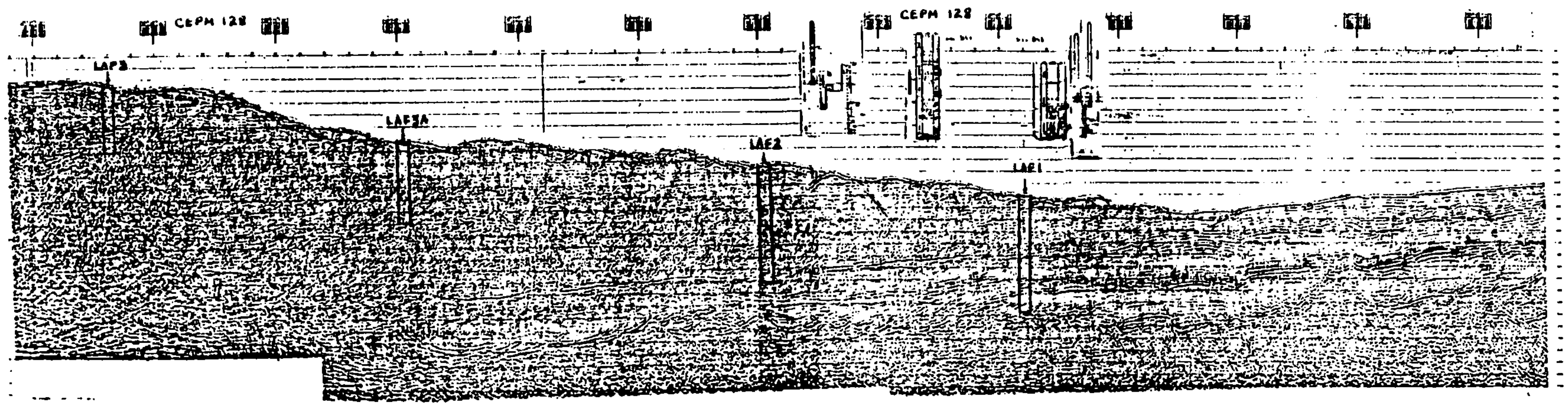
Finally, Leg 110 as planned will complete the transect begun on Leg 78A. The significant results from Leg 78A can be enhanced and placed in a larger tectonic framework if we are able to drill even shallow holes and establish the role of fluids at sites upslope from LAF-1 (541).

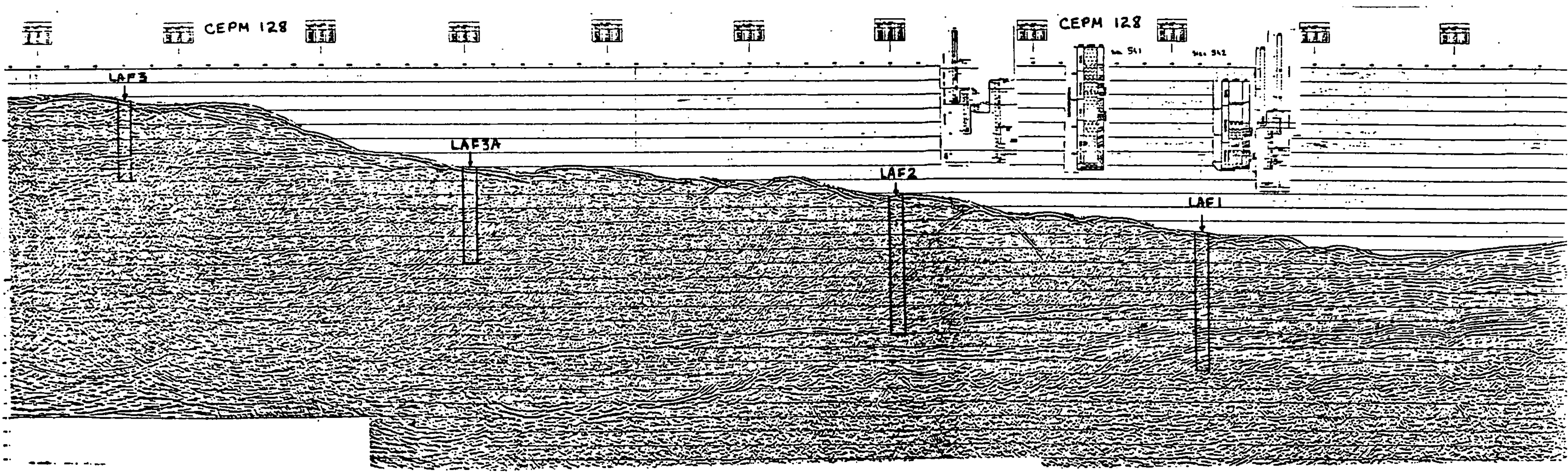
Sincerely,

Darrel

Darrel S. Cowan
Associate Professor

DSC/scb


CEPM 128
CEPM 128
LAF3
LAF3A
LAF2
LAF1



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LAF3
LAF3A
LAF2
LAF1
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WATCHDOG SUMMARY
EAST PACIFIC RISE 9°-13° N LEG(S)

GENERAL COMMENT

The LITHP has selected the EPR 9°-13°N as the type fast spreading ridge to examine the processes involved in ocean crust generation, a primary COSOD objective. Detailed drilling plans addressing the similar ideas and objectives of the proposals submitted by Fox and MacDonald, Bougault, Francheteau and Hekinian, and Batiza have not been completed. "It is the LITHP's intention to involve all the proposers and major holders of data in discussions to arrive at a consensus decision on which is the best location along the EPR. Because of the intensive data collection on the EPR this summer this final determination will not be possible until early 1986 following workup of the MCS data" (LITHP minutes, La Jolla). In addition, "attempts to define a specific drilling strategy [have] not succeed[ed]" because of disagreement within the panel as to whether the second priority (after drilling the upper portion of an active hydrothermal system) should be spaced to pursue hydrothermal or petrologic/tectonic/volanic objectives. Preliminary plans will be devised at the LITHP meeting in Strasbourg, 29-30 August.

The LITHP views these leg(s) as being the initial effort of an extended drilling program on the chosen ridge segment, the complete program eventually involving drilling of upward of ten holes.

PRIORITY 1: VICINITY OF ACTIVE HYDROTHERMAL SYSTEM

Location: near to/within an active hydrothermal vent area centrally located within a ridge segment. First of a cluster.
Objectives: To determine the nature of basement alteration in an area of intense hydrothermal activity, to define the geometry of circulation, to sample the stockwork underlying surficial mineral deposits, to provide an open hole for continuing geophysical and geochemical observations, and to serve as a reference section for other drilling along the chosen ridge segment.
Operating days: 300 m bare rock re-entry. Minimum 26 days see below

PRIORITY 2 OR 3: HYDROTHERMAL DOWNFLOW(?) ZONE ALONG STRIKE

Location: along strike located between adjacent active hydrothermal vent areas
Objectives: To possibly sample a recharge zone of an active hydrothermal system, to contrast the basement alteration with the nearby active site, to determine the reasons for lack of hydrothermal activity, and to provide an adjacent hole for cross-hole geophysical experiments.
Operating days: as above

PRIORITY 2 OR 3: PETROLOGIC/VOLCANIC/TECTONIC CONTRASTS ALONG/ACROSS A RIDGE SEGEMENT

Location: along strike near to the end of the ridge segment, truncated by overlapping spreading centers or across strike into one of a chain of small non-hot spot volcanoes.
Objectives: For OSC, to examine models for the origin of overlapping spreading centers by contrasting the tectonic, petrologic and volcanic signatures of the

section with the reference section for the ridge segment. For a non-hot spot volcano, to study the petrologic and volcanic processes involved in their formation and to provide a monitor of variations of the physical and chemical processes occuring in the spreading lithosphere.
Operating days: as above

THE MINIMUM HOLE

Operating days are predicated on the following minimum hole which assumes satisfactory guidebase performance and drilling conditions:

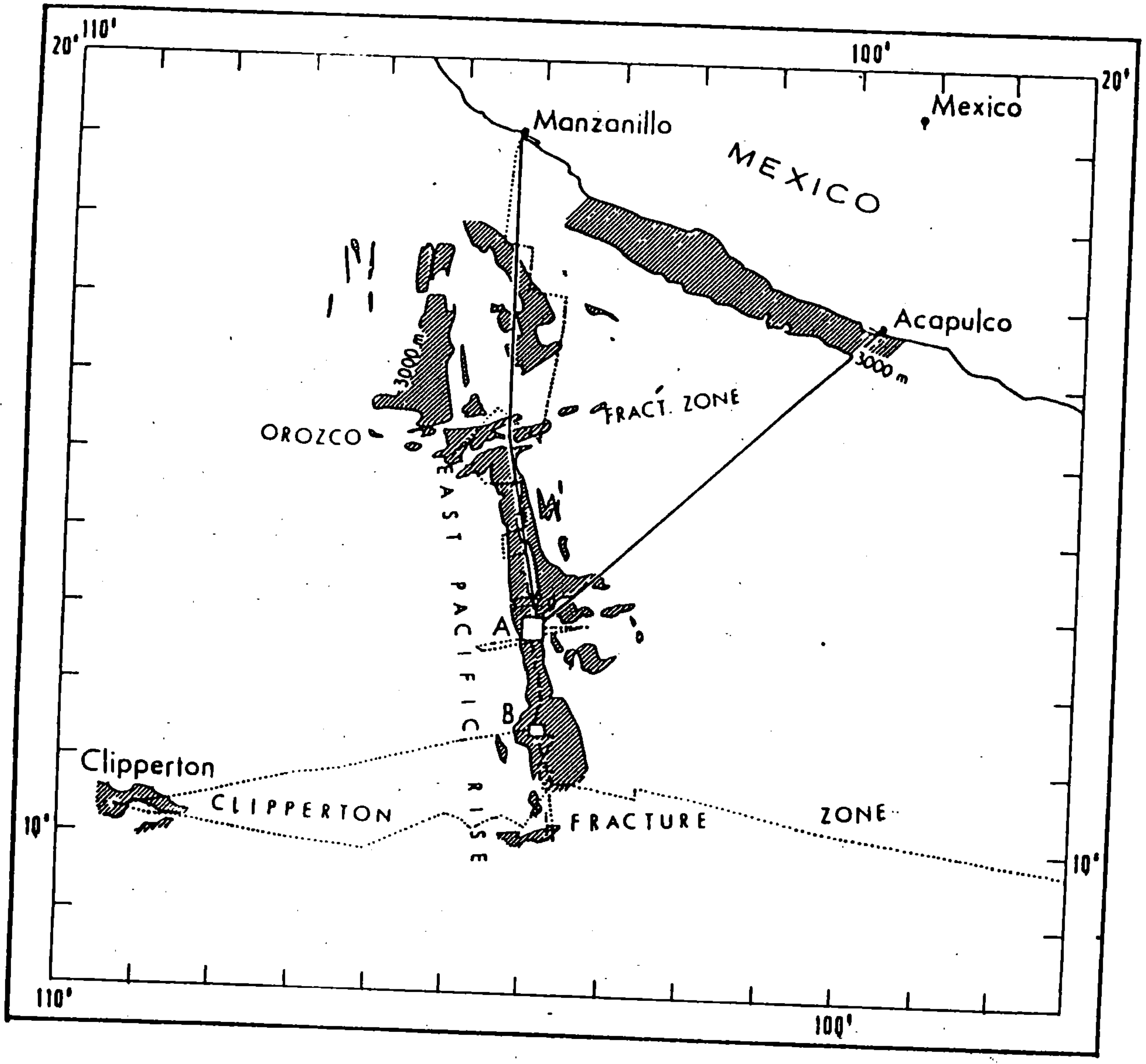
set guidbase/stabilize hole for drilling ahead	14 days
300 m coring at 2.5 m/hr 2600 m water depth	
rotation time	5
wireline trips	1
pipe trips	3
logging	3

BEST CASE LEG SCENARIOS

One leg of 55 days: 12 days transit, 26 days hole 1, 14 days establish hole 2, contingency 3 days.

Two legs of 47 days: 8 days transit, 26 days hole 1, 14 days establish hole 2; 8 days transit, 12 days drill hole 2, 26 days drill hole 3

Russ McDuff
May 1985



110°
20°
100°
20°
Manzanillo
Mexico
MEXICO
Acapulco
3000 m
3000 m
OROZCO
FRACT. ZONE
EAST PACIFIC RISE
A
B
Clipperton
CLIPPERTON
FRACTURE
ZONE
10°
10°
110°
100°

Fig. 1

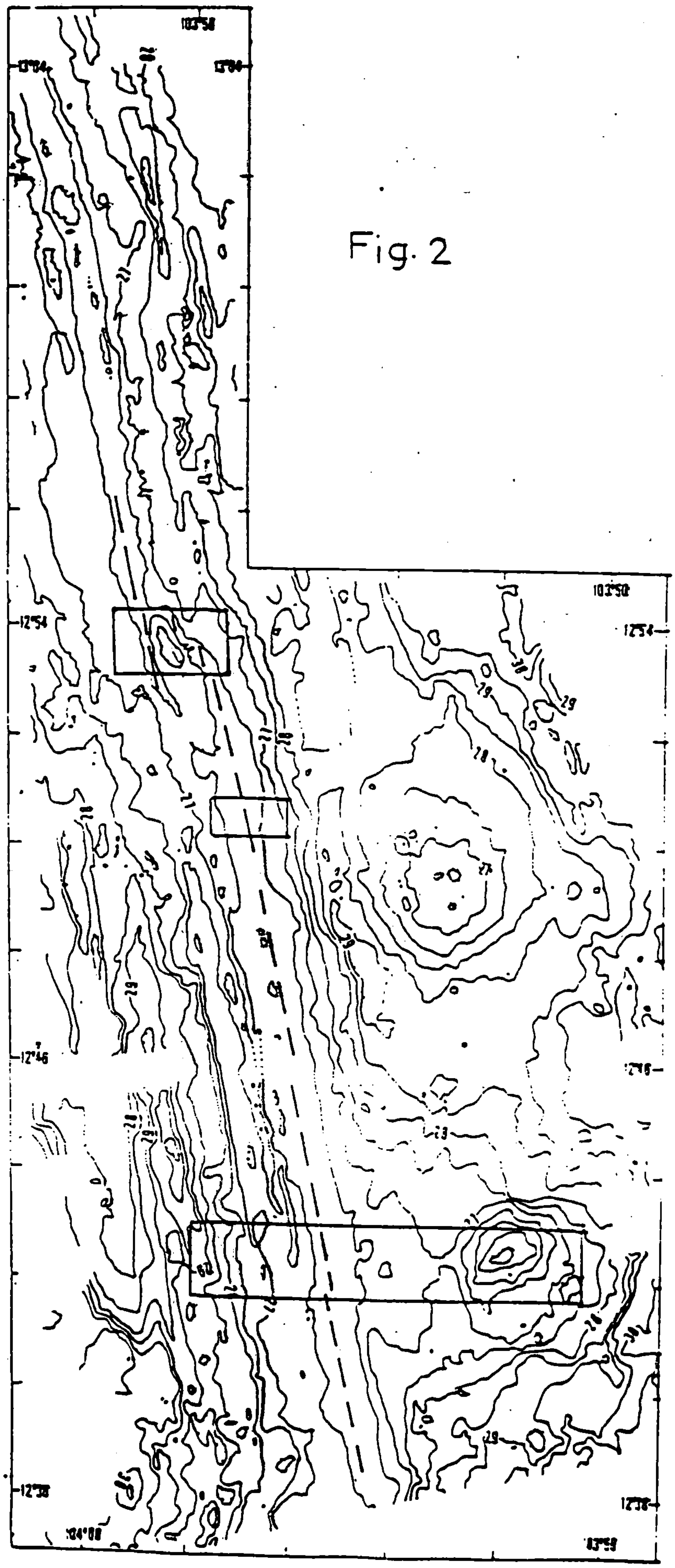


Fig. 2

SUMMARY OF OBJECTIVES FOR DRILLING AT DSDP SITE 504B

1. Introduction: Two proposals have been received for 504B drilling (123/E and 124/E). The major proposal is for deepening hole 504B to approximately 2-2.5 kms TD entailing a single leg of drilling in 1986 with a revisit to the site at a later date. The second proposal is for a series of single bit holes to define the nature and pattern of the shallow basement hydrothermal flow around 504B should the major proposal not be technologically feasible.

Drilling at this site has revolutionised our knowledge of the structure and chemistry of the oceanic crust. Months of drilling have been invested there and it represents the deepest penetration into igneous ocean crust by almost a factor of 2. It presently provides the best opportunity there is for answering fundamental questions concerning the formation and alteration of the dyke sequence (along with the natural impact of this on ophiolite interpretations) as well as for achieving the fundamental goal of reaching the gabbros of Layer 3.

2. Major Proposal (from K. Becker on behalf of LITHP): The principle objective of this proposal is to utilise the successful drilling at Site 504B to achieve deep penetration into the igneous crust with the eventual aim of sampling Layer 3. This proposal has been very strongly endorsed by LITHP as one of its main priorities. A consequence of this further drilling will be the creation of a "natural laboratory" around 504B.

The result of drilling on DSDP Legs 69, 70, and 83 achieved a total sub-seabed penetration of 1350 m comprising 274.5 m of sediment cover, 571.5 m of pillow lavas and minor flows, a transition zone of 209 m and 295 m of sheeted dykes from Layer 2C. It is thought that the layer 2C/B transition is 2.0-2.5 km into basement or at least 1 km deeper than the 504B depth. To achieve this major objective will require, at least, two full drilling legs and what is proposed here is a single leg to carry out pre-drilling measurements and then to core and log the sheeted dyke complex to whatever depth can be obtained. Existing technology and previous drilling experience suggest that a four-week drilling time will achieve about 300 m additional depth. Coring produced poor recovery rates in the dyke zone of <20%. It is proposed that every effort is made to improve both recovery and penetration rates prior to the return to 504B. It is further proposed that strict performance criteria are established for further drilling at 504B and that should recovery after a further 200 m of drilling be less than 20% and cutting rate averages less than 1 m/hr. then drilling would be suspended and the subsidiary hydrothermal sampling programme would be initiated.

The proposal is formulated in three parts as follows:

a. Measurements prior to drilling (3-5 operating days). A program of concurrent equilibrium borehole temperature measurements and water samples should be run to the bottom of the hole. Temperatures in the upper part of the hole will provide an estimate of the flow rate of ocean bottom water into the hole. Temperatures in the bottom part will require modifications to tools to record at approximately 160°C. Sampling of borehole bottom waters is intended to study equilibration with formation fluids.

b. Coring sheeted dykes (28 operating days).

c. Logging and experiments (7-10 operating days). The full dyke section should be logged with a standard suite of tools and the basement section in its entirety should be logged with tools which were not successful or completely run previously. Additional special experiments are proposed: VSP/OSE (3 days) to provide data on the depth to layer 2/3 transition, packer-permeability tests and long-spaced electrical resistivity. Again a major constraint is the temperature at the bottom of the hole.

The total maximum operating days required is 43 operating days for the first return to 504B.

3. <u>Alternative Proposal (from M. Mottl):</u> Should difficulties be encountered early in 504B (either in the initial pre-drilling phase or if drilling does not meet the performance criteria) then this proposal to study hydrothermal flow would be initiated. In its entirety, this proposal requires a single leg but the first two objectives could be met, to some extent, by one well-placed single bit hole. The proponent states that the objectives could be achieved incrementally and could form a back-up to the major drilling proposal in 504B.

Objectives of the Mottl proposal are as follows:

a. To test the hypothesis that warm, altered seawater is flowing upward through the sediment section in highly localized zones which correspond to the conductive heat flow highs. This would be done by drilling through the sediments to basement at a point directly centered over two or more of the heat flow highs. Critical measurements would include the profiles for temperature and sediment pore water chemistry.

b. To determine whether the chemical and physical properties of the sediment column and upper basement vary laterally and whether they are affected by diagenetic processes related to the heat flow highs.

c. To determine the nature of water flow through basement at the site, by making a shallow penetration of basement in the same holes designated above. The critical measurement to be made is of the lateral pressure gradient, which is the driving force for hydrothermal flow. Both flow rates and permeability could be calculated from this measurement.

Objectives a and b could be achieved by one well-placed single bit hole. For Objective a only this could consist of washdown in some 2 operating days. The second objective requires HPC to about 230 m depth plus rotary drilling for a further 50 m (4-6 operating days). The third objective requires at least two re-entry holes and could require setting the packer in the shallow basement of each hole. The complete programme, with re-entry holes, would require up to 2 weeks per hole and could be accomplished in a standard leg. As a back-up, the programme could be used to fill in any hiatuses in drilling 504B, even in increments of one or two days.

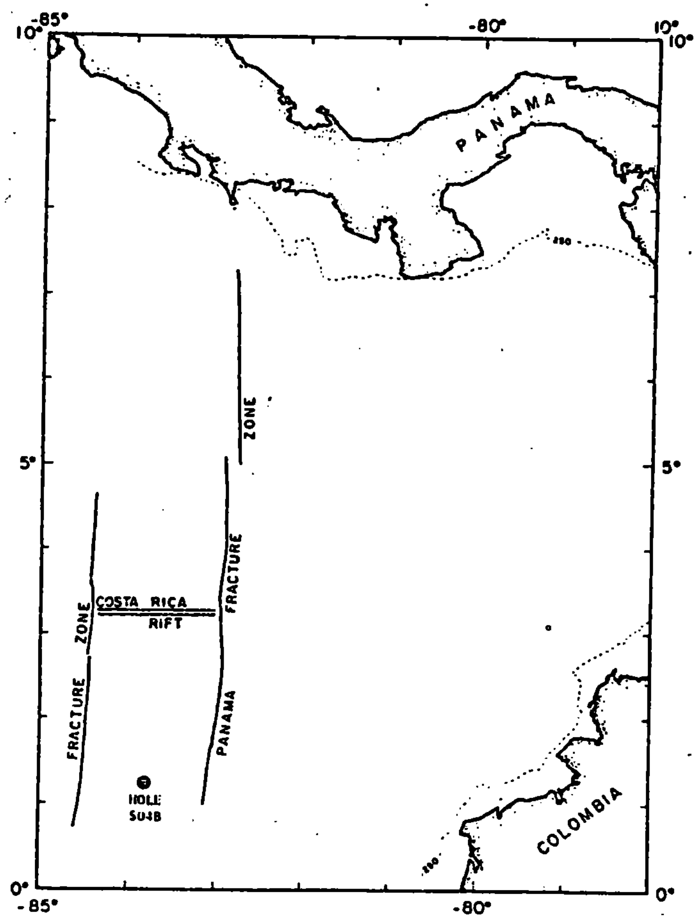


Figure 1. Location of DSDP Hole 504B.

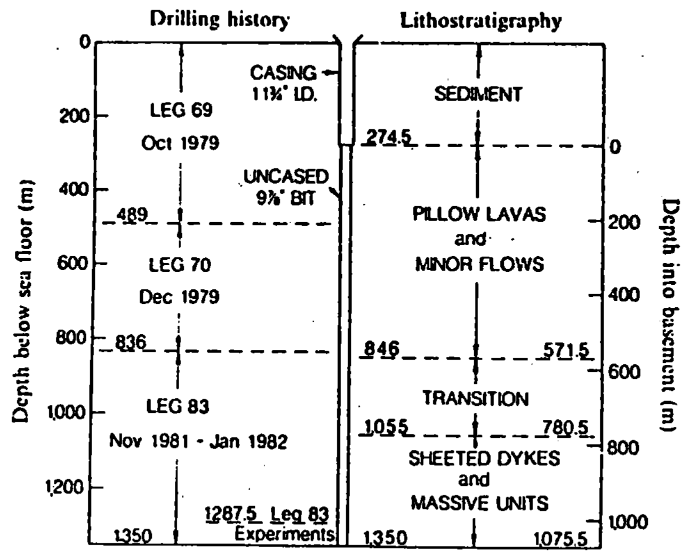


Figure 2. Schematic of the drilling history and lithostratigraphy of Hole 504B.

HANS SCHRADER

85/139

Watchdog Summary: Leg XXX, Peru, May 1985
ODP XXX "PRELIMINARY"

Proponents: Vern Kulm, Erwin Suess, OSU; Donald Hussong, HIG

Drillsites: 17 proposed double HPC, XBC, single-bit rotary, full logging for deeper sites, final site location will be determined in September 1985.

Proposed and Reviewed by: SOHP, TECTP, EPRP.

Tentative time requirements: Drilling time - 62 days, not yet calculated by Science Operator.

Scientific Rational: The Peru margin drilling program will elucidate the tectonic framework of the "Andean type" continental margin and determine how this framework is influenced by the subduction of the Nazca plate beneath the margin. Emphasis will be placed upon the geologic history of Mesozoic and Cenozoic forearc basin deposits in order to obtain a record of the vertical movements (rapid uplift and subsidence of 1.2 km) in these middle and upper slope basins, and a record of the truncation history of the outer margin. Most basins are believed to be floored by metamorphic terrain, and one terrain displays multiple cycles of metamorphism.

Younger Neogene and Quaternary deposits in the upper mudslope basins will provide a detailed record of initiation of the Humboldt current, variations of upwelling phenomena, El Niño variations, formation of organic-rich muds, and dolomitization history of the classic Peru coastal upwelling regime.

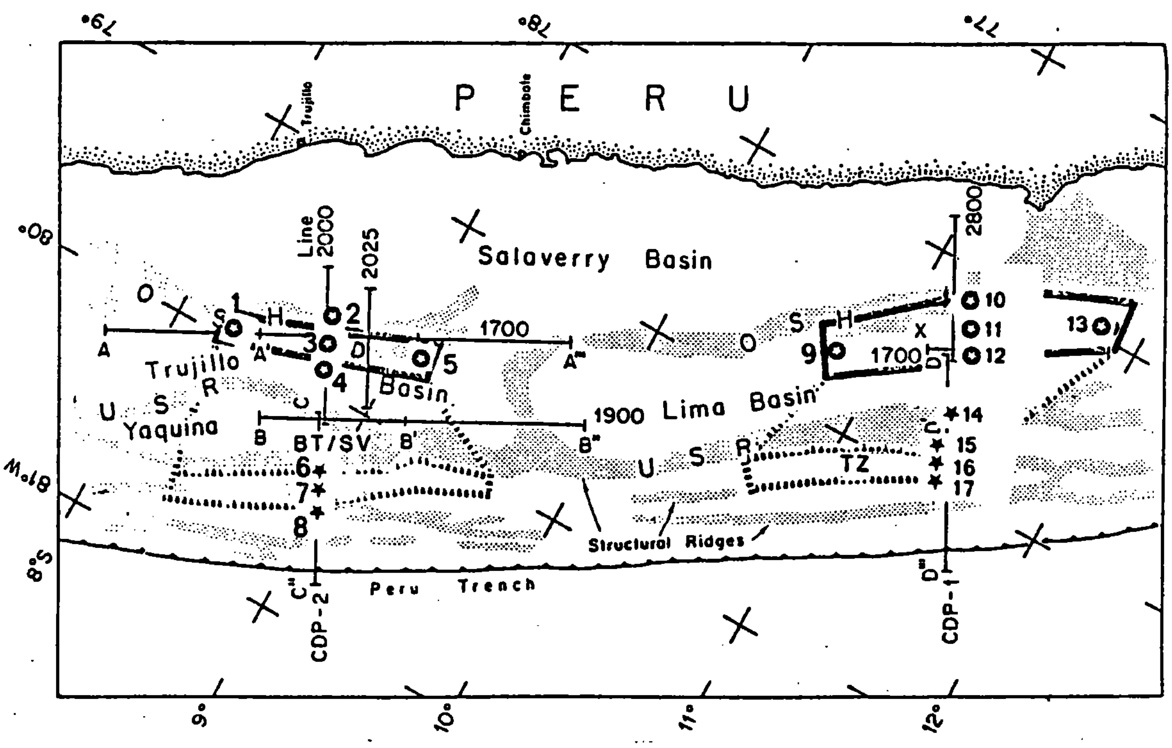


Fig. 12. Location of proposed drilling areas on the Peru continental slope.
PD = Paleoceanography/Dolomitization BT = Basin Tectonics TZ = Transition Zone
SV = Subduction Volcanics

SITE	PRIORITY LOCATION	WATER DEPTH (m)	MAXIMUM PENETRATION (m)	DRILLING TIME (Days)	PRIMARY OBJECTIVES
1*	8° 20' 79° 49'	500	150-200	2 x HPC 1	El Niño, Upwelling SOH, TECT
2*	8° 30' 79° 40'	200	150-200	2 x HPC 1	El Niño, Upwelling SOH, TECT
3*	8° 40' 79° 45'	500	150-200	2 x HPC 1	El Niño, Upwelling SOH, TECT
4*	8° 40' 80° 00'	800	150-200	2 x HPC 1	El Niño, Upwelling SOH, TECT
5*	9° 10' 79° 40'	500	150-200	2 x HPC 1	El Niño, Upwelling SOH, TECT
6*	9° 00' 80° 30'	4500	1000	6	Edge of metamorphic block, tectonics
7*	8° 56' 80° 24.0'	4100	600	6	Uppermost prism tectonics
8*	8° 50' 80° 06.0'	1200	800	6	Transition tectonics
9*	10° 50' 78° 40'	500	150-200	2 x HPC 1	El Niño, Upwelling SOH, TECT
10*	11° 30' 78° 20'	200	150-200	2 x HPC 1	El Niño, Upwelling SOH, TECT
11*	11° 32' 78° 50'	500	150-200	2 x HPC 1	El Niño, Upwelling SOH, TECT
12*	11° 35' 78° 35'	800	150-200	2 x HPC 1	El Niño, Upwelling SOH, TECT
13*	11° 45' 77° 50'	500	150-200	2 x HPC 1	El Niño, Upwelling SOH, TECT
14*	11° 30' 78° 35'	1200	1000	6	Outer Lima Basin hole subsidence history SOH, TECT
15*	11° 30' 78° 40'	1200	800	6	Transition tectonics SOH
16*	11° 32' 78° 00'	4100	600	6	Uppermost prism tectonics, SOH
17*	11° 35' 79° 00'	4500	1000	6	Edge metamorphic block, tectonics, SOH

* All site locations tentative (May 1985); final site location available September 1985.

**Note: Recent Site Survey -- Sea-mark II, multichannel seismic, bathymetry, all sea-mark rock outcrops dredged. Sea-mark only below 500-700 m water-depth, Peru shallow water clearance in consultation with Kulm and Hussong - above 1000 m!

<u>Weddell Sea Leg</u> - A summary

1. Consists of 11 potential sites W1 through W11 (see map).

2. Summary of Objectives:

   <u>Maud Rise</u> (W1,W2): Cenozoic-Mesozoic vertical water mass traverse in Antarctic waters in carbonate biogenic facies. Stable isotopic records at high southern latitudes; biostratigraphy; evolution; glacial history from ice-rafted sediment history; biogenic productivity.

   <u>Caird Coast</u> (W4): East Antarctic margin drilling; Cenozoic-Mesozoic; margin sedimentary facies; climatic evolution; glacial development of continent.

   <u>South Orkney Plateau</u> (W6,W7,W8): Middle to Late Cenozoic vertical water mass traverse in intermediate to deep Weddell Sea. Development of Weddell Sea circulation and water mass structure during Cenozoic; CCD history; biogenic evolution of siliceous and carbonate elements; stable isotopic history; glacial and climatic evolution.

   <u>Weddell Sea Basin</u> (W5): First-order sediment changes in Weddell Basin in response to large-scale glacial and climate evolution of Antarctica Cenozoic-Mesozoic; timing of Antarctic Bottom Water production changes; basement age and paleotectonic implications.

   <u>Drake Passage</u> (W11): Cenozoic climatic and paleoceanographic evolution; gateway problem; biogenic evolution in siliceous regime.

   <u>Bransfield Strait</u> (W10): Quaternary sediment history and biogenic productivity; organic and geochemical evolution in unusual region of high organic marine (non-terrestrial) input, high heat flow and cold bottom waters.

3. Ranking by SOP Panel is as follows:

   Maud Rise-W1, W2;
   Caird Coast-W4;
   South Orkney Plateau-W6,W7 and W8;
   Weddell Sea-W5;
   Drake Passage-W11; and Bransfield Strait-W10.

   Both the Bransfield Strait and Drake Passage (W10, W11) are ranked at much lower priority in terms of the overall objectives for the SOP. The panel slightly favors W11 over W10.

4. Site Surveys: In good shape; valuable British, Norwegian and American surveys completed in 1984-85 Austral summer; additional extensive surveys planned by BGR.

5. Important that expedition begins in Punta Arenas.

6. Crucial that cruise track be clockwise from Punta Arenas to W1-W2-W4-W5-W6-W7-W-8 and thence to Port Stanley (65 days). See table. No allowance has been made for bad weather or iceberg problems in leg-duration calculations.

   Clockwise track will give most opportunity to achieve highest priority sites early in leg.

   Clockwise track also essential to follow seasonal ice break-out which is earliest in Maud Rise and latest in South Orkney Plateau.

   If expedition finishes in Cape Town, the duration is 76 days and will require loss of one of the major objectives.

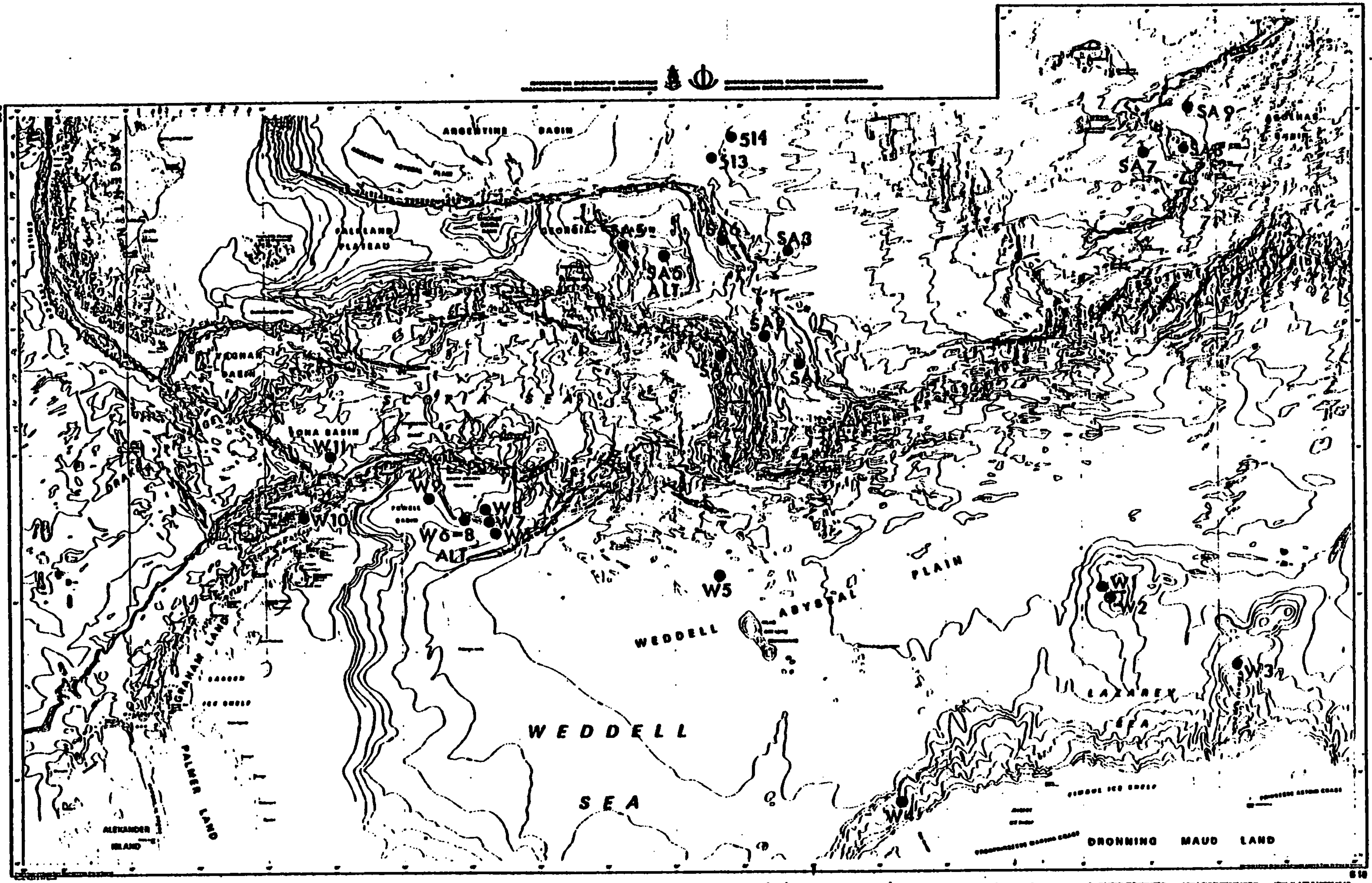
7. Logging: Panel requests that logging requirements be waived because it will necessitate the dropping of one or more of the major scientific objectives.

8. Subantarctic Leg is logistically linked because it also provides backup opportunity of completing South Orkney Plateau objectives, that otherwise may be potentially lost due to weather and sea conditions.

Weddell Sea Leg

		Water Depth	Penetration	Days	
Punta Arenas to W1, W2				8	Transit
	W1	2000 m	500 m	5.5	Double HPC, no logging
	W2	3000 m	500 m	6.5	Double HPC, no logging
W2 to W4				2.0	Transit
	W4	3000 m	900 m	8.5 0.5 1.0	No HPC Basement drilling Logging
	W4A	3000 m	300 m	3.0	No HPC, no logging
W4 to W5				2.0	Transit
	W5	5000 m	1000 m	12.0	No HPC, no logging Minimum basalt penetration
W3 to W6				2.0	Transit
	W6	3000 m	500 m	5.0	No Double HPC, no logging
	W7	1300 m	500 m	3.0	No Double HPC, no logging
	W8	700 m	500 m	3.0	Double HPC
				62.0	
W6 to Port Stanley				3.0	Transit
			Total	65.0	
or W6 to Cape Town				14.0	Transit
			Total	76.0	

NB: No allowance has been made for bad weather.



GENERAL BATHYMETRIC CHART OF THE OCEANS (GEBCO)

CARTE GÉNÉRALE BATHYMÉTRIQUE DES OCÉANS (GEBCO)

Subantarctic Leg - A Summary

1. Consists of 5 sites: SA5; SA2; SA3; SA7; and SA8.
   (see map)

2. Summary of objectives: These are outlined in the "Summary of major objectives" - given in attached appendix.

3. Ranking by SOP Panel is as follows:

   Gate-way Paleoceanography and N-S Traverse across

   Antarctic-Subantarctic regime - SA2; SA3; SA7.

   Regional Plate tectonic evolution - SA5 and SA8.

   Lower priority sites are SA1; SA6; SA9 and SA4.

4. Cruise outline shown in table.
   Port Stanley to Cape Town.
   Total 48 days with no logging and minimal basement penetration shown.

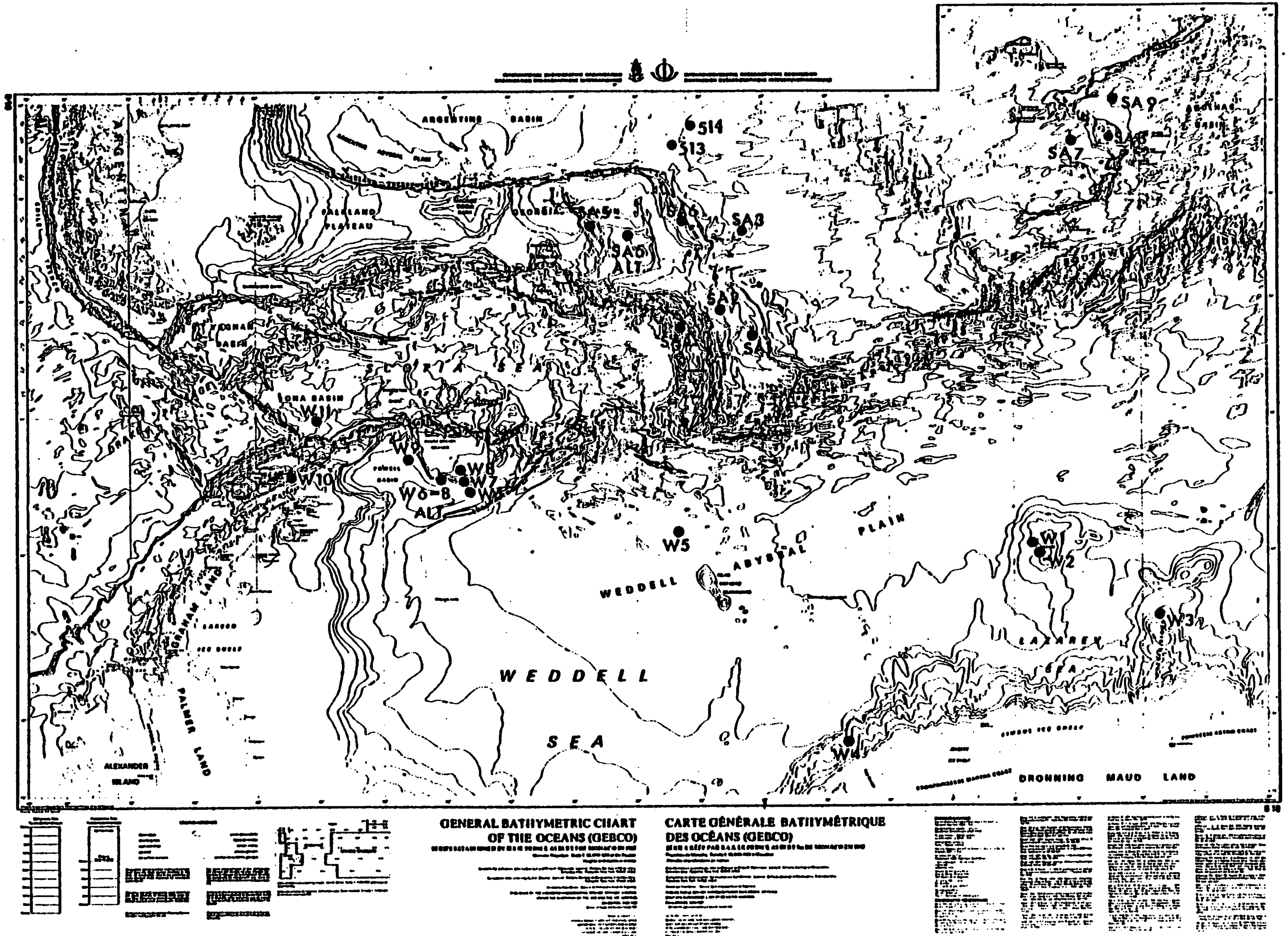
5. Importance of Subantarctic Leg: Summarized in attached letter to M. Arthur, Chairman of SOHP - May 22, 1985.

6. Site Surveys: Will be highly beneficial for the quality of this program.

Subantarctic Leg

		Water Depth	Penetration	Days	
Port Stanley to SA 5W				4.0	Transit
	SA 5W	2000 m	800 m	5.5	
SA5W to SA2				2.0	Transit
	SA 2	4000 m	700 m	8.5	Double HPC.
SA2 to SA3				1.0	Transit
	SA 3	4300 m	500 m	7.5	Double HPC.
SA3 to SA7				3.0	Transit
	SA7	4300 m	700 m	7.0	
SA7 to SA8				0.5	Transit
	SA8	2500 m	500 m	5.0	Double HPC
SA8 to Cape Town				3.5	Transit
			Total	48.0	

No logging and only minimal basement penetration



ARGENTINE BASIN
FALKLAND PLATEAU
GEORGIA BASIN
SCOTIA SEA
POWELL BASIN
WEDDELL ABYSSAL PLAIN
WEDDELL SEA
LAZAREV SEA
DRONNING MAUD LAND
GRAHAM LAND
PALMER LAND
ALEXANDER ISLAND
S14
S13
SA9
SA7
SA6
SA3
SA0 ALT
SA2
SA1
W11
W9
W8
W7
W10
W6-8 ALT
W5
W1
W2
W3
W4
GENERAL BATHYMETRIC CHART OF THE OCEANS (GEBCO)
CARTE GÉNÉRALE BATHYMÉTRIQUE DES OCÉANS (GEBCO)

The University of Rhode Island Graduate School of Oceanography
Narragansett Bay Campus, Narragansett, RI 02882-1197

May 22, 1985

Dr. Michael Arthur
Chairman
Sediment and Ocean Drilling Panel
JOIDES

Dear Mike:

I enclose a copy of our minutes of the Gainesville meeting and a brief summary of the scientific objectives of the South Atlantic Subantarctic drilling program. We are asking you to forward these documents to SOHP members to clarify our earlier submissions of the Subantarctic leg and hopefully to correct apparent misunderstandings about the thrust of the science proposed.

It is almost certain that the planning committee during their next meeting in middle June will finally decide on the post-Weddell Sea - pre-Kerguelen drilling program including the possibility of a Subantarctic South Atlantic leg. However, your panel does not meet before the next planning committee meeting. Therefore, the SOP members have requested that your panel be asked to reevaluate their previous relatively low ranking of the Subantarctic South Atlantic leg. The decision of SOHP members will weigh heavily in the planning committee's decision as to whether the Subantarctic leg will be drilled. As stated in Appendix I of our minutes, SOP considers that the age and subsidence history of the Subantarctic aseismic ridges of the South Atlantic are no less important than the Greenland-Iceland-Faroes Ridge to an understanding of bottom and intermediate water telecommunications to and from the Atlantic ocean in the early Cenozoic.

Our minutes clearly illustrate the logistic problems that also need to be taken into consideration in formulating these high-latitude drilling legs. There is no question that the most logistically sensible and scientifically rewarding approach of drilling the Weddell Sea leg is to proceed it in a clockwise direction drilling Maud Rise (W1, W2) and Caird Coast (W4, W4A) sites first. If a major objective (e.g. Weddell Sea Basin) is not to be dropped during the Weddell Sea leg, the cruise should terminate in Port Stanley rather than Cape Town (please see table in minutes). This plan, in turn, has the "backup" advantage of allowing the South Orkney Plateau sites (W6, 7, 8) to be drilled at the beginning of a Subantarctic leg if they were not drilled in during the Weddell Sea leg because of delays resulting from bad weather, pack-ice problems or ice-bergs. Our tables include no allowance for such lost time, which is a sure-thing at these latitudes. Furthermore, in this plan, the Resolution will need to make a long transit (Port Stanley - Cape Town) through the Subantarctic South Atlantic area in the vicinity of the SOP proposed sites.

To summarize:

1. SOP believes that the Atlantic Subantarctic drilling program is a first class scientific program that integrates late Phanerozoic paleoceanography and paleotectonics in a crucial area of the world ocean. The sites address first order scientific problems.

2. Retaining an Atlantic Subantarctic leg in the program could be crucial in ensuring the full success of the Weddell Sea goals.

3. The Subantarctic sites are complementary to the Weddell Sea sites; each builds on the others as did DSDP Legs 28 and 29 of the mid 1970s. Very few sites have been previously drilled anywhere in the Subantarctic. Nevertheless, these have been crucial in development of the models of circum-polar evolution and modern paleoceanography. The proposed SOP sites should help with the understanding of this general evolution.

4. Two legs will also allow full utilization of the brief austral summer weather window (Janaury-April) while the drilling vessel is making one of its rare visits to the Southern Hemisphere. If the Atlantic Subantarctic leg is not included and Kerguelen Plateau has only one leg, it seems possible that the first 5 years of ODP drilling will result in only two legs in the Southern Hemisphere (Weddell and Kerguelen).

The Southern Ocean Panel would be most grateful if SOHP members would consider all of these aspects in their deliberations.

Sincerely,

Jim

James P. Kennett
Professor of Oceanography

JPK:NGM
Enclosures

Appendix I

SOP Panel Meeting
Gainesville, Fla.
April 24, 1985

ATLANTIC SUBANTARCTIC DRILLING PROGRAM: Summary of major objectives

The Subantarctic Mid-latitude Drilling Program (MLDP) sites address a number of tectonic and paleoenvironmental objectives of wide-ranging importance. The SOP has carefully considered the merits of this suite of sites in the context of ODP contributions to a regional and global history of paleoenvironmental and tectonic development. This document is meant to distill the objectives of the suite of sites. The MLDP incorporates the following objectives:

1. Determine the paleoenvironmental evolution from the Late Cretaceous to modern ocean for the critical passageway linking the South Atlantic and Weddell Basins.

2. Complete a mapping of the Middle-Late Cenozoic Polar Front and surface water mass migrations in this sector; a program begun by IPOD.

3. Test and extend a plate tectonic model based on marine data and Seasat imagery for the development of the North Scotia Ridge and the Andean Orogeny.

4. Examine the development of oceanic crust along a flow line from the generation of dual aseismic ridges at pseudofaults to steady state seafloor spreading.

All sites have multiple objectives within this plan.

MAJOR OBJECTIVES:

1. Determine the paleoenvironmental evolution from the Late Cretaceous to modern ocean for the critical passageway linking the South Atlantic and Weddell Basins:

The Subantarctic region is of critical importance for an understanding of paleoenvironmental interaction between the Weddell and Atlantic basin to the north. The tectonic development in the Subantarctic region during the Cretaceous and Paleogene profoundly restricted deep and intermediate water mass connections between the southern and northern areas. (Figure 1 displays the Santonian reconstruction of the Atlantic sector while Figure 2 displays the Eocene reconstruction of the proposed drilling region.) Continual expansion of this gateway by seafloor spreading resulted from the subsidence of the adjacent ridges and seafloor spreading, but the interbasin connections remained relatively shallow through much of the Paleogene. Sites SA3 and SA7 were selected on Late Eocene ocean crust. The sedimentary sequences in these two locations is expected to provide a history of the re-establishment of intermediate to deep water mass connections between the Weddell and Atlantic Basins during the middle Cenozoic. This history is expected to provide an important basis to interpret South Atlantic basinal sediments of Eocene and Oligocene age.

The effect of this system may be considered in the light of the teleconnective theory of Johnson where a modification of flow in a critical region will effect the environment of a distant region. The interbasin passageway is critical since all bottom water which enters the South Atlantic from the Weddell must pass through this passageway. Present day flow is strongly affected by the regional morphology. We therefore expect that the influence of the regional relief will increase at earlier periods in the basin's history. The age and subsidence history of the aseisimic ridges are exact analogues of the Greenland-Iceland-Faroes Ridge and are no less important than the latter features in understanding the development of Atlantic-Weddell-Indian paleoenvironment.

In total, the program provides three shallow water, one intermediate and four deep water sites for monitoring the vertical development of the water mass through time for the Subantarctic. These sites will provide a unique opportunity to interpret the development of Subantarctic vertical water mass structure because of the significant depth variation in the suite of sites.

Piston cores indicate that we will obtain Messinian carbonates from SA6, the only such site in the Southern Ocean. Because of a severe hiatus, much of the Paleogene and Late Cretaceous sediments from the Falkland Plateau DSDP sites are missing. Because of the different setting of sites SA6 and SA8, we hope to extend Paleogene carbonate sampling to the Late Maastrichtian. It is hoped that further drilling will provide carbonate sediments for stable isotopic analysis. Sites SA5W, SA5E, SA6, SA8 and SA9 are expected to provide a Late Createceous to Miocene carbonate record. Deep water sites SA1-3, SA7, SA9 will recover Eocene to Oligocene carbonate.

2. Map the development of the Polar Front and surface water mass migrations:

Sites SA1-SA3 represent a southward extension of the longitudinal traverse begun with DSDP sites 513 and 514. The traverse is intended to monitor the development and migration of surface water masses and the migrational history of the Polar Front. The long standing program with the South Atlantic working group and the OMD working group is continued by this panel. A continuation of the work already begun is essential to determing the development of mid-latitude water masses and the long and short term migrations of the Polar Front and surface water masses.

3. Test and extend a plate tectonic model based on marine data and Seasat imagery for the development for the North Scotia Ridge and the Andean Orogeny:

The Andean Orogeny generated a Mid-Cretaceous accretionary prism which extends 2000 km from Tierra del Fuego to South Georgia. Figure 3 displays the geometry of a model which predicts the 1000 km of convergence between the Malvinas Plate and the South American Plate. This model could explain the Andean Orogeny and link the North Scotia ridge sediments to Weddell Basin development. The MLDP would provide the important link between marine data sets and land geology.

Success in the MLDP effort will provide a critical link between terrestrial geologic observations and Weddell Basin development. According to the model to be tested, the sediments of the North Scotia Ridge are accreted from the opposing (northern) flank of a spreading center which generated the present day Weddell seafloor. In other words sediments now accreted in the North Scotia Ridge could represent deep water equivalents of the Falkland Plateau sequences recovered by DSDP sites 327, 329, 330, 511, 512 and the sedimentary sequences on the opposing basin margin of the sediments to be acquired by the Southern Weddell drilling.

The crucial test in linking the Malvinas plate model to the Andean Orogeny is the development of a time scale for subduction at the Northeast Georgia Rise. This time scale could then be compared to the timing of geologic events observed in the southern Andean Cordillera. Both sites SA5-W and SA5-E are required to unequically achieve these objectives. Drilling is the only means to develop this time scale.

4. Examine the development of oceanic crust along a flow line from the generation of dual aseismic ridges at pseudofaults to steady state seafloor spreading:

Figure 3 display the Middle Eocene location of the Islas Orcadas and Meteor Rises. These aseismic ridges are direct analogues of the Walvis Ridge-Rio Grande Ridge system. Leg 73 observed the connection between the development of the Walvis-Rio Grande system and the development of pseudofaults at propagating rifts. Subsequent aeromagnetic and ships surveys have substantiated the models. The Islas Orcadas and Meteor Rises are also generated at the pseudofaults of a propagating rift. The Walvis ridge was drilled by DSDP Leg 74 on the Walvis Ridge transect. Sites SA6,SA3,SA7,SA8 will provide another data set analogous to the Walvis Ridge Leg 74 transect in order to monitor the development of the magma chamber along a flow line.

FIGURE CAPTIONS:

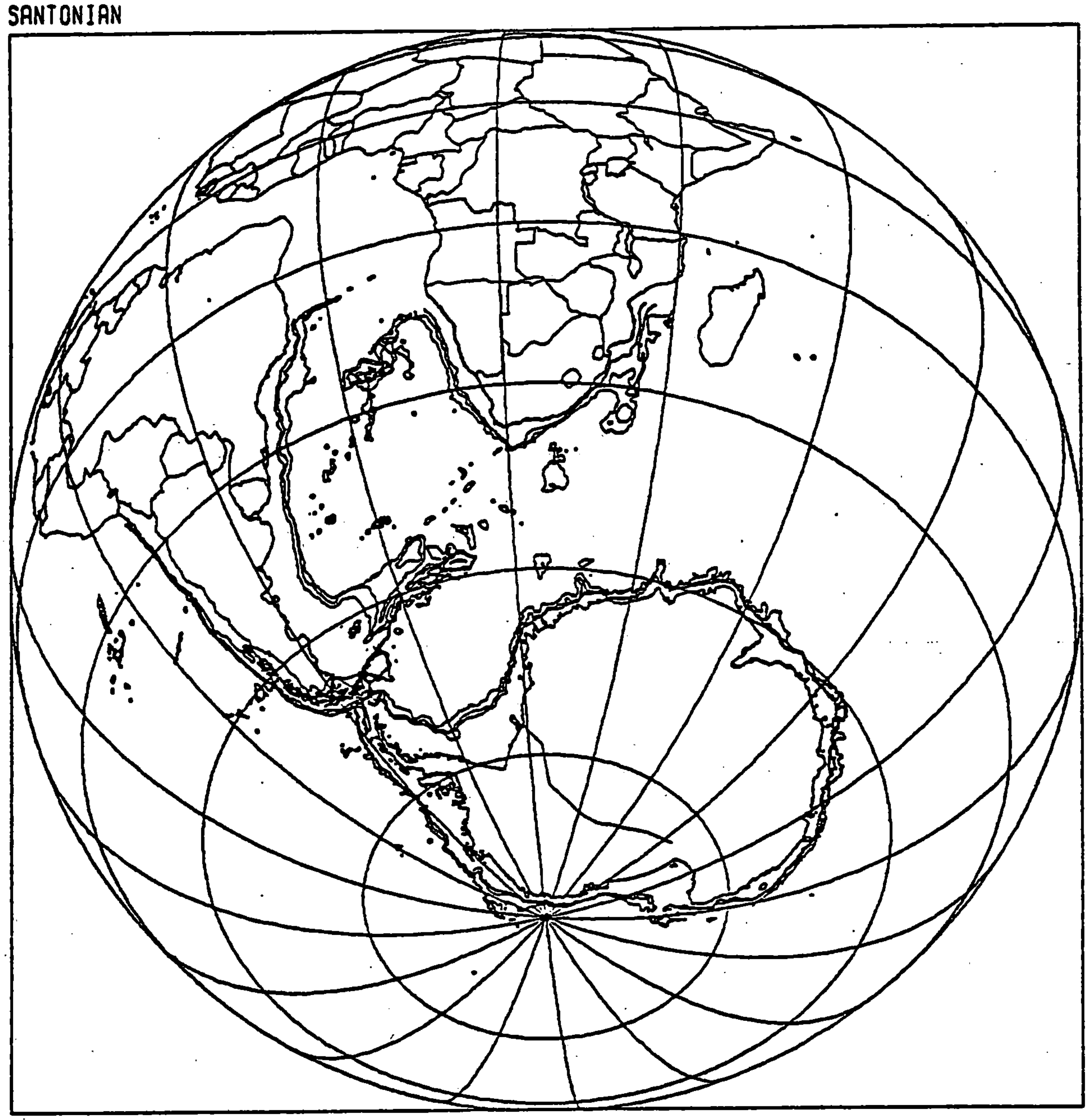
Figure 1: Reconstruction of the Antarctic Atlantic sector according to Norton and Sclater,1979. Reconstruction is with respect to Africa in its present day position. Age of the reconstruction is the Santonian-Campanian boundary or magnetic chron C34.

Figure 2: Reconstruction of the Subantarctic sites for the Middle Eocene. Spreading center locations based on magnetic anomaly location and Seasat gravity field. Supporting data is presented in the OMD Region 13 synthesis.

Figure 3: Detail of Figure 1 at the Campanian-Santonian boundary (Chron C34). Spreading center location determined from magnetic anomaly locations. Convergence vectors show direction and total motion for Chrons C34 and C31 based on the poles of rotation determined from LaBrecque and Hayes, 1979 and Ladd, 1975. Base of the convergence vectors plotted along the North Scotia Ridge and the N.E. Georgia Rise. Note that total convergence may have reached 1000 km near Tierra del Fuego from Santonian to Maestrichtian time. Polarity of the subduction zone was likely southward dipping along the North Scotia Ridge and westward facing along the N.E. Georgia Rise.

Figure 1.

SANTONIAN



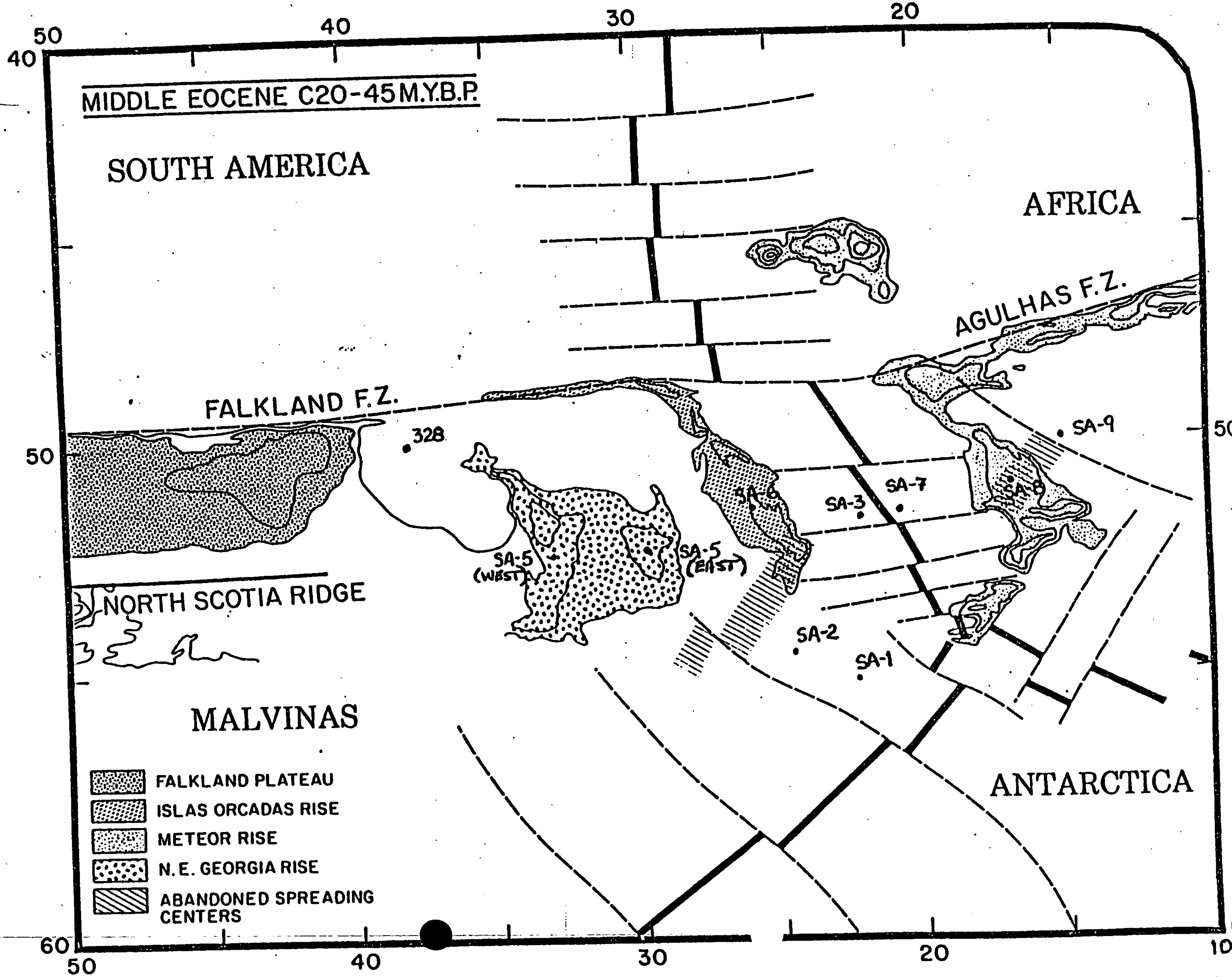

MIDDLE EOCENE C20-45 M.Y.B.P.
SOUTH AMERICA
AFRICA
AGULHAS F.Z.
FALKLAND F.Z.
NORTH SCOTIA RIDGE
MALVINAS
ANTARCTICA
328
SA-1
SA-2
SA-3
SA-5 (WEST)
SA-5 (EAST)
SA-6
SA-7
SA-8
SA-9
FALKLAND PLATEAU
ISLAS ORCADAS RISE
METEOR RISE
N.E. GEORGIA RISE
ABANDONED SPREADING CENTERS
50
40
30
20
10
60

Figure 2

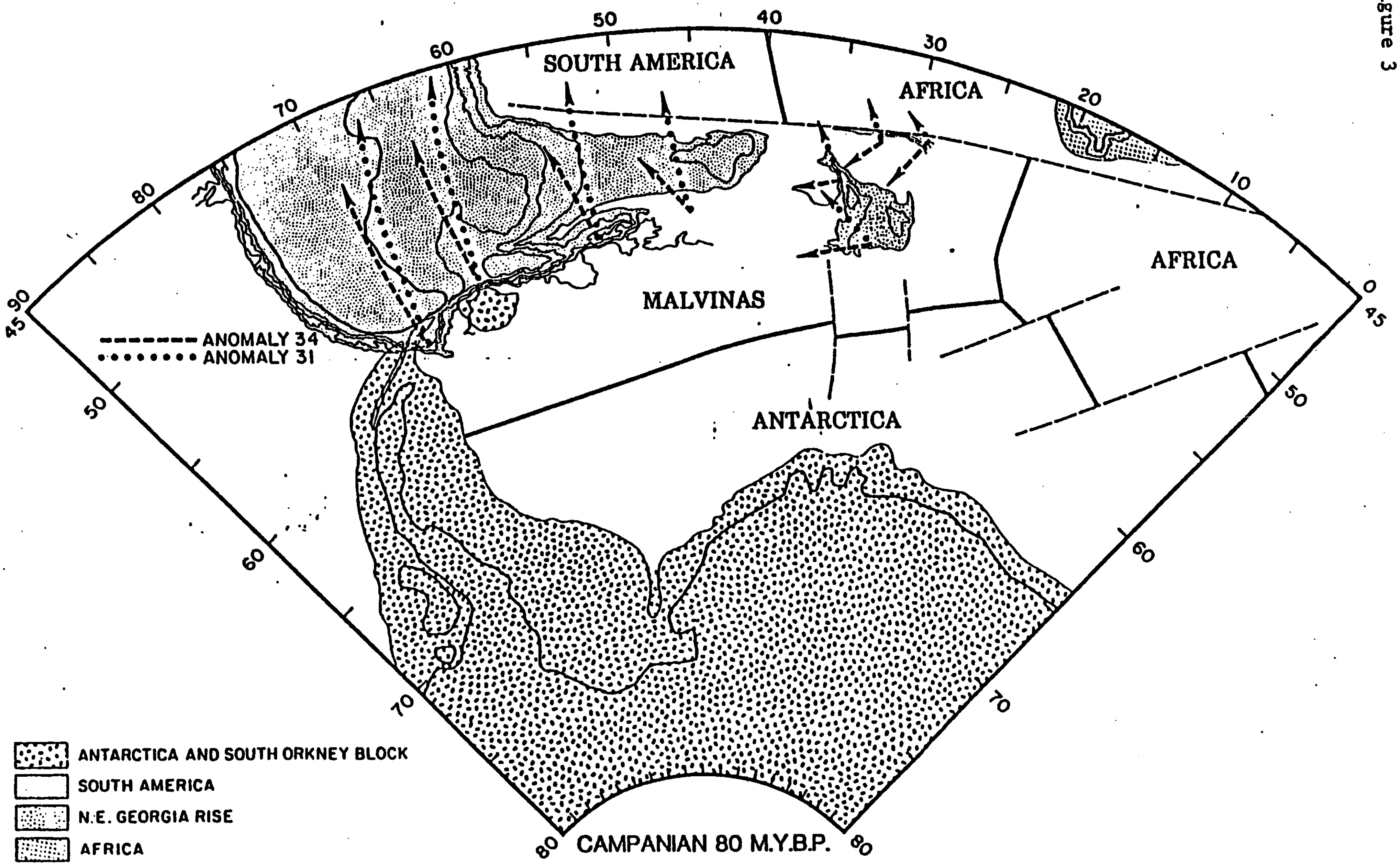

SOUTH AMERICA
AFRICA
AFRICA
MALVINAS
ANTARCTICA
ANOMALY 34
ANOMALY 31
ANTARCTICA AND SOUTH ORKNEY BLOCK
SOUTH AMERICA
N.E. GEORGIA RISE
AFRICA
CAMPANIAN 80 M.Y.B.P.
90
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Figure 3

JOIDES PANELS/WORKING GROUP MEMBERSHIP
(as of June 1985)

LITHOSPHERE PANEL

1. Purdy, M., Chairman (WHOI)
2. Delaney, J. (UW)
3. Fujii, T. (Japan)
4. Hawkins, J. (SIO)
5. Juteau, T. (France)
6. Langmuir, C. (LDGO)
7. Leinen, M. (URI) + WPAC
8. MacDonald, K. (UCSB)
9. Petersen, N. (FRG)
10. Robinson, P. (Canada) + ARP
11. Sclater, J. (UT) + IOP
12. Sinton, J. (HIG) + CEPAC

Liaisons
Honnorez (PCOM)
McDuff (PCOM)

SEDIMENTS & OCEAN HISTORY PANEL

1. Arthur, M., Chairman (URI)
2. Embley, R. (NOAA-Newport, OR)
3. Hay, W. (U. Colo.)
4. Lancelot, Y. (France) + CEPAC
5. Mayer, L. (Canada)
   Alt.: Mudie, P. (Canada)
6. Meyers, P. (U. Mich.)
7. Ruddiman, W. (LDGO)
8. Sarg, R. (Exxon) + CWG
9. Sarnthein, M. (FRG)
10. Suess, E. (OSU) + SOP
11. Takayanagi, Y. (Japan)
12. Tauxe, L. (SIO) + IOP

Liaisons
Schrader (PCOM)
Gartner (PCOM)

TECTONICS PANEL

1. Cowan, D., Chairman, (UW)
2. Becker, K. (SIO) + DMP
3. Blanchet, R. (France)
4. Ewing, J. (WHOI)
5. Hinz, K. (FRG)
6. Howell, D. (USGS, Menlo Pk.)
7. Marsh, B. (Johns-Hopkins)
8. Nakamura, K. (Japan) + WPAC
9. Riddihough, R. (Canada)
10. Vogt, P. (Naval Res. Lab.)
11. Weissel, J. (LDGO) + SOP

Liaisons
Hussong (PCOM)
to be announced (PCOM)

DOWNHOLE MEASUREMENTS PANEL

1. Salisbury, M., Chairman (Canada)
2. Becker, K. (SIO) + TECP
3. Bell, S. (Canada)
4. Duennebier, F. (HIG)
5. Georgi, D. (Exxon)
6. Goodman, R. (U. CA, Berkeley)
7. Howell, E. (Arco)
8. Jageler, A. (Amoco)
9. Jung, R. (FRG)
10. Kinoshita, H. (Japan)
11. Olhoeft, G. (USGS, Denver)
12. Pascal, G. (France)
13. Sayles, F. (WHOI)
14. Timur, T. (Chevron)
15. Traeger, R. (Sandia Labs)

<u>Liaisons</u>
McDuff (PCOM)
Von Herzen (PCOM)
Anderson (LDGO/Logging)

INFORMATION HANDLING PANEL

1. Appleman, D., Chairman (Smithsonian)
2. Gibson, I. (Canada)
3. Hathaway, J. (WHOI)
4. Latremouille, M. (Canada/member-at-large)
5. Loeblich, A. (UCLA)
6. Loughridge, M. (NOAA-Boulder)
7. Melguen, M. (France)
8. Nowak, J. (FRG)

<u>Liaisons</u>
Gartner (PCOM)
Cadet (PCOM)
Merrill (ODP/TAMU)

POLLUTION PREVENTION & SAFETY PANEL

1. Claypool, G., Chairman (USGS, Denver)
2. Ball, M. (USGS, WHOI)
3. Byramjee, R. (France)
4. Campbell, G. (Canada)
5. Green, A. (EXXON)
6. MacKenzie, D. (Marathon)
7. Stober, G. (FRG)
8. <u>to be announced</u> (Japan)

<u>Liaison</u>
PCOM Chairman

SITE SURVEY PANEL

1. Peirce, J., Chairman (Canada)
2. Mauffret, A. (France)
3. Orcutt, J. (SIO)
4. Suyehiro, K. (Japan)
5. Weigel, W. (FRG)
   Alt.: Wong, H. (FRG)

<u>Liaisons</u>
Beiersdorf (PCOM)
Malpas (PCOM)
Brenner (LDGO/Databank)

ATLANTIC REGIONAL PANEL

1. Montadert, L., Chairman (France)
2. Austin, J. (UT)
3. Bally, A. (Rice)
4. Jansa, L. (Canada/member-at-large)
5. Klitgord, K. (USGS, WHOI)
6. Mascle, J. (France/member-at-large)
7. Mutter, J. (LDGO)
8. Robinson, P. (Canada) + LITHP
9. Speed, R. (Northwestern)
10. Thiede, J. (FRG)
12. Tucholke, B. (WHOI)

Liaisons
Buffler (PCOM)
Cadet (PCOM)

CENTRAL & EASTERN PACIFIC REGIONAL PANEL

1. Shipley, T., Chairman (UT)
2. Chase, R. (Canada)
   Alt.: Davis, E. (Canada)
3. Cowan, D. (UW) + TECP
4. Francheteau, J. (France)
   Alt.: Bourgois, J. (France)
5. Johnson, P. (UW)
6. Lancelot, Y. (France/member-at-large) + SOHP
7. Mammerickx, J. (SIO)
8. Okada, H. (Japan)
9. Rea, D. (U. Mich.)
10. Scholl, D. (USGS, Menlo Pk.)
11. Sinton, J. (HIG) + LITHP
12. von Stackelberg, U. (FRG)

Liaisons
Buffler (PCOM)
Beiersdorf (PCOM)

INDIAN OCEAN PANEL

1. Curray, J., Chairman (SIO)
2. Cochran, J. (LDGO) + RS-WG
3. Duncan, R. (OSU)
4. Falvey, D. (Australia/member-at-large)
5. Gradstein, F. (Canada)
6. Prell, W. (Brown)
7. Schlich, R. (France)
8. Sclater, J. (UT) + LITHP
9. Tauxe, L. (SIO) + SOHP
10. von Rad, U. (FRG)

Liaisons
Honnorez (PCOM)
Kastner (PCOM)

SOUTHERN OCEANS REGIONAL PANEL

1. Kennett, J., Chairman (URI)
2. Anderson, J. (Rice)
3. Bornhold, B. (Canada)
4. Ciesielski, P. (Univ. Fla.)
5. Dick, H. (WHOI)
6. Elliot, D. (Ohio S.U.)
7. Fuetterer, D. (FRG)
8. Kaminuma, K. (Japan)
9. LaBrecque, J. (LDGO)
10. Needham, D. (France)
11. Suess, E. (OSU) + SOHP
12. Weissel, J. (LDGO) + TECP

Liaisons
Hayes (PCOM)
to be announced (PCOM)

WESTERN PACIFIC REGIONAL PANEL

1. Silver, E., Chairman (UCSC)
2. Hesse, R. (Canada)
3. Ingle, J. (Stanford)
4. Kagami, H. (Japan)
5. Langseth, M. (LDGO)
6. Leinen, M. (URI) + LITHP
7. Nakamura, K. (Japan/member-at-large) + TECP
8. Natland, J. (SIO)
9. Rangin, C. (France)
10. Recy, J. (France/member-at-large)
11. Schluter, H. (FRG)
12. Taylor, B. (HIG)

Liaisons
Hayes (PCOM)
Taira (PCOM)

TECHNOLOGY AND ENGINEERING DEVELOPMENT COMMITTEE

Chairman to be appointed

1. Bingman, W. (Shell)
2. Dennis, B. (Los Alamos Nat'l. Labs.)
3. Gardner, T. (Exxon)
4. Guinard, J-P. (France)
   Alt.: Delacour, M. (France)
5. Hocott, C. (UT)
6. Manchester, K. (Canada)
7. Marx, C. (FRG)
8. Newsom, M. (Sandia Nat'l. Labs.)
9. Schuh, F. (Arco)
10. Silcox, W. (Chevron)
11. to be announced (Japan)

Liaisons
Von Herzen (PCOM)
Kastner (PCOM)

RED SEA WORKING GROUP

1. Cochran, J., Chairman (LDGO)
2. Arthur, M. (URI) + SOHP

3. Backer, H. (FRG)
4. Bonatti, E. (LDGO)
5. Coleman, R. (Stanford)
6. Juteau, T. (France) + LITHP
7. Miller, P. (ESSO)
8. Pautot, G. (France)
9. Whitmarsh, R. (U.K.)

1985/1986 MEETINGS SCHEDULE

Date	Place	Committee/Panel
24-26 July	LDGO	SOHP
13-15 August	Santa Cruz, CA	WPAC
21-23 August*	Bermuda	IOP
29-30 August	Strasbourg, France	LITHP
9 September*	College Station, TX	IHP
23-25 September*	WHOI	SOP
25-26 September	Bonn, FRG	EXCOM
25-26 September	San Juan Island, WA	CEPAC
8-10 October	URI	PCOM
22-23 October	Venue to be arranged	PPSP
23-25 October*	Venue to be arranged	TECP
7-8 January	Hawaii	EXCOM
4-7 February	SIO	PCOM (w/Panel Chairmen)

*Meeting dates are tentative.

INFORMATION

PAPERS

ANALYSIS OF PROPOSALS RECEIVED BY THE JOIDES OFFICE (AS OF 31 MAY 1985)

Total number of proposals received		142
a. Atlantic Ocean		36 proposals
comprising:	General	22
	Mediterranean Sea	8
	Caribbean Sea	5
	Norwegian Sea	1
from:	U.S./JOIDES institutions	11
	U.S./non-JOIDES institutions	3
	France	11
	ESF nations	2
	U.K.	4
	FRG	3
	Canada	2
b. Indian Ocean		50 proposals
comprising:	General	46
	Red Sea	4
from:	U.S./JOIDES institutions	25
	U.S./non-JOIDES institutions	12
	France	8
	ESF nations	2
	U.K.	2
	FRG	1
c. Southern Oceans		9 proposals
from:	U.S./JOIDES institutions	6
	New Zealand	1
	France	2
d. West Pacific Ocean		26 proposals
from:	U.S./JOIDES institutions	2
	U.S./non-JOIDES institutions	5
	France	6
	Japan	6
	FRG	2
	U.K.	1
	Australia	3
	New Zealand	1

e. <u>Central and Eastern Pacific Ocean</u> — 13 proposals

from:	U.S./JOIDES institutions	8
	U.S./non-JOIDES institutions	2
	France	2
	Canada	1

f. <u>General/Instrumental</u> — 8 proposals

from:	U.S./JOIDES institutions	4
	U.S./non-JOIDES institutions	1
	U.K.	1
	ESF nations	1
	FRG	1

<u>Total (by country)</u> — 142 proposals

U.S./JOIDES institutions	56	79
U.S./non-JOIDES institutions	23	
France		29
U.K.		8
ESF nations		5
FRG		7
Japan		6
Canada		3
Non-JOIDES nations (Australia)		3
(New Zealand)		2

In addition, 53 ideas or suggestions for drilling have been received. These range from brief letters of intent to immature proposals. Several of the items listed have now been re-submitted as full proposals. There are also several proposals for workshops.

A.E.S.M.
May 1985

ATLANTIC OCEAN PROPOSALS

Ref. No.	Date Rec'd.	Title	Investigator(s)	Inst.	Site Survey Avail' Data	Site Survey Future Need	Panel Reference	PCOM Reference	Remarks
1/A	12/16/82	Pre-middle Cretaceous geologic history of the deep S.E. Gulf of Mexico	Phair, R.L. Buffler, R.T.	U.T.Austin	Some		SOHP 2/84 CAR-WG (P) ARP (P) PMP (P)		Reference to DSDP Panels
5/A	7/13/83	Structural & sedimentological development of carbonate platforms (Blake-Bahamas area)	Mullins, H.T. Sheridan, R.E. Schlager, W.	RSMAS	No	Ref'd to JOI SSP 7/25/83	SOHP 2/84 ARP (P)	Approved 3/84	Leg 101
6/A	8/-/83	Ocean crust and high latitude paleoceanography in the Labrador Sea	Gradstein, F.M. et al.	Atlantic Geoscience Centre, Canada	Some	SS needed (11/83)	SOHP 2/84 TECP 1/84 SOHP 10/84 (for added 14 days drilling)	Approved 3/84	Proposal revised 3/84 and 5/84 Leg 105 To incld Baffin Bay drilling (Proposal 58/A)
7/A	8/1/83	Future drilling sites in the Gulf of Mexico & Yucatan	Buffler, R.T. Bryant, W. R.	U.T.Austin	Some	Yes	CAR-WG 1/84 ARP 7/84	Approved 9/84	Approved as back--up leg. See Props. 23/A & 32/A
9/A	1/-/84	Pre-Messinian history of the Mediterranean	Hsu, K.J. (on behalf of the Swiss Working Group)	ETH, Zurich Switz. (ESF)	Yes		MED-WG (P) SOHP (P)		
10/A	1/-/84	Cenozoic events in oceanic and atmospheric circulation off N.W.Africa	Sarnthein, M., et al.	Univ. Kiel FRG	Yes	No	SOHP 5/84 ARP 4/84 SOHP 4/85 ARP 4/85	Approved 5/84	Leg 108 Revised 3/84 & further revised 4/85
12/A	1/-/84	A transect across the Tyrrhenian Back-arc Basin	Cita, M.B. Malinverno, A.	Milan Univ Italy (ESF)	Some		MED-WG 3/84 ARP 7/84	Approved 9/84	See Tyrrhenian Sea revised Proposal 21/A
15/A	1/10/84	Paleocommunication between the North and South Atlantic seas during the Cretaceous: Formation of the Atlantic Ocean	Herbin, J.P.	IFP, France			TECP ARP		French Blue Book
16/A	1/10/84	Atlantic-Mediterranean relationship (Gulf of Cadiz, Alboran Sea); Paleoceanographic and paleohydrological evolution since the Miocene	Faugeres, J.C.	Univ. of Bordeaux 1, France	Some	Yes	TECP ARP		French Blue Book

17/A	1/10/84	Deep oceanic crust and upper mantle proposal for deep sea drilling in the Gorringe Bank	Mevel, C.	Univ. P & M Curie, Paris, Fr. (CYAGOR G)	Some	Yes	LITHP 2/84 TECP ARP		French Blue Book
18/A	1/10/84	DSDP Proposal off Galicia Bank	Mauffret, A. Boillot, G. Montadert, L.	Univ. P&M Curie, Paris, Fr IFP	Yes	No	TECP ARP	Approved 5/84	French Blue Book Revised 6/84 Leg 103
19/A	1/10/84	Proposal for drilling on the Eleuthera Fan (Bahamas)	Ravenne, C. Le Quellec, P.	IFP France CFP France	Yes	No	TECP 1/84 ARP SOHP		French Blue Book Leg 101
20/A	1/10/84	Subduction Collision: the outer Hellenic Arc	Mascle, J.	Univ. P&M Curie, Paris, Fr.	Some	Yes	TECP 1/84 ARP		French Blue Book
21/A	1/10/84	Rifting, stretching and oceanic accretion in the Tyrrhenian Marginal Basin	Rehault, J.P. Fabbri, A.	Univ. P&M Curie, Fr. Instituto di Geolog. Marina, CNR, Italy	Some	Yes	TECP 1/84 & 10/84 ARP MED-WG 10/84 SOHP	Approved 9/84	French Blue Book Revised by MED-WG Sept. 1984 see Prop. 12/A Leg 107
22/A	1/10/84	The Rhone deep sea fan site: Proposal for deep sea drilling	Bellaiche, G. Droz, L. Got, H. Orsolini, P.	Lab. de Geodynam. sous marin Villefran. France CRSM, Perpignan, Fr. SNEA, Paris	Yes		TECP 1/84 ARP		French Blue Book
23/A	1/10/84	Caribbean Basins	Mascle, A. Biju-Duval, B.	IFP, France CNEXO, France	Yes		CAR-WG 2/84 TECP 1/84 ARP		French Blue Book (Partly related to Props 7/A and 32/A)
24/A	1/10/84	New drilling along Barbados transects	Mascle, A. Biju-Duval, B.	IFP, France CNEXO, France	Some		CAR-WG 2/84 SOHP 2/84 TECP 1/84	Approved 3/84	Incorporates prop. by Biju-Duval, Moore & DSDP Leg 78A science staff on drilling of the Barbados Forearc. Relate to Props. 35/A & 41/A; now inc in Prop. 72/A. Leg 110 & back-up leg
32/A	1/26/84	Primary drilling sites for AODP (Yucatan Basin)	Rosencrantz, E. Bowland, C.	U.T. Austin	Some	Yes	ARP (P) CAR-WG 2/84	Approved 9/84	Agreed as back-up prop. Relate to Props. 7/A & 23/A
35/A	2/-/84	Additional proposed sites for drilling on the Barbados Ridge accretionary complex	Westbrook, G.K.	Durham Univ., U.K.			TECP (P) CAR-WG	Approved 3/84	Related to Prop. 24/A & 41/A. Now incorporated in Prop. 72/A. Part of back-up

36/A	2/-/84	Drilling in the Norwegian Sea during the IPOD-extension drilling	[illegible]inz,K. and [illegible]orwegian Sea Working Group	BGR, FRG	Yes	No	NOR-WG [illegible] (P) [illegible]CP 2/84	Approved 3/84	Revised 4/84 & 5/84 (incorporates NOR-W[illegible] views) Leg 104
38/A	2/15/84	Proposal for drilling in N.E. Gulf of Mexico (DeSoto Canyon)	Kennett, J. Moore, T.	URI	Yes	Yes	SOHP 4/84		
39/A	2/27/84	IPOD drilling in Cape Verde	Hill, I.	Leicester Univ.,U.K.					Previously submitt[illegible] in 1982
40/A	2/27/84	Re-entry for logging of Site 534 (Blake-Bahamas Basin)	Sheridan, R. Shipley, T. Stoffa, P.	U.T.Austin	Yes		ARP (P) SOHP (P)	Approved 1/84	Part of Leg 101
41/A	3/-/84	Northern Barbados Forearc: structural and hydrological processes	Moore, C.	UCSC	Some		TECP 4/84 ARP SOHP 8/84	Approved 3/84	Related to Props. 24/A & 35/A; see also Prop. 72/A. Leg 109
45/A	3/5/84	Paleoenvironmental drilling in the Equatorial Atlantic	Ruddiman, W.F.	LDGO	No		SOHP 4/84 ARP 4/84 TECP		
58/A	3/21/84	West Baffin Bay	Grant, A.C. Jansen, et al.	Atlantic Geoscience Centre		Yes	SOHP 10/84 TECP 10/84	Approved 3/84	Incorporated within Proposal 6/A Leg 105
59/A	3/27/84	Continental margin sediment instability investigated by drilling adjacent turbidite sequences	Weaver,P.P.E. Kidd, R.B. et al.	IOS, UK	Yes		SOHP 4/84 ARP 4/84 TECP 3/84		Revised proposal 8/84 resubmitted to Panels
60/A	4/20/84	Newfoundland Basin: Eastern Canadian Margin	Masson, D.G.	IOS, UK	Yes	Yes	SOHP 4/84 ARP (P) TECP 4/84		
64/A	6/25/84	To drill at Site NJ-6	Poag, C.W.	USGS,WHOI	Yes		ARP 7/84 SOHP 7/84		
68/A	7/6/84	Deep basins of the Mediterranean	Montadert, L.	IFP, France			TECP 1/84		
72/A	7/30/84	Proposal for a two-leg transect of the Lesser Antilles forearc	Speed, R.C. Westbrook,G.K. Mascle, A. Moore, J.C.	Northwestern Univ. Durham,UK IFP,France UCSC	Yes		ARP (P) TECP 8/84 SOHP 8/84		CAR W/G proposal; incorp. Leg 110 See Props. 24/A, 35/A and 41/A

74/A	8/2/84	ODP drilling along the continental margin of Morocco, N.W. Africa	Winterer,E.L. Hinz, K.	SIO BGR, FRG	Yes		TECP 8/84 ARP(P) LITHP(P) SOHP(P)	Approved 9/84	Related to Prop. 85/A. Approved for back-up leg.
81/A	9/4/84	Proposal for an Ionian Sea transect	Hieke, W. Makris, J.	Univ. of Hamburg, FRG			ARP 9/84 MED-WG 9/84 SOHP 10/84 TECP 10/84		Revised by MED-WG 9/84
85/A	9/20/84	Preliminary proposal for ODP drilling along the continental margin of Morocco,N.W. Africa	Hayes, D.E. Mountain, G. Rabinowitz,P.	LDGO TAMU			ARP (P) SOHP (P) TECP (P) 10/84	Approved 9/84	Related to Prop.74/A Approved as part of back-up proposal.
122/A	12/28/84	Basement drilling at the Kane Fracture Zone	Karson, J.A.	WHOI	Yes	Yes	LITHP 1/85 ARP 1/85	Approved 3/84	Legs 106 & 109
125/A	01/14/85	Bare-rock drilling at the Mid-Atlantic Ridge (22°53'N)	Bryan,W.B Purdy,G.M. Thompson,G.	W.H.O.I.	Yes	No	LITHP 1/85 ARP 1/85	Approved 3/84	Legs 106 & 109

INDIAN OCEAN PROPOSALS

Ref. No.	Date Rec'd.	Title	estigator(s)	Inst.	Site Survey Avail' Data	Site Survey Future Need	Panel Reference	PCOM Reference	Remarks
30/B	1/10/84	Proposals for oceanic drilling on the Davie Ridge and Malagasy Margin (Mozambique Channel)	Clocchiatti, M. Leclaire, L. Segoufin, J.	Mus. Natn. d'Hist. Naturelle, Univ. P&M Curie Paris, Fr.	Some	Yes	TECP 1/84 IOP 4/85 SOHP 4/85 TECP 4/85		French Blue Book Revised proposal received 03/25/85
31/B	1/10/84	Paleoenvironmental history of the Red Sea	Guennoc, P.	BRGM, Fr.	Yes	Yes	TECP IOP (P)		French Blue Book
44/B	3/-/84	Tectonic evolution of the Andaman Sea in relation with the relative displacement of Indochina with respect to India	Peltzer, G. Tapponier, P. Jacquart, G.	Univ. P&M Curie, Fr.			WPAC TECP 4/84 IOP (P)		
55/B	3/21/84	The Makran Forearc, Pakistan	Leggett, J.K.	Imperial College, U.K.	Some	Yes	TECP 4/84 IOP 4/84 SOHP 4/85		Revised 04/08/85
56/B	3/21/84	Drilling to constrain the history of deformation and relationship between fault surfaces and upward flow of water in the region of inter-plate deformation, Central Indian Ocean	Weissel, J.K. Forsyth, D.W. Stein, C.A. Anderson, R.N.	LDGO Brown U. North-western U LDGO	None	Yes	DMP 4/84 TECP 4/84 IOP 4/84 LITHP 10/84 TECP 10/84 SOHP 10/84		Revised following Indian Ocean Workshop 10/84
57/B	3/21/84	Determine the history of the formation of the African-Arabian margin and adjacent oceanic lithosphere	Stein, C.A.	North-western University	Yes		IOP (P) SOHP 10/84 TECP 10/84		Revised 10/84 following US Indian Ocean Workshop See Prop.119/B
61/B	6/18/84	Conjugate passive rifted margins of Madagascar, East Africa and the Western Somali Basin	Coffin, M.F. Matthias, P.	LDGO TAMU	Some		IOP 7/84 TECP 7/84 SOHP 10/84 TECP 10/84		Revised following US Indian Ocean Workshop 10/84 See Prop.102/B
62/B	6/18/84	The Davie Fracture Zone: reactivating zone of weakness?	Coffin, M.F. Matthias, P. Bernoulli, D. Scrutton, R.A. Channell, J.T.	LDGO TAMU U.Basel Switz.ESF U.Edin.UK U. Florida	No		IOP (P) SOHP 10/84 TECP 10/84 IOP 12/84		Revised 10/84 following US Indian Ocean Workshop. Further revisions received 12/84 (mature proposal)
65/B	7/5/84	Magnetic quiet zone: Australia's southern margin	Mutter, J.C. Cande, S.C.	LDGO	Some		TECP 10/84 LITHP 10/84 SOHP 10/84 SOP (P) IOP (P)		Revised 10/84 following US Indian Ocean Workshop

77/B	8/20/84	The Seychelles Bank and the Amirante Trough	lart,Y.	TAMU	Some	Yes	'P 8/84		
78/B	8/23/84	Indus Fan - a proposal for drilling	Kolla, V.	Superior Oil Co.USA			IOP (P) SOHP 9/84		See Prop.96/B
79/B	8/28/84	Tethyan stratigraphy and ancient oceanic crust	Coffin, M.F. Chanell,J.E.T.	LDGO	Some		LITHP 9/84 SOHP 9/84 IOP 9/84		
86/B	10/1/84	Red Sea drilling	Bonatti, J. Ross, D.A.	LDGO WHOI	Yes	Some needed	LITHP 10/84 SOHP 10/84 TECP 10/84 IOP (P)		US Indian Ocean Workshop
87/B	10/1/84	Basalt drilling objectives in the Arabian Sea - Carlsberg Ridge	Natland, J.	SIO	Yes		SOHP 10/84 TECP 10/84 IOP (P) LITHP 10/84		US Indian Ocean Workshop
88/B	10/1/84	Origin & evolution of the Chagos-Laccadive-Mascarene volcanic lineament,Central Indian Ocean	Duncan, R.A. Fisk,M.R. White, W.M.	OSU	Yes		LITHP 5/85 SOHP 5/85 TECP 5/85 IOP 5/85		US Indian Ocean Workshop; Related to Proposal 97/B; Revised 5/85
89/B	10/1/84	Mantle heterogeneity leg-drilling on S.W.Indian Ridge Fracture Zones	Dick, H.J.B. Natland, J.	WHOI SIO	Some		LITHP 3/85 SOP 3/85 IOP 3/85 TECP 3/85		US Indian Ocean Workshop:Related to Prop.112/B. Revised proposal 3/1/85
90/B	10/1/84	S.E. Indian Ocean Ridge transect(mantle heterogeneity)	Duncan, R.	OSU	Yes		LITHP 10/84 SOHP 10/84 IOP (P)		US Indian Ocean Workshop; Related to Prop. 100/B and 111/C
91/B	10/1/84	Nature of chemical discon--tinuity in oceanic crust as a function of time (S.E.Indian Ocean)	Langmuir, C.	LDGO	Yes		LITHP 10/84 IOP (P)		US Indian Ocean Workshop; related to Prop. 112/B
92/B	10/1/84	Seismic observatory in the Crozet Basin	Brocher, T.M.	WHOI	No	OBS exp planned in 1985	LITHP 10/84 SOHP 10/84 IOP (P)		US Indian Ocean Workshop
93/B	10/1/84	History of anoxic sediments associated with monsoonal upwelling, salinity strat-ification and oxygen minima in the Western Arabian Sea	Prell, W.L.	Brown Univ.	Little	Yes	SOHP 10/84 IOP (P)		US Indian Ocean Workshop
94/B	10/1/84	History of monsoonal upwelling Owen Ridge, Arabian Sea	Prell, W.L.	Brown Univ.	Some	Yes	SOHP 10/84 TECP 10/84 IOP (P)		US Indian Ocean Workshop
95/B	10/1/84	History of the Asian monsoon (Bay of Bengal)	Cullen, J.L. Prell, W.L.	Salem St. Brown Univ.	Yes		SOHP 10/84 TECP 10/84 IOP (P)		US Indian Ocean Workshop

96/B	10/1/84	Surveying and drilling in the Bengal Fan (Distal Indus and Ganges Fans)	Klein, G.deV.	Illinois Univ.	Some	Yes	SOHP 10/84 TECP 10/84 IOP (P)		US Indian Ocean Workshop See Prop.78/B
97/B	10/1/84	Variation of Neogene surface fertility & carbonate compensation in the Equatorial Indian Ocean	Peterson, L.C.	RSMAS	Some	Yes	SOHP 3/85 IOP 3/85		US Indian Ocean Workshop; related to Prop.88/B. Revised 3/85
98/B	10/1/84	Determination of the geologic history of southern hemi--sphere atmospheric circu--lation and climatic evolution of the Australian Desert (S.E. Indian Ocean)	Rea, D.K.	Univ. of Michigan	Yes		SOHP 10/84 IOP (P)		US Indian Ocean Workshop
99/B	10/1/84	Palaeo-oceanography climate dynamics (Agulhas Basin)	Coulbourn, W.	Univ. of Hawaii	Yes		SOHP 10/84 TECP 10/84 IOP (P)		US Indian Ocean Workshop
100/B	10/1/84	Stratigraphic sections - S.E. Indian Ridge transect	Hays, J.D. Lazarus, D.B.	LDGO WHOI	Some		SOHP 10/84 IOP (P)		US Indian Ocean Workshop; related to Prop. 90/B and 111/C
101/B	10/1/84	Determination of geologic history of ridge crest hydro--thermal activity	Owen, R.M. Rea, D.K.	Univ. of Michigan	Some		SOHP 10/84 LITHP 10/84 IOP (P)		US Indian Ocean Workshop
102/B	10/1/84	Somali Basin	Matthias, P.	TAMU			IOP (P) SOHP 10/84 TECP 10/84		US Indian Ocean Workshop See Prop.61/B
103/B	10/1/84	Nature of Laxmi Ridge (N.W. Indian Ocean)	Heirtzler, J.	WHOI	Little		IOP (P) SOHP 10/84 TECP 10/84 LITHP 10/84		US Indian Ocean Workshop
104/B	10/1/84	Transect of 90°East Ridge	Curray, J. Duncan, R.	SIO OSU	Some	Yes	IOP (P) LITHP 10/84 TECP 10/84 SOHP 10/84		US Indian Ocean Workshop
105/B	10/1/84	Arc-continent collision, Timor	Karig, D.E.	Cornell Univ.	Yes		IOP (P) TECP 10/84 SOHP 10/84		US Indian Ocean Workshop
106/B	10/1/84	Broken Ridge, Indian Ocean	Curray, J. Thierstein, H. Mackenzie, Mahoney	SIO	Poss--ibly		IOP (P) TECP 10/84 SOHP 10/84 LITHP 10/84		US Indian Ocean Workshop

107/B	10/1/84	State of stress in ocean lithosphere plate: S.E. Indian Ridge	Forsyth, D.	Brown Univ	Yes		IOP (P) TECP 10/84 LITH 10/84 SOHP 10/84		US Indian Ocean Workshop
112/B	10/2/84	Lithosphere Targets	Kennett, J. (on behalf of SOP)	URI	Some		SOP (P) LITHP 10/84 TECP 10/84		SOP Proposal, link to Prop. 89/B and 91/B
113/B	10/2/84	Agulhas Plateau	Kennett, J. (on behalf of SOP)	URI	Yes		SOP (P) SOHP 10/84 TECP 10/84		SOP Proposal See props.116/B & 139/B
115/B	10/10/84	Deep sea drilling on the Agulhas Plateau and adjacent basins	Herb,R. Oberhansli,H.	Univ. Bern Switz. ESF	Some	Yes	IOP 10/84 SOHP 10/84 TECP 10/84		Revised 4/85 See props.114/B & 139/B
116/B	10/10/84	Comparative data on deep sea drilling on 90°E & Chagos-Laccadive Ridges for palaeo-oceanog.purposes;evaluation of advantages & disadvantages	Oberhansli, H. Herb,R.	Univ. Bern Switz. ESF	Some	Yes	IOP 10/84 SOHP 10/84		Revised 4/85
117/B	10/22/84	Proposal for drilling in the northern Red Sea	Cochran, J.B.	LDGO	Yes	Some	SOHP 9/84 TECP 9/84 IOP 9/84		Immature proposal rec'd 9/84;revised 10/84
118/B	11/2/84	Middle-late Cenozoic strati--graphy, chronology, paleo--environmental history off East Africa: correlation with hominoid sites	Kennett, J. Brown, F.H. Howell, C., et al	URI Univ.Utah UCBerkeley	Yes	No	SOHP 10/84 IOP 10/84		Includes views of LDGO Paleoclimates and Evolution Workshop
119/B	12/3/84	History of the early opening of the Gulf of Aden resulting rifting of old oceanic lithosphere	Stein, C.A.	Northwest. Univ.	Some	Yes	IOP 12/84 SOHP 12/84 TECP 12/84 LITHP 12/84		See Proposal 57/B
120/B	12/10/84	Oceanic drilling in Atlantis II Deep, Red Sea	Zierenberg,R.A Shanks, W.C. Von Damm, K.L.	U.S.G.S.	Yes		IOP 12/84 LITHP 12/84 TECP 12/84		
121/B	12/10/84	Ocean drilling in the Exmouth & Wallaby Plateaus & Argo Abyssal Plain, E.Indian Ocean	von Rad,U. Exon, N.F. Symonds,P.A. Willcox,J.B.	BGR, FRG BMR, Australia	Yes	Yes	IOP 12/84 SOHP 12/84 TECP 12/84		Australian COGS-2 proposal
134/B	03/25/85	Ocean drilling in the Gulf of Aden	Girdler,R.W.	Univ. Newcastle, U.K.	Yes	Yes	IOP 4/85 TECP 4/85 SOHP 4/85		
135/B	03/25/85	Drilling on Broken Ridge to evaluate thermo-mechanical models of rifting	Weissel,J.K. Karner,G.D.	LDGO U.Durham, U.K.	Some	Yes	IOP 4/85 TECP 4/85 SOHP 4/85		

137/B	03/25/85	Oceanic drilling on the fossil ridges in the Indian Ocean	Sc h,R. Ro ,J.Y. Whitechurch,H. Clocchiatti,M.	I.de Phys. d.Globe Strasb'g I.de Geol. Strasb'g Mus.Natn. d'Hist.Nat France	No	Yes	IOP 4/85 TEL 4/85 LITHP 4/85 SOHP 4/85		
138/B	03/25/85	Oceanic drilling at the Rodriguez Triple Junction Indian Ocean	Schlich,R. Munschy,M. Royer,J.Y. Montigny,R. Whitechurch,H.	I.de Phys. d. Globe Strasb'g I.de Geol Strasb'g France	Yes	No	IOP 4/85 LITHP 4/85 TECP 4/85		
139/B	03/25/85	Oceanic drilling on the Agulhas Plateau,S.W.Indian Ocean	Jacquart,G. Vincent,E.	CEPM-IFP, Rueil Univ.P&M Curie, France	Some	Yes	IOP 4/85 SOP 4/85 SOHP 4/85 TECP 4/85		See props.114/B & 115/B
140/B	04/01/85	Deep drilling in the Central and Northern Red Sea axial areas	Pautot,G. Guennoc,P.	IFREMER, Brest BRGM,Brest France	Some	Yes	IOP 4/85 SOHP 4/85 TECP 4/85 LITHP 4/85		
141/B	04/02/85	Drilling proposal for the Indus deep sea fan	Jacquart,G. Leclaire,L.	CEPM-IFP, Rueil Mus.Natn. d'Hist.Nat France	Some	Yes	IOP 4/85 SOHP 4/85		See props. 78/B & 96/B

SOUTHERN OCEANS PROPOSALS

Ref. No.	Date Rec'd.	Title	Investigator(s)	Inst.	Site Survey Avail' Data	Site Survey Future Need	Panel Reference	PCOM Reference	Remarks
54/C	3/20/84	Southern Ocean Drilling: a. Sub-Antartic sites b. Weddell sites	Kennett, J.P.	URI	Some	Yes	TECP SOP (P)	Approved 3/84	<u>Leg 114</u>
73/C	08/02/84	Drilling proposal on the Antarctic margin off the Adelie Coast	Wannesson, J.	IFP, France	Some	Yes	TECP 2/85 SOP 2/85 SOHP 2/85		Site summary forms submitted. Revised proposal rec'd 02/25/85.
108/C	10/2/84	East Antarctic continental margin	Kennett, J. (on behalf of SOP)	URI	Some		SOP (P) SOHP 10/84 TECP 10/84		Southern Ocean Panel Proposal
109/C	10/2/84	Kerguelen - Heard Plateau	Kennett, J. (on behalf of SOP)	URI	Some	Yes	SOP (P) SOHP 10/84 TECP 10/84		Southern Ocean Panel Proposal
110/C	10/2/84	Wilkesland- Adelie continental margin	Kennett, J. (on behalf of SOP)	URI	Yes	No	SOP (P) SOHP 10/84 TECP 10/84		Southern Ocean Panel Proposal
111/C	10/2/84	Southeast Indian Ocean Ridge transect (subantarctic)	Kennett, J. (on behalf of SOP)	URI			SOP (P) SOHP 10/84 LITHP 10/84		SOP Proposal, link to Prop. 90/B and 100/B
114/C	10/2/84	Crozet Plateau	Kennett, J. (on behalf of SOP)	URI	Yes		SOP (P) SOHP 10/84		SOP Proposal
129/C	01/21/85	ODP opportunities in the Bounty Trough	Davy, B.W.	D.S.I.R. N. Zealand	Some	Yes	WPAC 1/85 SOHP 1/85 TECP 1/85 SOP 1/85		
136/C	03/25/85	Oceanic drilling on the Kerguelen-Heard Plateau	Schlich, R. Munschy, M Leclaire, L. Froelich, F.	I.de Phys. d.Globe Strasb'g Mus. Natn. d'Hist. Nat France	Yes	No	IOP 4/85 SOP 4/85 TECP 4/85 SOHP 4/85		

WEST PACIFIC OCEAN PROPOSALS

Ref. No.	Date Rec'd.	Title	Investigator(s)	Inst.	Site Survey Avail' Data	Site Survey Future Need	Panel Reference	PCOM Reference	Remarks
25/D	1/10/84	Deep sea drilling proposal on the New Hebrides arc	ORSTOM team	Centre ORSTOM, New Caledonia, Fr.			TECP 1/84		French Blue Book
26/D	1/10/84	Succinct proposals for deep sea drilling sites on the Tonga-Kermadec Arc	NOUMEA team	ORSTOM Centre de Noumea, New Caledonia, France			TECP 1/84		French Blue Book
27/D	1/10/84	Proposal for drilling in the Sulu Sea Marginal Basin and Sulu-Negros Troughs	Rangin, C.	IFP, France	Some		TECP 1/84		French Blue Book
28/D	1/10/84	Tectonic evolution of the South China Sea: marginal basin drilling proposal	Letouzey, J. Fricaud, L. Rangin, C.	IFP, France CFP, France	Some		TECP 1/84		French Blue Book
29/D	1/10/84	Transect across Ryukyu Island Arc and Okinawa Backarc Basin	Letouzey, J.	IFP, France	Yes	No	TECP 1/84		French Blue Book
42/D	3/-/84	Preliminary deep sea drilling proposal in Sunda Straits area	Huchon, P.	Univ. P&M Curie, Fr.	Yes	Yes	WPAC TECP 4/84 IOP (P)		
43/D	3/-/84	Outline of suggested ocean drilling program in the S.W. Pacific	Falvey, D.A.	BMR, Australia	Yes	Yes	WPAC (P) IOP (P) TECP 3/84		
46/D	3/5/84	An informal proposal for future ODP drilling in the South China Sea Basin	Hayes, D.E. Lewis, S.D. Ladd, J. Leyden, B.	LDGO	No		WPAC (P) TECP (P) 3/84		
47/D	3/5/84	Proposal for scientific ocean drilling along the Manila Trench subduction zone, South China Sea	Lewis, S.D. Hayes, D.E.	LDGO	Some	Yes	WPAC (P) TECP (P) 3/84		
48/D	3/5/84	Drilling proposal for the South China Sea Basin	Schluter, H.U.	BGR, FRG			WPAC (P)		
49/D	3/5/84	Drilling proposal for the Eastern Banda Arc/Arafura Sea	Schluter, H.U. Fritsch, J.	BGR, FRG	Yes		WPAC (P)		
50/D	3/5/84	ODP proposal for scientific drilling in the Nankai Trough	Kagami, H. Taira, A.	ORI Tokyo Japan	Yes		WPAC (P)		

51/D	3/5/84	ODP proposal for scientific drilling in the Sea of Japan	Kagami, H. Tamaki, K. Kobayashi, K.	ORI Tokyo Japan	Yes		...AC (P)		
52/D	3/12/84	The Solomon Sea - a suggested drilling target	Milsom, J.	Univ. College, London, UK			WPAC 4/84		
67/D	7/6/84	ODP drilling on Tonga-Lord Howe Rise transect	Falvey, D.A. Exon, N.F. Willcox, B. Symonds, P.	BMR, Australia	Yes		TECP (P) WPAC (P)		
80/D	8/30/84	Sunda and Danda Arc drilling: a study of convergent margin processes	Karig, D.E. Moore, G.F.	Cornell U. Tulsa U.	Yes		IOP (P) TECP 10/84 SOHP 10/84		Revised 10/84 following US Indian Ocean Workshop
82/D	9/4/84	Drilling in the Sulu Sea, Western Equatorial Pacific	Thunell, R.	Univ. S. Carolina	Some		WPAC (P) SOHP (P) TECP 9/84		
83/D	9/5/84	Izu-Ogasawara (Bonin) Arc transect: preliminary sites proposal	Okada, H. Takayanagi, Y.	Shizuoka Univ., Japan Tohoku U., Japan	Yes		WPAC 9/84 TECP 9/84 LITHP 9/84		
126/D	01/14/85	Site proposals for scientific ocean drilling in the Australasian region (composite proposal)	Crook, K.A.W. Falvey, D.A. Packham, G.H.	ANU, Canberra BMR, Canberra U. Sydney Australia	Yes	Yes	SOHP 1/85 LITHP 1/85 TECP 1/85 IOP 1/85 SOP 1/85 WPAC 1/85		Composite proposal from Australian community. COGS-2 super-proposal.
127/D	01/18/85	Eastern Sunda Arc & N.W. Australian Collision: accretionary processes in a sharp transition zone of arc--continent collision	Reed, D.L. Silver, E.A. Meyer, A.W.	U.Calif., Santa Cruz ODP/TAMU	Some	Yes	SOHP 1/85 TECP 1/85 IOP 1/85 WPAC 1/85		
130/D	01/21/85	Evolution of the SW Pacific: drilling proposal for the area north of New Zealand	Eade, J.V.	N.Z. Ocean. Institute N. Zealand	Some	Yes	TECP 1/85 WPAC 1/85 LITH 1/85 SOHP 1/85		
131/D	03/11/85	Banda Sea Marginal Basin: trapped ocean crust & displaced continental borderland	Silver, E.A.	U.Calif., Santa Cruz	Some	Yes	WPAC 3/85 TECP 3/85 LITHP 3/85 SOHP 3/85		
132/D	03/11/85	ODP Proposal on drilling the TTT-type Triple Junction area off Boso, Japan	Ogawa, Y. Fujioka, K. Nakamura, K.	Kyushu U. ORI, Tokyo ERI, Tokyo Japan	Yes	No	WPAC 3/85 TECP 3/85 SOHP 3/85		

144/D	05/28/85	Arc-arc collision in the southernmost Kuril forearc off Hokkaido	Seno,T. Kimura,G. Tamaki,K.	Int.Inst. Seism. & Earthquake Eng. Kagawa U. Geol.Surv. Japan	Yes	No	WPAC TECP	5/85 5/85	
145/D	05/29/85	Left-lateral dislocation of the Ryukyu Arc system	Ujiie,H.	U. of the Ryukyus Japan	Some	No	WPAC TECP	5/85 5/85	
146/D	05/30/85	Toyama Submarine Fan,eastern Japan Sea	Klein,G.deV.	U.Illinois (Urbana)	Some	Yes	WPAC TECP SOHP	5/85 5/85 5/85	

CENTRAL & EAST PACIFIC OCEAN PROPOSALS

Ref. No.	Date Rec'd.	Title	Investigator(s)	Inst.	Site Survey Avail' Data	Site Survey Future Need	Panel Reference	PCOM Reference	Remarks
2/E	12/16/82	Regional seismic reflection profiles across the Middle America Trench and convergent margin of Costa Rica	Crowe, J.C. Buffler, R.T.	U.T.Austin	Yes	No	AMP (P) Middle America WG (P)		Reference to DSDP Panels
3/E	6/27/83	Drilling in the vicinity of the Hawaiian Islands	Watts, A.B.	LDGO	Some	Yes	CEPAC 2/84 LITHP 2/84		
4/E	undated	Drilling in the Tuamoto Archipelago(French Polynesia)	Okal, E.A.	Yale Univ.	Some		CEPAC 2/84 LITHP 2/84		
8/E	9/18/83	Ridge crest subducton along the Southern Chile Trench	Cande,S.C.	LDGO	Some	Ref'd to JOI SSP8/84	TECP 7/84	Approved 9/84	Leg 113
14/E	1/10/84	Zero age drilling: East Pacific Rise 13° N.	Bougault, H.	COB,France	Yes		CEPAC 2/84 LITHP 2/84 TECP	Approved 9/84	Related to Prop. 76/E. Leg 111 French Blue Book
34/E	2/-/84	Pacific-Aleutian-Bering Sea (PAC-A-BERS) proposal	Scholl, D. Vallier. T.	USGS,Menlo Park					
37/E	2/25/84	Costa Rica drilling - a test of the duplex model	Shipley, T. Moore, G. Buffler, R. Silver, E. Lundberg, N.	U.T.Austin UCSC Princeton	Some		CEPAC (P) TECP (P) 8/84 SOHP 8/84		Revised 8/84
75/E	8/13/84	Gulf of California drilling	Becker, K. et al	SIO	Some	Yes	LITHP (P) TECP (P) SOHP (P) CEPAC (P)		
76/E	8/17/84	Proposal for drilling oceanic crust at the axis of the East Pacific Rise	Francheteau,J. Hekinian, R.	Univ.Paris IFREMER, Brest			CEPAC (P) CEPAC 11/84 LITHP 11/84	Approved 9/84	Revised 11/84.Rel. to Prop.14/E.Leg 111
84/E	9/10/84	Peru Margin drilling proposal	Kulm, L. Hussong,D	HIG		Needed	TECP 9/84 CEPAC (P) SOHP 9/84	Approved 9/84	Leg 112
123/E	12/28/84	Regional drilling studies at IPOD Site 501/504	Mottl,M.J.	WHOI	Yes	No	LITHP 1/85 CEPAC 1/85		Related to Prop. 124/E
124/E	01/02/85	Proposal to deepen Hole 504B	Becker,K. (on behalf of LITHP)	S.I.O.	Yes	No	LITHP 1/85 CEPAC 1/85	Approved 9/84	Approved as back-up Leg

142/E	04/02/85	Equatorial Pacific depth transect: Ontong Java Plateau	[illegible]r,L. Berger,W.H.	Dalhousie U.Canada SIO	Some	Yes	[illegible] 4/85 [illegible] 4/85		

GENERA' INSTRUMENTAL PROPOSALS

Ref. No.	Date Rec'd.	Title	In igator(s)	Inst.	Site Survey Avail' Data	Site Survey Future Need	nel Rererence	PCOM Reference	Remarks
13/F	1/5/84	Setting-up of a water column research laboratory	Wiebe,P.H.	WHOI	N/A	N/A			
53/F	3/19/84	Vertical seismic profiling for AODP	Phillips, J.D. Stoffa, P.L.	U.T.Austin			DMP 4/84	Approved 9/84	Part of Leg 102
66/F	7/5/84	Laboratory studies of basalt rock cores on SEDCO/BP 471-Principal horizontal stresses in the oceanic crust from anelastic strain recovery and other rock studies	Whitmarsh,R.B.	IOS, UK	Some		DMP (P) LITHP (P)		
69/F	7/23/84	Rock stress measurement in the southern part of the Norwegian Sea	Stephansson,O.	Univ. of Lulea Sweden,ESF			TECP 7/84 DMP 9/84		Revised 7/84
70/F	7/23/84	Borehole seismic experiment at DSDP sites 417 and 603	Stephen, R. Mayer, L. Shaw. P.	LDGO	Some		DMP (P) LITHP (P)	Approved 9/84	Part of Leg 102
128/F	01/21/85	Proposal for an ODP hole dedicated to the physical properties, mechanical state, and structural fabric of deforming sediments in accretionary prisms	Karig, D.E.	Cornell Univ.	Yes	No	SOHP 1/85 TECP 1/85 DMP 1/85 WPAC 1/85		
133/F	03/21/85	In situ sampling of pore fluids during ODP	McDuff, R.E. Barnes, R.O.	U. Washington	N/A	N/A	DMP 3/85 LITHP 3/85		
143/F	04/15/85	In situ magnetic susceptibility measurements with a well log probe	Krammer,K. Pohl,J.	Inst. fur Allgemeine u.Angewan-te,Munich, FRG	N/A	N/A	ARP 4/85 LITHP 4/85 DMP 4/85		

Proposals received by the JOIDES Office marked with an asterisk and the JOIDES Reference number

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JAPANESE ODP PROPOSALS

Tectonics Proposals

* 144/D JT-1 Arc-arc collision in the southernmost Kuril forearc off Hokkaido : T. Seno, G. Kimura and K. Tamaki

JT-2 Tectonic response of Japan trench forearc region to the subducting plate motion : K. Ohtsuki

JT-3 Japan trench forearc - basements, Mid-Miocene strike-slip tectoncis and Japan sea opening : N. Niitsuma, Y. Saito and A. Taira

JT-4 Tectonic evolution of Japan-Ogasawara-Sagami trench tripple junction : N. Niitsuma

* 132/D JT-5 Drilling the TTT-type tripple junction : Y. Ogawa, K. Fujioka and K. Nakamura

JT-6 Tectonics and sedimentation of oblique subduction zone, Sagami trough : Y. Ogawa and K. Fujioka

* 52/D JT-7 Tectonic evolution of Nankai trough : A. Taira, H. Kagami, H. Tokuyama, K. Shimamura and E. Nishiyama

JT-8 Opening of Shikoku basin : A. Taira, H. Kagami and H. Tokuyama

JT-9 Nankai trough forearc - forearc igneous activity and microcontinent collision : T. Shiki and Y. Miyake

JT-10 Ogasawara plateau and Ogasawara forearc : S. Nagumo

* 145/D JT-11 Left-lateral dislocation in the Ryukyu arc system : H. Ujie

JT-12 Ryukyu arc and Amami plateau : H. Tokuyama, M. Kimura and K. Konishi

* 50/D JT-13 Drilling in the Sea of Japan : H. Kagami, K. Tamaki and K. Kobayashi

JT-14 Drilling proposal of the Japan sea : K. Tamaki

JT-15 Recent spreading center in the Japan sea : M. Kimura

JT-16 Luzon forearc regions : N. Niitsuma

JT-17 Hawaiian hot spots - detailed plate motion during Neogene : N. Niitsuma

JT-18 Measurements of in-situ subduction rate using worldwide trench wedges : K. Tamaki and K. Nakamura

Sediment and Ocean History Proposals

JS-1 Japan trench and Pacific ocean floor - diagenesis and chemical sedimentology : R. Matsumoto

JS-2 Izu-Ogasawara (Bonin) arc transect - paleoenvironment and tectonics : H. Okada and Y. Takayanagi 83/D *

JS-3 Trench sedimentation in Nankai trough : A. Taira and K. Shimamura

JS-4 Nankai trough channel system and Tenryu canyon : K. Ohtsuka

JS-5 Paleoenvironmental and biostratigraphic studies of the Japan sea : I. Koizumi and T. Ohba

JS-6 Geochemistry of back-arc sediments, Japan sea drilling : R. Matsumoto

JS-7 Pore fluid geochemistry of Japan sea sediments : H. Wakita

JS-8 Kula plate stratigraphy, Bering sea : A. Taira

Lithospere Proposals

JL-1 Petrology of forearc ophiolite, Ogasawara (Bonin) arc region : T. Ishii

JL-2 Geochemistry of back-arc basement rocks, Japan sea : Y. Tatsumi. M. Torii, A. Hayashida, T. Itaya and K. Nagao

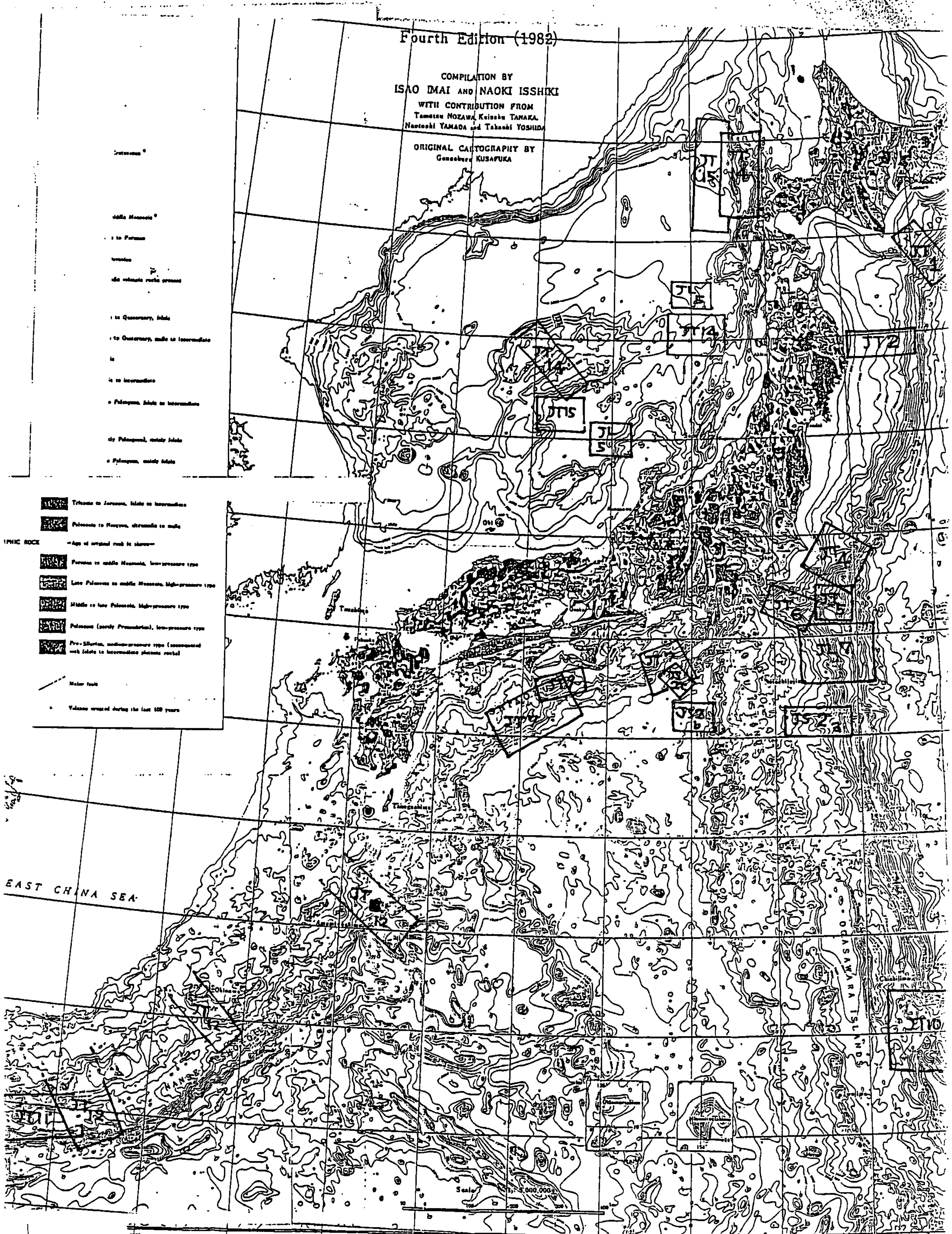
JL-3 Deeper drilling of Hole 462A, Nauru Basin : N. Fujii, H. Tokuyama and H. Kinoshita

JL-4 Down-hole experiments along Izu-Bonin transcect : H. Kinoshita and others

JL-5 Identification of Vp=3 km/sec layer in the Sea of Japan : K. Suyehiro, T. Kanazawa and H. Kinoshita

JL-6 Long-term down-hole experiments in Hole 504B : H. Kinoshita and others

JL-7 Down-hole experiments in the Antarctic plate : K. Kaminuma, H. Kinoshita, J. Segawa and K. Kobayashi



Some of the representative ~~sites~~ areas proposed to be drilled around Japan

IDEAS, SUGGESTIONS FOR DRILLING (RECEIVED BY JOIDES OFFICE)

Ref.#	Title	Proponent	Institution	Date Recd	Refer. to Panel	Comments
1	Objectives/suggestions for Mediterranean Leg	Hsu, K	ETH Zurich, Switzerland (ESF)	7/13/83	DSDP/TMP and OPP	
2	Study of sedimentation patterns on the Barbados Ridge and in the Tobago and Grenada Basins	Saunders, J.B.	Naturhistorisches Museum, Basel Switzerland (ESF)	7/19/83		Formal proposal requested
3	Future potential sites in the Gulf of Mexico	Bouma, A.H. Coleman, J.	Gulf Research	1/4/84	TECP (P)	Reference to this in letter on other subject. Memo never received by JOIDES Office.
4	Outline of multi-topical program of Ocean drilling: NE Pacific Ocean	INPAC Group (Rea, D.K.)	Univ. of Michigan	1/6/84	TECP (P) CEPAC 2/84 LITHP	Workshop convened for Feb. 1985
5	Proposed objectives for ODP: Gulf of Mexico	King, J.	Univ. of Rhode Island	1/6/84		
6	Suggested drill sites in the NE Pacific Ocean	Malpas, J.	Memorial University, Canada	1/11/84	CEPAC 2/84 LITHP	
7	Some geological problems and areas of regional interest (Central and Eastern Pacific)	Okada, H.	Shizuoka University, Japan	2/15/84	CEPAC (P)	
8	Peru-Columbia Trench: provisional proposal	Aubouin, J.	Univ. P. & M. Curie Paris, France	2/-/84		Formal proposal requested
9	New Jersey Site 1A	Miller, K.G. Mountain, G.S.	LDGO	3/-/84		
10	General drill sites off Cuba	Case, J.E.	USGS, Menlo Park	3/19/84		
11	Suggestions for drilling on young seamounts in the Eastern Pacific	Batiza, R.	Washington Univ. Missouri	4/9/84	LITHP (P)	
12	Heterogeneity of the mantle	Schilling, J-G. O'Nions, R.K. White, R.M. Frey, F. Albarede	URI Cambridge Univ., UK Max-Planck.Inst.,FRG MIT CNRS Nancy, France	5/21/84	LITHP 6/84	

13	Gulf of Aden drilling 1987	Girdler, R.W.	Newcastle Univ., UK	6/25/84	IOP 7/84	
14	Potential coring objectives and site locations for future deep sea drilling in the Mediterranean Sea	Thunell, R.	Univ. of S. Carolina	7/6/84	TECP (P)	Formal proposal requested.
15	South Atlantic palaeo-circulation	Robert, C.	IPOD Cttee, France	7/6/84	ARP SOHP	
16	ODP drilling in the tectonic area of Japan	Klein, G. deV.	Univ. of Illinois (Urbana)	7/6/84	TECP (P)	
17	Ocean margin drilling project around Japan	Ogawa, Y.	Kyushu Univ., Japan	7/6/84	TECP (P) 12/83	Formal proposal requested.
18	Some drill sites in the Indian Ocean	Luyendyk, B.P.	Univ. of California, Santa Barbara	8/22/84	IOP (P) TECP 10/84	
19	Suggestions for drilling in the Indian Ocean - Indus Fan	Kidd, R.B.	IOS, UK	9/4/84	IOP 9/84 TECP 9/84	Withdrawn.
20	Drilling in the Indus Fan	Haq, B.U.	Exxon	9/8/84	IOP (P)	Formal proposal requested.
21	Drilling in the SW Somali Basin	Scrutton, R.A.	Edinburgh Univ., UK	9/8/84	IOP (P)	Formal proposal requested. Withdrawn No further action.
22	Drilling in the Atlantis-II Deep, Red Sea	Zierenberg, R.A	USGS, Menlo Park	9/8/84	IOP LITHP TECP	Proposal 120/B received 12/10/84.
23	Transect: Northern Exmouth Plateau to Argo Abyssal Plain	Willcox, J.B. Symonds, P.A. (supported by Gradstein, F.)	BMR, Australia (Atlantic Geoscience Centre-Canada)	9/8/84	IOP SOHP 12/84 TECP	Proposal 121/B received 12/10/84.
24	Drilling stratigraphic bore-hole off the coast of East Africa	Burckle, L.H.	LDGO	10/16/84		Formal proposal requested. Advised to liaise with Kennett (see proposal 117/B)
25	Investigation of hydrothermal processes and basalt dia-genesis in the Gorda Ridge	Hart, R. Fisk, M.	OSU	10/16/84		Formal proposal requested.

26	Deep sea drilling targets near loci of arc volcanism in Marianna back-arc basin	Fryer, P.	HIG	10/19/84	TECP LITHP 10/84 WPAC	
27	Philippines Workshop	Wolfe, J.A.	Taysan Copper Inc., Philippines	11/14/84		Copied to Chairman, WPAC
28	Transect of upwelling zone sedimentation and palaeoceanography of cold circulation 15°-30°S	Kelts, K.	ETH-Zurich, Switzerland (ESF)	11/16/84	CEPAC (P)	Formal proposal requested.
29	504B Drilling	Purdy, G.M. (LITHP)	WHOI	12/10/84	LITHP	Proposal 124/E received 1/2/85
30	Drilling non-hotspot seamounts	Batiza, R.	Washington Univ., Missouri	12/19/84		
31	Physical and mechanical properties of core material	Karig, D.E.	Cornell University	12/19/84		Proposal 128/F received 1/21/85
32	Banda Sea Marginal Basin: trapped ocean crust & displaced continental borderland	Silver, E.A. Jongsma, D. Audley-Charles, M.G. von der Borch, C.C.	Univ. California, S. Cruz Vrije Univ, Amsterdam Netherlands (ESF) Univ. Coll. London (U.K.) Flinders Univ., Adelaide (Australia)	12/28/84	WPAC (P) TECP 12/84	Formal proposal in the name of Silver only received 03/11/85. See Proposal 131/D
33	Workshop on Western Pacific drilling (proposal to USSAC)	Hawkins, J.W.	S.I.O.	01/02/85	WPAC(P)	
34	Drilling in the East Pacific Rise (N. & S. of Clipperton F.Z.)	Fox, P.J. Macdonald, K.C.	U.R.I. Univ. California, S. Barbara	01/02/85	LITHP(P)	No formal proposal likely until at least late 1985.
35	Oceanic plateaus (Kerguelen-Heard)	Schlich, R.	Inst. de Phys. d. Globe Strasbourg (France)	01/03/85	IOP(P)	Rec'd from IOP Chairman See proposal 136/C
36	Upper Mesozoic & Cenozoic palaeoenvironments of S. Indian Ocean (Kerguelen-Gaussberg Plateau)	Leclaire, L.	Mus. Nat. d'Histoire Naturelle, Paris (France)	01/03/85	IOP(P)	Rec'd from IOP Chairman

37	South Antarctic Ocean palaeooceanography (Crozet & Enderby Basins)	Leclaire,L.	Mus.Nat.d'Histoire Naturelle, Paris (France)	01/03/85	IOP(P)	Rec'd from IOP Chairman
38	Sedimentary record of Indonesian volcanic activity	Leclaire,L.	Mus.Nat.d'Histoire Naturelle, Paris (France)	01/03/85	IOP(P)	Rec'd from IOP Chairman
39	Palaeoenvironment and geodynamics of Central Indian Basin	Leclaire,L.	Mus.Nat.d'Histoire Naturelle, Paris (France)	01/03/85	IOP(P)	Rec'd from IOP Chairman
40	Study of shear margin and fault (Davie Ridge)	Leclaire,L.	Mus.Nat.d'Histoire Naturelle, Paris (France)	01/03/85	IOP(P)	Rec'd from IOP Chairman See revised proposal 30/B
41	Carbonate, clastic and other deposits in the Indian Ocean	Jaquet,J.M.	Univ. of Geneva Switzerland (ESF)	01/03/85	IOP(P)	Rec'd from IOP Chairman
42	Tectonics of the Red Sea	Pautot,G	Centre de Brest IFREMER (France)	01/03/85	IOP(P)	Rec'd from IOP Chairman See proposal 140/B
43	Magma generation & mantle heterogeneities, Indian Ocean (Rodriguez T.J.,S.E.,S.W., Central Indian Ocean Ridges)	Schlich,R.	Inst.de Phys.d.Globe Strasbourg (France)	01/03/85	IOP(P)	Rec'd from IOP Chairman See proposal 138/B
44	Suggested drilling in the East Indian Ocean	Falvey,D.A.	BMR,Canberra Australia	01/03/85	IOP(P)	Rec'd from IOP Chairman
45	Drilling on the Shaka Rise	Sclater,J.G.	UT Austin	07/20/84		Paperwork not available Previously classified as Prop. 71/C
46	Drilling proposal on the Antarctic margin off the Adelie Coast	Wannesson,J.	IFP,France	08/02/84	IOP(P)	Only site summary forms received Previously classified as Prop. 73/C Full proposal received 02/25/85(73/C)

47	Madeira Abyssal Plain	Duin,E.J.T. Kuijpers,A. Schuttenhelm, R.T.E.	Geol.Survey of Netherlands (ESF)	06/21/84		Not full proposal. Previously classified as Prop.63/A
48	Bare-rock drilling for hydrothermal objectives:Leg 106	Rona,P.A.	NOAA,Miami	02/25/85	LITHP(P)	Full proposal requested
49	Stratigraphic tests proposal	SOHP	Panel proposal	04/02/85	IOP(P)	Full proposal expected
50	Proposal for a workshop on scientific seamount drilling (proposal to NSF)	Watts,A.B.	LDGO	04/11/85		
51	Hydrogeology experiments to be performed during the first two years of ODP (proposal to NSF)	Becker,K. Gieskes,J.	SIO	05/22/84		
52	Back-arc spreading & fresh-water sediment: Japan Sea	Koizumi,I.	Osaka Univ., Japan	05/03/85	WPAC	Formal proposal requested
53	Geochemical significance of hard-rock drilling in the S.E.Indian Ocean	Frey,F.A.	M.I.T.	05/14/85	IOP(P)	

(P) = Referred directly to the indicated Panel by the proponent.

April 15, 1985

RECEIVED APR 15 1985

TO: JOIDES.URI - Larson
HAWAII.INST - Moberly
LAMONT - Hayes
OREGON.STATE - Schrader
RSMAS - Honnorez
NSF.OCE.ODP - Brass
J. CLOTWORTHY - Clotworthy
R. MCDUFF - McDuff
W. NIERENBERG - Nierenberg

FROM: TAMU/ODP

The following is a summary report from the JOIDES RESOLUTION for the week of April 7-13.

DRILLING OPERATIONS

April 8 - Hole 418A
Complete P.O.O.H with drill pipe.
Stream Gear and Profile across site at reduced speed depart from Site 418A at 1600 Hrs. ETA Norfolk pilot station 0800 hrs 11 April

April 9 & 10 - Underway for Norfolk

April 11 - Arrive Norfolk. Pilot aboard at 0912 Hrs. First line at Pier P, Lambert's Point Docks 1142 hrs.

April 12, 13 & 14 - Port Call

SCIENCE REPORT

The JOIDES Resolution returned from Leg 102 of the Ocean Drilling Program arriving in Norfolk, Virginia, on April 11 11th after 24 days at sea. During Leg 102 the JOIDES Resolution relocated and re-entered DSDP Hole 418A (25o 02.10'N 68o 03.44'W). Experiments were conducted to measure the porosity, acoustic velocity, magnetic properties and interstitial water chemistry of the basaltic oceanic crust.

A second ship, the R/V Fred H. Moore from the University of of Texas, Austin, joined the JOIDES Resolution at the site. Seismic experiments were conducted using explosion and airgun sources and receivers deployed by the two ships to determine the seismic structure and seismic properties of the oceanic crust in the vicinity of Hole 418A.

The JOIDES Resolution will depart Norfolk and complete a nine day transit to the Azores. Leg 103 is scheduled to depart from the Azores April 26.

April 22, 1985

TO: JOIDES.URI - Larson
HAWAII.INST - Moberly
LAMONT - Hayes
OREGON.STATE - Schrader
RSMAS - Honnorez
NSF.OCE.ODP - Brass
J. CLOTWORTHY - Clotworthy
R. MCDUFF - McDuff
W. NIERENBERG - Nierenberg

FROM: TAMU/ODP

The following is a summary report from the JOIDES RESOLUTION for the week of April 14 - 20.

DRILLING OPERATIONS

The JOIDES Resolution departed Norfolk on April 16 for a 10 day transit to the Azores. The cryogenic magnetometer was installed during the Norfolk portcall and is being calibrated during the transit. Leg 103 is scheduled to depart the Azores on April 26.

SCIENCE OPERATIONS

April 15 - Underway for Azores Mesotech sonar test site at 0800 hours. ETA operational area 2200 hours 22 April 85.

April 16 - Underway

April 17 - Underway. ETA on site 2100 hours 21 April 85.

April 18 - Underway

April 19 - Underway. Respooled coring line

April 20 - Underway. ETA test site 2000 Hours today.

April 21 - On site at 36 degrees 49.2'N, 33 degrees 16.2'W Dropped Beacon. Started running drillpipe.

LG/wj

April 29, 1985

TO: JOIDES.URI
HAWAII.INST
LAMONT
OREGON.STATE
RSMAS
NSF.OCE.ODP
J. CLOTWORTHY
R. MCDUFF
W. NIERENBERG

FROM: TAMU/ODP

The following is a summary report from the JOIDES RESOLUTION for the week of April 21 - 28, 1985.

DRILLING OPERATIONS

April 22 & 23 - On station at Test Site "Archie". Scanned seafloor in axial valley of Mid-Atlantic Ridge using Mesotech sonar. Results good, videotaped same. Ran VIT frame down drill pipe to test procedure. Secured operations at 1930 and underway to Punta Delgada.

April 25 - Arrived Punta Delgada 0800 local time. Changed ODP and SEDCO crews. Took on Scientists for Leg 103. Departed at 1900 for Leg 103 Site 2B.

April 28 - Arrived at ODP Site 637 at 1400 hours. Surveyed site and dropped beacon. Made up BHH, rabbit D/P and RIH.

SCIENCE OPERATIONS

The JOIDES Resolution completed the transit from Norfolk, Virginia to Ponta Delgada, arriving in the Azores on April 25. After a change of ship-personnel, the JOIDES Resolution departed

Ponta Delgada at 1900 hrs. on April 25 for Leg 103. The ship arrived at Site 637 (Galicia Site-2B; 42o05'N 12o51'W) at 1400 hrs on April 28.

Scientific objectives during Leg 103 include examining the history of rifting, subsidence and sedimentation of the Galicia margin and the relation of these processes to the initiation and progressive opening of the adjacent North Atlantic. The result of this leg also will bear strongly on the evolution of the more thickly sedimented and hence less accessible conjugate margin of North America.

LG/wj

Posted: Mon May 6, 1985 12:46 PM EDT
From: OCEAN.DRILLING.TAMU
SUBJECT: Weekly Report 4/29 - 5/5

DRILLING REPORT

April 29 RIH at Site 637 (GAL-2B); Lat 42 degrees 05.3'N, Long 12 degrees 51.8'W; Spud hole 637A at 5321M; Core to 5336M. April 30 core to 5404M; 2-1/2 hrs coring winch breakdown. May 1 core to 5500M. May 2 core to 5567M; Peridotite basement at 5536M. May 3 core to T.D. at 5606M; release bit; begin logging operations. May 4 finish basic suite of two Schlumberger logs; P.O.O.H.; under way for site Gal-4B at 2100 hrs. May 5 profile GAL-4B area to locate max sediment cover; arrive site 638 at 0715 hrs; R.I.H.; conduct Jet-In test to 44M BSF for conductor casing point.

SCIENCE OPERATIONS

Drilling operations commenced at Site 637 (Gal-2B,42o 05.28N 12o 15.81W). Twenty-three sediment cores were recovered from this Site. Core 637A-1 through -9 consist of Pleistocene turbidites and calcareous nannofossil oozes. Core 637A-19 consists of lower Pliocene marls and calcareous clays. The sediment/basement contact was reached at 215 meters subbottom (Core 637A-23). Old sediment veins are early Pliocene-late Miocene (?) in age. The basement consists of peridotite. Resistivity, gamma ray, caliper, sonic, and neutron density logs were obtained from Hole 637A. On May 5, the JOIDES Resolution departed Site 637 for Site 638, located in the vicinity of Site Gal-48. A mudline core was recovered at 0600 Hrs., May 5.

LG/wj

Command? read 2

Posted: Mon May 13, 1985 2:13 PM EDT Msg: IGIF-2131-3366
From: OCEAN.DRILLING.TAMU
To: JOIDES.URI, HAWAII.INST, LAMONT, OREGON.STATE, RSMAS, NSF.OCE.ODP, J.Clotworthy, R.mcduff, W.NIERENBERG
CC: OCEAN.DRILLING.TAMU
Subj: WEEKLY REPORT OF 5/6 - 5/11

May 13, 1985

TO: JOIDES.URI, HAWAII.INST, LAMONT, OREGON.STATE, RSMAS
NSF.OCE.ODP, J. CLOTWORTHY, R. MCDUFF, W. NIERENBERG

FROM: TAMU/ODP

The following is a summary report from the JOIDES RESOLUTION for the week of May 6 - May 11.

DRILLING OPERATIONS

May 6, begin coring operations in re-entry exploratory hole 638B; Latitude 42 degrees 09.2'N, Longitude 12 degrees 11.8'W 4673M.

May 7 - 10 continuous coring operation in Hole 638B.

May 11, Core to T.D. at 5104M; free stuck pipe; clean and condition hole; release bit for logging; fill hole with freshwater mud; pull to logging depth at 4770M; first log attempt stopped at bridge at 4956M.

May 12, clean hole to 5005M; pull to 4770M; second log attempt stopped at 4834M; P.O.O.H. for re-entry cone.

SCIENCE REPORT

SITE 637A (42o 06.28N 12o 15.81W) was continuously cored to a total depth of 285.6m subbottom. The following sequence was recovered:

0-135m: Upper Pliocene to Pleistocene, turbidites comprising clayey silt and olive clay couplets, interbedded with nannofossil marl.
135-180m: Upper Miocene to lower Pliocene, slumped brown clay and nannofossil marl.
212-258m: Serpentinized, spinel peridotite cut by veins of calcite.

The JOIDES Resolution completed exploratory Hole 638B (42o 9.19N 12o 11.82W; 4663m water depth). The hole was continuously cored to a total depth of 431m subbottom. The following sequence was recovered.

0-183m:	Upper Miocene to Holocene, nannofossil ooze and chalk.
83-305m:	Valanginian to upper Barremian, highly altered bioturbidited micritic limestone and finely laminated, turbidite couplets of claystone and marlstone.
305-431m:	Valanginian, graded layers of hard carbonate cemented arkosic sandstone.

Sonic and gamma logs were taken from 285 to 100m subbottom and the multichannel sonic log from 164 to 100m subbottom. Preparations are currently underway for a re-entry hole at this site.

LG/wj

Posted: Mon May 20, 1985 2:10 PM EDT Msg: JGIF-2139-2652
From: OCEAN.DRILLING.TAMU
To: JOIDES.URI, HAWAII.INST, LAMONT, OREGON.STATE, RSMAS, NSF.OCE.ODP, J.CLOTWORTHY, R.MCDUFF, W.NIERENBERG
CC: OCEAN.DRILLING.TAMU
Subj: WEEKLY REPORT

May 20, 1985

TO: JOIDES.URI, HAWAII.INST, LAMONT, OREGON.STATE, RSMAS, NSF.OCE.ODP, J. CLOTWORTHY, R. MCDUFF, W. NIERENBERG

FROM: TAMU/ODP

The following is a summary report from the JOIDES Resolution for the week of May 12 - May 18.

DRILLING OPERATIONS:

May 13 - Hole 638C. Assembly re-entry cone. Run re-entry cone with 40 M of 16" casing and jet in same. Jet in Core/casing to 4712M. Drill ahead to 4718. POOH for rotary coring assembly. RIH with RCB. Run Mesotech sonar or sandline attempt re-entry. Firm formation encountered 17 M up inside of 16 inch casing - Pull up for second re-entry attempt. Second re-entry attempt - same result as first attempt, missed stab into core. Ran EDO Sonar tool for third re-entry attempt. Stabbed cone after five hours of scanning. Drill ahead to 5017 M. Survey at 4853 M - 1 deg, at 4938 M - 3/4 deg. Drill 5084 M and begin coring. Core to 5104 M. While retrieving #2 core upper latch assembly Backed off core BBL. Barrel falling back to bottom caused core to be forced out top of C/B and lodge in drillpipe. Round trip drillpipe to retrieve core barrel. RIH and run Mesotech Sonar successful re-entry

SCIENCE REPORT

Since the completion of pilot Hole 638B on May 12, the JOIDES Resolution has attempted to establish re-entry Hole 638C (42 degrees 08.308 N 12 degrees 11.827 W) approximately 30 miles South of the pilot hole. Three attempts were required as hard fill (or a formation) was hit approximately 17 meters above the 16" casing on the first two efforts. The third re-entry attempt was successful and at present three cores have been recovered. Core 638-3 contains Valangian/Hauterivian sandy turbidite beds.

LG/wj

85/480

Posted: Tue May 28, 1985 11:29 AM EDT Msg: MGIF-2146-3298
From: OCEAN.DRILLING.TAMU
To: JOIDES.URI, HAWAII.INST, LAMONT, OREGON.STATE, RSMAS, NSF.OCE.ODP, J.CLOTWORTHY, R.MCDUFF, W.NIERENBERG
CC: OCEAN.DRILLING.TAMU
Subj: WEEKLY REPORT

May 28, 1985

FROM: TAMU/ODP

The following is a summary report from the JOIDES Resolution for the week of May 20 - 26.

DRILLING OPERATIONS

May 20, Hole 638C. Run to T.D. at 5104 M after re-entry. Core to 5152m. May 21, Core to 5220m. May 22, encountered hole trouble and stuck pipe from over pressured sand stratum at about 5185m. Attempted to sever drill collar but only ruptured body of collar. Drill string came free while circulating and preparing second severing shot. Hole filled with mud and abandoned at 5220m T.D. because of adverse hole conditions.

May 23, Hole 638C/639A. Recover drill string, Lay out damaged D.C. and magnaflux adjacent connections. Move to site 639, 2.3 N.M. WSW of site 638. R.I.H. and core from mudline at 4735m to 4747m.

May 24, hole 639A. Core to 4824m. Bad hole conditions and pipe sticking beginning at 4805m. Apparent flowing sand causing pipe to stick and bit to plug during attempts to retrieve stuck inner core barrel. Forced to pull string from 2824m T.D. to recover inner barrel. Loose bolt in latch assembly had caused barrel to jam.

May 26, Hole 639B, offset rig 9/m west, R.I.H. seafloor at 4707m too firm to spud. Offset 9/m further west. Drill from seafloor at 4758m to 4821m. Core to 4834m.

SCIENCE OPERATIONS

Hole 638C (42 degrees 09.2N 12 degrees 11.8W; water depth 4674m below sea-level) was a reentry hole planned to core from an interval equivalent to the base of Hole 638B, which terminated in upper Valanginian/lower Hauterivian turbidite sandstone, through the underlying formations to crystaline basement. Unfortunately, bad hole conditions required that Hole 638C be abandoned. The sediments recovered from Hole 638C are equivalent to the upper Valanginian/lower Hauterivian turbidite sandstone recovered from Hole 638B.

After completion of Hole 638C, the JOIDES Resolution moved about 2.3 km west south-west of Site 638 to a position where the seismic reflector, believed to mark the top of the carbonate platform, is close to the sea floor. The beacon for Site 639 was dropped at 0946 hrs, May 23, at 42 degrees 08.5N 12 degrees 14.9W.

Nine cores consisting of Quaternary to lower Createaceous nannofossil ooze overlying lower Valanginian or Berriasian calcareous claystone, marlstone, sandstone, and dolomite where recovered from Hole 639. Core-barrel 10 became stuck in the hole and initially could not be retrieved. Core barrel 10 was recovered by pulling the pipe out of the hole and found to contain dolomite biscuits. The JOIDES Resolution offset about 300 feet west (down slope) of Hole 639 and spud Hole 639B (42 degrees 08.5N 12 degrees 14.9W.)

The mudline core recovered from Hole 639B consisted of upper Pleistocene calcareous clay, marl, and clayey ooze. After a wash interval dolostone/dolomite limestone was cored. Hole 639B was also abandoned because of the high torque difficulties similar to those at Hole 639. The JOIDES Resolution is currently offsetting an additional 300 feet to the west to attempt Hole 639C.

85/507

Subj: WEEKLY SHIP REPORT

June 4, 1985

TO: JOIDES.URI

FROM: TAMU/ODP

The following is a summary report from the JOIDES Resolution for the week of May 27 - June 2.

DRILLING OPERATION

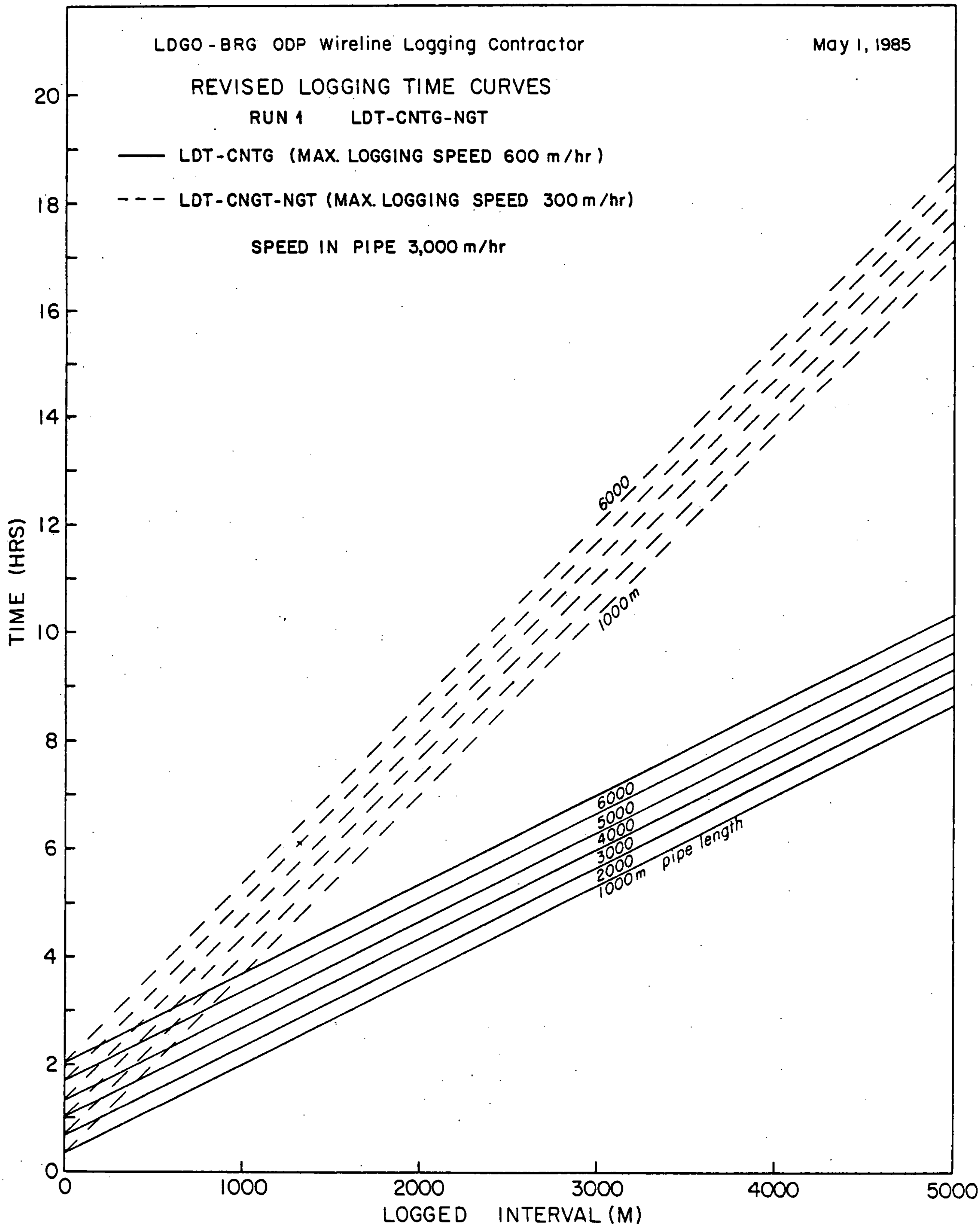
May 27 - Hole 639B/639C. Cored hole 639B to 4838 (80 M PEN) abandoned due to high torque, sticky formation. Spud hole 639C - cored to 4891 m (99m PEN.) abandoned at 4891 m due to high torque.

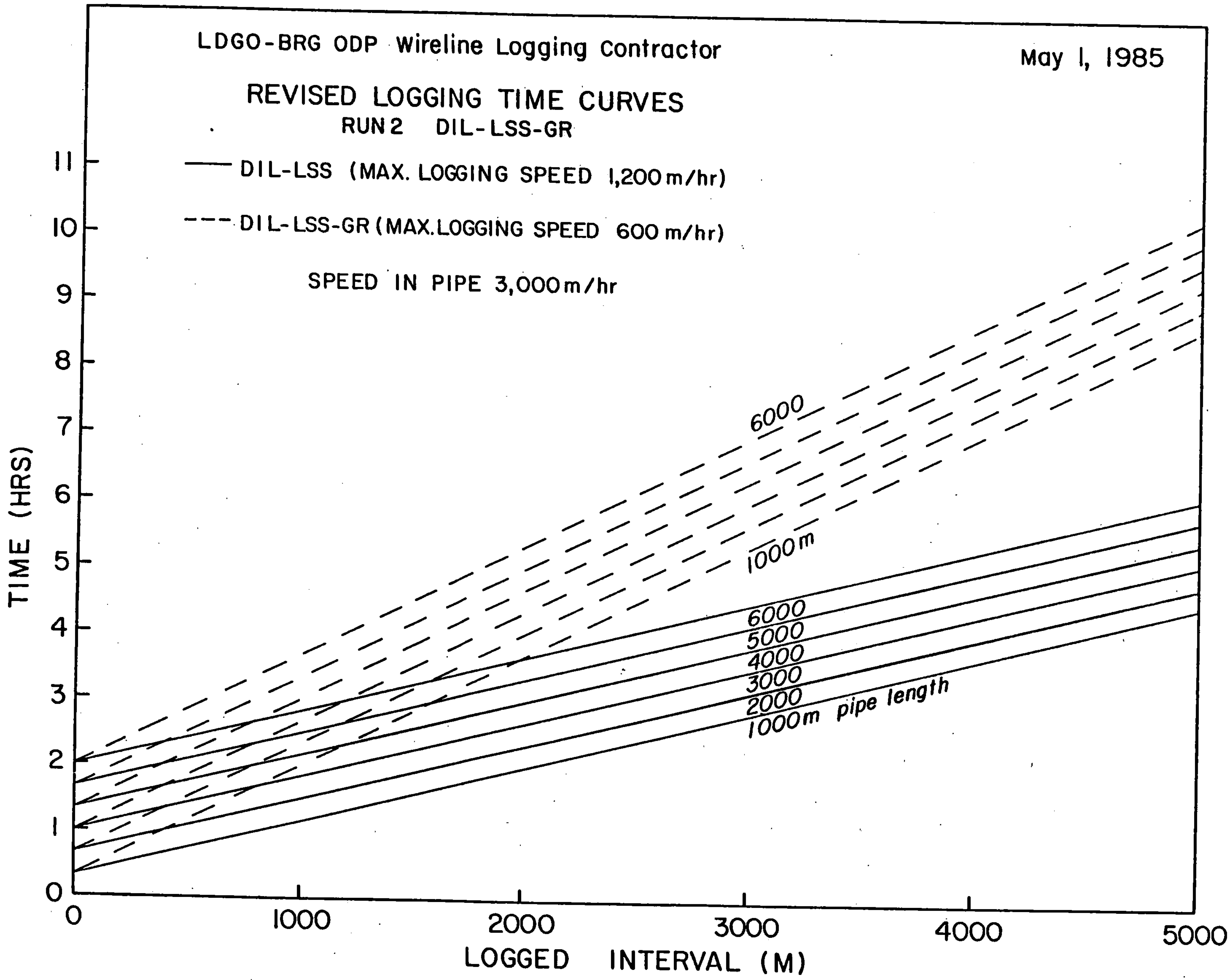
May 29 - May 31 - Hole 639D, washed 177 m to 4930 m - begin coring. Retrieve core number 5 from 4969m. Cored from 4969 to 5027m. After retrieving core number 13 at 5046 m, bit failed die to lost core. Attempt to release bit released. Freed stuck drillpipe with 100 k overpull. Clean hole with Gel sweep. Ran suite of three logs.

June 1 - Hole 639D/639C, Rig down logging tools/pooh. Return to hole 639C. RIH to 4656. Run Mesotech sonar. Scan +/- 6 hours stab at 2307 hours - retrieve sonar tool. RIH to 4981, bit bridge - reamed to 5021 m. Reamed 2nd bridge 5012 - 5220 m condition hole to log.

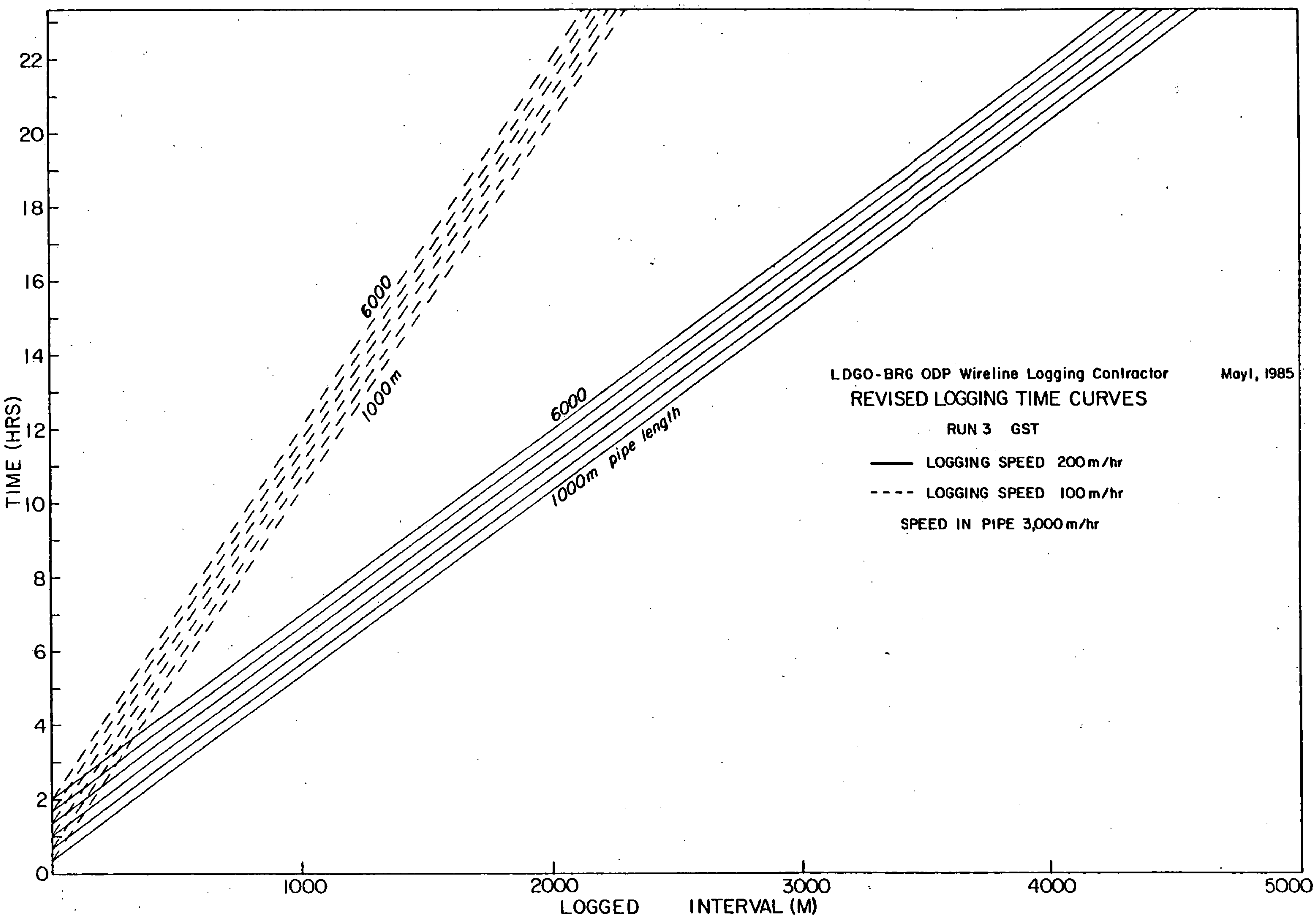
SCIENCE REPORT

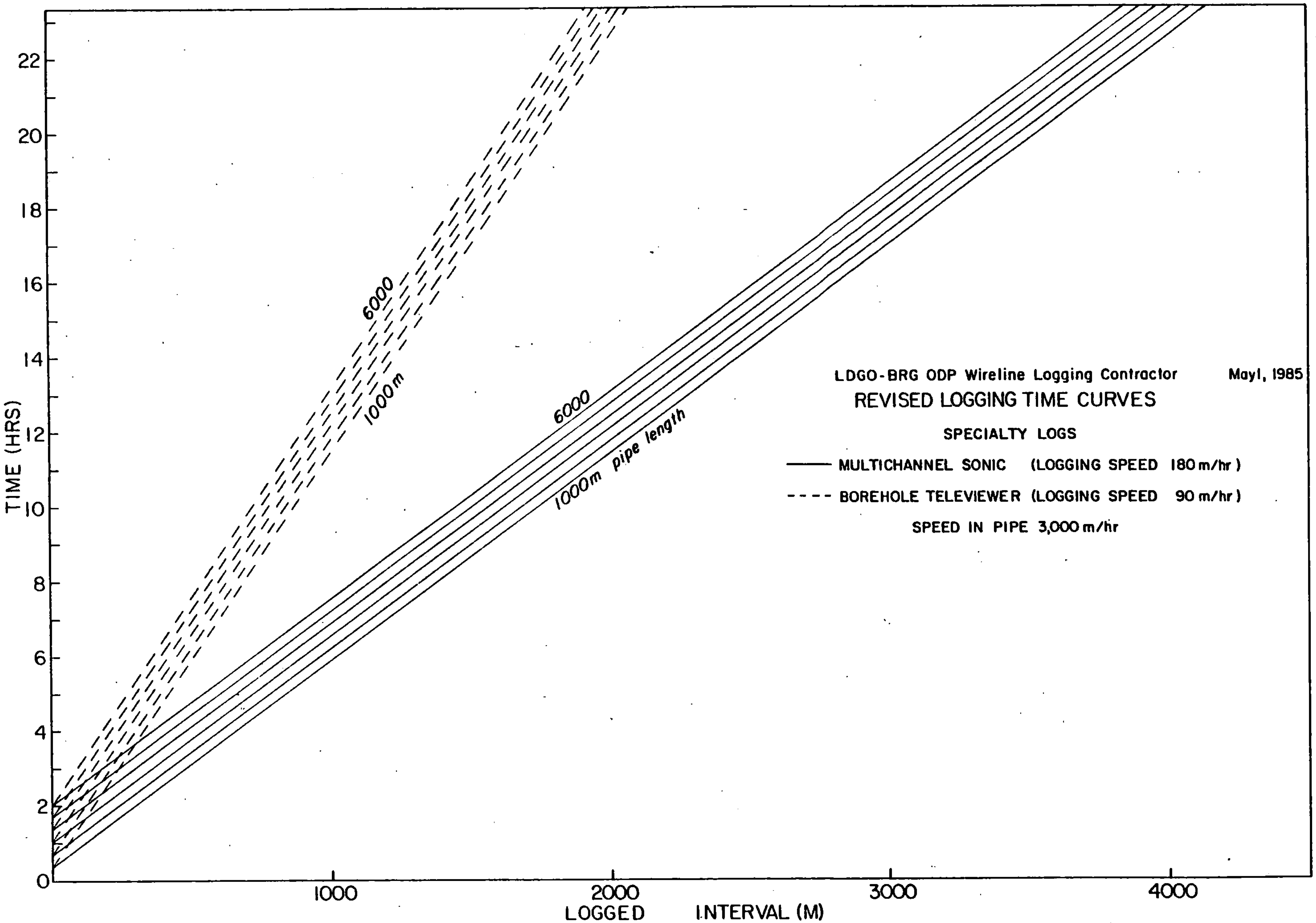
The JOIDES Resolution continued coring attempts at Site 639. Four cores were recovered from Hole 639B (42o 08.5N 12 o 14.9W) before problems with high torque and sticking forced the hole to be abandoned. Calcareous clay, marl, clayey ooze and dolostone/dolomitic limestone were recovered. The ship offset 100 meters west and established the mudline at Hole 639C. Twenty-one meters were cored from 78 to 99 meters subbottom when excessive torque and over-pull required pulling out of the hole. Pliocene nannofossil marl, clayey ooze and dolostone were recovered. The JOIDES Resolution moved an additional 200 meters west and commenced coring Hole 639D (42o 08.618N 12o 15.247W). Fourteen cores were recovered from this hole before fill-in and bridges in the hole required coring to stop. Pliocene nannofossil marl underlain by dolostone/dolomitic limestone underlain by limestone with sandstone, marlstone and calcareous silt were recovered from this hole. Hole 639D was logged using the Dil-Caliper-Sonic Gamma Ray log, the LDT-CNL NGT log, and the Multi-Channel/Sonic log. The JOIDES Resolution is currently returning to Site 638 (42o 08.618N 12o 15.247W) for reentry and logging.


LDGO - BRG ODP Wireline Logging Contractor
May 1, 1985
REVISED LOGGING TIME CURVES
RUN 1 LDT-CNTG-NGT
LDT-CNTG (MAX. LOGGING SPEED 600 m/hr)
LDT-CNGT-NGT (MAX. LOGGING SPEED 300 m/hr)
SPEED IN PIPE 3,000 m/hr
6000
1000m
6000
5000
4000
3000
2000
1000m pipe length
TIME (HRS)
0
2
4
6
8
10
12
14
16
18
20
0
1000
2000
3000
4000
5000
LOGGED INTERVAL (M)



LDGO-BRG ODP Wireline Logging Contractor
May 1, 1985
REVISED LOGGING TIME CURVES
RUN 2 DIL-LSS-GR
DIL-LSS (MAX. LOGGING SPEED 1,200 m/hr)
DIL-LSS-GR (MAX. LOGGING SPEED 600 m/hr)
SPEED IN PIPE 3,000 m/hr
6000
1000 m
6000
5000
4000
3000
2000
1000 m pipe length
TIME (HRS)
0
1
2
3
4
5
6
7
8
9
10
11
0
1000
2000
3000
4000
5000
LOGGED INTERVAL (M)


LDGO-BRG ODP Wireline Logging Contractor
May1, 1985
REVISED LOGGING TIME CURVES
RUN 3 GST
LOGGING SPEED 200 m/hr
LOGGING SPEED 100 m/hr
SPEED IN PIPE 3,000 m/hr
6000
1000m
6000
1000m pipe length
TIME (HRS)
0
2
4
6
8
10
12
14
16
18
20
22
1000
2000
3000
4000
5000
LOGGED INTERVAL (M)



LDGO-BRG ODP Wireline Logging Contractor
May1, 1985
REVISED LOGGING TIME CURVES
SPECIALTY LOGS
MULTICHANNEL SONIC (LOGGING SPEED 180 m/hr)
BOREHOLE TELEVIEWER (LOGGING SPEED 90 m/hr)
SPEED IN PIPE 3,000 m/hr
6000
1000m
6000
1000m pipe length
TIME (HRS)
0
2
4
6
8
10
12
14
16
18
20
22
1000
2000
3000
4000
LOGGED INTERVAL (M)

OTC 4989

Scientific Ocean Drilling: An Overview of the Ocean Drilling Program

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Introduction

The Ocean Drilling Program (ODP), the successor program to the Deep Sea Drilling Project [1-3], is a long term (10-year) international program of scientific ocean drilling with Texas A&M University (TAMU) as the operating institution. TAMU/ODP receives scientific direction from the Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES), an international group of scientists. The National Science Foundation (NSF) funds the program with contributions from non-U.S. countries through the Joint Oceanographic Institutions, Inc. (JOI, Inc.), a not-for-profit consortium of the 10 U.S. oceanographic institutions which comprise JOIDES.

Role of the Science Operator

TAMU's ultimate responsibility as science operator of the Ocean Drilling Program is to collect cores from beneath the floors of the world's oceans and to assure that adequate scientific analyses are performed on these samples. In order to properly discharge this major responsibility, TAMU, under the scientific guidance from the JOIDES community, was responsible for the lease-procurement and conversion of a dynamically-positioned drillship with riser capabilities, and for the outfitting of the drillship with scientific and drilling equipment and the onboard laboratories for scientific ocean drilling. In addition to these tasks, TAMU's responsibilities include:

i. Staffing scientific and technical support personnel. These personnel include: a) the shipboard scientific staff; typically about 25 in number that represent a team of specialists in the various fields of geosciences (e.g., paleontology, petrology, sedimentology, geophysics, etc.) drawn from universities, government, and industry; and b) a highly technical support crew, also about 25 in number, who are TAMU/ODP employees. These include electronic and marine technicians, curatorial representatives, computer experts, and an experienced drilling superintendent, who oversees the drilling operations and acts as a liaison between the drilling and scientific activities.

ii. Maintaining shipboard laboratories necessary to meet the needs of the shipboard scientific staff. These laboratories have been equipped with state-of-the-art research equipment and computer facilities, and include laboratories for sedimentology, paleontology, geochemistry, paleomagnetics, physical properties, meteorology, and geophysics. Also included are technical facilities such as computer, electronics, word processing and photographic.

iii. Developing an operations plan and drilling schedule which includes, among other activities, ensuring equipment availability, defining operational limitations, providing an adequate supply of consumables (beacons, drillbits, etc.), assessing safety and operational procedures prior to drilling, and ensuring the organized transition of personnel and supplies between cruises.

iv. Improvement of existing drilling and downhole techniques and development of new ones which may be useful to the needs and goals of the JOIDES scientific community at large. These include understanding the physical characteristics of the drilling system, so that the operating limits of very long drill strings may be established; improving core quality, orientation and recovery; and developing the capability of hard rock spudding at sea.

v. Storing, archiving, and disseminating core and other scientific data collected during the course of the program. TAMU is curator of all cores obtained in the Ocean Drilling Program. It maintains core repositories, state-of-the-art shorebased scientific laboratories, and computer facilities for the study of the cores.

vi. Publication of an authoritative series of reference books which summarize the objectives and results of each cruise. The reports include pre-drilling geological/geophysical site surveys, objectives, planning documents, core records, descriptions of physical and geochemical measurements, logging data, core photographs, core descriptions, paleontology and petrological reports and syntheses. Shipboard post-cruise science documents are also

References and illustrations at end of paper.

included. These volumes are a modified version of the Initial Report Series [4] previously published by the Deep Sea Drilling Project. In addition, TAMU provides public information such as press releases, informational brochures, films, shipboard tours, and speaking engagements presented by the scientific and technical staff.

Drillship Selection and Conversion

TAMU made a contract award in March 1984 with Underseas Drilling, Inc. (UDI) for the use of the drillship SEDCO/BP 471 (commonly referred to as the JOIDES RESOLUTION, Figure 1). This 470-foot long drillship is under contract for 5 years with options to continue for an additional 10 years.

The JOIDES RESOLUTION is capable of deploying 30,000 feet of drill string, and conducting drilling operations in water depths up to 27,000 feet. It utilizes a computer-controlled dynamic positioning system to keep the ship stabilized over a specific location. The ship is 70 feet wide, with a displacement of 16,596 long tons, and a derrick that towers 200 feet above the waterline. The JOIDES RESOLUTION is fully capable of seasonal operations in high latitudes.

Although the initial phase of the Ocean Drilling Program involvesonly riserless drilling, drilling with riser will be required to address some of the problems that have been targeted for scientific ocean drilling. The drillship is capable of deploying a riser up to 6,000 feet long.

The complex job of converting a vessel from an offshore petroleum drilling rig to a floating scientific research center was started immediately after the contract award. In order to meet the tight schedule, a group referred to as the JOIDES Advisory Group on Equipment and Laboratories (JAGEL) was formed to provide advice to ODP/TAMU. ODP also contracted with an architectural firm with experience in laboratory design to assist in the development of laboratory plans. The design of scientific laboratories was completed in late April 1984, and only minor changes were made thereafter.

A seven story main laboratory structure was constructed on the starboard side of the vessel between the rig floor and the crew accommodations (Figure 2). In addition, a library and study area was installed on the main deck forward of the bridge, and an underway geophysics laboratory was constructed on the fantail under the helicopter deck. Additional scientific, office and storage space has been provided as well on other parts of the ship for a total of about 12,000 sq. ft. of science space.

In addition to the scientific laboratory spaces, some major changes were made to the ship's systems and drilling equipment as outlined below.

1. The ship's dynamic positioning system underwent major modification to include capability for long-base line and short-base line systems, as well as the original ultra-short base line system. This system, which performed remarkably well in hostile sea conditions during the shakedown cruise, enables the ship to maintain a fixed position in relation to the hole being drilled in the sea bottom. It is supported by 12 powerful 800 hp thrusters, as well as by two main propellors each driven by six 750 hp motors.

2) The world's largest heave compensator, a 400-ton device which minimizes the vertical motion of the drillpipe relative to the seafloor, was installed.

3) No changes were required to the substructure. However, the derrick and guide rail assembly were reinforced to withstand the dynamic loads resulting from the installation of the top drive unit and heavier heave compensator, traveling block, connector, and swivel.

4) The horsepower on the drawworks was increased from 2000 hp to 2800 hp by installing larger motors, and the braking capacity was doubled by adding a second electric brake. The capacity of the drawworks-mounted auxiliary sand reel was increased. The main-drum was modified to a 4.4 cm diameter wireline instead of the 3.8 cm diameter type previously used.

5) A new crown and traveling block was installed with larger sheaves to accommodate the increased drill string load and to allow use of larger wireline 4.4 cm in diameter. A weight sensor was installed on the crown block to provide improved load indications. The traveling block is specially designed to permit running a coring line and 10.2 cm OD coring tool throughout the center of the block.

6) New designs of the hook and swivel and electric top drive unit were made to meet ODP needs.

7) A 9144 meter drill string and the necessary bending restraints for installation on the ship were designed. This is a tapered drill string design using 12.7 cm and 14 cm diameter high-strength drill pipe. A section of special heavy wall drill pipe is also available for use when drill string loads are high and penetration rates are slow. This pipe is used only at the upper end of the drill string when the pipe is in contact with the bending restraint member on the ship. All components of the drill string, including drill collars, have a 10.5 cm minimum ID t accommodate the coring tools. An automated dual elevator is used at all times when handling drill pipe to prevent slip damage to the high-strength pipe.

8) The pipe racker was modified to increase its capacity in order to accommodate a longer drill string. Also, an iron roughneck was installed on the rig which, when used with the dual elevator system and the pipe stabber now on the rig, eliminates the necessity of man-handling the pipe and improves safety on the rig floor.

Scientific Laboratories and Equipment

The scientific equipment onboard the JOIDES RESOLUTION is located in the seven-story, 12,000 sq. ft. laboratory stack. The laboratories contain the most complete array of state-of-the-art seagoing scientific research equipment available. They include the following.

1. Sedimentology Laboratory - Important innovations include an enclosed core-splitting room to diminish the distraction caused by the noise and contamination of this activity, a new core photo table designed for

maximum clarity of photographs, and new research-quality petrographic and stereo microscopes with photographic capabilities and compatibility with a video system for group viewing. Terminals are available for processing and storing the core descriptions and sampling data on the main computer.

2. Physical Properties Laboratory - This laboratory is designed for study of both soft sediments and hard rocks. The equipment here includes the Gamma Ray Attenuation and Porosity Evaluator (GRAPE). This instrument, which has been redesigned to scan cores vertically, uses a radioactive beam that scans each whole core section. The amount of radiation that passes through the sample is related to the density of the core. A computer monitors the data and displays it at a dedicated terminal. A velocimeter measures the velocity of sound in the core samples. These measurements are automated to read out time and sample thickness on a dedicated terminal. Additional physical properties equipment include a pycnometer for volumetric sample measurement, a thermal conductivity device to analyze the sample's ability to transfer heat, an X-ray device to record the internal structures of the samples, and a vane shear device with a torque transducer to measure the strength of the sediment samples.

3. Paleomagnetics Laboratory - Before the cores are split, they are passed through a cryogenic magnetometer to measure the strength and polarity of the remanent magnetic field. This information is used to reconstruct the history of the earth's magnetic field and provide fine-scale stratigraphic data. The superconducting magnetometer is being used for the first time in a seagoing laboratory; it can measure much more sensitively thanthe more common spin magnetometers and is much faster. A specially designed sample handler will feed the uncut core through the cryogenic magnetometer, giving pass-through capabilities for whole core analyses as well as analyses of discrete samples. The paleomagnetics laboratory also contains a low-field alternating field demagnetizer and a susceptibility meter. A single-axis A/F demagnetizer which rises to peak fields of 1000 oersteds will be used for demagnetization of discrete samples. A spin magnetometer will be used for strongly magnetized samples such a basalt.

4. Chemistry and Gas Laboratory - This lab contains both organic and inorganic geochemical equipment. The inorganic equipment is primarily used for analyses of interstitial pore water squeezed from drilled core sediments. Instruments used to make these analyses include a dual-channel ion chromatograph with both cation and anion columns; an auto titrator for analysis of alkalinity, pH, chlorinity, magnesium, and calcium; and a refractometer for salinity measurements. Carbonate bombs and a carbon determinator are used for measuring carbonate percentages in sedimentary materials.

The organic equipment is primarily used for hydrocarbon monitoring of core material. Two gas chromatographs connected to a lab automation system will provide fast, accurate measurement of C1-C6 gases and nearly instantaneous reports on C1/C2 ratios and hole gas profiles. Carbon, hydrogen, and nitrogen will be measured by an elemental analyser and microcomputer data station. Other features in the lab include three fume hoods (hydrofluoric, general, and organic solvent), a nanno pure-water filtration system, and a sophisticated computerized microbalance system.

5. Petrology and Thin Section Laboratory - In the thin section laboratory, pieces of rock are taken from the cores and made into optical thin sections for microscopic study of the minerals. The equipment in this laboratory includes special diamond saws, grinders, vacuum impregnation units, and polishing machines. After the thin sections are made, they are analyzed in the petrology laboratory where microscopes with reflected light, as well as photographic and video capabilities are available.

6. XRF/XRD Laboratory - The X-ray diffractometer (XRD) is usedto investigate and identify minerals within the sample. It is fully microprocessor-controlled with automatic sample loading and is configured with Cu X-ray tube and monochromator. The X-ray fluorescent machine (XRF) uses X-rays to investigate the chemical composition of rocks and to aid in identification of major and minor trace elements to a high degree of accuracy. This instrument is also fully microprocessor-controlled with automatic sample loading.

7. Paleontology Laboratory - Samples are taken from the cores for age determination based on microfossils --tiny skeletons of marine organisms typically less than a millimeter across and typically composed of calcium carbonate or opaline silica.

The laboratory is subdivided into a paleo-prep lab and a microscope study room. The paleo-prep lab contains the necessary equipment and supplies for processing samples and making slides. Equipment includes a vacuum filtration system for rapid sample drying, slide-warmers with benchtop fume absorbers, and a laboratory glassware washer. The microscope study room contains the microscopes and reference materials required for micropaleontological research. The optical equipment includes a photomicroscope with film-labeling capabilities, two research-quality polarizing microscopes with video-monitor capability, and four stereo microscopes with built-in illuminators and camera attachments. The paleontological reference library contains collections of critical texts, journals and reprints.

8. Scanning Electron Microscope (SEM) Laboratory - The SEM is used to identify and examine fossil species, as well as to examine the fine scale features of sediment grains. An electron beam scans a prepared sample and relays an image of the surface features of a sediment particle magnified up to 20,000 X. Complete SEM sample preparation facilities are available.

9. Photographic Laboratory and Darkroom - This is a completely self-contained unit capable of producing black and white prints and color transparencies onboard the ship. Equipment includes a slide duplicator, 35 mm and 4X5 camera systems, a copy stand and video camera. Its primary functions are to photograph the cores while they are fresh and to develop and print core photos, seismic records, and other scientific records.

10. Downhole Instrumentation Laboratory - This laboratory provides support for logging, re-entry tools

and other special downhole experiments. The space is divided into two sections: a wet lab area for tool storage, cleaning and repair; and a dry lab area for the computer and electronic support.

11. Electronics Shop - This space is completely equipped with test equipment and spare electronics parts for repair work on shipboard laboratory equipment.

12. Refrigerated Core Storage, Cold Storage and Freezer Spaces - The cores are stored in refrigerated areas to preserve their moisture content. A cold storage area for chemical and photographic supplies and a freezer to keep frozen samples for certain chemical studies are also on board.

13. Shipboard Science Library - The library contains basic references, a complete set of Deep Sea Drilling Project Initial Reports, maps and key monographs representing various fields of oceanography. The holdings are categorized using the Library of Congress system.

14. Underway Geophysics Laboratory - While the ship is in transit between drill sites, digital single-channel seismic reflection and sea floor depth profiles are collected and processed in this laboratory. Basic processing includes gain recovery, deconvolution, filtering, trace scaling, equalization and mixing. The processed data are graphically displayed on a 22-inch plotter. The primary sound sources are waterguns, although airguns are onboard as a back-up system. The changes in the earth's magnetic field are also measured by towing a magnetometer behind the ship between sites.

Computer Facilities

The JOIDES RESOLUTION is equipped with a research oriented computer system which is designed to perform as many of the routine clerical and arithmetical tasks as possible. The heart of this computer system is the "librarian" machine which sits in the computer room in the ship's laboratory, and which stores and retrieves the data being collected by the multitude of electronic workstations which are distributed throughout the vessel. The librarian can access data bases at Texas A&M University and elsewhere via the ship's satellite communications system.

Tasks that will be performed by electronic workstations distributed throughout the vessel include:

i. underway geophysical data collection and display;
ii. core inventory, sampling and descriptions;
iii. chemistry and gas laboratory data collection and processing;
iv. physical properties laboratory data collecting and processing;
v. monitoring of engineering development and operations experiments;
vi. wireline logging;
vii. paleontological laboratory support;
viii. petrographic descriptions;
ix. word processing; and
x. drafting.

Additional facilities include line printers, plotters (up to 48x36 inch format), laser printer, 9-track 800/1600 bpi tape drives, and access to current versions of the ODP bibliographic and science data bases.

Shakedown Cruise

After the conversion of the ship and installation of the new drilling equipment and science laboratories, the JOIDES RESOLUTION commenced its first cruise.

Leg 100, the inaugural voyage of the Ocean Drilling Program, was a sea trial and shakedown cruise to determine the ship's readiness for scientific ocean drilling. This first cruise departed Pascagoula, Mississippi, on 11 January 1985 and arrived in Miami, Florida, on 29 January 1985 after 18 days of testing all of the drilling systems and scientific laboratories and giving the drilling and scientific/technical crew an opportunity to train on their respective equipment.

During this inaugural cruise, three holes were drilled at Site 625, near De Soto Canyon, west Florida Shelf (Figure 3). In addition to testing the ship's operational capabilities, the scientific objectives were to document the sedimentologic, paleontologic, geochemical, geotechnical, and geomagnetic characteristics of the sedimentary sequences, and to correlate alternating sedimentary and erosive sequences to world-wide sea level changes over the last several million years. The principal operational objectives were to test the rotary, advanced piston coring (APC) and extended core barrel (XCB) drilling and coring systems and to familiarize the drillship's crew with core handling and sampling procedures.

The deepest of the three holes drilled was Hole 625B, which penetrated to 235.2 meters subbottom. This hole was continuously hydraulic-piston-cored with the APC through 197.1 meters of a Plio-Pleistocene section. The hole was further deepened with the XCB to its termination depth in the Lower Pliocene. At the third hole (625C), an attempt was made to obtain a complete section of the uppermost Quaternary by overlapping HPC cores taken in the previous hole between 5 and 44.5 meters subbottom. Recovery of a continuous Plio-Pleistocene sedimentary section to the Lower Pliocene (N N 18) was made.

In addition to testing the rotary coring, APC and XCB systems, a re-entry cone was deployed on Leg 100 and the re-entry sonar tools were checked. The original decision was to perform these operational tasks in the Florida Straits in regions where Leg 101 scientists had plans for a re-entry site (BAH-1, Figure 3). However, these sites were near the strongest portion of the Florida current (in places greater that 3 knots). Two potential Leg 101 re-entry sites were aborted when the drill pipe started strumming and knocking against the guide cone due to the strong surface current. At a third site in the Florida Straits, the currents were less, but beacon problems occurred. The re-entry tests were eventually completed successfully in a region away from the center of the current.

Program for the First Two Years of Drilling

Some of the most important problems to be resolved by scientific ocean drilling include the following.

1. The origin and composition of the deep ocean crust.

Studies of "zero age" ocean crust will be addressed by drilling on the axis of the Mid-Atlantic Ridge. This will require a capability to spud in and set a re-entry cone on bare rock surface without the otherwise necessary 50 to 100 meters of stabilizing sediment. Cores from such a location will represent the most recently formed ocean crust and will yield unique data on the process of magma extrusion and sea floor spreading.

2. The early rifting stages of passive continental margin evolution.

The early rifting phase of passive margin development has been shown to involve some form of crustal stretching and thinning which leads to regional subsidence and to the faulting and tilting of large blocks of pre-rift sediments. These conditions are found off Spain, where drilling more deeply than ever into the older deposits should provide new insight to the problem. However, not all passive margins show these well developed, tilted blocks and listric faults. Portions of the Norwegian and East Greenland margins have sequences of seaward dipping reflectors, which recent studies suggest may be layered volcanics formed subaerially during initial rifting. Drilling in the latter regions will give new insight on margin development processes which are now poorly understood.

3. The active margin processes of fore-arc subduction, accretion and erosion, and of back-arc spreading, compression and volcanism.

Active continental margins offer a host of important problems. As regions of volcanism and earthquakes, they pose hazards to be studied. As regions of high temperatures, rapid uplift, and subsidence, they offer rich prospects for mineral resources. These margins, which are formed at the boundaries of convergent plates, are also regions where crust is being consumed by subduction and therefore are a critical part of the cycle of plate tectonics. Active margin areas which may be studied in the first two years of the Ocean Drilling Program are off Peru and Chile, where great trenches mark the underthrusting of ocean crust beneath South America; and north of the island of Barbados, where a vast wedge of accreted sediments overlies the zone where Caribbean crust is overriding Atlantic ocean crust.

4. The response of marine sedimentation to sea level fluctuations.

In a recently advanced theory, Vail et al., (1977) [5] have suggested that the onlap of coastal sediments seen in the geologic record is correlatable on a global scale and is therefore directly related to the rise and fall of sea level. Furthermore, Vail and his colleagues indicate that such sea level variations have occurred in time cycles of at least three orders, i.e., several hundred million years, 10-80 million years, and 1-10 million years. Clearly some basic control over geologic processes is involved, but not at all well understood, and further investigation is essential. This theory is being tested today in many places, but the Ocean Drilling Program will offer several good opportunities to examine the problem in areas where little drilling has occurred. In the Yucatan Basin of the western Caribbean, where thick sequences of clastic sediments overlie basement, and in the Bahamas, where massive chalk deposits undiluted by terrigneous sediments have accumulated at least since Mesozoic time, the existence of global unconformities can be investigated.

5. The changing pattern of ocean circulation through the geologic time as ocean sizes changed, shallow continental seas developed and vanished, and major inter-oceanic passages opened and closed.

Sediments throughout the oceans contain the imprint of the environmental conditions in which they were transported and deposited. Paleo-oceanography, the discipline which explores ocean environments of the past, interprets the clues in deep ocean sediments to piece together the picture of ocean circulation in times when continents were configured differently than today, and when atmospheric circulation was affected as well. Most of the areas of proposed drilling that are not overwhelmed by heavy influxes of terrestrial sediments will yield valuable paleo-oceanographic information. In the Yucatan Basin, the Bahamas, and in mid-ocean regions, drilling sites will be designated with this in mind.

Drilling objectives for the first two years' operation are now being formulated by the various Panels and Committees of JOIDES. Some possible areas for addressing these problems are shown in Figure 4.

Concluding Remarks

During the shakedown cruise (Leg 100), all of the onboard scientific, drilling and operational equipment was tested under varying sea conditions. The JOIDES RESOLUTION is an extremely stable ship that should meet the needs of the international scientific community for ten years or more.

JOIDES members are University of California, Columbia University, University of Hawaii, University of Miami, Oregon State University, University of Rhode Island, Texas A&M University, University of Texas, University of Washington, and Woods Hole Oceanographic Institution. Institutions in France, Canada, and the Federal Republic of Germany are also members, and the Japanese have announced their intentions to join. It is anticipated that the United Kingdom and a consortium of countries within the European Science Foundation will join as well.

References

AGI Reprint Series 1, Deep Sea Drilling Project Legs 1-25, American Geological Institute, Falls Church, Va., (1975), 93.

AGI Reprint Series 2, Deep Sea Drilling Project Legs 26-44, American Geological Institute, Falls Church, Va., (1976), 82.

AGI Reprint Series 4, Deep Sea Drilling Project Legs 45-62, American Geological Institute, Falls Church, Va., (1979), 78.

Initial Reports of the Deep Sea Drilling Project (at time of writing 81 volumes), U.S. Government Printing Office, Washington, D.C.

Vail, P.R., R.M. Mitchum, and S. Thompson III, (1977), Seismic stratigraphy and global changes of sea level, part 3: Relative changes of sea level from coastal onlap, in Payton, C., ed., Seismic stratigraphy - applications to hydrocarbon exploration: Am. Assoc. Petroleum Geologists Mem. 26, p. 63-81.

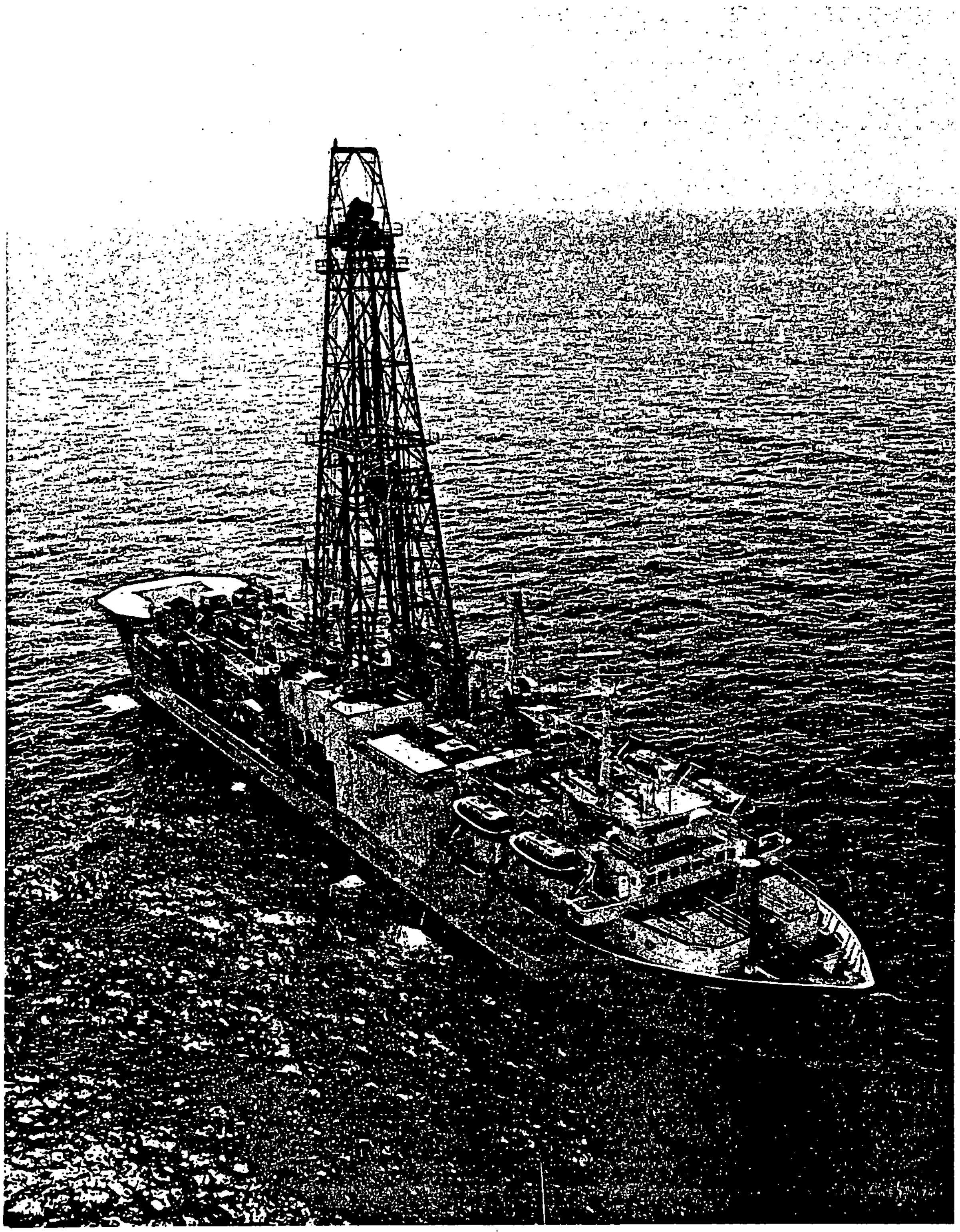

Fig. 1—The *Joides Resolution* (registered name *Sedco/BP 471*).

ODP DRILLING VESSEL

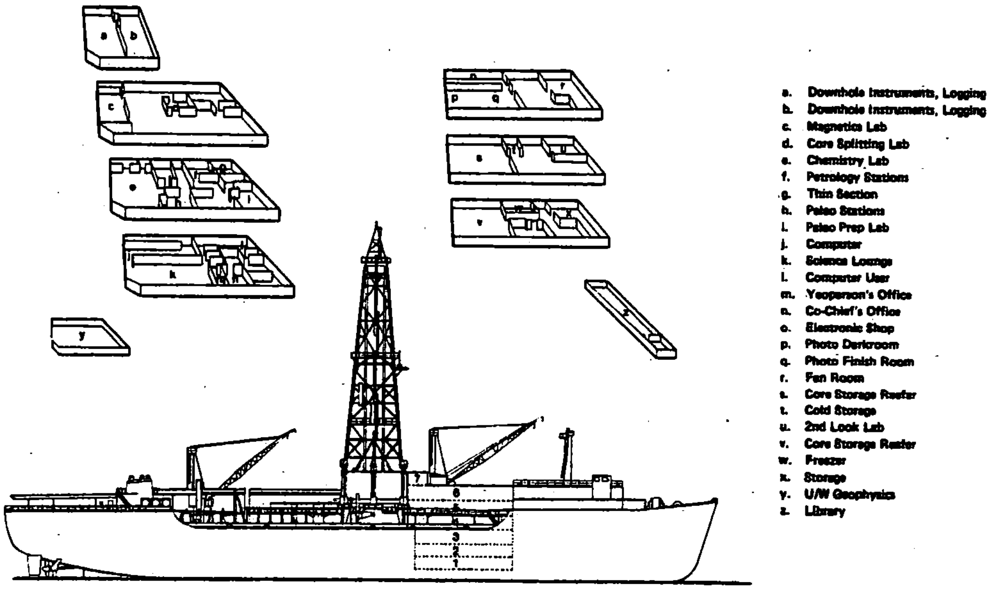

Fig. 2—Scientific work spaces aboard *Joides Resolution.*

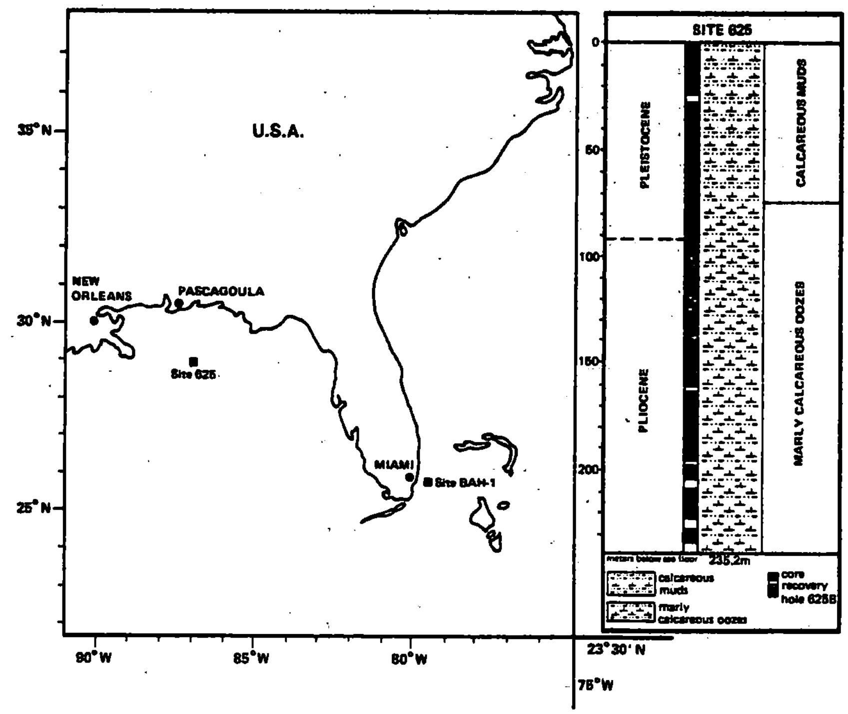

Fig. 3—Location map for Leg 100 and lithologic column for Site 625.

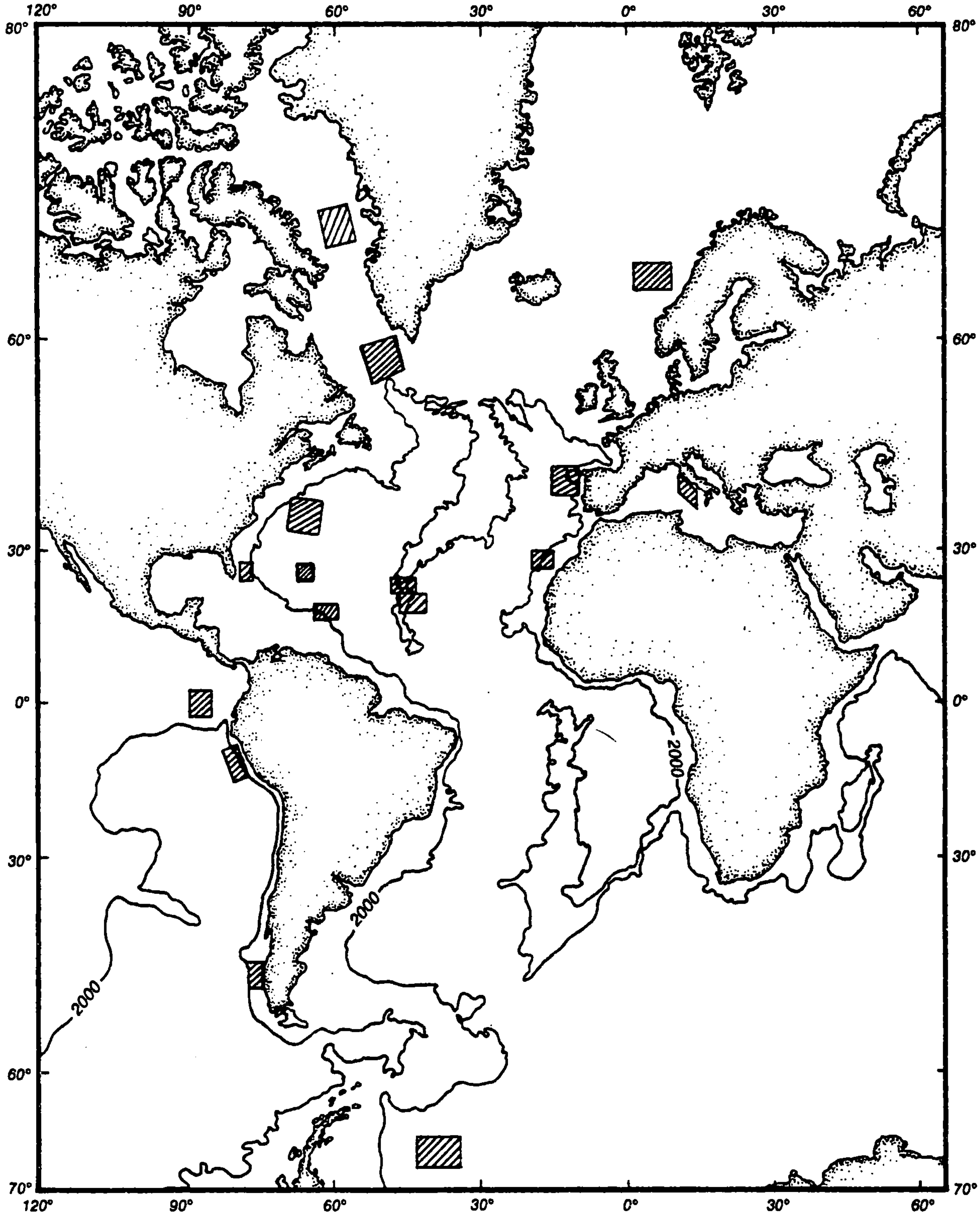

Fig. 4—Candidate drill sites for first 2 years of drilling.