JOIDES PLANNING COMMITTEE ANNUAL MEETING
28 November - 1 December, 1990
Kailua-Kona, Hawaii

AGENDA

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Additional Attachments

JOIDES MEETING SCHEDULE

Date	Place	Committee/Panel
1990		
27 November	Kailua-Kona, Hawaii	Panel Chairpersons
28 Nov.-1 Dec.	Kailua-Kona, Hawaii	PCOM
1991		
06-08 February*	College Station, TX	DMP
28 Feb.-02 March*	Chappel Hill, NC	OHP
March*	??	SGPP
05-06 March*	College Station, TX	SMP
12-14 March*	Tokyo, Japan	SSP
14-16 March*	La Jolla, CA	LITHP
14-16 March*	Washington, DC	BCOM
18-20 March*	College Station, TX	IHP
21-23 March*	??	TECP
04-05 April*	Austin, TX	PPSP
23-25 April*	Narragansett, RI	PCOM
June*	Cardiff, Wales	ex-IOP & Co-Chiefs
July 08-09*	Los Angeles, CA	TEDCOM
July 09-11*	San Diego, CA	EXCOM
20-22 August*	Hannover, Germany	PCOM
22-23 October*	Halifax, Canada	SMP
03 December*	Austin, TX	Panel Chairpersons
04-07 December*	Austin, TX	PCOM
1992		
14-16 January*	Bonn, Germany	EXCOM

*Tentative meeting; not yet formally requested and/or approved.

As of 11/16/90

ODP OPERATIONS SCHEDULE

Leg		Cruise Dates	Days at Sea	In Port
133 -	NE Australia	09 August-11 October 1990	62	Townsville 11-15 Oct 90
134 -	Vanuatu	16 October-17 December 1990	62	Suva 17-21 Dec 90
135 -	Lau Basin	22 December 1990 - 28 February 1991	68	Honolulu, 28 Feb-02 Mar 91
136	OSN-1	03 March - 20 March 1991	17	Honolulu 20 Mar 91 (Scientific Party Change)
137	Engineering 3A	21 March - 01 May 1991	41	Panama 01-05 May 91
138	E. Equatorial Pacific	06 May - 05 July 1991	60	Los Angeles 05-09 July 91
139	Sedimented Ridges I	10 July - 11 September 1991	63	Victoria 11-15 Sept 91
140	Engineering 3B	16 September - 13 November 1991	58	Panama 13-17 Nov 91

Revised 26 September 1990

JOIDES PLANNING COMMITTEE ANNUAL MEETING
28 November - 1 December, 1990
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AGENDA NOTES

Wednesday, 28 November 1990 (9:00 AM)

Item A.
Welcome and Introduction

1. Welcome and comments about meeting logistics (R. Moberly).

2. Introduction of PCOM members, panel chairpersons, liaisons and guests.

Item B.
Approval of Minutes

1. The attached revised draft minutes of the 14-16 August 1990 PCOM Meeting at Scripps Institution of Oceanography include corrections received at the JOIDES Office through 14 November.

2. ACTION Call for additional corrections or additions; call for approval.

Item C.
Approval of Agenda

1. Comments about scheduling of the meeting and organization of its agenda (J. Austin).

The two main purposes for the Annual Meeting are <u>to exchange information</u> among the JOIDES panels, the different parts of the ODP organization, and the Planning Committee (see Agenda **Items D., E., H.-K.**), and <u>to prepare the next one-year drilling plan</u>, in this case for fiscal year (FY) 1992 (~mid-November, 1991 - October, 1992). See Agenda **Items L.-N.**

Other important but subordinate purposes are: to discuss possible program renewal strategies (Agenda **Item F.**), hear recent scientific results from drilling off northeast Australia (Agenda **Item G.**), decide matters related to the various reports, and conduct routine PCOM business (Agenda **Items O.-T.**).

In oral presentations concerning their activities over the past year, panel chairpersons and liaisons should answer any questions addressed to them by PCOM previously, stress points that bear on future (particularly FY 92) planning, and raise any issues that need to be resolved at this meeting. Details can be left to the panel minutes (appended as attachments to this Agenda Book, if received at the JOIDES Office by 11/15/90). *(Note: Immediately following these reports, copies of any overheads used should be given to JOIDES Office personnel for inclusion as appendices to the minutes of this meeting.)*

a. Wednesday: Reports by liaisons to PCOM, the service panels and technical committees, and the *ad hoc* subcommittee of PCOM (STRATCOM) charged with showcasing ODP's accomplishments and considering renewal activities. Panel chairs will be encouraged to contribute to discussion among PCOM members regarding STRATCOM's recommendations. All parties are urged to keep their reports and related discussion to ~20-30 minutes, without sacrificing the charge to reporters as stipulated above. If/when complicated issues arise, time will be made available later for further discussion as feasible/appropriate (probably under Agenda **Item S.**).

b. Thursday: A scientific summary of recent results from Leg 133 will lead off, followed by a report of the annual panel chairpersons meeting (PANCHM, held Tuesday, 11/27) and associated discussion. Most of the rest of the day will deal with reports that bear more directly on FY 92 planning in the eastern Pacific, first by the thematic panels and then the pertinent detailed planning groups (DPGs). This will be followed by summaries of the status of engineering and technical developments by ODP subcontractors.

c. Friday: Preparation of the FY 92 drilling plan. Continued consideration of major issues, including planning requirements for the 1991 PCOM meetings. Panel chairpersons are urged to remain for as long as possible during these activities, to be available as possible sources of information for PCOM deliberations.

d. Saturday: Routine PCOM affairs, personnel decisions, and matters deferred from earlier in the week. Under Other Business (**Item S.**), potential PCOM action items derived from JOIDES Office perusal of recent panel minutes are listed: possible alternate uses of Leg 137 (Engineering 3A/504B) time if planned operations do not go as planned (diverse recommendations from thematic panels have been submitted), the request to establish another working group on offset drilling, the issue of "add-on" or "piggy-back" science to scheduled drilling legs (This was a topic for discussion at recent thematic panel meetings and will also be taken up at the Panel Chairpersons meeting.), the question of whether to discontinue whole-round sampling/freezing for organic geochemistry, and a discussion of recent SEDCO concerns over the growing length of ODP drilling legs. Other items for discussion may be brought forward at the outset of the meeting, or may arise Thursday as a result of PANCHM deliberations.

2. ACTION Call for additions to Agenda **Item S.**; call for other additions or revisions; call for agenda approval.

Item D.
ODP Reports by Liaisons to PCOM

1. EXCOM (J. Austin, liaison. R. Moberly was also present at this meeting, and he may comment as he feels appropriate.)

Results of the EXCOM meeting held on 2-4 October in Villefranche-sur-Mer, that are of interest to PCOM, are summarized below:

- Soviet participation. At the time of the meeting, participation of the USSR in ODP had not yet been approved by the U.S., but such approval was expected in the near future. (An official invitation was extended on 31 October, see pertinent correspondence attached to this Agenda Book.) EXCOM passed the following **motion**:

The EXCOM reaffirms its desire to have the USSR Academy of Science re-establish membership in the ODP at the earliest possible date. Provided that an invitation for restoration has been extended by the NSF, the EXCOM requests that the USSR send observers to the future PCOM and EXCOM meetings.

Following internal Soviet review, full participation by the USSR in ODP is possible by early 1991. Panel chairs and PCOM members are advised that observers may attend meetings in advance of formal membership and will have the status of guests, without voting rights. One area in which PCOM could work with its Soviet observer (not yet identified) is in the identification of appropriate Soviet panel members, in order to expedite complete entry of the USSR into ODP's scientific advisory structure on its achievement of full member status.

- Aiding renewal. Austin reviewed recent STRATCOM activities and recommendations for EXCOM. One such recommendation, a COSOD-type scientific meeting to showcase ODP, was the subject of some discussion. EXCOM felt that the goals of such a meeting must be better defined, and some doubts were expressed as to its ability to attract members of other earth science research initiatives and to influence decision-makers. Opinions were expressed that the timing of the meeting (Spring 1992) would be too late to influence the renewal process and that in any case, it would have little or no influence on renewal outside the country in which it was held. Furthermore, any disagreement on scientific plans resulting from the meeting, especially if differing from those of the LRP, could be problematic at renewal time. One suggestion was that the best way to reach other earth science research groups would be to give presentations concerning ODP directly to their governing bodies (see also Agenda **Item F.**).

- Program flexibility/drilling through the lower crust and upper mantle. There was considerable support within EXCOM for generating publicity during this renewal period. One suggestion discussed at length was for drilling to and through the Moho. Some EXCOM members felt that this objective has the virtue of being easy to comprehend and that such a proposal has a long history in scientific ocean drilling. EXCOM felt that if a suitable site could be defined on an uplifted block (possible locations at Hess Deep were discussed), this goal could be accomplished within the capabilities of current technology. The need for ODP to be flexible (i.e., able to accommodate changes in the drilling schedule in order to capitalize on exciting scientific opportunities) was also discussed. EXCOM passed the following **motion**:

EXCOM commends PCOM for its development of the program and encourages PCOM to pay special attention to truly major scientific issues that would bring the program greater visibility in the period prior to renewal. In particular, EXCOM urges that no opportunity be missed within the Program Plan to drill through the lower crust and upper mantle.

- Implementation of the Long Range Plan. In response to discussion of pp. 25-28 of the draft minutes of the 14-16 August PCOM meeting (attached to this Agenda Book), EXCOM suggested that it would be helpful to voice an opinion encouraging PCOM to address implementation of the LRP. EXCOM reached the following **consensus**:

EXCOM urges PCOM to develop strategies for implementation of the Long Range Plan with particular attention to identifying themes for special emphasis in the mid-nineties.

- Timing of EXCOM meetings. In order to distribute the two EXCOM meetings per year more evenly, EXCOM decided to move its previously scheduled October 1991 meeting back to January 1992. The intent is to maintain this new schedule in subsequent years. This will allow PCOM to report to EXCOM on its annual meeting, while at the same time allowing for initial EXCOM input to budget discussions by BCOM in March. The possibility of advancing the timing of fall PCOM meetings was considered but rejected. EXCOM felt that PCOM should not be expected to meet each fall before mid-November.

- Budget Committee. A. Nowell (University of Washington) was appointed to BCOM. J. Briden (NERC, U.K.) was appointed to BCOM chair.

2. NSF (B. Malfait, liaison)

- Resource issues and budget status.

- Membership issues and status of planning for renewals.

- Other information.

3. JOI, Inc. (T. Pyle, liaison)

- Budgetary and other current information that may affect the current FY 91 Program.

- Planning for the FY 92 Program.

- Status of liaison groups.

- Other information.

(Approximately 10:35 AM) Coffee Break

4. Science Operator (T. Francis, liaison; not to include status of engineering and technical developments, Agenda **Item K.**)

- Present operations.

- Operational status of FY 91 drilling program: schedule, co-chiefs and other staffing, clearances, safety reviews, and related factors.

- Publications: schedule; anticipated costs and problems.

- Personnel changes and other developments at ODP-TAMU.

- Other comments.

5. Wireline Logging (R. Jarrard, liaison; not to include status of engineering and technical developments, Agenda **Item K.**)

- Recent operations, performance, and results.

- Other comments.

6. ACTION Before recess: Identification of action items from morning reports; take action or postpone (probably to **Item S.**) as appropriate.

(Approximately 12:20-1:30 PM) Lunch

Item E.
JOIDES Annual Reports by Service Panel Chairpersons

1. PPSP (M. Ball)

2. DMP (P. Worthington)
(PCOM should carefully consider DMP recommendations regarding both concentrating current efforts to develop high-temperature logging capability and augmenting DCS experience aboard ship during Engineering 3B/Leg 140 on the East Pacific Rise. The letter from Lysne to Austin [attached to this Agenda Book] is pertinent in this regard.)

3. SMP (K. Moran)
(Minutes were not received in the JOIDES Office by 11/15/90. Copies should be available at the meeting.)

4. SSP (R. Kidd)
(SSP has not met since July. At the request of the panel chairperson, the executive summary of that meeting and a list of SSP watchdogs for proposals for highly-ranked Atlantic programs are attached to this Agenda Book for information purposes. Recent SSP action on Leg 136/OSN-1 is also included.)

(Approximately 3:00 PM) Coffee Break

5. Deep Drilling Working Group (J. Natland)/TEDCOM (C. Sparks)
(At its April meeting, PCOM recommended the formation of a Deep Drilling Working Group [DDWG] as a subset of TEDCOM. PCOM set the mandate and assigned membership for the DDWG in August, for a 26 September meeting in College Station immediately prior to TEDCOM. The PCOM liaison will report on the DDWG meeting, while the panel chairperson will summarize TEDCOM activities. Ordering of these presentations is at the discretion of the individuals involved.)

6. IHP (T. Moore)

7. ACTION Identify action items from afternoon reports of service panel chairpersons; take action or postpone (probably to **Item S.**) as appropriate.

Item F.
Issues Related to 1993 Renewal: STRATCOM (J. Austin)

1. By consensus at its April 1990 meeting, PCOM formed an *ad hoc* subcommittee charged "...to aid the renewal process by developing strategies for generating excitement and publicity about the scientific advancements and technological achievements of ODP, coordinating presentations in the partner countries, countering criticism, identifying and strengthening weak points, and improving the image that ODP projects outside of the marine geosciences community."

STRATCOM met in May (I) and September (II) at JOI, Inc. (Both sets of minutes are attached to this Agenda Book.)

STRATCOM I recommendations to PCOM in August included the following:

- Focus the drilling program. Consider the following themes (while stressing that they are a flexible framework, into which modified/new themes can be incorporated) for a focused approach to ocean drilling (no priority order):
  - HIGH-RESOLUTION NEOGENE PALEOCEANOGRAPHY TRANSECTS
  - SEA-LEVEL STUDIES
  - DEEP-DRILLING TO UNDERSTAND THE STRUCTURE AND FLUID DYNAMICS OF ACCRETIONARY PRISMS
  - PASSIVE MARGIN EVOLUTION
  - EVOLUTION OF SEDIMENTED AND UNSEDIMENTED RIDGE CRESTS
  - OFFSET DRILLING FOR DEEP LITHOSPHERE OBJECTIVES

(Following discussion, PCOM action in La Jolla was not to focus ODP beyond the themes elucidated by the LRP. However, EXCOM has since commented favorably on the issue of focussing ODP. PCOM and panel chairs should discuss this issue further.)

- Synthesize thematic drilling prospectuses. Charge the thematic panels to go beyond existing, unsolicited proposals and DPG drilling plans to synthesize a prospectus involving a finite number of long-term focuses of ODP, each perhaps consisting of 4-6 drilling legs. The following questions must be addressed:
  - How will such programs be tackled effectively?
  - Who will the proponents of these programs be?
  - Do the proposals exist to tackle these programs effectively? If not, how will these proposals be generated?

STRATCOM felt that such a strategy could perhaps be in place for the advisory structure before November 1991.

(In August, PCOM asked the thematic panels to consider developing an implementation plan for the LRP at their fall 1990 meetings. This is also an agenda item for the PANCHM meeting.)

- Maximize impact of the Long Range Plan. STRATCOM members (and selected collaborators) should formulate a series of one-page summaries of ODP's existing and newly evolving relationships with a number of important global initiatives in the earth sciences.

(Those summaries, involving ODP and Global Change, Technology Development, Global Sedimentary Processes, Ridge Crest Processes, High-Latitude Drilling [Nansen Arctic Drilling Program], and Continental Scientific Drilling Programs, were generated and inserted into the LRP brochure recently distributed by JOI, Inc.)

- Conduct a formal review of the Long Range Plan. The National Science Foundation should approach the Ocean Studies Board of the National Academy of Sciences (and perhaps other, similar review bodies as deemed appropriate) for a formal review of the LRP.

STRATCOM suggested that such an initiative would blunt unofficial criticism of ODP, while encouraging official, and perhaps constructive, suggestions for program improvement over the long term.

(At PCOM in August and at EXCOM in October, NSF representatives replied that the Foundation would be conducting formal reviews of both management and science aspects of ODP once the LRP had been disseminated among the international partners.)

PCOM requested in August that STRATCOM meet again to emphasize shorter-term (i.e., pre-1993) renewal strategies.
STRATCOM II recommends the following to PCOM at this meeting (no priority order):

- Members of STRATCOM (Austin, Beiersdorf, Leinen, Malpas, Moberly) and other members of PCOM as appropriate or desirable should make themselves available for oral presentations on ODP in aid of renewal.

(Austin has recently returned from Australia, where he participated in apparently successful renewal activities at Australia's request.)

- Members of PCOM should submit summary slides (or art which can be converted to slide copy, perhaps by JOI, Inc.) to the JOIDES Office which showcase themes summarized by the LRP for such [renewal] presentations.

- Members of PCOM, perhaps in consultation with outside parties (e.g., members of ODP's formal liaison groups) should prepare short, popular articles based upon the 1-page inserts [see STRATCOM I above] in the LRP brochure.

- PCOM will be asked to endorse a JOIDES-sponsored meeting showcasing the thematic impact of ODP on the international earth sciences community:

- similar to COSOD's in form and size.
- will emphasize ODP's accomplishments, but not be limited to them.
- probable date: Spring, 1992 (would require BCOM action 3/91).
- several mega-themes discussed, to be discussed further at this meeting.
- potential convenors and members of both scientific and general organizing committees discussed, to be modified based upon further discussion at this meeting.

(EXCOM [see Agenda **Item D. 1.**] discussed this last recommendation and rejected it.)

STRATCOM II recommendations relate less to group activity and more to individual "selling" initiatives on the part of PCOM members and perhaps panel chairs. ("Ask not what your [program] can do for you, ask what you can do for your [program].") The JOIDES Office is ready to contribute, perhaps by helping to publicize the ship's track and ODP's new thematic focus in the open literature. The PCOM chairperson is looking for "volunteers" to write short, popular articles on ODP, and all PCOM members and panel chairs should be prepared to submit slides/art work in support of those giving oral presentations on behalf of ODP during this critical renewal period. PCOM also needs to decide on the continued existence of STRATCOM, whose members would like it to continue as an *ad hoc* subcommittee.

2. ACTION Before recess: Identification of action items from the STRATCOM summary; take action or postpone (probably to **Item S.**) as appropriate.

Thursday, 29 November 1990 (8:30 AM)

Item G.
Summary of Scientific Results: Northeast Australia, Leg 133 (P. Davies)

Item H.
Report of the Annual Chairpersons Meeting (PANCHM) (R. Kidd)

1. The report of the Tuesday 27 November meeting of the Panel Chairpersons will be given by its *pro tem* chair, R. Kidd (SSP).

2. ACTION items from PANCHM.

Item I.
JOIDES Annual Reports by Thematic Panel Chairpersons

1. LITHP (S. Humphris)

(Approximately 10:30 AM) Coffee Break

2. TECP (E. Moores)

3. SGPP (E. Suess)

4. OHP (N. Shackleton)

5. ACTION Before recess: Identification of action items from morning reports by the thematic panels.

(Approximately 12:15-1:15 PM) Lunch

Item J.
Reports of Detailed Planning Groups

1. East Pacific Rise (E. Davis. The PCOM liaison for this DPG was J. Austin.)

2. Cascadia (L. Cathles. The PCOM liaison for this DPG was M. Langseth.) (The report of this DPG, which was mandated to fashion a workable drilling program from competing proposals for the Vancouver and Oregon-Washington margins, appeared in the most recent issue of the *JOIDES Journal*. However, for the convenience of all meeting participants, the report is reproduced as an attachment to this Agenda Book. The PCOM liaison for this DPG first reported on the group's deliberations at the August 1990 PCOM meeting.)

3. ACTION Identification of action items from afternoon DPG reports. As both the Cascadia and EPR programs rely to varying degree on engineering and technical developments, PCOM may choose to defer action until after Agenda **Item K.**

Item K.
Status of Engineering and Technical Developments

1. ODP - TAMU (T. Francis)

- Leg 135: Use of Drill-In Casing with Funnel.
- Leg 136: Prototype Borehole Seal.
- Leg 137: Preparations for 504B clean-out.
- Leg 139: Preparations for expected high temperature, H_2S.
- Leg 140: Preparation for Diamond Coring System (DCS) drilling on EPR.
- Status of: Vibra Percussive Corer (VPC)
  Motor Driven Core Barrel (MDCB)
  Sonic Core Monitor (SCM)
  Adara Heat Flow Tool

(Approximately 3:15 PM) Coffee Break

2. BRG - LDGO (R. Jarrard)

- Status of slimhole and high-temperature preparations (with T. Pyle).
- FY 90 budget overrun and implications for FY 91 (with T. Pyle).

3. ACTION Identification of action items from afternoon DPG reports and summary of status of engineering and technical developments, particularly as they relate to planning for FY 92 drilling activities in the eastern Pacific.

Friday, 30 November 1990 (8:30 AM)

Item L.
Detailed Planning Information for Pacific Drilling

1. PCOM's task is to consider the nine programs (listed below) detailed in the "FY 1992 Pacific Prospectus" prepared by the JOIDES Office *[While a few extra copies will be available at the meeting, PCOM members and panel chairs are expected to have read and to bring this document with them to the meeting.]* and construct a drilling schedule to fill the time-frame from mid-November 1991 (the expected conclusion of Leg 140) to ~October 1992, the approximate time for the ship's departure from the eastern Pacific for the Atlantic based upon the four-year plan agreed upon by PCOM at its April 1990 meeting.

PCOM should bear in mind that the stated time for the ship's exit from the eastern Pacific is the "preferred scenario", so some flexibility is implied. However, global rankings of existing drilling proposals by thematic panels at their spring 1990 meetings confirm that high-priority Atlantic work exists, so a substantial delay beyond October 1992 is not justified (at the moment).

2. To get this discussion started, the PCOM chairperson requests that PCOM watchdogs each be prepared to give a short (~5-10 minute) summary of the scientific objectives of Pacific Prospectus programs, as listed below. These presentations should stress the thematic impact of the proposed work, its reliance on developing technology and engineering, and any other considerations essential to PCOM deliberations (e.g., sufficiency of site survey information, weather constraints, environmental impact, etc.)

To aid in these presentations, the JOIDES Office has prepared a series of overheads of pertinent figures from the programs under consideration which will be available at the meeting.

The PCOM chairperson asks that presentations occur in the order listed below (no priority order, by design). PCOM watchdogs for these programs were assigned in August 1990, and are as follows:

- Atolls and Guyots (AG) - B. Tucholke

- Bering Sea History (BSH) - Y. Lancelot (alt. J. Watkins)

- Peru Gas Hydrates (PGH) - A. Taira

- Sedimented Ridges II (SR II) - M. Langseth (alt. J. Mutter) (E. Davis will assist as necessary.)

- North Pacific Transect (NPT) - Y. Lancelot (alt. J. Watkins)

- Chile Triple Junction (CTJ) - J. Austin

- East Pacific Rise Bare Rock (EPR) - J. Malpas (E. Davis/J. Austin will assist as necessary.)

- Cascadia Accretion (CA) - D. Cowan (L. Cathles will assist as necessary.)

- Hess Deep (HD) - R. Duncan (J. Natland to assist, if necessary)

(Approximately 10:30 AM) Coffee Break

Item M.
Program Plan for FY 92

1. Previous discussions within PCOM and the considerations noted above suggest that time should be made available during FY 92 and early FY 93 for approximately six legs of eastern Pacific drilling, or five legs and an engineering leg. In advance of watchdog presentations (Agenda **Item L.**), some additional items for PCOM consideration are noted below:

- CTJ is designed as a possible two-leg program. To conserve transit and because there is no need for a [science] evaluation period between legs, a second leg could immediately follow the first. Weather windows have yet to be completely evaluated, but scheduling during southern hemisphere summer seems to make the most sense.

- SR II represents a proposed follow-up to SR I, presently scheduled as Leg 139 (July-September 1991.) The SR DPG has strongly recommended to PCOM that such a second leg follow the first, but that a delay of at least a year be built in to the schedule for scientific evaluation, hydrologic modeling, etc. On the other hand, the PCOM chairperson has been advised that a delay between SR I and SR II of more than 1.5-2 years is inadvisable (because of undesirable changes in hole conditions caused by precipitation, etc.), so SR II could not follow proposed Atlantic drilling in FY 93. SR work also has a scheduling constraint to avoid adverse weather conditions in northern hemisphere late fall, winter and early spring. Therefore, if PCOM opts for SR II, scheduling during Summer 1992 seems appropriate. The PCOM chairperson has been notified by the Leg 139 co-chiefs that SR I drilling strategy/priorities will probably change if SR II drilling is not scheduled at his meeting (see correspondence from E. Davis to J. Austin, attached to this Agenda Book).

- CA The Cascadia DPG has recommended a one-leg, seven site program addressing scientific objectives on both the Vancouver and Oregon-Washington convergent margins. (Substantial modifications to this strategy have been proposed by SGPP/TECP, see below.) A second leg of drilling is proposed by the DPG, but with a suggested delay of 2 years. Additional drilling is also endorsed by SGPP, but with no stipulation as to its time-frame, so follow-up CA drilling beyond FY 93 is a possibility. The CA program has weather constraints similar to those of SR II, and should probably either precede or follow SR II, if PCOM opts for both.

- EPR drilling probably should not immediately follow Leg 140 activities at 9° 30'N, because of the possibility that the DCS system will have to be modified following Engineering 3B. PCOM should keep in mind that such a constraint may also affect proposed drilling in HD, although an offset drilling strategy there might proceed without the DCS. (PCOM may also want to ask the question: "What do we do if Leg 140 is going very well?" The potential exists to let the drillship continue to drill at EPR, subject to staffing/resupply problems, which is along the lines of the program "flexibility" recommended by EXCOM.) Neither EPR nor HD has weather restrictions.

- AG, as portrayed in the Pacific Prospectus, consists of historically "competing" proposals concentrating on Late Cretaceous - Cenozoic history of the northern Marshall Islands and Cretaceous history of a number of carbonate-capped guyots in the northwestern Pacific. PCOM must bear in mind that the science as proposed will clearly require two (or more) legs, not including transits from/to eastern Pacific ports-of-call. If PCOM opts for this program, it will have to decide on an "all" or "partial" strategy, depending in part upon review by the thematic panels (see below), which might mean deciding between (or modifying) proposals listed in the Pacific Prospectus. Panel chairs will be encouraged to contribute to this aspect of the discussion.

- Both BSH and NPT are one-leg programs with weather restrictions suggesting that drilling must occur during northern hemisphere Summer 1992. (PCOM members and panel chairs might be interested to know that a drilling proposal for the Shirshov Ridge/Bering Sea was received by the JOIDES Office from the Soviet Union in early November, so potential impact of the USSR on ODP planning is not far away.)

- PGH has no weather restrictions. The PCOM chairperson notes that as proposed this program may not require a full leg of drilling, making it a candidate as an "add-on" or "piggy-back" activity (see Agenda **Item S.**).

2. This blank schedule is provided to assist PCOM members/panel chairs with draft planning:

Leg	Approx. Months	Notes	Program
141	Nov 91-Jan 92	no N Pac.	
142	Feb-Mar	"	
143	Apr-May	no CTJ(?)	
144	Jun-July	"	
145	Aug-Sep	"	
146	Oct-Nov(?)	proximity to Panama Canal?	

3. **LITHP PRIORITIES**, FY 92 drilling in the Pacific (October 1990 - from the minutes)

- "LITHP considered the nine programs described in the Pacific Prospectus for drilling in 1992. Six of the proposals were considered to be of LITHP interest and were included in the rankings. The other three--Bering Sea History, Gas Hydrate Formation, and North Pacific Transect--were omitted as not within the mandate of LITHP. The ranking is as follows:"

Rank	Program	1st	2nd	3rd	4th	5th	6th
1	EPR	8	4	-	-	-	-
2	HD	3	6	3	-	-	-
3	SR II	1	2	8	-	-	-
4	CTJ	-	-	1	5	3	3
5	CA	-	-	-	4	5	3
6	AG	-	-	-	3	3	6

- Additional comments by LITHP:

HD: "Detailed analyses of the available video and photographic data are required soon to clearly define specific drilling sites." (Note: SSP was also concerned about the status of site survey information for this program: "...drilling should not be scheduled before late 1992.")

- If the LITHP voting above were assessed in terms of total score (e.g., 6 points for a first place vote, 5 points for a second place vote, and so on) those scores would be as follows: EPR - 68 points, HD - 60 points, SRII - 48 points, CTJ - 28 points, CA - 25 points, AG - 21 points. These numbers suggest a significant gap between LITHP's top three programs and the remaining three.

4. TECP PRIORITIES, FY 92 drilling in the Pacific (November, 1990 - from the minutes)

- "Following extensive discussion and review of the proposals, programs and legs involved, TECP voted as follows on the FY 1992 Pacific Prospectus:"

Rank	Program	1st	2nd	3rd	4th	5th	6th	Total Score
1	CTJ I	11	1	-	-	-	-	71
2	CTJ II	-	9	2	-	-	-	55
3	CA	1	2	7	1	1	-	49
4	HD	-	-	2	4	1	-	22
5	AG II	-	-	1	2	2	2	15
6	NPT	-	-	-	2	2	3	13
7	EPR	-	-	-	1	2	3	8
8	SRII	-	-	-	1	1	2	7
9	BSH	-	-	-	-	2	1	5
10	PGH	-	-	-	1	-	-	3
11	AG I	-	-	-	-	-	1	1

- Additional comments by TECP:

CTJ: "TECP voted almost unanimously (11 to 1) in favor of an integrated 2 leg CTJ program."

CA: "Because the Cascadia drilling leg recommended by the DPG is very full for one leg, TECP recommends that the program should be prioritized as follows:

Priority 1: Oregon holes plus Vancouver hydrate hole (VI-5).
Priority 2: Vancouver holes to calibrate porosity-depth-seismic velocity relations."

- PCOM should take note that there is once again (see LITHP priorities) a significant gap between TECP's top three programs and the rest of the pack. TECP has subdivided the AG program in the Pacific Prospectus, rating Cretaceous objectives in the northwestern Pacific substantially above Cenozoic drilling targets in the Marshalls.

(Approximately 12:00-1:00 PM) Lunch

5. SGPP Priorities, FY 92 drilling in the Pacific (November, 1990 - from the minutes)

"SGPP considered the following addenda to drilling proposals (355/A/Add; 317/E/Add 1/Add 2; 233/E/Add 3; 266/E/Add 2), revisions (375/D, 387/E Rev and 318/E/Rev 2) which were received prior to the meeting, and recapitulated proposals from among those of the Pacific Prospectus reviewed at an earlier meeting. The panel arrived at the final ranking by ballot:"

Rank	Program	Score
1	modified (see below) CA	7.8
2	modified (see below) CTJ	7.2
3	modified PGH	6.1
3	SR II	6.1
5	AG	5.1
6	EPR	4.1
7	NPT	3.0
8	BSH	2.4
9	HD	2.0

- Additional comments by SGPP:

CA "The modifications to the DPG recommendations for the highest ranked CA drilling leg are extensive:

- Restrict drilling on the Vancouver margin to the 'BSR study' and attempt two holes: these could be VI-5 and a second one, where the BSR is weakly developed.
- A reference hole is important; the site location (whether off Vancouver Island or Oregon) should be left to the discretion of the co-chiefs.
- Time permitting, a site of secondary priority should be drilled through the frontal thrust area off Oregon (OM-3A) to achieve down-dip penetration of the fault. This hole needs to be cased and/or instrumented in detail.
- A second CA leg, as outlined in the DPG report, is required to extend and complete the observations of the first one (including instrumentation and monitoring).
- Leading to this revision was a discussion at the joint session with TECP, which identified apparently weakened tectonic objectives of the northern Cascadia proposal, problematic assumptions with the gas hydrate model, and a desire to make genuine progress by drilling a full-fledged 'generic' gas hydrate leg rather than having this objective be part of others."

CTJ "Both panels [SGPP and TECP] agreed that the recently received version of the proposal greatly improved all and added new objectives for drilling off Chile. Whereas TECP favored 2 drilling legs there to achieve these objectives, SGPP questioned the need for 3-hole transects in studying the post- and pre-collision setting and instead suggested one-hole each. There was consensus, however, about the proposed plan for drilling several holes in the current collisional contact zone."

- PCOM should note that SGPP voting does not reflect the obvious breaks in priority evident in both the LITHP and TECP rankings, but that CA and CTJ drilling [in modified form] are clearly the panel's top choices. If PCOM opts for either program or both, members will have to decide on some/all of the modifications to the drilling proposed. Panel chairs are urged to contribute to this discussion.

6. **OHP Priorities**, FY 92 drilling in the Pacific (October 1990 - from the minutes)

"The philosophy of prioritization was discussed. Jenkyns [PCOM liaison to OHP] reassured the panel that the plans for FY 1992 are not pre-determined and that PCOM will make the plans on the basis of panel prioritization... ...a brief discussion of each of the three proposals with OHP content [NPT, AG, BSH] was held."

Rank	Program	Score (number of first place votes)
1	NPT	9
2	AG	4
3	BSH	-

- Additional comments by OHP:

NPT "OHP considers these high-latitude North Pacific sites to be a critical component of its global array of high-resolution transects...In addition, significant contributions to our knowledge of Paleogene and Cretaceous paleoceanography will come from both sediment sampling and from the improved tectonic reconstruction that will result from basement dating."

AG "...addresses several topics of interest to OHP...The most important of these is the determination of timing and causes of drowning of Cretaceous atolls in the Pacific Basin...In addition, this drilling program should obtain Cenozoic and Upper Cretaceous sections with possible recovery of rare Pacific mid-Cretaceous black shales...this program can make a significant contribution to our understanding of questions relating to the history of sea level...even though [OHP] is not optimistic about the sea level objectives."

"...it is clear that the results of the whole program will benefit greatly from successful deployment of the DCS system."

BSH "...While rating the BSH a clear third of the three OHP programs, the panel does retain a very strong interest...No drilling has been attempted in the Bering Sea since 1971, so that any drilling in the area must appear more speculative than drilling in easier latitudes, but the panel considers that reconnaissance drilling may often produce more exciting results than highly focussed and well-planned drilling, and that there is a place for excitement in [ODP]..."

- PCOM should note that the clear preference of OHP is for the NPT program, with strong interest in AG. OHP did not appear to prioritize AG drilling, although they suggest that Cretaceous drowning objectives (AG II, see also TECP minutes) are paramount.

7. SUMMARY OF FY 92 PRIORITIES

Pacific Program	LITHP	TECP	SGPP	OHP
CTJ	4	**1** [2]*	**2**+	-
CA	5	3	**1**+	-
EPR	**1**	7	6	-
NPT	-	6	7	**1**
HD	**2**	4	9	-
AG	6	5 [11]	5	**2**
SR II	3	8	3	-
~~BSH~~	-	9	8	3
~~PGH~~	-	10	3	-

*two-leg program
+modified, see Agenda **Item M. 5.**

- Given the rankings summarized above, PCOM (with advice from panel chairs) will have to develop a six-leg program for FY 92 (assuming no additional time dedicated specifically to engineering and technical development). What should the rationale for doing that be? The PCOM chairperson can make a few suggestions:
  - Drill each thematic panel's highest priority science.
    Four different programs are ranked first by the four thematic panels: EPR (LITHP), CTJ I (TECP), CA (SGPP), NPT (OHP). If multiple legs to address EPR during FY 92 are excluded, these priorities suggest 4 legs of drilling.
    If panels' second priorities are included, the following additions can be made: HD (LITHP), CTJ II (TECP), AG (OHP). If the AG program is not prioritized, 4 additional drilling legs sit on the FY 92 schedule, 3 if only one of the AG proposals is addressed Total: 7 legs, so something else still has to go.
  - Drill important multidisciplinary objectives, with priority as a secondary concern.

Only one program, AG, received a ranking from all four thematic panels, but only OHP ranked it higher than 5th. All but PGH received a ranking from three panels. Of those, the highest composite rankings fall (in rough priority order) to: CTJ (7), CA (9), EPR, NPT, SR II (all at 14) and HD (15).

- Honor previous "commitments".
  PCOM and panel chairs should carefully examine the issue of constancy relative to the SR II program. SR II was philosophically endorsed as a follow-up to SR I by LITHP and SGPP at the 1989 annual PCOM meeting with panel chairs in Woods Hole, although it has fallen to third priority for both panels since that time. PCOM further endorsed such follow-up drilling with a motion to "tentatively" schedule SR II drilling during the spring of 1992. The PCOM chairperson has been notified that SR I may be adversely affected if SR II is not put on the schedule.

(Approximately 3:00 PM) Coffee Break

Item N.
Detailed Planning Requirements for 1991 PCOM Meetings

1. Spring meeting, 23-25 April 1991

- Review of procedures involving PCOM, JOIDES Office, thematic panels and DPG/WGs.
  - The primary purpose of this meeting is for PCOM to decide the general direction of the vessel for the 4-year period to spring 1995:
    - By **mid-April**, PCOM members must receive, in their Agenda Books, **annotated** lists by each of the four thematic panels of their current global ranking of programs.
    - The JOIDES Office must receive these lists from the thematic panels no later than **early April**.
    - No later than **mid-March**, the thematic panels will have had to (a) review new and appropriate older proposals from any ocean, in terms of published thematic objectives and the probability of actual drilling (related to the scientific and technical maturity of a proposal, including existing or anticipated surveys, engineering developments, safety, and perhaps other factors); (b) assemble the acceptable proposals into programs; (c) rank and list those programs; and (d) briefly annotate each program with its thematic objectives and other appropriate comments to guide PCOM. In

order to assess and monitor the evolving technical maturity of acceptable programs, interaction of thematic panels and DMP, SSP, and TEDCOM is essential during this process.

- At this meeting, PCOM will also receive [final] reports from its new DPGs (Northernmost Atlantic Paleoceanography/Arctic Gateway; North Atlantic Rifted Margins) and a progress report from its new Working Group (Sea Level). The JOIDES Office will be seeking liaisons from thematic panels and appropriate service panels for meetings of these groups, all of which should occur during January-February 1991. Input from the DPGs is essential for the thematic panels to conduct a proper global ranking of proposals in March.
- As soon as the 4-year general direction for the drillship is set, PCOM must assign watch dogs for each highly-ranked program likely to be a candidate which is not already covered. All PCOM watch dogs should be prepared to report to PCOM at the August meeting.

- ACTION Are these arrangements satisfactory and clear? Does PCOM want to make any adjustments, in consultation with panel chairs that remain?

2. Summer meeting, 20-22 August 1991

- Agreement on procedures involving PCOM and other parts of the JOIDES structure.

    - One important purpose of this meeting is preparation for the 1991 Annual Meeting at which the FY 93 drilling program will be constructed.
        - PCOM should receive and discuss watch-dog reports, DPG/WG reports, and other information pertaining to possible candidate programs for FY 93 drilling, which should occur primarily in the Atlantic. Programs that might be in regions visited by the drillship early in its 4-year general progress will be examined most closely, but even the potentially later ones must be discussed.

- PCOM will also hear reports from formally constituted liaison groups at this meeting, and accommodate those programs where constructive overlap with expected drilling activities occurs.

3. Annual Meeting, December 4-7 1991

- Review of procedures involving PCOM, thematic panels, and other parts of the JOIDES structure.

  - The primary purpose of this meeting is preparation of the Science Program (drilling plan) for the FY 93 drilling schedule.
    - As was true this year, PCOM members and panel chairs will receive **no later than early fall 1991** the equivalent of a "prospectus" (~ Pacific Prospectus), including: relevant DPG/WG reports, candidate programs for FY 93 presented in leg form, including objectives, thematic/service panel comments and rankings from Spring 1990 meetings, and wherever possible, their specific sites, drilling and logging times, and whatever else is needed for PCOM evaluation and decision. Unless PCOM has an objection, the "FY 93 Prospectus" will be assembled during the spring and summer of 1991 by the JOIDES Office. Ideally, this document should include programs (and perhaps a candidate engineering leg) totalling about 7 to 10 legs, from which 6 will be selected for FY 93. This prospectus should receive additional thematic/service panel review and comment during Fall 1991 prior to the annual meeting.

Saturday, 1 December 1990 (8:30 AM)

Item O.
Membership on JOIDES Panels

1. As in the past, this Agenda Book will list necessary actions but not nominees, with one exception. A separate set of pages will be handed out in Kailua-Kona to PCOM members including nominees and vitas (if available). PCOM members are reminded to bring documentation (a short biography) for their own nominees to fill panel vacancies. The JOIDES Office has prepared overheads summarizing each panel's membership and necessary action items.

- LITHP

R. Batiza, L. Cathles and M. Perfit are all due to rotate off LITHP. C. Mevel is also rotating off. LITHP endorses Perfit's continuation until the March meeting.

ACTION Three nominees have to be selected, one of them to replace Perfit after the spring meeting.

- TECP

Replacements for I. Dalziel, D. Engebretson, and R. Buck need to be discussed.

ACTION PCOM must confirm three nominations.

- SGPP

A new chairperson must replace E. Suess, who will be stepping down after the spring meeting. The panel also needs two geochemists to replace F. Froelich and M. Goldhaber.

ACTION The next chairperson and two new members, preferably geochemists, must be nominated.

- OHP

OHP requests that D. Kent and W. Berger, whose three years have ended, be permitted to remain members (at least) through the next meeting. If PCOM insists on replacement, another magnetostratigrapher should replace Kent, preferably one with both Mesozoic and Cenozoic expertise.

OHP asks PCOM to renew Berger's membership because of his immense breadth, enthusiasm and wisdom, and because the panel is heavily dominated by members with no previous panel experience. If PCOM feels that Berger's replacement is unavoidable, additional Paleogene (to Mesozoic) expertise is generally desired.

ACTION PCOM needs to decide on both extensions. Based on these decisions, PCOM must then nominate either one or two new members to begin OHP service either before the spring or fall meetings. (OHP is of the opinion that the fall meeting is the appropriate time for new members to arrive.)

- DMP

No personnel action needed.

However, the PCOM liaison for this panel is M. Langseth, who is rotating off PCOM. DMP has nominated a replacement, with justification. PCOM should discuss this issue under Agenda **Item P. 2.**

- IHP

No personnel action needed.

- PPSP

PPSP has voted unanimously to include Lou Garrison in its membership.

ACTION The PCOM chairperson respectfully suggests that PCOM confirm PPSP's nomination with enthusiasm.

- SMP

No personnel action needed, but SMP minutes for their October meeting in Australia were unavailable to the JOIDES Office during the preparation of this summary.

ACTION The SMP chairperson is requested to bring nominees and their justification to the meeting for PCOM discussion and approval.

- SSP

J. Hedberg, who represented the oil-industry on the panel, has resigned.

ACTION As has been true in the past, USSAC has nominated a new oil-industry representative. PCOM must confirm that nomination.

- TEDCOM

ACTION The addition of someone with expertise in high-temperature drilling is requested.

2. ACTION PCOM should discuss and decide panel membership appointments, and incorporate all membership changes in a single motion.

(Approximately 10:00 AM) Coffee Break

Item P.
Other Personnel Actions

1. Co-chief scientists. Nominations for legs placed on the FY 92 schedule should be given to the Science Operator.

2. Panel liaisons. PCOM liaisons to panels, DPGs and WG (see Agenda **Item Q.**) should be updated/nominated as necessary. PCOM liaisons to late winter meetings of thematic panels, DPGs and WG should be confirmed.

Item Q.
Status of New Detailed Planning Groups and Working Group

1. North Atlantic Rifted Margins DPG.

- The JOIDES Office has received positive responses from all nominees. Hans Christian-Larsen has agreed to be the chairperson. The DPG will meet for the first time in February 1991 at a site yet to be determined. B. Tucholke is the PCOM liaison.

2. Northernmost Atlantic Paleoceanography/Arctic Gateway DPG.

- The JOIDES Office has received positive responses from all nominees. B. Ruddiman has agreed to be the chairperson. The DPG will meet for the first time in January-February 1991 at a site yet to be determined.

- ACTION PCOM must nominate a liaison to this DPG.

3. Sea Level WG.

- The JOIDES Office has received positive responses from all nominees except two (both of whom have been out of their offices for extended periods). P. Crevello has agreed to be the chairperson. The WG will meet for the first time in January-February 1991 at a site yet to be determined. J. Watkins is the PCOM liaison.

Item R.
Future Meetings

- 23-25 April 1991; Narragansett, Rhode Island; University of Rhode Island, Graduate School of Oceanography; M. Leinen to host. PCOM will need to know if a field trip is planned either before, during or after this meeting.

- 20-22 August 1991; Hannover, Germany; Bundesanstalt für Geowissenschaften und Rohstoffe; U. von Rad to host. A two-day field trip is scheduled after the meeting. PCOM will need to know logistics details at its next meeting.

- 4-7 December 1991; Austin, Texas; University of Texas Institute for Geophysics (Thompson Conference Center); J. Austin and JOIDES Office to host. A field trip may be held prior to the meeting. Additional details will be available at either the April or August PCOM meeting.

  -Panel Chairpersons will meet on 3 December.

- Oregon State University, College of Oceanography has invited PCOM for its Spring 1992 meeting. PCOM should confirm dates for this meeting, which is at present scheduled for 21-23 April.

- ACTION PCOM should set the dates and venue for its Summer 1992 meeting.
  - This meeting could be held outside the U.S. Recent PCOM meetings held outside the U.S. include: Oxford, U.K. (Summer, 1988), Oslo, Norway [ESF] (Spring 1989); Paris, France (Spring 1990); Hannover, Germany (Summer 1991). Possibilities include Canada or Australia and Japan (perhaps the Soviet Union?).

- ACTION PCOM should set the dates and venue for its 1992 Annual Meeting.
  - This meeting should be held in the U.S. For PCOM's information, JOI institutions that have not hosted a PCOM meeting over the past four years (i.e., by 1992) are TAMU and LDGO.

(Approximately 12:00-1:00 PM) Lunch

Item S.
Other Business

1. Leg 137 - possible alternate uses of drillship time if cleaning operations at Hole 504 B are unsuccessful. PCOM asked the thematic panels to consider alternatives for Leg 137 time if milling this hole has to be abandoned completely, which would preclude deepening the hole. Each thematic panel responded: LITHP, TECP and SGPP in their minutes, and OHP by telemail direct to the JOIDES Office:

- LITHP. "...strongly recommends that Leg 137 carry the equipment necessary to set the liner if the casing is bad and to mill with smaller diameter tools in order that the future of drilling at Hole 504B can be established on [Engineering 3A].

  Given that time constraints would not permit setting a hard rock guide base at either EPR or HD, LITHP recommends the following contingencies for any time available during Leg 137 (listed in order of priority):
  a.) Additional logs and downhole measurements (FMS, wireline packer, flowmeter/packer, digital televiewer) be run.

b.) Investigation of the hydrogeochemistry of the sediments and upper basement near Site 504 (as suggested in proposal 123/E of Mottl et al.).

c.) Logging sediments near Site 504."

- TECP. "...recommends that if [Hole 504B] is clear, it be logged to the extent possible. If another hole must be drilled, then the full range of measurements should be done."

- SGPP. "...reaffirms the importance of downhole temperature measurements and water sampling prior to disturbing hole conditions...If it becomes apparent early during the time allotted for work at 504B that the hole should be abandoned, SGPP defers to the LITHP's plan for another site (including EPR drilling). In the event of late abandonment, SGPP suggests a new double HPC/APC-hole through the sediment column to basement including appropriate logging runs."

- OHP. "If significant time is left on Leg 137, triple core and drill to basement EEQ-4 now planned for Leg 138 (~7 days). The site is 50 hours at 10 knots from 504B. It may have clearance problems. If Leg 137 can't drill this site, then the next option would be to triple APC and core to basement EEQ-2 (~5 days, plus 57 hours transit from 504B). Either site saves Leg 138 at least 5 days."

- ACTION PCOM should discuss these options and convey a preference to the Science Operator for implementation.

2. Offset Drilling Working Group. Both LITHP and TECP have commented on the desirability of a new Working Group to examine offset strategies for drilling the oceanic lithosphere. They have also examined the group's mandate and nominated potential members. The PCOM chairperson reminds PCOM that EXCOM (Agenda **Item D. 1.**) considers drilling the deep oceanic lithosphere an important and exciting endeavor for ODP, but that at its April 1990 meeting PCOM agreed to charge LITHP with making recommendations for establishing an approach to drilling offset sections.

- ACTION PCOM needs to discuss the issue of offset drilling again, and decide whether or not a group separate and distinct from the thematic panels is necessary to develop strategies for its implementation.

3. Add-On/Piggy-Back Science. Both OHP and TECP have endorsed the concept of adding sites to established drilling legs to take advantage of unexpected or exciting scientific opportunities. (OHP has even proposed a candidate site in the Santa Barbara Basin, for drilling sometime during FY 91, see their minutes.) This is also a topic for discussion at PANCHM. EXCOM has generally endorsed such activity as evidence for program flexibility.

- ACTION After considering PANCHM and other input, PCOM must decide whether or not to endorse this activity in general, and if endorsed how to put the policy into practice.

4. Discontinuing Blind Whole-Round Sampling/Freezing for Organic Geochemistry. OHP has recommended terminating this practice immediately, and that the majority of the existing material should be split and returned to the normal repository as soon as possible (with preference being given to heavily sampled APC holes). R. Merrill, TAMU-ODP, has registered the opinion with the Hawaii JOIDES Office (correspondence dated 8/1/90) that OG whole rounds are "relatively expensive for the rather modest benefit received."

ACTION PCOM should discuss this issue and either retain the *status quo* or endorse the OHP position and advise the Science Operator of the change in policy.

5. Length of drilling legs. ODP-TAMU has received objections from SEDCO concerning the growing lengths of drilling legs. SEDCO considers the legs to be too long at present (see graph prepared by the JOIDES Office illustrating leg lengths through the history of ODP, attached to this Agenda Book) and would prefer an average leg length of ~8 weeks to alleviate hardship on their personnel. For comparison, the crew of an offshore oil drilling platform works 2 weeks on and 2 weeks off. Furthermore, there are signs of an upturn in drilling activity in the oil industry, so the supply of experienced drilling personnel is limited, making ODP vulnerable to losing key SEDCO personnel from the *JOIDES Resolution*.

- ACTION PCOM must work with the Science Operator to avoid loss of quality technical personnel at SEDCO. This may require developing more stringent guidelines regarding leg length for the FY 92 program.

6. ACTION items postponed from earlier parts of the meeting.

Item T.
Adjournment

JOIDES PLANNING COMMITTEE SUMMER MEETING
14-16 August, 1990
Scripps Institution of Oceanography
La Jolla, California

REVISED DRAFT MINUTES

Members:

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

Liaisons:

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

Guests and Observers:

K. Becker - University of Miami
T. Bralower - Florida International University
P. Blum - Future Executive Assistant and Non-US Liaison in JOIDES Office
A. Crawford - Australian ODP Secretariat, University of Tasmania, Australia
B. Harding - ODP-TAMU Engineering
M. Kastner - Scripps Institution of Oceanography
L. Kroenke - Hawaii Institute of Geophysics
A. Meyer - Science Operator (ODP-TAMU)
M. Purdy - Woods Hole Oceanographic Institution
M. Storms - ODP-TAMU Engineering

JOIDES Planning Office:

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

Tuesday, 14 August 1990

853 Introduction

PCOM Chairman Ralph Moberly called the 1990 Summer Meeting of the JOIDES Planning Committee to order. Jim Natland welcomed everyone to Scripps Institution of Oceanography. Natland explained logistics including a reception hosted by Scripps and a dinner hosted by JOI and the Drs. Winterer. Introductions were then made around the table. Moberly said that this was the last PCOM meeting for the University of Hawaii JOIDES Office, which will prepare and distribute the Draft Minutes, but the Revised Draft Minutes will be prepared by the UTIG JOIDES Office after 1 October 1990.

854 Minutes of 24-26 April 1990 Spring PCOM Meeting

Moberly called for comments, corrections and approval of the previous minutes. There were no further corrections to the revised draft minutes.

PCOM Motion

PCOM approves the minutes of the 24-26 April 1990 Planning Committee meeting. (Motion Malpas, second Brass)

Vote: for 16; against 0; abstain 0

855 Approval of Agenda

Moberly called for additions or revisions, and then for adoption of the agenda for the meeting. Several minor additions and modifications were requested in the Agenda.

PCOM Motion

PCOM adopts the agenda for the 14-16 August 1990 Planning Committee meeting with amendments. (Motion Brass, second Austin)

Vote: for 16; against 0; abstain 0

856 ODP Reports By Liaisons to PCOM

NSF

B. Malfait reported that the House of Representatives has passed the requested increase of around 14% for the National Science Foundation but there was some shifting of funds between programs. The Senate had not acted on the budget before its summer recess. With the present budget deficit the Gramm-Rudman-Hollings Act would require a 32% cut across the board. This reduction is not the most likely scenario, since it would halt Federal Government operations, but requires Congress to act before 1 October. If there is no Gramm-Rudman-Hollings sequestering of funds, the ODP budget is projected to go up $3M (3% increase). The Geosciences Directorate has a requested 18.1% increase with most of the increase going to the Global Change initiatives. The international-partner contribution level to ODP will be held constant at $2.75M.

NSF ODP Field Programs that are upcoming are: near-bottom refraction of the EPR around 9°N by Purdy (WHOI) and Fryer (Hawaii) on the *Atlantis II*; MCS study of the Antarctic peninsula by Dalziel/Austin/Shipley (UTIG) and Hayes/Mutter (LDGO) scheduled for January/February 1991 on the *Ewing* in a joint project with UK scientists; Deep-tow study of the Kane Transform by Delaney (Washington) and Karson (Duke) scheduled for May 1991 on the *Melville* in a joint project with French scientists. New field programs include: a study of sediment properties and OBS experiments on the Cascadia Margin by Yamamoto (Miami) scheduled for Fall 1990 on the *Wecoma*; SEAMARC study of the Vema Transform by Kastens (LDGO), which is a joint study with France and is pending scheduling; and a multibeam, gravity, and dredging study of the Marquesas by Kruse (Eckerd), McNutt (MIT) and Natland (SIO) scheduled for Fall 1991 on the *Ewing*.

An Index to DSDP volumes is in the final stages of completion and will be published in hard copy with a computer searchable CD-ROM; the distribution will follow existing ODP guidelines. The possibility of Soviet participation is being examined by the US administration with activities to date including: rapid response to the December PCOM motion; initial interagency review of issues; intelligence agencies report; special panel for the science advisor; document on technology transfer concerns; and the final interagency review should be completed shortly. At the ODP Council meeting the following issues were discussed: strong support for Ocean Drilling; planning for renewal seems to be on track; uncertainty in facilities beyond 1998 is a concern.

Discussion

Austin said that a 10-year renewal was the aim announced at EXCOM; is this still the goal? Malfait said that the arguments for a 10-year renewal are there, but the questions about facilities will influence any decisions. Moberly asked how the actual funds for ODP relate to the target figures estimated by EXCOM several years ago to be necessary for technological advancement of the program. Malfait said that the budget is under those figures by approximately $1M.

JOI

T. Pyle discussed the 1991 Program Plan, which has been approved by EXCOM and is under review by NSF. Highlights of the plan include: the SOE target of 4% has been exceeded; and an additional $300K has been approved by NSF for high-temperature logging and sampling tools. Under current events: NSF has contributed $50,526 for the insurance deductible for the logging tool lost on Leg 131; shipboard procedures have been under review in case the USSR becomes a new member of ODP; 2 Soviet scientists with continental and ocean drilling expertise have been invited to attend the Deep Drilling Working Group and TEDCOM meetings; the Long Range Plan will get general distribution in late August but PCOM members can get copies at this meeting. During a visit to Japan, T. Pyle talked with ORI and JAMSTEC concerning various ODP issues (*e.g.* logging tools, new drill ship). JAMSTEC has expressed an interest in some involvement with ODP. The new drillship will probably be finished around 1998.

Liaisons with the Continental Scientific Drilling Programs (CSDP's) are being pursued, but this is a rather diffuse effort. A review of CSDP technology by Andrews and Pyle will be published in *Scientific Drilling*. Discussions with DOE have begun on common interests. Pyle will present an invited paper at the International Congress on CSDP, which is being held in Regensburg, FRG on 8-11 September. During his visit to Japan, Pyle talked to Japan Petroleum Exploration Company (JAPEX) about technology issues including logging. JAPEX is now interested in letting ODP use its high-temperature logging tools, but they have no water sampling tools and the cost to ODP is not settled.

Liaison efforts with IGBP (PAGES) is advancing. Pyle will attend the IGBP Science Advisory Committee Meeting in Paris on 4-6 September. There has been correspondence with Mosely-Thompson, an author of the US National Academy of Sciences Committee report on Global Change on Earth System History and Modelling, which discussed ODP efforts and problems with coring.

An invitation was sent in May to Zietzschel in Kiel, FRG, asking JGOFS to form a Liaison Group, but there has been no formal response because their Steering Committee will not meet until September.

The Nansen Arctic Drilling Program has nominations for a Liaison Group and waits for PCOM action. JOI is helping to prepare a brochure for NADP.

InterRIDGE had a meeting in Brest in June but no action was taken because the group did not feel empowered to form a Liaison Group.

Efforts to provide high-temperature logging and sampling tools is continuing. A letter was circulated to ODP member countries asking about available tools. There were 7 expressions of interest. Pyle's JAPEX visit also explored ways to obtain these tools. Further evaluation will have to be made with the advice of R. Anderson and P. Worthington about which tools will satisfy ODP requirements.

Miscellaneous other business includes: JOI/USSAC will support the Wireline Reentry development by Spiess (SIO) as a US facility; the Mac version of the DSDP CD-ROM is undergoing testing; there is a special issue of *Scientific Drilling* on ODP; and the ODP film is nearing completion (details in Appendix A).

Discussion

Duncan asked if there was a video camera onboard the *Resolution* for recording exciting moments when they occur. Harding said there is one available on the ship now. Brass said he thought that it would be a good idea to make recordings of all legs, which could later be used to produce visual summaries of the legs. von Rad asked how the ODP film would be distributed to member countries. Pyle said this had to be deferred until the film is completed and the number of copies is known.

Science Operator

Operations

T. Francis, the new Deputy Director, presented the first part of the Science Operators report. Francis and L. Garrison overlapped for part of June and July, which made for an orderly transition. Leg 131 at Nankai had severe operational problems. These included strong currents, which were not fully anticipated by the advisory system, and unstable hole conditions. Ways to avoid problems of bad hole conditions should be explored before similar environments are drilled in the future. The 2-3 knot currents generated strong vibrations of the drill pipe, leading to the unscrewing of logging tool connections, problems with the VIT-frame and SES which require cable outside the pipe, and difficulties in the lowering of casing. Leg 132 will be discussed by M. Storms and J. Natland later in the meeting. Leg 133 had just gotten under way and had not started any drilling. Clearances from Australia were acquired the week before sailing.

The increases in fuel prices did not affect the *Resolution* at the port call in Guam because the price was contracted before the recent increases, but fuel will be a larger drain on the budget in the future and may cost an extra $1M next year. The upturn in offshore drilling may also cause problems for staffing and drilling supplies in the future. SEDCO has said that the increase in the length of drilling legs from 56 to 62 days causes problems for their crews, who effectively work 70 days on and 50 days off. If the crews worked on offshore platforms their work schedule would be 14 days on and 14 days off, making it easier on their families.

Discussion

Natland asked if the hold-up with the clearance from Australia was due to problems with environmentalists. Francis said that a special permit was required for drilling in the marine park. Crawford said that the problem was with the petroleum exploration companies, who felt that they should also be allowed to drill in these areas. It had to be made clear that this drilling is not for petroleum exploration.

Publications and Staffing

A. Meyer reported on the publications schedule and on staffing of legs. During FY90, 20 *Proceedings* volumes will be produced in an effort to catch-up on the publications schedule (Appendix B). By the end of FY90 both parts A and B will have been published through Leg 116 and Part A volumes through Leg 128 (Appendix B) will be published. Legs have been staffed through Leg 135. Leg 136 will be staffed after the plans are finished by PCOM at this meeting. Eastern Equatorial Pacific Neogene has had invitations sent out, but Sedimented Ridges 1 has not yet but will after talking to the international partners at this meeting. Meyer presented a breakdown of US participants that had been requested by Tucholke and Moberly (Appendix B). The overall results have been about 50% of the participants come from JOI institutions and 50% from non-JOI institutions. The number of applicants for a leg are generally lower when legs are put into the schedule relatively late. Also the hard-rock legs that anticipate low recovery have fewer applicants. The number of participants has varied from the low 20s to high 20s, with the highest number on Leg 119 when the picket boat was alongside with extra berths. The Co-Chiefs have generally said that they would prefer to hold down the number of participants, except on high-resolution sampling, paleoceanography legs. Austin asked if non-performance increased with the total number of participants. Meyer said that it varies widely and is more dependent on how active a role the Co-Chiefs take in the post-cruise science.

G. Green, a Co-Chief on Leg 134, has approached T. Canby of the National Geographic Society about putting a photographer and writer aboard the *Resolution* on a short-term basis to highlight the drilling on the Vanuatu Leg. The article that comes out of this would integrate the scientific drilling aspects along with cultural and natural history of the region. National Geographic has expressed a willingness to pursue this article.

Discussion

von Rad expressed a concern that some delay in the publications schedule is the result of reviewers holding-up papers. Cowan said that ODP has been recruiting reviewers in advance of the paper's arrival from the author. Meyer said that the publications department is understaffed but tries to get reviewers lined-up before the papers come into the system.

Wireline Logging Services

R. Anderson presented the Wireline Logging Services report for the Lamont Borehole Research Group. He distributed a handout which presented some of the recent results of logging on Legs 130, 131, and 132. The Formation Micro Scanner (FMS) has been routinely deployed by ODP since Leg 128 in the Japan Sea. The FMS data is very useful for orienting cores and observing fine structures in the borehole. Anderson suggested that it should be an ODP policy to log all holes and not just those deeper than 400 m, since the FMS provides critical data up to the end of the drillpipe. Post-cruise processing of the gamma ray logs using spectral analysis can identify changes in sedimentation rates and reveal unconformities.

Logging on Leg 130 on the Ontong Java Plateau provided an almost complete set of high-quality logging data. Stylolites, pillow basalts and flows were beautifully imaged by the FMS. Major scientific results included logging of a wide range of sedimentological changes on a number of scales within what had been perceived in the cores as a monotonous column of oozes and chalks. Comparison of over 500 m of repeated interval between two wells only 50 m apart (807A and 807C) shows excellent replication.

Logging on Leg 131 at Nankai encountered many problems. Roughly half of the deep hole was logged through the pipe. The frontal thrust was logged and is easily identified on the logs. Similar hostile logging environments are expected during the Cascadia drilling and need to be addressed. The Lamont temperature tool was successfully run on the bottom of the tool string and provided multiple measurements showing the recovery of the hole temperature profile following drilling.

The modest logging plan on Leg 132 was unsuccessful. Four different attempts were made to lower the slimhole resistivity-caliper tool borrowed from Mark Zoback at Stanford into the 70 m hole drilled by the DCS. Only 7 m of open hole were accessed. Bridging and infill in such a narrow diameter hole make logging extremely difficult, even with a 1 and 11/16ths inch tool. Reaming appears to be the only alternative for logging high-temperature DCS holes.

Two wireline packers have been received from TAM International. During testing in the Lamont #2 test well, it was found that the deflation shunt needed to be enlarged to avoid clogging with hole debris. One modified packer was sent out on Leg 131 at Nankai. Two packers will be available on the NE Australia Leg.

Operational versions of LITHP's highest-priority slimhole logging tools (*i.e.* temperature, fluid resistivity, and fluid sampling) can be procured from either JAPEX or Sandia National Laboratories. The BRG will operate and maintain the tools on the *Resolution*. In FY1991 the electrical resistivity and possibly gamma-ray and sonic logging tools will be double dewered (assuming high-temperature crystals and transducers can be acquired). These slim-hole tools will then be evaluated in UNOCAL land wells to test both reliability and accuracy of measurements versus more conventional larger diameter tools.

The BHTV has, with the advent of the wireline heave compensator, acquired excellent data on hard sediment and basement. These data are important for providing delineation of formation contacts, fractures, and intraplate stress directions. The BRG is still negotiating the contract for the lease of these tools from the German WBK. The delay has been the BRG insistence on a paper shipboard copy of the BHTV logs. Leg 134 at Vanuatu will see the first-time deployment of three new logging tools; the CFA/ELF-developed Nuclear Magnetic Resonance Tool (NMT), the Susceptibility Tool (SUT) from Schlumberger, and the WBK Digital Borehole Televiewer.

In March, Schlumberger introduced their new digital shipboard acquisition and borehole imaging system, the Maxis X-Windows Multitask Acquisition System. The BRG has negotiated the deployment of this system on the *Resolution* at the port call in San Diego next summer.

There have been 13 Logging Schools so far, with one more scheduled for Townsville, Australia this October. The BRG is experimenting with video-taping the Logging Schools. There have been a number of ODP-related logging publications this past year.

Discussion

Langseth asked if there would be "real-time" FMS processing for the Vanuatu Leg. Anderson said that the results will be available relatively quickly but there is still a problem with having sufficient personnel. Duncan asked about the problems with logging on Leg 132. Brass said that the problem was initially caused by a piece of core blocking the bit inside, so the 4-inch pipe had to be pulled. There was also a bridging problem below the pipe.

857 Reports By PCOM Liaisons

EXCOM

Liaison R. Moberly reported on the meeting of the Executive Committee and ODP Council in Washington on 20-22. June. EXCOM and the ODPC discussed the perspective and scheduling for renewal, going country by country much as PCOM did in Paris. In summary little had changed since fall of 1989. Most timing seems about right, even though fiscal years and decision points may vary from country to country. Everyone has some worry about competing programs and global initiatives, but most are optimistic if there is not a major increase in required funds. Reports by JOI, BCOM, PCOM, Wireline Services, and the Science Operator were well received. EXCOM noted "with approval the successful efforts of all concerned in bringing the publication of Initial Reports and Scientific Results on to schedule".

Members of EXCOM and the ODPC were interested in visiting and/or participating in the short leg off Hawaii in late February as well as visiting the *JOIDES Resolution* in port in San Diego in late June; all of which requires a firm schedule well in advance of those times. The 1991 joint EXCOM-ODPC meeting is to coincide with the San Diego port call. PCOM and the Science Operator must set the dates of the Honolulu and San Diego port calls at this PCOM meeting so that EXCOM and ODPC can be informed by 1 September.

SMP

Liaison M. Leinen reported on the 20-21 March 1990 meeting of SMP, the minutes for which were included in the Agenda Book. The decision of SMP is that <u>no radioactive or enriched-stable isotope reagents</u> be allowed onboard the *Resolution*. After careful consideration, the panel could think of no essential experiments that could only be performed on the ship and recommends the banning of these reagents. The provision for requesting exceptions was to allow some flexibility in case the need for an essential experiment does arise, but the panel was not able to foresee any need. PCOM agreed that the advice of the panel was sound and passed the following motion.

PCOM Motion

PCOM recommends that the use of radioactive or enriched-stable isotope reagents be banned from use onboard the *JOIDES Resolution*. (Motion Leinen, second Brass)

Vote: for 16; against 0; abstain 0

<u>Discussion</u>

von Rad said that he was still concerned that there were no facilities on the *Resolution* for X-ray radiography of whole cores, and this has not been addressed by SMP. Brass said that there was a X-ray machine for small samples but not whole rounds. Leinen said that the panel had not understood that there was a request for an endorsement of this capability. Natland said that he was concerned that the CHN analyzer that used to be on the *Resolution* has been replaced by a Carbon-Nitrogen-Sulfur analyzer, which means that there is no longer a capability to measure H and H_2O in igneous rocks. He suggested that SMP should canvass the community about the desirability of these measurements onboard the ship during the upcoming lithosphere legs at 504B, EPR, and Sedimented Ridges.

PPSP

Liaison R. Moberly reported on the 11-12 June 1990 meeting of PPSP in Reykjavik, Iceland. For Leg 135, Lau Basin-Tonga Arc, three sites were approved, one provisionally approved, and two disapproved; the latter three were to be reconsidered if additional information would be presented at a 9-10 August meeting at College Station. PPSP also discussed the need to include consideration of possible high-temperature hazards in some upcoming legs, and discussed again possible clathrate drilling and shipboard monitoring, the safety of drilling the Northeast Australian Margin, and the Exmouth Plateau post-mortem. With respect to the last topic, PPSP emphasized that all proposed drill sites of all legs will be considered on a case-by-case basis, and that the decision to allow the twinning of an industry site, with hydrocarbon shows, on the Exmouth Plateau, should in no way be construed as setting a direct precedent to be extrapolated to other drilling proposals.

Discussion

T. Crawford had a letter from P. Davies, Co-Chief of the NE Australia Leg, which was in reaction to a comment in the PPSP minutes about presentation of the safety package and concerns for safety at the deep drill site on the axis of the Queensland and Townsville Trough. It was pointed out that the comment was made by only one member of the TAMU Safety Panel whereas the JOIDES panel as a whole had approved the drilling at these sites. The leg is fully endorsed by PPSP and PCOM.

Liaison J. Austin reported on the 9-10 August meeting of PPSP in College Station. The panel did a final review of sites for the Lau Basin that had been disapproved at the Reykjavik meeting. Sites LG-1, LG-2, LG-3 and LG-6 were provisionally approved with modifications in locations and the need to collect data as the ship approaches the sites. During the College Station meeting, PPSP was given an update on the PCS system. A draft of the Hydrocarbon Safety Manual was distributed. The safety and pollution aspects of deep crustal drilling were discussed; steam flash was judged not to be a likely problem. The need for H_2S safety abatement training for SEDCO and ODP personnel was recommended.

T. Francis presented a revised drilling plan that is based on the safety recommendations of PPSP, which require that LG-3 be surveyed by the *Resolution* for approval by the PPSP Chairman, PCOM Chairman, and Science Operator. PCOM considered the revisions which were in the spirit of the original plan of the Lau Working Group and takes the safety considerations into account, and produced the following consensus.

PCOM Consensus

> The order for drilling sites on the Lau Basin Leg (135) will be modified so the order will now be LG-2, LG-7, survey LG-3 for PPSP approval, LG-10, LG-3, LG-6, LG-1, and LG-9.

The Science Operator said that in the 58 days for this leg, only sites through LG-6 will probably get drilled. The other sites will serve as alternates.

DMP

Liaison D. Cowan reported on the 28-29 June 1990 meeting of DMP held at the University of Washington. Cowan discussed DMP recommendations 90/10-90/15. There is a great concern about improving hole stability so that logging can be accomplished in accretionary prisms. The problem should be considered by TEDCOM. JAPEX should be approached about supplying high-temperature logging tools and logging cables (already discussed by T. Pyle). DMP has recommended a suite of logging measurements for the Oahu Pilot Hole, including a test of the borehole seal. A TECP liaison should be appointed to DMP, and liaisons from either the BRG or DMP should go to DPG meetings. Further discussion of some of the items was deferred until the appropriate place later in the agenda.

SSP

Liaison J. Watkins reported on the 12-13 June 1990 meeting of SSP at Lamont. SSP updated its assessment of Pacific programs and organized its future work for Atlantic programs. SSP discussed the potential problems with conflicts of interest since many SSP members have been involved with the preparation of various drilling proposals. The panel felt that as long as the involvement was at "arms length" there should be no problems. SSP discussed and then suggested remedies for the planning process concerning weather- and current-related oceanographic problems at sites. Important specific comments were made about Chile Triple Junction, Cascadia Margins, North Pacific Transect, OSN Pilot Hole, Hess Deep, and Peru Gas Hydrates. The data package for the OSN Pilot Hole is not adequate and will require further SSP and PPSP review. The Hess Deep proposal was discussed and the panel recommended additional work including high-resolution near-bottom studies of rubble zones and additional MCS lines to elucidate structure. SSP does not think that the data will be ready for evaluation before 1992.

Discussion

Natland said that the dive video tapes of the outcrops in the Hess Deep can be used to pick drilling sites. Studies of the rocks are continuing and will allow good sites for the sections to be chosen. Meyer said that SSP did not view Hess Deep worth drilling without understanding the structure. Francheteau said that the MCS lines may not reveal the structure either. Natland agreed that due to topographic complexity the MCS will probably not reveal structure in the ultramafic and gabbroic rocks. Leinen said that the Hess Deep proponents need to respond to these criticisms.

Cascadia DPG

Liaison M. Langseth reported on the 9-11 August 1990 meeting of the Cascadia Detailed Planning Group in highly recommended Quinault, Washington. The DPG has recommended a plan that integrates primary objectives from both the Oregon and Vancouver proposals. The plan is to drill three shallow holes on the Vancouver margin to study variations in porosity and fluid flow in the accretionary prism. The flow at this site is calculated to be a broad diffuse flow ("sweating"), which leads to the formation of the BSR. Drilling is estimated to take 26 days including the suite of downhole measurements. For the Oregon margin, four holes are planned to study the observed more focussed flow through conduits ("peeing"). The first site will be through the primary frontal thrust to study flow from deep in the wedge through fractures. The second hole will be in the backthrust. The third hole will be at an out-of-sequence thrust where the BSR seems to be pulled up at the fault. The fourth hole will be at the landward vergent thrusts which form conduits for fluid flow. This will be a reentry site, cased to 300 m with perforated casing to guarantee success of the packer experiments. A very ambitious program of downhole measurements is planned which will include

Geoprops, LAST, VSP, etc. The sealed cased hole will serve as an ocean bottom observatory. The total time estimate for the leg is 57.7 days including logging but not any transit times.

A second leg is planned to follow 2 years after the first leg. This leg will amplify what was done on the first by recovering instrument packages, re-instrument the holes with new experiments, and additional drilling. The second leg will drill a reference hole outboard of the wedge as well as drill the primary frontal thrust down-dip from the hole drilled on the first leg for tracer studies of the rates of flow.

Discussion

Malpas said that if the second leg is 2 years later, this will put it during the time the ship is in the Atlantic. Langseth said that the DPG felt that this was the most appropriate time for a follow-up leg. Taira asked why two holes were to be drilled in the primary thrust. Langseth said that in part this is to study quantitatively the effects of compaction on porosity. Calibration of the seismic velocity increase due to compaction will help to understand the overall picture revealed by the good seismic coverage.

Taira said that he thought the DPG should have focussed on one set of objectives rather than mixing the two sets of proposal together. He was concern that the plan might be unrealistic about what can be done in the time available. Francheteau also questioned why the two proposals were combined. He thought that both margins deserve to have adequate time to answer the questions. Langseth said that the plan takes the best objectives from both margins so that a first approach is made towards understanding them. The plan proposed will answer some very fundamental questions about fluid flow in these margins.

von Rad suggested that SGPP and TECP should evaluate whether or not this is a reasonable drilling plan for these margins. Brass said that he thought these were two important regional studies to get started. The question about whether or not to study one in more detail should be answered by the thematic panels. Leinen said that the thematic panels should be asked if the compromise plan will lose any important thematic objectives.

Cowan asked how the focussed flow will be examined by drilling. Langseth said that the Geoprops probe, LAST tool, Wireline packer and Straddle packer can all be used to study pressures. Fluid samples can be studied geochemically to identify various processes and sources.

858 Reports By Joint Liaison Groups

FDSN

A. Dziewonski could not attend the PCOM meeting, so M. Purdy (JOIDES co-chairman) presented the plans for the Federation of Digital Seismic Networks (FDSN) as they relate to ODP. Three members of the Liaison Group met at the Spring AGU meeting in Baltimore and discussed technological issues concerning the Oahu pilot study, including the possible use of the Romanowicz downhole seismometer.

The long-term goal is the placement of 15 to 20 broad-band ocean floor seismographs in ODP boreholes in areas where no land or island broad-band observatory is nearby. The scientific goals of the program are to image the global earth structure better, and to constrain models of oceanic upper mantle dynamics and lithosphere evolution. The resolution of the present global tomography is limited by the seismic station coverage. A better spatial distribution is needed to sample the ray paths from large earthquakes. Oceanic islands are also not ideal stations because they are relatively noisy and have anomalous structure beneath them. Better coverage will also enhance source studies for earthquakes in areas such as California where there is inadequate coverage by ocean island stations.

Several technical issues remain to be worked out. The ability to operate a seismograph downhole for long periods of time has to be demonstrated. Data retrieval options have to be worked out. Possibilities include use of ocean-floor telephone cables, satellite telemetry, and interval recording. The pilot experiments are necessary to test the equipment and make a comparison between ocean-bottom observatories and nearby ocean-island observatories.

The Federation of Digital Seismic Networks at its annual meeting encouraged the efforts to form an Ocean Seismic Network using ODP boreholes by issuing a Statement of Support (Appendix C).

Discussion

Duncan asked about the timing and methods of deployment of the seismometer at the Oahu site. Purdy said that the seismometer will be deployed using the wireline reentry system sometime during the 1992-1993 time frame. No exotic experiments are planned at the time of the drilling of the borehole. Duncan asked what logging would be necessary for the pilot study. Purdy said standard logging and a VSP would be all that is required.

Austin said that the drilling in the Atlantic will provide opportunities to establish some OSN stations, and asked if the Liaison Group will advise on the best placement of holes. Purdy said the plans right now are to piggyback on other efforts when possible. Until the pilot study has been done, the practicality of the ocean floor observatories remains unknown, so it is hard to justify planning holes solely for this purpose. When opportunities arise to argue for leaving cased reentry holes or quickly drilling a hole in an area lacking coverage, this will be done. Brass asked if a list of prioritized locations would be produced, once the concept was proven. Purdy said that in coordination with FDSN the logic of what order to fill in gaps will be developed.

Taira asked about casing of the hole. Purdy said it has to be cased through the sediments to competent basement. Natland asked how deep the hole needed to be drilled. Purdy said that in order to study the propagation periods for long-period waves and noise levels to compare with the seismic station on Oahu, experiments need to be carried out in sediments and basement at various depths.

GSGP

E. Kauffman could not attend the PCOM meeting, so T. Bralower (JOIDES co-chairman) discussed the Liaison Group with the Global Sedimentary Geology Program (GSGP). This liaison group has not yet met together, but plan to get together in late August in Denver at the Cretaceous Resources meeting. The GSGP is an activity of the International Union of Geological Sciences, which has the objectives of: understanding the history of the earth; finding and producing natural resources in sedimentary rocks; and training sedimentary geologists. The International Committee selected Cretaceous Rhythms, Events and Resources (CRER) as the first research project. The objectives of CRER are to: 1) test global synchroneity of various rhythms and events; 2) characterize and explain widely distributed sedimentary deposits; and 3) enhance further discovery and development of resources. There are 5 working groups in CRER: WG1 - Sequence stratigraphy and sealevel change; WG2 - Sedimentation in oxygen-deficient oceans; WG3 - Cyclostratigraphy; WG4 - Cretaceous carbonate platforms; and WG5 - Paleogeography, paleoclimatology, and sediment flux.

One activity for the Liaison Group will be to help strengthen drilling proposals with Cretaceous aspects such as: Atolls and Guyots; Shatsky Rise; NW Africa Transect; Equatorial Atlantic Margins; Argentine Basin; High Latitude Transects; and Somali Basin. There is a concern that there is not a good balance on OHP and SGPP between panel members with research interests in the Mesozoic and those with Neogene interests; this is discouraging proposals for drilling older sequences.

Discussion

Brass said that there also needs to be a stronger voice for the technological advances needed to recover more than 20% of older sections. Leinen said that a broader look than just recovering more samples needs to be taken. Models for the formation of black shales and oxygen-deficient oceans which can be tested by drilling need to be developed; drilling sites for doing these tests need to be identified and the proposals written. Bralower said that some of the proposed margin transects could address these types of problem if they get input from GSGP. Moberly said that carbonate platforms and some other areas which lack proposals could also benefit from GSGP input.

859 Engineering Developments

B. Harding discussed engineering developments at TAMU (Appendix D). The DCS test received most of the efforts over the past months. Harding commented on the following developments: Conical Side Entry Sub (CSES) has been completed and shipped to the vessel for Leg 133; Vibra-Percussive Corer (VPC) has been fabricated and shipped for testing on Leg 133; Motor Driven Core Barrel (MDCB) formerly called the Navidrill Core Barrel (NCB3) has undergone further modifications and will be tested again on Leg 134; Sonic Core Monitor (SCM) is being reconfigured for use with the RCB coring system; this will include hard rock orientation capability with core scribers and a connection to a magnetic multishot camera, and will undergo further testing on Leg 134; APC Breakaway Piston Head (BPH) has been put on hold since development of the VPC may make it superfluous; Pressure Core Sampler (PCS) was modified for use on Leg 131 (Nankai) where it recovered 0.49 m of clay and clathrates near hydrostatic pressure; Drill-In-Casing System (DIC) was successfully used on Leg 131 and will be available again after minor modifications. The reentry cone seal is being developed as a joint project among E. Davis, K. Becker, B. Carson and ODP. ODP Engineering is developing the seal mechanism while Davis develops the data logger, Becker develops the sensor string, and Carson the fluid sampling feed-through. The mechanical seal should be ready for testing at the Oahu pilot hole.

Technical support of third-party developments continues to be a significant role of ODP engineering, these include: 1) Lateral Stress Tool (LAST) being developed by K. Moran; successfully tested using a modified APC at Nankai; 2) Geoprops Probe being developed by Dan Karig; will be tested at ODP in August and later this fall in New Jersey, but will not be deployed before Leg 134 (Vanuatu); 3) ONDO Thermistor String developed by ORI and ODP; deployed in Hole 808E but has not yet had its data recovered.

Discussion

Pyle asked who was in overall charge of the reentry cone seal project. Harding said that the fabrication of the mechanical seal was under the supervision of T. Pettigrew at ODP, and the seal is the part to be tested at the Oahu site. M. Cita asked how much time on Leg 134 will be needed to test the MDCB, SCM and Geoprops. Storms said that these will be tested during normal operations and will require only a few extra hours.

Leg 132

M. Storms discussed the results of the test of the Diamond Coring System (DCS) on Leg 132. The Engineering Leg accomplished a thorough evaluation of the DCS in the bare, fractured rock environment. The system was not evaluated in interbedded chalks and cherts or shallow water atoll and guyot carbonates. Test results for the overall system as well as subsystems are given in Appendix E. On the whole the DCS system has proven itself for deployment from the *Resolution* and shown the capability to drill and core in fractured rocks. The problems encountered with recovery in some units were the result of the friability of the material and the choice of the core catchers. The mini-hard rock guidebase design proved successful after minor modifications and the "pogo" concept worked very well. No major engineering changes are needed in the DCS at this time, just tweaking of some of the components. Two important unresolved questions for the EPR drilling are bit life and rates of advancement in fractured basalts. There were no problems with hole instability and getting pipe stuck with the system used.

Discussion

M. Cita asked about the core catcher design used for the DCS. Storms said it was a standard off-the-shelf industrial design for hard rocks. Natland said that the core catcher was not the proper design to catch friable material and the problem may have been aggravated by the erosion caused by spray of fluid ahead of the bit.

Langseth asked if the system will be able to drill a 1 km hole in the basalts at the EPR. Storms said that this cannot be answered very well at this time. The platform mounted system is not efficient for deep drilling. The pipe feeding system takes time and to change a bit requires a round-trip of the pipe, which will take between 9 to 12 hours. The present range of the system is about 300-500 mbsf. For more efficient operations, the rigging crew needs to work on the rig floor. Harding said the present DCS configuration is robust enough to do the job. The next major expenditure for the system will be to get it on the rig floor with the tensioners. Brass said that the time for tripping the core barrel using the DCS is as efficient as the conventional system on the *Resolution*. Storms said that guides for estimating drilling times with the DCS are being prepared for the 4500 m configuration.

860 Next Engineering Development Leg

J. Natland and G. Brass in a letter distributed at the meeting suggested that the next test of the DCS be at Loihi Seamount immediately following the drilling of the Oahu Pilot Hole. This drilling would allow more experience to be gained with the system at shallower water depths before undertaking scientific drilling at the deeper EPR axis. The principal engineering objective would be to gain more experience coring in young basalts for better evaluation of bit life, core catchers, and wireline retrieval. The engineers said that the DCS will be ready for further testing by January 1991.

Discussion

Langseth said that at the Paris PCOM meeting, the next Engineering Leg for testing the DCS was deferred because the engineers said there would not be sufficient time to work on the DCS if the next test was in February 1991. Storms said that the prior time estimate was overly conservative since the DCS does not require as much work as anticipated.

Leinen commented that the drilling in the Bonins was supposed to be in young fractured rocks, based on what we thought we knew; how can we be sure that the drilling at Loihi will be the same as the EPR? The best way to evaluate the system for EPR drilling is to go there for the engineering test. Francheteau agreed that the EPR would be a better place for the next test of the DCS; if we say we are not going to go to the EPR until fully prepared, then it will probably never get drilled. Storms said that an engineering leg at the EPR would be advisable before any drilling there, regardless of whether or not there is drilling at Loihi. Austin said that the test should be done where the science has been judged to be of high priority by LITHP, therefore the EPR makes the most sense. Natland said that Loihi was suggested because of its shallow depth, which means that more time can be spent evaluating the coring operations and less time tripping pipe. Watkins said that the drilling at the EPR should begin as soon as possible. Malpas agreed that it was important to begin this drilling as soon as possible.

Malpas said that addition of the Loihi drilling to the schedule will delay other programs, putting the Sedimented Ridges program in a bad weather window, as well as delay the appearance of the *Resolution* in the Atlantic. Moberly said that it is important for the renewal process that ODP show progress is being made towards the technically challenging drilling at ridge crests; a major engineering success is needed before renewal to show that ODP has made a significant advancement over DSDP.

PCOM Motion

> The next test of the Diamond Coring System will take place on the next leg at the East Pacific Rise. (Motion Leinen, second Francheteau)
> Vote: for 14; against 1; abstain 1

Wednesday, 15 August 1990

861 Adjustments to the FY91 Program Plan

Moberly expressed his concern that additions to the schedule are consuming time originally intended for science legs in the central and eastern Pacific, since PCOM has indicated a time for the *Resolution* to go to the Atlantic. There are several requests for changes or additions to legs already in the schedule which PCOM took under consideration. Adjustments to the Lau Basin Leg were made earlier in the meeting (see Minute 857).

Location of Oahu Pilot Hole

M. Purdy discussed the changes in location suggested for the Oahu Pilot Hole to be drilled on Leg 136. The original site had been proposed for the arch to the northeast of Oahu, based solely on OSN requirements. Sites to the south of Oahu have also been proposed for scientific and logistic reasons. The scientific goals for a site on south of Oahu are the most compelling and fit the OSN requirements as well. Proposed sites in the moat are not tenable due to great sediment thickness (~1 km) and presence of avalanche debris deposits. OSN prefers that the sediment thickness be around 200-300 meters as on the arch. There is also deep velocity data on the arch which indicates normal crust and upper mantle. Logistic arguments for data telemetry and ship use are not compelling at this stage, since there are no plans to instrument the site permanently and the location of debris flows closer to Oahu is an unknown factor. The size of the equipment package to be deployed will require a large-size research vessel regardless of how close the site is to Oahu.

The proposals to move the site to the arch south of Oahu will bring a greater scientific benefit to ODP. The proposed scientific studies by Garcia, Wilkens, and Keating of windblown ash deposits from the Hawaiian volcanoes, paleomagnetics and physical properties are good science. The southern arch site is at the intersection of two MCS lines, has two-ship Expanding Spread Profiles and Sonobuoy data. The seismic control is very good and the structure is well known. Deep velocity data on the arch indicates normal crust and upper mantle at this location. The top of the basement is at 240 mbsf. In summary, the reasons for choosing this site are: proximity to the Global Seismic Network Station on Oahu; excellent support logistics; 200-300 m of sediments; auxiliary scientific studies; good velocity control, intersecting MCS lines; and the GLORIA data indicates it is clear of debris flows. OSN would be happy to go with the southern arch site.

Discussion

von Rad asked if there would be continuous coring of the sediments. Moberly said that this would depend on whether or not PCOM decides to accept the add-on and provides the extra time required.

Natland asked if the seamounts located near the proposed site would influence the OSN goals. Purdy said that the seismic data indicate that the crust and mantle are normal at this location.

Berggren said that from a paleomagnetic view-point, the southern site makes more sense for drilling.

Test of Borehole Seal at Oahu Pilot Hole

K. Becker discussed the proposed add-on to the Oahu leg for testing the mechanical seal for reentry cones. The ODP Reentry Cone Seal is an integral part of the scientific drilling programs for both Sedimented Ridges and EPR Bare-Rock legs. Becker presented sketches of the seal (Appendix F), which in addition to the mechanical seal will eventually contain a data logger, a sensor string, and a fluid sampling feed-through. It is essential that the mechanical packer and plug latching ring locks be tested in the new style reentry cones prior to deployment on the scientific legs. The test requires the *Resolution* both to place the seal and to remove it. The seal requires a 30,000 pound over-pull to remove it from the cone, since the latches are designed for 1,000 psi overpressure in the borehole. The test cannot be done on land since it needs to be a hydrostatic test of the seal at ridge-axis depths. The test will require about 40 hours. The plug should not endanger either the hole or the cone since it can be pulled out. The sensors and data loggers can be tested on the seafloor at a later time, but the seal requires testing in a reentry cone at ridge-axis depths.

Discussion

Purdy said that learning how to seal the hole is also of importance to OSN, since long-period noise can result from water flowing in the hole. Purdy asked why the seal is designed for removal only by the *Resolution* rather than by wireline or ROV? Becker said that the seal had to be designed to withstand an overpressure of 1,000 psi in the borehole possible in accretionary prism drilling, but still capable of being pulled out by the *Resolution* if there is a failure of the packers or latch ring to release. In the future, seals to be deployed at sites where no formation overpressures are expected could possibly be modified to require much less pullout force and therefore be removable without the drillship. The plug outlets for wireline or ROV access are for access to fluids and data, not removal of the seal.

Langseth asked what specifically would be tested. Becker said that the mechanics of installation and removal using the hardware plus the actual ability to seal the borehole. Langseth asked how the sealing of the borehole will be tested if there are no sensors installed. Brass suggested that the drill string be latched-in and the hole pressurized with the mud pumps to see if the cased hole holds pressure. Austin said that it is important to have a real test of the ability to seal the borehole; this may take additional time. Harding said that time for a pressure test is included in the 40 hour estimate.

Cowan said that the record of having equipment work the first time it is tried is not good, therefore it is essential to test the seal before the Sedimented Ridges leg. Francheteau agreed that the seal needs to be tested before the science legs, but thought land tests in addition to the sea trials would be appropriate.

Langseth asked if sufficient funds were available and Harding said they were for building the mechanical part of the seal. Leinen asked when the seal will be ready for testing and who was in charge of the project. Harding said that the design will be done at the end of the summer and then bids will be requested for fabrication. Harding said that since four persons were involved with different sources of funding, no one person was in charge. Langseth said that one main person should be in charge of the project. Harding said that Pettigrew is in charge of fabrication.

Time Requirements for Oahu Pilot Hole

PCOM reviewed the DMP recommendations for logging during the Oahu Pilot Hole Leg. These are BHTV, Sonic/Density and VSP (if sonic log poor). Anderson recommended a single logging run with the Quad Combo plus borehole imaging (either BHTV or FMS). Time requirements are about 36 hours for standard logging. The VSP will take another 36 hours. DMP put a higher priority on the Borehole Seal test than the VSP.

Time estimates for the leg were as follows:

8 days	Drilling and Casing
3 days	Sediment Coring
2 days	Logging of Open Hole
2 days	Borehole Seal Test
2 days	Transit to and from Honolulu

17 days total (would mean 3 days added to schedule)

Discussion

Moberly pointed out that the thematic panels have not had an opportunity to comment on the addition of the Oahu Pilot Hole to the schedule or on the desirability of coring here. These additions directly effect the amount of time that they have available for scientific drilling in the central and eastern Pacific. Malpas said that the addition of 3 days to the Oahu Leg will remove 3 days from the Engineering Leg at 504B as things now stand. More time may need to be added to the 504B Engineering Leg.

Leinen said that the proposed additions will make the Oahu Leg more of an ODP-type leg and produce some immediate science results for ODP plus earn some good will. There are strong argument for the coring, the Borehole Seal test and logging. Brass agreed that the three days should be added.

Purdy asked if the VSP is included in the time estimate. Langseth said that it was not. Austin reminded everyone that DMP endorsed the seal before the VSP, so this means that VSP drops off because of lack of time.

Time Requirements for Engineering Leg at 504B

At the Paris meeting, PCOM accepted the LITHP recommendations for logging, milling operations, and drilling ahead at 504B: after reentry, log temperature, sample fluid, and measure permeability; then mill (and fish or both); if the hole is cleared with time remaining, core ahead. If it becomes obvious that clearing will be unsuccessful in the allotted time, the remaining time should be devoted to as full a logging program as possible. DMP has made similar recommendations for logging with the exception that they propose a more extensive logging program before casing the hole in place of coring ahead. The Science Operator requests that more time be allowed in order to improve the chances of success for coring ahead at 504B.

Francis reviewed the operations history at 504B. At the end of Leg 111, the bottom of the hole was 5036 m beneath the rig floor and the time for a round trip to change a bit was about 20 hours. Bit life was averaging about 20 hours and the penetration rate was around 2 m/hour. Average recovery had fallen to 15% on Leg 111. Some of the material in the bottom of the hole include a diamond bit, as well as various parts including a steel flapper, a float valve and 42 steel ball-bearings, plus spall from the sides of the borehole. There are equivocal indications of possible problems with wear of the casing.

Francis presented flow-charts diagramming options and time estimates for proceeding at 504B (Appendix G). The most optimistic scenario would require 16 days of operations, and a realistic scenario is 22 days. The present schedule has 15 days of operations on-site at 504B. The Science Operator recommends that at least 3 weeks should be devoted to these operations to maximize the chances for success. The present estimate is that there is a 75% chance of success for getting the hole open by milling operations. If operations proceed smoothly and there is time to drill ahead, a test of tri-cone bits against narrow kerf diamond core bits is planned to see which gives the better penetration and recovery rates. If the casing is bad another short leg may be required. Options depend on the state of the casing, and range from patching (4 days), to setting a protective liner (3 days), to abandoning the hole (Appendix G). If the protective liner is set, then drilling would have to proceed with smaller diameter drilling systems. If the hole must be abandoned, plans have to be made for what to do with the remaining time. It is estimated that around 37 days would be needed to drill a new site without coring. A similar amount of time would be needed to clean and drill ahead at Sites 504A or 504D.

Discussion

Moberly said that this plan differs from what LITHP recommended. LITHP recommended drilling ahead only if time was available after milling. Francis said this plan is not significantly different, only if the extra time is available will the drilling experiments be done and these are important for evaluating how drilling should proceed. Moberly said that LITHP recommended that if it was not possible to clear 504B, then the full suite of logs should be run and the site abandoned. LITHP could not recommend drilling any other sites in this area.

Von Rad asked what was the most likely bit for drilling the 900 m to Layer 3. Harding answered the diamond-type bits. Langseth asked how the diamond bits would work with the present system. Harding said 60 feet of core will be cut and the whole drill string will be tripped since the wireline system will not work with this system. Langseth asked if this would slow down operations. Harding said that since the bit life is about 20 hours, the drill string would be tripped about this time anyway. Duncan asked what would be done if everything proceeds smoothly and only 16 days are required to prepare for further drilling. Francis said that the extra week will be devoted to coring ahead. Duncan said that this was the LITHP recommendation, so he sees no conflict.

Cita asked what would be done with the remaining time if the crustal drilling program at this site has to be abandoned entirely. Becker suggested that the program of sediment coring for OHP that was not fully accomplished on Leg 111 could be done. Austin suggested that the guidebases be set at the EPR. Brass suggested that the flow-charts diagramming options and time estimates for proceeding at 504B be examined by the thematic panels so they could give their priorities for proceeding along the branches. Moberly said the thematic panels will be asked what to do if time becomes available in this area.

JGOFS Experiments on Eastern Equatorial Pacific Neogene Leg

JOIDES has received a letter from M. Leinen acting on behalf of the Joint Global Ocean Flux Study (JGOFS) requesting that ODP collect a set of measurements and samples as an add-on program while the *Resolution* is on station drilling sites for the Eastern Equatorial Pacific Neogene Transect Leg. The measurements and samples include: meteorology and ship position; CTD; O_2; fluorometry, optics (at least PAR); collected samples for analysis of nutrients (NO_3, NO_2, PO_4, $Si(OH)_4$, and NH_4); POC/PON; and extracted chlorophyll and phaeopigments. The Science Operator has indicated that these measurements should be possible to collect on a non-interfering basis with the drilling operations. The samples will be collected, by hydrocasts, from the upper 200 m of the water column. The Co-Chiefs are willing to consider these experiments. These experiments will not require any additional time be added to the leg. Details about which technician to assign to handle the hydrocasts and samples need to be resolved.

Discussion

Francheteau asked why the drilling vessel was needed. Leinen said that the *Resolution* represents a ship-of-opportunity which will be in an area of interest to JGOFS as well as ODP. The advantage of the *Resolution* over other ships in the area is that it occupies one site over an extended time period. The spacing of sites is also appropriate for the JGOFS needs.

Moberly noted that JGOFS is one of the international programs with which ODP has been seeking to form links. It is appropriate for ODP to accept these experiments since they will not interfere with drilling operations and do not add time to the leg. Austin said that the cruise prospectus should state specifically that these experiments will be done on a non-interference basis and there may be days or sites when it is not possible to do them.

PCOM Consensus

PCOM recommends the accommodation of the JGOFS request for experiments on a non-interference basis on the Eastern Equatorial Pacific Neogene Transect Leg.

Additions to the FY91 Schedule

PCOM formally accepted the additions to the FY1991 schedule discussed above by passing the following motion.

PCOM Motion

Three days will be added to the operational days for the Oahu Pilot Hole Leg; Six days will be added to the operational days for the Engineering Leg at Site 504B; and whatever port time necessary to accomplish crew changes to accommodate these additions will also be added. (Motion Leinen, second Malpas)

Vote: for 16; against 0; abstain 0

862 Reports from Co-Chief Scientists of Recent Legs

Leg 130 Ontong Java Plateau

Co-Chief Scientist Loren Kroenke presented the results of Leg 130 on the Ontong Java Plateau. The primary objective of the leg was the Neogene depth transect to study paleoceanographic changes. A further objective was sampling of the basement of the plateau for petrological, geochemical and paleomagnetic studies. A total of 16 holes were drilled on the plateau, with a record 4822 m of core recovered. At Sites 803 and 807 at total of 149 m of Aptian to Albian aged basement was recovered. The most complete Neogene section was recovered at Site 806, elsewhere there were large hiatuses in the sections.

Cretaceous/Tertiary boundary sequences were recovered at two of the sites, a clay-rich facies with enough paleontological control for identification at Site 803, and a carbonate-rich facies at Site 807. These sites are in similar paleopositions with a difference in basement elevations of only 140 m. The difference in the K/T boundary facies is possibly related to a steep gradient in the CCD. The controls on sedimentation rates and carbonate contents seems to be paleoceanographic variables and not the time the plateau moved beneath the equator.

The basalts represent multiple submarine flows, with a hiatus at Site 807 between the deeper flows and the upper pillow basalts. Geochemically the basalts show a hotspot affinity, and are similar to basalts from Malaita and the Nauru Basin.

Leg 131 Nankai

Co-Chief Scientist Asahiko Taira presented the results of the drilling of the Nankai Accretionary Prism on Leg 131. Only one site (808) was occupied on this leg. The site was located in the middle of the Nankai Trough in an area where the turbidite section overlying the hemipelagic section was thinnest and where high heat flow should produce higher rates of diagenesis. The drill site was situated to penetrate through the sediments to the frontal thrust, décollement and then to basement.

Drilling cored sands, frontal thrust breccia, highly deformed sediments, shear banded sediments, thrust faulted sediments, slickensided rocks in the décollement, undeformed hemipelagic sediments, and basement. The décollement zone was penetrated at about 900 m and was characterized by scaly clays about 19 m thick. There were no veins or mineralization found in the décollement zone. The sole of the décollement was characterized by 20 cm of clays below which there was no deformation. Just above the basement acidic tuffs and red clays were found. Core recovery was very good and will allow many studies to be carried out. Problems with hole conditions and vibration of the drill pipe caused by high currents, prevented the extensive program of downhole measurements from being carried out. No lithological differences were found in the hemipelagic sediments above and below the décollement. There are changes in the number of faults/m as well as physical properties at the décollement.

M. Kastner presented some of the results of geochemical studies of pore water squeezed from the sediments. Chlorine was found to increase in abundance to 500 m then to decrease until the décollement is reached where it again increased. Possible sources of the influx are local dehydration reactions of clay minerals or an influx from elsewhere in the wedge. Dehydration could only supply a maximum of 50% of the water needed. The rest comes from lateral fluid flow from some horizon elsewhere in the prism due to dewatering by deformation of the sediments. The flow is diffuse with no channeling evident.

Leg 132 Joint Engineering and Science Leg

Co-Chief Scientist Jim Natland described the scientific results of drilling in the Bonin backarc on Leg 132. The primary drilling site (809) was in an area of volcanic vents and flows in the initial rifting zone of the backarc where the recent volcanism laps onto older volcanic peaks. Initial drilling and coring in the fractured rocks had recovery rates around 60%, until the thin carapace of basalts overlying a second friable unit was penetrated. In the underlying unit there was no recovery, with the exception of a few small grains. This unit appears to be similar to the "basalt mousse" encountered on Leg 126. The few fragments recovered were of a highly vesicular basalt that had interconnected trains of vesicles with a geopetal-like structures where melt had inflowed to fill the bottom of the vesicle.

A second site on was briefly occupied on Shatsky Rise (Site 810). Initially the *Resolution* surveyed the area searching for thin sediments overlying the Maastrichtian age cherts. Eventually a site was found with 120 m of sediments over the cherts. The sediments were piston cored to the top of the cherts prior to the attempted deployment of the DCS. The faunas found in these sediments indicate mixing of warm and cold water masses. In addition 15-16 ash layers were found in the Pliocene section. The surveys around Shatsky Rise indicate that the top of the seamount could have been at sealevel previously. Problems with equipment and the weather prevented further work at this location.

PCOM applauded Drs. Kroenke, Taira, and Natland for their efforts as Co-Chief Scientists, and thanked them for their presentations.

863 Facilitation of Renewal of ODP

Report of the *Ad hoc* Strategy Committee

J. Austin led the discussion about facilitation of renewal of ODP. He discussed the Minutes of the 29 May meeting in Washington. A salient point was the recommendation to PCOM that the following six themes become a focused approach to future ocean drilling:

- High-resolution Neogene Paleoceanography transects
- Sea-level studies
- Deep-drilling to understand the structure and fluid dynamics of accretionary prisms
- Passive-margin evolution
- Evolution of sedimented and unsedimented ridge crests
- Offset drilling for deep lithosphere objectives.

The list had evolved from a comparison of the objectives of Phase 1 of the Long Range Plan with the highly ranked proposals from any ocean, with some committee adjustments in scope and wording. Presumably the supporters of the chosen programs, realizing the opportunities for more drilling for their proposed science, would provide enthusiasm for renewal that would more-than-offset loss of support from those proponents whose interests would be left out.

In light of the themes listed above (while stressing that they are a flexible framework into which modified or new themes could be incorporated), STRATCOM suggested that since some of the highest-ranked thematic objectives will require many legs, and even a renewed program will nevertheless have only a finite number of total legs, PCOM should select about 5 programs, announce a focus of drilling on those, and restructure its thematic and detailed planning accordingly. To do this PCOM would have to charge the thematic panels to go beyond existing proposals and DPG drilling plans to synthesize a prospectus involving a finite number of long-term focuses of ODP. The following questions need to be addressed:

- How will such programs be tackled effectively?
- Who will the proponents of these programs be?
- Do the proposals exist to tackle these programs effectively? If not, how will these proposals be generated?

The November 1990 Annual Meeting was proposed as a time to start this process, after a general discussion within PCOM in August.

The committee also proposed the inclusion in the Long Range Plan brochure of a series of one-page summaries of ODP's existing and newly formed relationships with important global initiatives in the earth sciences. These were to be on global change, technology development, global sedimentary processes, ridge-crest processes, high-latitude drilling, and continental drilling.

Other suggestions were:

- JOI was asked to include a presentation, similar to its one before the National Science Board in March, before EXCOM-ODPC in June.
- JOI was asked to consider augmenting the number of LRP/brochure packets to be published, to allow more mailings.
- NSF was to be asked to approach the Ocean Studies Board of NAS-NRC for a formal review of the LRP (D. Heinrichs was so asked at the EXCOM meeting).
- PCOM is asked to retain STRATCOM as an *ad hoc* executive subcommittee of PCOM

Discussion

Malfait said that NSF will approach the National Academy of Sciences about reviewing the Long Range Plan. Moberly said that the hope is that an early review will help in blunting any criticism that might come at a later time during the formal renewal process.

A long discussion was held on the proposed focussing of ODP. Counter arguments made at the meeting were that many proponents believe that diversity has been an asset of the program, bringing in many scientists outside the oceanographic institutions; the notion that some small group of scientists should decide what will and will not be allowed is contrary to a proposal-driven program where any proposed science, if it is good enough, has a chance for selection; too few of the "global initiatives" could expect ODP support; and confusing signals would be sent during the renewal period if having just produced and endorsed a Long Range Plan we now change its most fundamental aspects to a different plan.

The result of these discussions was that ODP will stick with the Long Range Plan. Nevertheless, great concern remains among most PCOM members that the objectives and phasing of the Plan may not succeed unless the advisory structure considers carefully how to carry it out. This motion followed:

<u>PCOM Motion</u>

In order to develop an implementation plan for the Long Range Plan, PCOM charges the thematic panels to:

1) Identify the appropriate way to integrate existing individual proposals into the larger thematic programs identified by their global prioritization and by the Long Range Plan;
2) Plan to obtain proposals for themes or theme elements that are not presently represented;
3) Integrate interdisciplinary interests into the program effectively; and
4) Determine whether it is necessary to identify coordinators or proponents for the theme program.

(Motion Leinen, second Brass)

Vote: for 13; against 0; abstain 3

Thematic panels should begin to answer this charge at their next meeting.

Because of its successes and its potential for further success relative to the exceptionally important matter of program renewal, PCOM asked the *ad hoc* strategic planning committee to continue its efforts.

<u>PCOM Motion</u>

STRATCOM will have another meeting to address the best ways to present the recent accomplishments and advances of ODP; and to illustrate the promise of the program over the next ten years, with the objective of enhancing the chances of renewal. (Motion Langseth, second Malpas)

Vote: for 16; against 0; abstain 0

Members of the *Ad Hoc* Strategy Committee are J. Austin (chairman), H. Beiersdorf, M. Leinen, J. Malpas, R. Moberly, and N. Pisias.

Addition of Innovative Science to Legs

The absence of regional panels and the restricted mandates given to detailed planning groups has caused some concern that worthwhile scientific objectives are being missed if those aspects of science are not included in the original proposal being reviewed by a thematic panel or sent to a DPG. Moreover, there may be instances where an objective can be met along the transit between sites or to or from ports. N. Shackleton has suggested that proposals for add-on science opportunities be considered to put more innovation into drilling legs. Examples of "add-ons" of a couple of days to a couple of weeks might be deepening a paleoceanographic hole into basement in an area of abnormal crust; plugging an old re-entry cone en route to a scheduled site; adding a "tectonics" site to a "fluids" leg; or adding an experiment or testing a tool where not in the original scientific proposal. Most PCOM members believe that a mechanism for allowing some last-minute innovation is important for the future success of ODP, but there is a concern that "add-ons" are not being handled evenly.

PCOM asks the panels to help to inform the community that add-ons will be considered. Moreover, panel chairs at the Chairmen's Meeting should discuss the aspects of fairness, lateness, review, etc., and provide recommended guidelines for how PCOM should handle add-ons. Panels should discuss possible add-ons for the FY92 and remaining FY91 programs, so that their chairs will be able to make recommendations to PCOM at the Annual Meeting, after whatever guidelines are established. OHP and SGPP should note this specifically with regard to the proposed Santa Barbara Basin add-on.

Thursday, 16 August 1990

864 Miscellaneous Business

PCOM Watchdogs for Pacific and North Atlantic Proposals

PCOM decided that it was helpful to continue assigning watchdogs to proposals under consideration for drilling. Watchdogs should be prepared to lead discussions about the proposals and help when there are conflicting opinions from panels, but maintain a neutral position acting neither as an advocate or severe critic. The following is a list of watchdog assignments.

Pacific Ocean

B. Tucholke	Atolls and Guyots
Y. Lancelot (alt. J. Watkins)	Bering Sea History
D. Cowan	Cascadia Accretion

J. Austin	Chile Triple Junction
M. Leinen	Eastern Equatorial Pacific Neogene
J. Malpas	EPR Bare Rock Drilling
J. Malpas	Hawaii Flexure
R. Duncan	Hess Deep
J. Malpas	Lower Crust at 504B
K. Becker	Oahu Pilot Hole
Y. Lancelot (alt. J. Watkins)	North Pacific Neogene
A. Taira	Peru Gas Hydrates
M. Langseth	Sedimented Spreading Centers
H. Jenkyns	Shatsky Rise
R. Moberly	Young Hotspots: Loihi

North Atlantic Ocean

D. Cowan	Barbados Accretionary Wedge
J. Austin	Cayman Trough
J. Watkins	Equatorial Atlantic Transform Margins
J. Natland	MARK Area: Long Section of Upper Mantle
M. Cita	Mediterranean Gateways
B. Tucholke	New Jersey Margin Sealevel
U. von Rad	North Atlantic: Non-Volcanic Rifted Margins
R. Duncan	North Atlantic: Volcanic Rifted Margins
M. Leinen	Northernmost Atlantic Paleoceanography: Arctic Gateway
K. Becker	TAG Area High-Temperature Hydrothermalism
J. Natland	Vema FZ: Layer 2/3 Transition
J. Natland	Vema FZ: Layer 3-Mantle Transition
M. Leinen	West Florida Margin Sealevel

The JOIDES Office will send out copies of the proposals to the watchdogs.

Evaluation of ODP Drilling Results in terms of COSOD I Objectives

For their Fall 1988 meeting, EXCOM had been concerned with evaluating the performance and success of ODP in addressing the themes of COSOD I and therefore had asked the JOIDES Office to provide tables of which goals had and had not been achieved. PCOM later asked that these tables be revised with the input of the Co-Chief Scientists of the legs concerned. The JOIDES Office has received responses from 48% of the Co-Chiefs covering 72% of the

Legs through Leg 128, concerning revisions of the tables. The tables have been revised based on these responses and were included in the Agenda Book. There has been a wide range in the degree of detail of the responses and some conflicts between Co-Chiefs in their interpretation of accomplishments. There was no response from Co-Chiefs from Legs 102, 109, 114, 116, 117, 120, 124 and 125.

PCOM remains concerned that the tables still may be incomplete or biased. PCOM asks each thematic panel to consider the COSOD I themes (at least the 12 principal themes) and prepare 1-page summaries of successes for those themes within its area of interest. In addition, the Panel chairs at the Panel Chairmen's Meeting will be asked about their panel's evaluation of the success of ODP in addressing the COSOD I themes. Undoubtedly, at the time for renewal, agencies and review bodies will want to know what was accomplished out of what ODP set out to do.

865 Membership Actions for JOIDES Panels

PCOM emphasized its general concern about ensuring that the JOIDES advisory structure is open to participation by all US Institutions. PCOM has admonished all JOIDES panels to provide at least two nominees to cover each requested appointment and that these nominations should include "new blood"; the two or more nominees may be given in order of priority. PCOM wants to see a balanced mixture of scientists in the advisory structure, including both scientists with experience in the Ocean Drilling Program and those that are new to the program. PCOM will avoid putting more than one person from a single institution on the same panel. PCOM members should also be prepared to nominate candidates to ensure that panels are balanced, regardless of whether or not nominations come from panels. A short description of the expertise of candidates for panel membership should be supplied for PCOM consideration when candidates are nominated. Thematic panels have been asked previously to supply lists of the expertise of existing panel members to be matched against panel mandates and also to indicate any perceived gaps.

In view of the need by the thematic panels for continuity and even distribution of the work load during the proposal review process, the Panel Chairmen will be asked at the Annual Panel Chairmen's Meeting about the best time to rotate panel members (*i.e.* should replacements be made prior to the fall meetings of the thematic panels as has been proposed by one panel chair, or at the beginning of the year as is done currently).

Membership on the various JOIDES panels was reviewed and the following actions were taken.

LITHP S. Humphris has accepted the chairmanship. Replacements for R. Batiza, L. Cathles, and M. Perfit need to be discussed and nominated by the panel at its fall meeting, for PCOM selection at the Annual Meeting.

OHP Because of heavy commitments this fall, J. Parrish declined the invitation to join OHP at this time but would like to serve in the near future. L. Pratt has accepted an appointment. Replacements for W. Berger and D. Kent need to be discussed and nominated by the panel at its fall meeting, for PCOM selection at the Annual Meeting. PCOM recommends replacements combining expertise in the Mesozoic be nominated.

SGPP Replacements for P. Froelich, M. Goldhaber, and W. Hay need to be discussed and nominated by the panel at its fall meeting, for PCOM selection at the Annual Meeting. No actions were taken by PCOM at this meeting on a recent SGPP nomination because only one name was submitted and the appointment could be deferred until the Annual Meeting. It was reported that E. Suess will be stepping down as chairman after the Spring 1991 panel meeting and therefore nominations for a new chair should be made at the fall meeting. Canada-Australia reported that S. Macko has been replaced by R. Hiscott.

TECP Eldridge Moores has accepted the chairmanship of the panel after the Fall 1990 meeting when Ian Dalziel will be stepping down. I. Dalziel will serve on the panel through the Spring 1991 meeting. Replacements for R. Buck, D. Engebretson, and I. Dalziel need to be discussed and nominated by the panel at its fall meeting, for PCOM selection at the Annual Meeting.

DMP No personnel actions needed. During their joint meeting this fall, DMP and SMP should discuss the problem of liaisons between their panels.

IHP Both P. Fryer and W. Wise have accepted the Co-Chief positions on IHP. The Co-Chief positions will rotate frequently, depending on the rate of publication of the "Scientific Results" volumes.

PPSP No personnel actions requested. ESF has replaced E. Cassano with L. Deluchi.

SMP No changes in panel membership. The panel will continue to request guests to discuss issues. During their joint meeting this fall, DMP and SMP should discuss the issue of liaisons between their panels.

SSP J. Hedberg has not been able to attend any meetings of SSP and has resigned. Nominations for a new oil-industry representative will be sought by USSAC and, if if time allows, the names may be circulated by correspondence within the panel before PCOM selection at the Annual Meeting. Because of maternity, A. Trehu was given a bye and will become a SSP member in the summer of 1991. G. Moore has accepted an appointment.

TEDCOM The addition to TEDCOM of someone with expertise in high-temperature drilling was approved by PCOM and nominations should be discussed by the panel at its fall meeting, for PCOM selection at the Annual Meeting. Chevron has replaced W. Cotten with P. Nicholls.

Annual Panel Chairmen's Meeting R. Kidd is to be asked to chair the Annual Panel Chairmen's Meeting at Kailua-Kona on 27 November 1990. [Kidd has accepted.]

Detailed Planning Groups and Working Groups A North Atlantic Rifted Margins Detailed Planning Group and a Deep Drilling Working Group were established at the Paris PCOM Meeting. PCOM needed to set membership and establish the mandates at this meeting. Plans for a one day meeting of the Deep Drilling WG have been made for 26 September one day prior to the TEDCOM meeting. Various individuals have already been invited to attend the meeting, since preparations had to be made well in advance for some participants. It was the consensus of PCOM that a North Atlantic Arctic Gateway Detailed Planning Group would also be formed and staffed at this meeting. PCOM was also to consider the formation of a Sealevel Working Group. PCOM approved the formation of these groups, made appointments, and set mandates for all four groups, as indicated below.

Deep Drilling Working Group (DDWG)

C. Sparks, Chairman - designate for 26 September 1990 meeting

Core TEDCOM members for 26 September 1990 meeting:

C. Marx (FRG)
K. Millheim (AMOCO)
H. Rischmüller (KTB/FRG)
F. Schuh (Consultant)

Guests and Liaisons for 26 September 1990 meeting

B.N. Khakhaev (USSR)
M. Finkel ? (Sweden)
JAMSTEC ? (Japan)
G. Gamsakhurdia (USSR)
A. Beswick (UK)

J. Mutter (LITHP)
W. Dean (OHP)
J. Austin (PCOM)
J. Malpas (PCOM)
R. Anderson (LDGO Borehole Res.)
T. Brittenham (Consultant)
G. Foss (ODP-TAMU)
T. Francis (ODP-TAMU)
J. Alt (SGPP)
D. Sawyers (TECP)
J. Natland (PCOM)
T. Pyle (JOI)
K. Becker (PCOM)
S. Howard (ODP-TAMU)
R. Lawrence (DOSSEC/TAMU)
D. Reudelhuber (ODP-TAMU)

B. Harding (ODP-TAMU)

M. Storms (ODP-TAMU)

The mandate of the Deep Drilling Working Group is to prepare a document that identifies technologies that exist or need to be developed to achieve scientific drilling goals in those areas that require deep penetration (*i.e.* greater than 2 km beneath the seafloor). The working group will evaluate the alternatives they identify in terms of likely costs and suggest long-term strategies for achieving a deep drilling program in the oceanic crust and deep sedimentary sections.

In addition, PCOM sees the working group fulfilling a long-term function in advising ODP on deep scientific drilling, therefore, the group should examine its mandate, suggest changes or additions in membership and nominate a chairman for this longer-term group.

North Atlantic Rifted Margin Detailed Planning Group (NARM-DPG)

H. C. Larsen (Greenland) - chairman designate

G. Boillot (France)

M. Coffin (UTIG)

O. Eldholm (Norway)

J. Hall (Canada/Australia)

K. Hinz (FRG)

D. Hutchinson (USGS-Woods Hole)

K. Miller (Rutgers)

A. Morton (UK)

D. Sawyer (Rice U.)

S.P. Srivastava (Canada/Australia)

B. Tucholke (WHOI)

R.B. Whitmarsh (UK)

The DPG is to examine the various proposals for drilling volcanic and non-volcanic North Atlantic rifted margins and recommend a prioritized plan for a drilling program, specifying the number of legs required to answer fundamental unanswered questions about these margins.

North Atlantic Arctic Gateway Detailed Planning Group (NAAG-DPG)

W. Ruddiman - chairman designate (LDGO)

W. Berggren (WHOI)

R. Heinrich (FRG)

E. Jansen (ESF)

L. Mayer (Canada-Australia)

P.J. Mudie (Canada-Australia)

J. Thiede (FRG)

T. Vorren - alternate chairman designate (Oregon State)

The DPG is to examine the three existing North Atlantic Arctic paleoceanographic gateway drilling proposals and provide a prioritized plan for a drilling program. If the highest priorities cannot be accomplished in one leg, the DPG should make suggestions for additional drilling.

Sealevel Working Group

P. Crevello - chairman designate (Marathon Oil, Littleton, CO)

M. Aubry (France/WHOI)

R. Carter (Canada-Australia)

N. Christie-Blick (LDGO)

P. Davies (Canada-Australia)

A. Droxler (Rice Univ.)

G. Eberli (ESF)

R. Halley (USGS)

T. Loutit - alternate chairman designate (EXXON)

K. Miller (Rutgers)

W. Sager (TAMU)

M. Sarnthein (FRG)

A. Watts (UK)

E. Winterer (Scripps)

The PCOM Liaison will be J. Watkins.

The Working Group is to formulate an approach for a worldwide attack on the problems of sealevel change utilizing the drilling capabilities of the *JOIDES Resolution*. A focussed drilling program should be formulated, specifying the number of legs required to answer fundamental questions about eustatic sealevel change and outlining the areas which will bring the greatest scientific return. A multi-disciplinary approach is recommended which incorporates lithospheric, ocean history, sedimentary, geochemical, and tectonic objectives.

In addition, the group should examine its membership and suggest changes or additions at its first meeting.

<u>Liaisons from Service Panels to DPGs</u> Both DMP and SSP have suggested that they be allowed to send liaisons to meetings of the Detailed Planning Groups to ensure that their concerns are known to the DPG. Having either a DMP liaison or Wireline Logging liaison will help provide realistic logging plans early in the planning process. Having either an SSP liaison or Data Bank liaison will help communicate the coverage of the site survey data base and any deficiencies. Earlier, PCOM had decided that having members from appropriate panels on the DPGs would eliminate the need for liaisons, but this has not occurred in all instances. PCOM agreed that the best way to handle these liaisons requests is on an *ad hoc* basis. If the service panels feel there is a need for a liaison to attend a particular meeting then the chairman of that service panel should make a request to the PCOM chairman.

<u>Liaison Groups</u> The following JOIDES panel members are to be invited to be members of the Joint Liaison Groups with other Global Geoscience Programs.

Liaison Group with the Nansen Arctic Drilling Program

Larry Mayer, Co-Chairman, (Dalhousie Univ.); member of NAAG-DPG

Bill Berggren, Member, (WHOI); member of OHP

<u>PCOM Liaisons to Fall Panel Meetings</u> The following is the list of PCOM Liaisons to upcoming panel meetings.

LITHP - Becker	IHP - Lancelot (alt. Cita)
OHP - Jenkyns	PPSP - Moberly
SGPP - von Rad	SMP - Leinen
TECP - Taira	SSP - Watkins
DMP - Cowan	TEDCOM - Natland

<u>PCOM Motion</u>

PCOM accepts the slate of persons nominated to serve on panels, detailed planning groups, and working groups and approves the mandates for these groups. (Motion Natland, second Malpas)

Vote: for 16; against 0; abstain 0

<u>Co-Chief Scientist Nominations</u> PCOM made recommendations for Co-Chief Scientists. For the Oahu Pilot Hole (Leg 136), A. Dziewonski and one of R. Wilkens, B. Keating or K. Becker were suggested. For the Joint Engineering and Science Leg at 504B (Leg 137), PCOM recommended for the science Co-Chief, K. Becker, R. Stephens, J. Alt, and R. Morin.

866 <u>Future Meeting Schedule</u>

The next meeting will be the 1990 Annual Meeting which will be hosted by the School of Ocean and Earth Science and Technology (SOEST) of the University of Hawaii at the Hotel King Kamehameha on the big island of

Hawaii, on 28 November-1 December 1990, in Kailua-Kona, Hawaii. The PCOM meeting will be preceded by the Panel Chairmen's meeting on Tuesday, 27 November. A field trip prior to the meeting is being planned for 26 and 27 November to study active and recent volcanism in the vicinity of Hilo and older volcanism along the way to Kailua-Kona. Panel chairs might attend the first of the two days of the field trip.

The 1991 Spring PCOM meeting will be hosted by the Graduate School of Oceanography of the University of Rhode Island on 23-25 April 1991, in Narragansett, Rhode Island. The meeting will be held on the Graduate School of Oceanography campus. A tentative field trip is being planned for after the meeting.

The 1991 Summer PCOM meeting will be hosted by the Bundesanstalt für Geowissenschaften und Rohstoffe on 20-22 August 1991, in Hannover, Federal Republic of Germany. There will be a two day field trip on Friday and Saturday after the meeting, to the Harz Mountains which will probably include stops in East Germany. The field trip will cover a large range of topics including sediments, tectonics, and volcanism.

The 1991 Annual Meeting will be hosted by the University of Texas Institute for Geophysics at the Thompson Conference Center on the Austin campus on 4-7 December 1991. The PCOM meeting will be preceded by the Panel Chairmen's meeting on Tuesday, 3 December. There will possibly be a field trip, which might include examination of the Diamond Coring System and other drilling rigs.

The 1992 Spring PCOM meeting will be hosted by Oregon State University in Corvallis on 21-23 April 1992.

867 Conclusion of the Meeting

This was the last meeting for Garry Brass since he was stepping down from PCOM. In recognition of the many contributions of Garry Brass to ODP which have included: helping when PCOM became stuck in the morass; his extensive contributions to the science the program does; and generosity of his time and efforts; the following joint motion was made.

<u>PCOM Motion</u>

A PCOM geochemist named Brass
Talked always of cows eating grass
When LITHP asked for a few
Or even just two
He asked if they'd find any gas

LITHP answered 'What do you mean?'
It's majors and traces we're keen
So Brass voted 'NO!'
It can't be a go
For a hole without gas is obscene.

(Motion Leinen and Malpas, second Everyone Else)
Voted for by acclamation

The Planning Committee thanked Jim and Carole Natland for their efforts arranging the PCOM Meeting and other events. Jerry and Jacqueline Winterer were thanked for hosting the dinner at their home. Thanks were also forwarded to the Director, Dr. Edward Frieman and others at Scripps Institution of Oceanography for their hospitality.

The 1990 PCOM Summer Meeting adjourned at 1:30 PM.

APPENDICES TO 14-16 AUGUST, 1990 LA JOLLA PCOM MINUTES

A Information on the ODP Film

B Items Related to the Science Operator's Report
 Ships Operations Schedule Revised 6 September 1990
 Bar Graph of Proceedings Volumes Produced Each Year (1987-1991)
 List of Proceedings Volumes Produced FY90
 Statistics on US Particpation in ODP Legs

C Statement of Support for OSN from FDSN

D Development Engineering Report

E Leg 132 Engineering Evaluation of Diamond Coring System

F Schematics for ODP Reentry Cone Plug

G Flow Chart Of Options for Engineering Leg at 504B

HANDOUTS DISTRIBUTED AT THE LA JOLLA PCOM MEETING

Letter from J. Natland and G. Brass Proposing a DCS Test at Loihi

NSF Report to the PCOM meeting

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Wireline Logging Services Report to PCOM 8/90

Letter from T. Moore to P. Froelich Concerning Proceedings Vol. 114

Letter from R. Merril About Statistics on Usage of Frozen Whole Round Cores for Organic Geochemistry Studies

Letter from S. Hart to R. Coleman about Hsu/Coleman/Moberly/Pyle Correspondence about ODP

Letter from C. Helsley About Science Objectives for Oahu Pilot Hole

JOI/USSAC Workshop Report on "Role of ODP Drilling in the Investigation of Global Changes in Sea Level"

ODP Poster on Scientific Coring Beneath the Sea

United States Department of the Interior

TAKE PRIDE IN AMERICA

GEOLOGICAL SURVEY
BOX 25046 M.S. 940
DENVER FEDERAL CENTER
DENVER, COLORADO 80225

IN REPLY REFER TO:

Office of Energy and Marine Geology
Branch of Petroleum Geology

October 4, 1990

Memorandum

To: James Austin and Ralph Moberly, Chairmen, JOI-PCOM

From: Mahlon Ball, Chairman, JOI-PPSP

Subject: PPSP meeting of 9/17-18/90

This meeting was held in a conference room of the Pacific Geosciences Center of the Energy, Mines and Resources Department, Sidney, B.C., Canada.

Attendance:

Yutaka Aoki, JOI-PPSP
Mahlon Ball, JOI-PPSP
George Claypool, JOI-PPSP
Claude Delas, JOI-PPSP
Dieter Horn, JOI-PPSP
Mimi Fortier, JOI-PPSP
Barry Katz, JOI-PPSP
David MacKenzie, JOI-PPSP

Kevin Burke, ODP Safety Panel
Thomas Thompson, ODP Safety Panel
Henk Wories, ODP Safety Panel
Lou Garrison, ODP, Safety Panel

Tim Francis, TAMU-ODP
Marta von Breymann, TAMU-ODP
Ron Grout, TAMU-ODP
Steve Howard, TAMU-ODP

Ralph Moberly, JOI-PCOM
Steve Lewis, JOI-SSP, PPSP Liaison

Carl Brenner, LDGO, JOI Data Bank
Earl Davis, Chief Sci. Leg 139
Nick Pisias, Chief Sci. Leg 138

Robert Hornal, Hornal Consultants, Vancouver, B.C.
Roger Stacey, Consultant, Ottawa, Canada.
Fred Lepine, Canadian Oil & Gas Lands Admin.
Alan Williams, U.C. Riverside, IGPP
Roy Hyndman, Cascadia Accretionary Prism Proponent
Robert Zierenberg, Leg 139, Escanaba Trough Proponent

Mahlon Ball opened the meeting by requesting self introductions from and circulating a signature list to attendees. Minutes of the previous meeting were amended and approved. In the minutes of the PPSP meeting of 8/9-10/90, site LG 6 was redesignated LG 6A.

Tim Francis reviewed drilling results for Leg 133.

Ralph Moberly, representing PCOM, reviewed the ship's schedule and proposals with potential for selection for Pacific drilling. The ship will probaby return to the Atlantic in late fiscal 1992.

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Earl Davis led a discussion of regional geologic attributes of the sedimented Juan de Fuca Ridge and Escanaba Trough, leg 139. The scientific objectives of drilling in these areas are to study the three-dimensional character of fluid flow and geochemical fluxes of the hydrothermal systems of sedimented ridges and to investigate processes related to formation of sediment-hosted sulfide deposits. The troughs are 10 to 15 km across and contain as much as 1.4 km of Pleistocene turbidites overlying "zero age" oceanic crust. Temperatures in the oceanic crust are estimated to be as high as 400°C. Seismic data indicate sills intruding the sediment cover. The temperature of fluids venting from seafloor chimneys is as high as 280°C.

The safety panel synopsized the general petroleum geologic aspects of these areas. The high temperatures present, especially attending intrusions in the sediment section, insure thermal maturation of organic carbon. However, hole 174A, drilled to a depth of 879m with 50% core recovery, midway between the Middle Valley and Escanaba Trough averages only 0.37 wt.% TOC and indicates that source rocks are probably absent in this region. A condensate show is reported in Escanaba Trough but indications are that the hydrocarbons in this show were dissolved in hydrothermal fluids and condensed out of solution on coming in contact with low temperature bottom waters of the seafloor. This show is not indicative of major subsurface accumulations of hydrocarbons. It should be emphasized that in this setting C_1/C_2 ratios have no meaning in predicting likelihood of encountering an accumulation of petroleum. Instead, the quantity of oil and gas encountered should dictate whether drilling should proceed or be suspended. The faulted nature of the sedimentary section and ample evidence for venting of formation fluids at the seafloor also make it seem unlikely that significant accumulations of hydrocarbons could exist in these environments. In summary, the safety panel concluded that hydrocarbon hazards in the Juan de Fuca Ridge and Escanaba Trough drilling are unlikely.

An extended discussion was held concerning the dangers of hydrogen sulfide in connection with the sedimented ridge drilling. David MacKenzie emphasized the importance of considering worst-case scenarios. Subjects covered included: 1) the need for quantitative H_2S monitors on the drill floor, in the core lab, and core repository, 2) gas masks for the drill crew during coring trips and masks for core handlers, 3) ventilation and pressurization of working and living spaces, 4) temperature monitoring of all coring operations using heat tabs, 5) emergency procedures for capping the drill string, 6) emergency procedures for cutting the drill pipe, 7) the necessity for bleeder valves on all holes sealed for re-entry, 8) H_2S abatement training for all shipboard personnel, 9) use of the pressure core barrel (Tom Pettigrew, ODP pressure core barrel expert, will be onboard during leg 139), and 10) advisability of including an H_2S consultant on leg 139. Lou Garrison suggested establishment of a subcommittee to develope standard and emergency procedures to handle H_2S hazards. The safety panel unanimously agreed to this suggestion. Francis agreed to chair this subcommittee. Fred LaPine offered to supply Francis with names of H_2S consultants.

Earl Davis led the site-by-site review of holes proposed for drilling in the Middle Valley of Juan de Fuca Ridge.

PPSP took the following action regarding proposed Middle Valley sites:

MV1

H-1	Approved to a penetration of 200m or to bit destruction at 48°27.33'N and 128°42.51'W. This hole will be sealed for re-entry.
H-1.1 (S1-S5)	Approved to a penetration of 410m or to bit destruction at 48° 27.5N and 128° 42.5'W. At least five shallower holes (S1-S5.50-100m deep) will be used to locate the 410m hole. The 410m hole will involve use of the pressure core barrel.

MV2

H-2	Approved to a penetration of 300m or to bit destruction at 48°25.82N and 128°40.90'W. This hole will be sealed for re-entry.
S-6	Approved to a penetration of 310m at 48°26.00'N and 128°41.00'W. This hole will involve use of the pressure core barrel.
S-7	Approved to a penetration of 300m at 48°26.00'N and 128°41.00'W. This hole will involve use of the pressure core barrel.
S-8	Approved to a penetration of 300m at 48°26.00'N and 128°41.00'W. This hole will involve use of the pressure core barrel.
S-9	Approved to a penetration of 300m at 48°26.00'N and 128°41.00'W. This hole will involve use of the pressure core barrel.
S-10	Approved to a penetration of 300m at 48°26.00'N and 128°41.00'W. This hole will involve use of the pressure core barrel.

MV3

H-3	Approved to a penetration of 900m (i.e., to basement) at 48°26.63'N and 128°41.65'W. This hole will be sealed for re-entry.

MV4

H-4	Approved to a penetration of 600m or to bit destruction at 48°27.45'N and 128°46.28'W. This hole will be sealed for re-entry.

MV5

H-5A	Approved to a penetration of 300m or to bit destruction at 48°27.15'N and 128°41.58'W.

MV6

H-6A	Approved to a penetration of 250m or to bit destruction at 48°27.00'N and 128°40.43'W.

MV7

H-7A Approved to a penetration of 200m or bit destruction at 48°26.61'N and 128°38.55'W.

MV8

H-8 Approved to a penetration of 700m or to bit destruction of 48°30.00'N and 128°45.20'W.

Robert Zierenburg led the site-by-site review of holes proposed for drilling in the Escanaba Trough.

PPSP took the following action regarding holes proposed for drilling in the Escanaba Trough.

ET1

S-16 (S11-S15) Approved to a penetration of 510m at 41°00.0'N and 127°29.5'W. At least 5 shallower holes (S11-S15, 50 to 100m deep) will be drilled to locate the 510m hole. The 510m hole will involve use of the pressure core barrel.

ET2

S-16.1 Approved to a penetration of 510m at 41°00.5'N and 127°31'W. This hole will involve use of the pressure core barrel.

The Middle Valley sites were approved with the understanding that MV 6 be drilled first to be followed by MV 3 and then MV 1 or MV 2. These three sites are all to be drilled prior to drilling MV 8. The Escanaba trough sites were approved with the understanding that ET2 be drilled before ET1. If temperatures exceeding 350°C are encountered, drilling will be terminated. At temperatures below 350°C in water depths extant on Juan de Fuca Ridge (approximately 2.5 bm), steam flashing on deck is unlikely.

Moberly presented a regional description of the geology and scientific objectives for leg 136 on the Southern Hawaiian Arch. This leg involves a single, shallow site for sub-seafloor placement of a seismometer.

PPSP took the following action regarding leg 136 drilling:

OSN-1 Approved to a penetration of 340m at 19°20.6'N and 159°04.8'W. Only 240m of sediment exist at this site. Prospects for source rocks, maturation of source materials, and accumulation of hydrocarbons of this location are remote.

Nick Pisias presented a regional discussion of the geology and scientific objectives for leg 138, Eastern Equatorial Pacific. The focus of leg 138 drilling is to obtain continuous, undisturbed, late Cenozoic, sediment sections in order to study climate evolution during the period when the earth changed to a world dominated by high-latitude glaciation.

Pisias offered to lead the site-by-site review of holes proposed for leg 138. The safety panel deemed this unnecessary because these 12 proposed holes are shallow (the deepest is 420 m), in pelagic sediments in a region containing sites 503, 504, and 571-576. Previous drilling indicates lack of source materials and reservoirs. PPSP approved all 12 sites as follows:

EEQ-1	Approved to a penetration of 330m at 9°34.9'N and 94°35.3'W.
EEQ-2	Approved to a penetration of 275m at 7°55.3'N and 90°28.9'W.
EEQ-3	Approved to a penetration of 290m at 0°12.1'N and 95°19.2'W.
EEQ-4	Approved to a penetration of 420m at 3°05.8'S and 90°49.6'W.
EEQ-4A	Approved to a penetration of 190m at 3°01.8'S and 95°04.8'W.
EEQ-5	Approved to a penetration of 225m at 5°36.2'N and 94°12.2'W.
WEQ-2	Approved to a penetration of 40m at 11°16.3'N and 109°36.3'W.
WEQ-3	Approved to a penetration of 140m at 5°19.6'N and 110°04.6'W.
WEQ-4	Approved to a penetration of 330m at 02°45.5'N and 110°34.3'W.
WEQ-5	Approved to a penetraton of 110m at 2°59.7'S and 110°28.9'W.
WEQ-6	Approved to a penetration of 325m at 0°06.2'N and 110°30.3'W.
WEQ-7	Approved to a penetration of 95m at 7°12.7'N and 109°45.1'W.

Roy Hyndman led a review of regional geology and scientific objectives related to proposed drilling in the accretionary wedge off Oregon and Vancouver. It was apparent from Hyndman's presentation that clathrate studies are an increasingly important part of this proposed drilling. Hyndman described extensive seismic modelling leading to the conclusion that there is no free gas beneath the base of hydrate impedance contrast in the Cascadian accretionary prism.

A lengthy discussion of clathrates followed. Claude Delas pointed out the significant difference in drilling onshore in permafrost areas is that drilling mud must be heated to avoid freezing in mud pits. The hot mud melts hydrates, releasing significant quantities of methane to the surface. This significantly increases the fire and blowout hazard onshore but presents no problem in ODP drilling. No formal decisions regarding plans for clathrate drilling were reached, but the tone of the safety panels' discussion was that it increasingly appears that the problem of clathrate drilling in marine environments is simply a problem of avoiding free gas. This is a problem that the safety panels have been solving since their inceptions.

Marta von Breymann dispelled some misconceptions regarding the shipboard Rock-Eval equipment. A number of options exist for upgrading or augmenting the present system. ODP, with input from safety panel geochemists, will decide with the Shipboard Measurements Panel, on changes to be made. The safety panel will reinforce their requests for changes and additions to onboard hydrocarbon monitoring equipment with letters to all appropriate parties.

The safety panel decided to incorporate the 1990 update on safety guidelines, written by Claypool, Katz, and Keith Kvenvolden, in a new edition of the ODP Guidelines for Pollution Prevention and Safety, Joides Journal, v. XII. Special Issue No. 5, March, 1986, p. 1-40. MacKenzie offered to share the initial editing chores with Ball.

The JOI-PPSP voted unanimously to include Lou Garrison in its membership. Ball agreed to pass this request on to PCOM.

The panel bid farewell to Ralph Moberly on the occasion of his retirement as PCOM Chairman and expressed its appreciation, admiration, affection, and enjoyment stemming from the association with Ralph as our PCOM liaison.

The panel decided the date and location of its next meeting will be April 4-5, 1991, in Austin, Texas with ODP as host for the meeting.

MEETING OF JOIDES DOWNHOLE MEASUREMENTS PANEL

Sheraton Breakwater Hotel
Townsville
Queensland

11-13 October 1990

EXECUTIVE SUMMARY

1. Features of this third DMP meeting of 1990 were a shipboard tour of the JOIDES Resolution, with whose Townsville port call the meeting had been scheduled to coincide, and a joint session with the Shipboard Measurements Panel (SMP) to review the shipboard integration of core and log data.

2. DMP continues to encourage the shipboard acquisition of laboratory physical properties data that can be applied to the calibration of downhole measurements, especially compressional wave velocity and resistivity data.

3. The Lateral Stress Tool (LAST II) should be tested at sea by ODP at least two legs prior to its proposed scientific deployment, in order to allow adequate time for any residual modifications to be made.

[DMP Recommendation 90/16]

4. Since the wireline packer is not functional, at least in unstable overgauge holes, an urgent evaluation should be undertaken by LDGO of what is needed to make the wireline packer perform. LDGO should prepare such a report for the next DMP meeting. A rigorous test programme should be satisfactorily concluded before the tool is deployed for scientific purposes at sea. The first scientific deployment should be where hole conditions are good. In view of the doubts concerning sample integrity and tool robustness, LDGO should also examine alternative technology to prepare for the possibility that the wireline packer might not eventually achieve the status of an ODP functional tool.

[DMP Recommendation 90/17]

5. The approved guidelines for the deployment of third-party tools should be published in the JOIDES Journal.

6. LDGO are to be congratulated on their increased role as providers of logging data to the scientific community. The growing demand for log data is a testimony to the success of the logging programme and to an increased realization within the community of the scientific benefits that the data can bring.

7. Facilities should be established at LDGO for post-cruise processing of data acquired using both analogue and digital borehole televiewers.

[DMP Recommendation 90/18]

8. TAMU engineers are to be complimented on the successful and timely development of the new strengthened side-entry-sub.

9. DMP formulated the following recommendation concerning high-temperature logging technology in the short term.

For high-temperature logging purposes, the efforts of ODP should be concentrated on the following three areas, listed in order of priority.

(1) Temperature and fluid pressure
(2) Fluid sampling
(3) Formation resistivity

For temperature and fluid pressure, funds should be provided for a back-to-back study of the available slimhole tools in a hot hole (c.300°C). The best performer(s) should be leased.

A slimhole borehole-fluid sampling tool should be developed by modifying existing technology.

Formation resistivity should be addressed by double-dewaring the LDGO ARCO tool, or an alternative tool; this objective falls away if there is insufficient funding for all three objectives to be progressed properly and concurrently.

10. To enhance the prospects of the Diamond Coring System (DCS) producing good core recovery, deployment of the DCS in a scientific leg should be under the direction of an experienced diamond-core driller.

[DMP Recommendation 90/20]

11. During Leg 136, the sonic log of the Oahu test hole should also be run in cement-bond (CBL) mode.

[DMP Recommendation 90/21]

12. During Leg 137 the Formation Microscanner (FMS) should be run in Hole 504B.

DMP Recommendation 90/22]

13. The Formation Microscanner should be a standard ODP logging tool for planning purposes, i.e. it should be run in all holes that are designated for standard logging.

[DMP Recommendation 90/23]

14. An ad hoc working group comprising engineers and scientists should be convened for a one-day meeting to review causes of hole instability in Nankai-type situations and to propose remedial action. This meeting should be scheduled to take place immediately prior to the next DMP meeting in College Station in January/February 1990.

[DMP Recommendation 90/24]

This date has been set as 6 February 1991, subject to PCOM approval.

15. The joint session with SMP encompassed a review of the recommendations of the JOI Workshop on ODP Shipboard Integration of Core and Log Data, held at the University of Miami on 29-30 August 1990. From these deliberations, an agreed listing was developed of user needs for integrated core and log data, and these were formulated into a joint recommendation.

The joint DMP/SMP Recommendation on the shipboard integration of core and log data presented a specification of user needs in the form of General Observations, General Requirements and Specific Requirements. The last item was subdivided into sections headed Reference Depth, Data Acquisition, Data Analysis and Data Availability.

[DMP Recommendation 90/25]

There was a general appreciation that the joint DMP-SMP meeting had been a great success, partly because of the groundwork done at the Miami Workshop. It was considered desirable for the two panels to meet at regular intervals, with the next joint meeting possibly taking place in 12 months' time.

16. The next meeting of the JOIDES Downhole Measurements Panel is scheduled for College Station, Texas, around late January/early February 1991. This meeting should be preceded by the working group meeting on hole stability.

The next DMP meeting has been set for 7-8 February 1991.

PAUL F WORTHINGTON
23 October 1990

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MEETING OF JOIDES DOWNHOLE MEASUREMENTS PANEL

Sheraton Breakwater Hotel
Townsville
Queensland

11-13 October 1990

MINUTES

Present

Chairman:	P F Worthington (UK)
Members:	M Hutchinson (USA) D Karig (USA) P Lysne (USA) R Morin (USA) C Sondergeld (USA) D M Williams (USA) H Crocker (Canada/Australia) H Draxler (FRG) J P Foucher (France) O Stephansson (ESF) M Yamano (Japan)
Liaisons:	D Cowan (PCOM) A Fisher (TAMU) X Golovchenko (LDGO)
*Guests:	R N Anderson (LDGO) R Jarrard (LDGO) T Pyle (JOI) K Moran (SMP) E Scholz (Stanford Univ.)

Apologies

B Carson (USA)
J Gieskes (USA)
R Wilkens (USA)
J McClain (LITHP)
J Mienert (SGPP)

*Partial attendance

N.B. Item 15 was conducted in joint session with the JOIDES Shipboard Measurements Panel.

1. Welcome and Introductory Remarks

The meeting was called to order at 8.30 am on Thursday 11 October 1990. The Chairman welcomed Members, Liaisons and Guests to the first DMP meeting to be held in Australia, especially Yamano who was attending for the first time. Important features of this meeting were the joint session with the JOIDES Shipboard Measurements Panel (SMP) and the shipboard tour of the JOIDES Resolution which was making a port call in Townsville.

Review of Agenda and Revisions

Three additional items were proposed.

Item 12: Hole Stability

Item 13: Safety

Item 14: Panel Membership

The joint session with SMP is reported under Item 15: Shipboard Integration of Core and Log Data. With these modifications, the pre-circulated agenda was adopted as a working document for the meeting.

2. Minutes of Previous DMP Meeting, University of Washington, Seattle, 28-29 June 1990

The minutes were adopted with the following minor modification proposed by Foucher:

Page 8, Item 6(v), line 1;

Delete "Schlumberger" (the tool has been developed by Total and CEA and is being operated by Schlumberger).

A similar modification was made to the Executive Summary.

Matters Arising

Item 5(ii) had identified Karig or Villinger to attend the next meeting of SGPP in Paris in November 1990. Karig notified the Panel that the attendee would have to be Villinger.

[ACTION:VILLINGER]

3. PCOM Report

Cowan reported on the August 1990 meeting of PCOM with particular regard to the PCOM response to DMP Recommendations 90/10 - 90/15.

Rec. No.	Description	PCOM Response
90/10	Hole stability	Noted (see Item 5)
90/11	JAPEX high-temperature tools	Noted: action already undertaken by JOI Inc.
90/12	Oahu test hole: logging	Accepted
90/13	Oahu test hole: testing of seal	Accepted
90/14	TECP Liaison to DMP	Not accepted: liaison is not in the mandate of TECP
90/15	Logging input to DPGs	Accepted: DMP and/or LDGO are welcome to send guest representatives to DPG meetings

PCOM has established a strategy subcommittee to facilitate the ODP renewal process.

The next meeting of PCOM (November 1990) is very important because the six legs for FY92 will be formulated.

4. JOI Report

Pyle reported that ODP had published a long range plan together with an accompanying brochure for the layman.

JOI is co-producing a television film based on footage taken on Leg 105. The intention is that this film will be shown on cable networks in the USA.

There is still no formally approved budget for FY91. The budget is likely to be 1-2 million dollars short due to increased fuel costs. This is likely to negate the financial benefits of Soviet participation which is expected to be approved imminently.

5. Liaison Reports

i) Lithosphere Panel (LITHP)

LITHP is meeting at the same time as DMP: therefore no report from LITHP Liaison to DMP.

ii) Shipboard Measurements Panel (SMP)

DMP Liaison to SMP (Gieskes) had notified the Chairman two weeks previously of his non-availability for the SMP meeting in Townsville on 9-10 October 1990. There had not been time formally to arrange an alternative but Crocker had attended part of the SMP meeting and was able to provide some feedback.

Issues of interest to DMP included:

- problems of excessively high susceptibility at the top of APC core sections, possibly due to rust particles from the pipe;

- the concept of mineralogy through infra-red spectroscopy, such as that offered by Core Laboratories through their MINERALOG service;

- core natural gamma to be added to the multi-sensor tool (MST).

The Chairman asked if the tour of the physical properties laboratory on the JOIDES Resolution had stirred any thoughts about additional measurements that might be made. Two issues were raised, the need to upgrade shipboard measurements of compressional wave velocity and the lack of continuous resistivity measurements.

DMP Consensus

Panel continues to encourage the shipboard acquisition of laboratory physical properties data that can be applied to the calibration of downhole measurements.

iii) Sedimentary and Geochemical Processes Panel (SGPP)

SGPP has not met since the previous DMP meeting: therefore no report from SGPP Liaison to DMP.

iv) Technology and Engineering Development Committee (TEDCOM)

The Chairman, as DMP Liaison to TEDCOM, reported on the TEDCOM meeting held in College Station on 27-28 September 1990.

An ODP Deep Drilling Workshop had been held on 26/9/90. An ODP goal is to penetrate 6000 m by the year 2000. The attainment of this objective will require new technology. The workshop had reviewed deep drilling on land in the USA, USSR, Germany and Sweden. This had been followed by a summary of the evolution of offshore drilling. The subsequent discussion had not answered the questions posed by PCOM concerning alternative technologies, development strategies, etc. It had been considered that such complex questions could not be addressed meaningfully through a one-off meeting. Future needs could best be satisfied by an iterative design process involving TAMU engineers and an ad hoc subgroup to be called together informally at strategic intervals. Planning for specific objectives would need to be initiated several years ahead of the proposed deployment of the design technology. Practically, the ODP/TAMU engineers would need to receive details of hypothetical drilling sites, typical of those that are to be drilled, in order to provide the facility for meeting the specific objectives. OPP/TAMU would respond with draft designs to be circulated for review among oil company personnel, etc., and for consideration by the (TEDCOM) subgroup. No other semi-permanent working group had been considered necessary.

A review was presented of the Engineering Leg (132) on which the Diamond Coring System (DCS) Phase II was tested. The DCS was tested only in bare zero-age brittle rocks. The other target lithologies were not drilled because of time limitations. The deployment of slimhole logging tools in DCS holes was not accomplished because of difficulties in re-accessing the DCS hole. However, the handling technique for slimhole tools was evaluated. Core recovery from fractured basalts was 64%. Recovery from friable tuffs was sometimes as low as zero.

TAMU engineers noted that the planners had asked for the DCS to be deployed on the East Pacific Rise, one of the most hostile environments that might be encountered, within a relatively short time-frame. The planners had given the impression that they see the DCS as the saviour of the programme. This myth must be dispelled. The DCS is a working concept which needs much further development effort. Even then, it will constitute only one member of the ODP armoury. The conventional APC/XCB/RCB system is performing extremely well and will continue to be widely deployed. It is important that a true perspective be established.

It was noted that these comments have important implications for downhole measurements. The key question is whether ODP can justify developing high-temperature slimhole logging tools when (i) the DCS is not yet proven, (ii) when proven it will constitute a part, possibly the minority, of the overall drilling operations, and (iii) only a subset of its deployment would be in high-temperature environments. The correct approach is to design a coupled system to address each scientific objective. The system should comprise drilling, coring and logging, each of which should be dovetailed with the others in a way that maximises the prospects of achieving the scientific objective.

PCOM had asked TEDCOM to consider the question of hole stability in loose sands so that these might be logged. There are various commercially available additives that "cement" the borehole walls. Heavy mud additives routinely provide adequate hydrostatic pressure to hold up the hole. Although certain logs can be run through pipe, there is variable data degradation. Some tools cannot be run in pipe. For these reasons, a solution which avoids pipe is much more preferable from both data quality and data quantity standpoints. The various additive options are to be evaluated.

(v) KTB

Draxler reported that the large rig had been initiated and that the main hole was spudded on 6 October 1990. Target depth is 10 km with the option for negotiating a possible extension to 12 km. The logging programme is planned to occupy 151 days. Because the pilot hole has been fully logged and tested to the final depth of 4 km, only a limited logging programme is planned over the top 3 km of the main hole. A complete logging coverage is planned from 3 km downwards, allowing a 1 km "overlap" of full logging data between the two holes.

The post-orientation of cores needs a clear-cut depth correlation. In this respect, the Formation Microscanner (FMS) is an important facility. Back-to-back tests have shown that the resolution of the ODP FMS tool is better than that of the standard Schlumberger FMS.

Expected bottom-hole temperature (at 10 km) is 300°C: this figure is based upon an extrapolation of data from the pilot hole.

An English-language summary report of results from the pilot hole is available as KTB Report 90/8.

6. Tool Monitor Reports

i) Geoprops Probe

Karig reported that two tools have been manufactured, at least one of which is at College Station awaiting testing in the TAMU experimental borehole. The tool is deployed in conjunction with the Motor-Driven Core Barrel (MDCB). The MDCB is due to be tested at sea during Leg 134. Karig has contacted the Co-chiefs of Leg 138 (Davis, Mottl) to discuss the deployment of the tool at Sedimented Ridges.

ii) BGR Borehole Magnetometer

Draxler reported that work is progressing on upgrading the tool.

iii) LAST

Moran reported that the LAST II tool is still in Houston awaiting offshore tests in the Gulf of Mexico. If successful, the tool will be scheduled for deployment in ODP, probably during FY92. A further field test on the JOIDES Resolution would be needed prior to scientific deployment.

DMP Recommendation 90/16

"The Lateral Stress Tool II should be tested at sea by ODP at least two legs prior to its proposed scientific deployment, in order to allow adequate time for any residual modifications to be made."

iv) Wireline Packer

Scholz described the deployment of the wireline packer during Leg 133 from his informed standpoint of the electronics technician responsible for the tool's operation. During Leg 133 there were two attempts to deploy the wireline packer. In both cases the succession comprised soft pelagic sediments overlying reef material. This situation gave rise to unstable overgauge holes.

The first attempt, at Site 812, failed on the rig floor. An attempt was made to assemble the tool horizontally but the tool flexed and the weakness of the quick disconnects caused breaks in the high-voltage feedthroughs. Efforts to repair the feedthroughs resulted in damage to other components. The attempt at deployment was then abandoned. Remedial action includes redesigning the quick disconnects to make them more reliable and assembling the tool vertically for which highly stable environments are needed.

The second attempt at deployment, in Hole 816C, did involve assembling the tool vertically. The packers could not be fully set against the borehole wall. The cause was believed to be silt suspended in the borehole fluid, which clogged the intake filter. The packers deflated satisfactorily in terms of the hydraulics but mechanical deformation prevented their complete collapse to less than the 4-inch drillpipe internal diameter.

Scientifically the exercise was fruitless but much was learnt about the shortcomings of the tool. For example, there is a problem with the design of the sampling bottles. The wireline packer uses a syringe type but a major drawback is the dead volume of fluid which is present before pumping begins. Even if distilled water is used, this can negate the scientific results unless it is tagged to allow the dead volume to be evaluated. Thus, at present, there is no prospect of a sample containing 100 per cent formation fluid. There will always be contamination. To overcome this, it will be necessary to take several samples at each depth location and determine their variation with time. This would require smaller syringe bottles to allow a greater number to be installed. A possible alternative strategy might be to use an evacuated type of bottle. Also a higher quality of inflow valves to the sampling bottles is needed. These are currently rated to 400 psi: they need to be rated to 10 000 psi. It was now apparent that the TAM engineer who designed the tool did not understand how critical it is to have good sample quality. The packer problem might have to be addressed by approaching a different manufacturer. In theory the packers are capable of expanding to 13 inches but the practical limit has probably been around 12 inches. Now it seems that a safer limit to avoid the packer deformation problem might be 10.75 inches.

In concluding his presentation Scholz emphasized that these comments were "hot off the press" and that a much fuller evaluation of the tool's performance by LDGO was needed before one could identify precisely what remedial action is required. At this stage it is not possible to state how much engineering work is needed to render the wireline packer a fully operational tool.

The Chairman thanked Scholz for taking the time to come and give such a frank and open briefing to the Panel. The subject matter focussed attention once again on those same key issues that had previously been of concern to the Panel. How good had the networking been between the logging contractor, the wireline packer subcontractor (Stanford University), and the manufacturers (TAM, Inc)? Why was the tool accepted from TAM as a working tool? Why was the tool deployed without thorough and satisfactory land tests? Each time a problem is solved, a new one seems to arise. Initially it was the packers, then the motors; now it is sample integrity and tool robustness, with new doubts about the packers. The saga could not be allowed to continue indefinitely. At some point a critical evaluation would have to be made of the desirability of continuing with the wireline packer vis-a-vis some alternative technology.

Anderson responded by emphasizing that the wireline packer constituted new and ambitious technology that is not available anywhere else. It is one of the first examples of the ODP having to advance technology for its own specific purposes. These tasks have to be undertaken within the fiscal constraints imposed by ODP: these are rarely adequate for full and complete engineering to be effected. The difficulties are compounded by what the tool is required to do. Packers have to extend to four times their deflated diameter; there is an exceptionally long wireline (c.30 000 ft); and everything has to be compatible with the small diameter constraints imposed by the drillpipe. It is true that there has not been a systematic land test of the tool. However, the geochemistry community were keen to acquire the data that the tool should provide and pressure was strong for the tool to be run prematurely.

Lysne pointed out that the wireline packer is a subset of a much wider problem. Tool development is expensive but it can rarely be addressed in ODP with commensurate resources. Other examples are the Diamond Coring System and the Geoprops Probe, both of which appear to be supported at the critical level.

Key future deployments of the wireline packer are Hole 504B and Sedimented Ridges, the latter being an especially difficult environment. After much discussion, DMP formulated the following recommendation with the object of enhancing the prospect of appropriate data being acquired in these key areas, either by using the wireline packer itself or through alternative technology.

DMP Recommendation 90/17

"Since the wireline packer is not functional, at least in unstable overgauge holes, an urgent evaluation should be undertaken by LDGO of what is needed to make the wireline packer perform. LDGO should prepare such a report for the next DMP meeting. A rigorous test programme should be satisfactorily concluded before the tool is deployed for scientific purposes at sea. The first scientific deployment should be where hole conditions are good. In view of the doubts concerning sample integrity and tool robustness, LDGO should also examine alternative technology to prepare for the possibility that the wireline packer might not eventually achieve the status of an ODP functional tool."

v) <u>Sediment Magnetometer</u>

Foucher described briefly the two constituent, but separate, tools for measuring the modulus of the magnetic field (to within 0.1 nT) and susceptibility (to within 10^{-6} SI units). The latter can be ombined with other Schlumberger tools. The tool has been specifically designed for ODP in terms of diameter, i.e. 3.75 inches. Another version has been built with a slightly larger diameter. The sediment magnetometer is scheduled for deployment on Leg 134, which was about to start. The tools are currently on board ship.

It is no longer proposed to record daily field variations on the sea floor. Instead a magnetometer will be placed on an island 100 km from the drillhole and these records will be compared with those from a second magnetometer on a dingy close to the borehole location.

It was noted that the University of Munich has a susceptibility tool with the same sensitivity as the above.

vi) Flowmeter Tool

Morin reported that approval was received one month ago from NSF for the flowmeter proposal to be pursued under their ODP equipment development programme. The purchase order is being issued imminently. The tool will be ready by the end of the calendar year with land tests scheduled at LDGO in January or February 1991. The tool is scheduled for use on Leg 137 at Hole 504B. If the tool functions properly at sea, it will be turned over to ODP for the Sedimented Ridges leg. The tool can be used in hot holes because it does not contain any rubber packer elements except for that positioned uphole in the casing which should be further cooled by the downflow of injected waters.

vii) Japanese Downhole Magnetometer

Yamano reported tht the Japanese downhole measurement group has started to make a new downhole magnetometer. Capabilities and specifications of this instrument are expected to be as follows:

Sensors:	Three components of the magnetic field and magnetic susceptibility
Digitizer:	16 bit A/D converter
Resolution:	To be determined Depends on selected dynamic range
Max. Depth:	6000 m
Max. Temp:	180°C (< 4 hours)
Pressure Case:	3 or 4 stainless steel cylinders Each case is 1.1 m long.
Diameter:	< 96 mm
Heat Insulation:	Combination of dewar bottle and heat sink material

Data Acquisition: Serial data transfer through the logging cable

Logging Cable: Four-conductor cable is necessary

The magnetometer will be completed by the end of June 1991 so that it can be available for use in Hole 504B on Leg 139, as a third party tool if possible. Yamano requested information on the specifications of the logging cable to be used on Leg 139 and details of when and how the tool should be shipped.

In thanking Yamano for his contribution, the Chairman noted that the German magnetometer is already earmarked for Leg 139. Another candidate is the refurbished University of Washington magnetometer. Clearly we need to sort out priorities. The Panel view was that we should follow rigorously the guidelines for third party tool development and deployment, which have been approved by PCOM, and that the tool which best satisfies these guidelines should be the premier candidate.

DMP Consensus

The approved guidelines for the deployment of third party tools should be published in the JOIDES Journal.

This action is to be progressed by Fisher who will be receiving appropriate copy from the Chairman.

[ACTION: WORTHINGTON, FISHER]

7. <u>Logging Contractor's Report</u>

Golovchenko reported that the LDGO Borehole Research Group now have four full-time log-analysis personnel for data processing, archiving and meeting data requests. The work load has increased greatly, especially since the FMS was introduced. During the past three months there have been 99 requests for data, an increase by a factor of two. The logging school recently held in Australia had been the 14th in the series: an updated version of the logging manual had been prepared for that school.

The Chairman congratulated LDGO on their increased role. The growing demand for log data was a testimony to the success of the logging programme and to an increased realization within the community of the scientific benefits that the data can bring.

Golovchenko continued by discussing training matters. LDGO has started to train two TAMU technicians who will fill the slot that is 50% dedicated to shipboard FMS processing and VAX station maintenance. One visiting scientist (from the UK) has also been trained in FMS processing.

FMS data are being presented in the Initial Reports (Part A) volumes in microfiche form. The VAX station for FMS processing has been shipped and is currently being installed on the JOIDES Resolution.

The upcoming leg (134) is also the first leg in which deployment of the German digital BHTV is scheduled. In response to a question, Golovchenko reported that there is no provision for processing BHTV data at LDGO. This is in marked contrast to the FMS situation: yet, these tools lend themselves to conjunctive use. The Chairman recalled that special funds had been provided to secure a back-up digital televiewer, that BHTV data are a prime input to one of DMP's thematic thrusts (Global Stress), and that the Tectonics Panel are strongly interested in breakout-related interpretation of BHTV images. The Panel saw the absence of a processing facility as inconsistent with this overall situation.

DMP Recommendation 90/18

"Facilities should be established at LDGO for post-cruise processing of data acquired using both analogue and digital borehole televiewers."

Golovchenko reported that the logging tools and truck donated by ARCO had been tested. For the most part they functioned well, although some minor problems need resolving. Money exists for at least one tool to be re-packaged for high-temperature deployment. There is also NSF funding for the development of a dipole shear-wave logging tool. This work is to be undertaken by LDGO (Goldberg) in collaboration with ARCO.

Leg 132 involved the attempted deployment of a slimhole gamma-ray caliper tool (borrowed from Zoback, Stanford University) in Hole 809F drilled with the DCS. The aim was to see if logging tools could be deployed with the DCS. Four different attempts were made to lower the tool below the pipe but this could not be accomplished due to an obstruction at the bit, believed to be basalts wedged above the bit throat. The test was therefore inconclusive: it has not yet been demonstrated that logging tools can be deployed with the DCS.

Yamano reported on the ONDO experiment using a long-term temperature recording system that was deployed in Hole 808E during Leg 132. Data retrieval has been attempted twice. The first attempt was made in July using a small boat, but nothing could be heard due to difficulties with the on-board data receiver. The site was re-visited in October, this time by a research vessel, but no answer was received from the system. A further attempt to recover the data will be made by lowering an acoustic data logger down to the sea floor near Hole 808E. In view of the rough seas that prevail around the Japanese Islands in Winter, this operation will be scheduled no earlier than April 1991.

Golovchenko reported that Leg 133 had broken all records. Twelve holes were logged with more than 5 km of logs being obtained. The seismic stratigraphic tool combination was always run, mostly as part of the quad combo. The FMS was run in most holes. The geochemical tool string was run in clay holes but not in pure carbonates. GLT precision was verified through excellent repeatability. The excellent and comprehensive logging data are especially significant in view of the sometimes sparse core recovery.

Leg 133 also saw the first deployment of the new side-entry-sub. This is faster to deploy and is strengthened so that there is less risk to the drillpipe and the logging tool. The new SES was deployed in just one hole, 812B.

DMP Consensus

Panel wish to compliment TAMU engineers on the successful and timely development of the new strengthened side-entry-sub.

8. High Temperature Technology

The Chairman introduced this important topic by summarising the current situation. High-temperature logging technology will initially be required for Legs 139 (Sedimented Ridges) and 140 (East Pacific Rise). The latter will be drilled with the DCS, the former with conventional hole diameters. High-temperature slimhole tools will be needed for Leg 140 but larger diameter tools would suffice for Leg 139.

At present, the DCS is not established technology. The worst scenario is that it might prove impossible to drill at EPR; the second worst is that holes will be drilled but core recovery will be poor. The third scenario, which is the hoped-for target, is to drill DCS holes with very high core recovery. All of these scenarios are possible; their existence makes it very difficult to formulate a plan for high-temperature logging in slimholes.

The DMP position, which has been governed as much by fiscal constraints as by scientific considerations, is to concentrate on the high-temperature measurement in slimholes of those properties which cannot be measured on core. This philosophy pre-supposes good core recovery: if core recovery is poor, the strategy breaks down. Panel is aware of this potential outcome, but fiscal constraints prevent a more ambitious range of downhole measurements at this stage.

The situation had been eased somewhat by the announcement that JAPEX super-high-temperature tools could be leased to ODP. Some of the tools listed in the original descriptive publication (Itoh T., Miyairi, M. and Takeyama, T., 1985 "Super high-temperature geothermal well logging tools (450°C) and log interpretation", Int. Symp. on Geothermal Energy, Int. Vol., Stone, C. (Ed.), 471-479, Geothermal Resources Council, USA) as stand-alone tools are apparently not available, but a combination temperature-pressure-flowmeter tool is under development and this is to be offered to ODP.

Yamano provided the following account of tool status. The new slimhole PTF combination tool will probably be used on Leg 138 (Sedimented Ridges). The tool can measure pressure, temperature, and flowrate, and can be operated at a temperature of up to 375°C for two hours. The diameter of the tool is 43 mm. The tool has just been completed, and the first test in a high-temperature borehole will be made in the middle of October 1990.

Since this tool is new, and in view of the fact that other technology is available, Panel considered that a back-to-back study should be undertaken in a hot slim hole on land with the object of establishing the reliability, precision and compatibility of the various pressure-temperature tools. Panel incorporated this view into the following recommendation, which also reflects the earlier stated priorities pertaining to fluid sampling (for geochemistry) and formation resistivity (for porosity in fractured media).

DMP Recommendation 90/19

"For high-temperature logging purposes, the efforts of ODP should be concentrated on the following three areas, listed in order of priority.

(1) Temperature and fluid pressure
(2) Fluid sampling
(3) Formation resistivity

For temperature and fluid pressure, funds should be provided for a back-to-back study of the available slimhole tools in a hot hole (c. 300°C). The best performer(s) should be leased.

A slimhole borehole-fluid sampling tool should be developed by modifying existing technology.

Formation resistivity should be addressed by double-dewaring the LDGO ARCO tool, or an alternative tool; this objective falls away if there is insufficient funding for all three objectives to be progressed properly and concurrently."

The above recommendation (90/19) relates to the short term: this technology will be required within the next 12 months. Panel reiterated that interactions between different scientific programmes are needed for long-term technological achievement.

Panel re-affirmed their awareness that drilling, coring and logging constitute a coupled system which must be designed to meet scientific objectives. An important prerequisite for DMP Recommendation 90/19 is that the DCS produces good core recovery. To enhance these prospects, an experienced diamond-core driller should direct the drilling operation.

DMP Recommendation 90/20

"Deployment of the Diamond Coring System (DCS) in a scientific leg should be under the direction of an experienced diamond-core driller."

9. Pacific Planning

i) Legs 134-140

Fisher reported on plans for the WPAC/CEPAC programme that comprises Legs 134-140.

Leg 134: Vanuatu

The sonic core monitor is to be tested with the rotary core barrel: a prototype already exists for the XCB. The aim is to orient cores by inscribing. No changes to the logging programme.

Leg 135: Lau Basin

The logging programme is virtually unchanged. A drillstring straddle packer deployment is scheduled for Site LG3.

Leg 136: Oahu

PCOM approved two days for conventional and BHTV logs together with testing of the borehole seal, as proposed by DMP. There will be no VSP. Panel considered that a key factor in the success of this hole is the bonding of the casing. A cement bond log (CBL) would indicate the presence of any potential leakage zones behind the casing. The sonic log should be run in two passes, one in conventional mode to provide seismic control and one in cement-bond mode to provide details of casing bonding.

DMP Recommendation 90/21

"During Leg 136, the sonic log of the Oahu test hole should also be run in cement-bond (CBL) mode."

Leg 137: 504B/Engineering 3A

No changes to the proposed logging programme but the FMS has been requested by one of the Co-chiefs. Panel considered that since the FMS is effectively a standard tool, it should be run in 504B in order to complete the already comprehensive logging data at this site.

DMP Recommendation 90/22

"During Leg 137 the Formation Microscanner (FMS) should be run in Hole 504B."

[Note: this Recommendation focusses part of DMP Recommendation 90/8 in which the schedule for deploying the FMS was left open.]

Leg 138: Eastern Equatorial Pacific

No changes to the proposed logging programme. This leg is a candidate for testing (at total depth) the LAST II tool.

Leg 139: Sedimented Ridges

No changes to the proposed logging programme but the spinner-flowmeter has been included. The pre-cruise meeting will take place in January 1991.

Leg 140: Engineering 3B

Programme depends on the results of Leg 137. Candidates are 504B or East Pacific Rise.

ii) FY 92 Pacific Prospectus

Fisher reviewed possible FY92 programmes. There are several candidates.

Atolls, Guyots and Aprons
Bering Sea
Chile Triple Junction (I and II)
Cascadia Margin
North Pacific Neogene
East Pacific Rise (I and II)
Sedimented Ridges II
Gas Hydrates
Hess Deep (4 legs)

Cowan advised that only six of these (fourteen) candidates could be accommodated within FY92. There would therefore be much redundancy if DMP were to invest time now in formulating a detailed logging programme for all of these proposals. It would be appropriate to address these issues in detail at the next DMP meeting, by which time the PCOM selection will have been made. The Chairman agreed to give FY92 planning the highest priority at the next DMP meeting.

[ACTION: WORTHINGTON]

Several topics of special interest to DMP were elucidated for information.

Cascadia

Carson tabled the following report in absentia, as the official panel representative to the Detailed Planning Group for Cascadia Margin Drilling.

That group met in mid-August and they recommended a drilling programme which includes holes off both Oregon and British Columbia. They unanimously endorsed the DMP resolution that precruise planning should include extensive meetings between scientific staff and the operations group to maximise the probability of successful logging. There was some considerable discussion prior to that endorsement. The group assembled had drilling experience on Nankai, Barbados, Peru-Chile, and Japan margins and were fully aware of the difficulties of logging in these convergent margin settings. They were, nevertheless, more optimistic about the prospects for successful logging than was DMP at our last meeting. They noted, for example, the nearly full suite of logs obtained on the Japan Margin transect on Leg 57 which followed careful hole conditioning. They felt that because the proposed holes were relatively shallow and because the margin exhibits extensive carbonate cementation, the prospects for successful logging were good. They enthusiastically endorsed the notion, however, that detailed strategies for hole conditioning and logging procedures be worked out well in advance of the drilling programme. The number of holes proposed for the margin has been substantially reduced and representatives of the Borehole Research Group from Lamont and the Ocean Drilling Programme from TAMU had produced a revised logging programme that can be accommodated within a single drilling leg. It is accurate to report that DMP's concerns were carefully and conscientiously considered. The Planning Group produced a plan that provides for a logging programme that is now significantly different from that originally proposed for this margin.

Fisher added that the updated downhole measurements plan for Cascadia is extensive. Standard logs, including FMS, and the WSTP are scheduled for all holes: wireline packer, drillstring packer, VSP and BHTV are scheduled for selected sites. In all, 16.7 days of rig time have been set aside for downhole measurements.

Hess Deep

Fisher presented a synopsis of a possible four-leg programme. The objectives are to study the igneous, tectonic and metamorphic evolution of fast-spread oceanic crust and to evaluate the structure of the Hess Deep rift valley. No logging is discussed in the proposal but a repeat of 504B seems desirable.

Gas Hydrates

The proposal specifies the Peru Margin but it could equally be applied to Cascadia. The objectives are to quantify factors that control the formation of gas hydrates, to characterise them geochemically, physically and thermally, and to identify methane sources. Logging plans have not been formulated but they should be comprehensive.

The Chairman commented that the logging characteristics of (methane) hydrate have been addressed in the oil-industry literature. He would extract this information and present a brief synopsis at the next DMP meeting, if Gas Hydrates are scheduled by PCOM for FY92. This might guide the choice of logging programme.

[ACTION: WORTHINGTON]

Role of Formation Microscanner

Panel felt that the success and increased use of the FMS, together with the onset of a shipboard processing capability, require that it now be classified as a standard tool for the planning of logging surveys for FY92 and beyond. The merging of the seismic-stratigraphic and litho-porosity tool combination into the "quad-combo" had effectively created a vacancy in the tripartite standard logging suite. Panel proposed that the FMS be allowed formally to occupy this slot.

DMP Recommendation 90/23

"The Formation Microscanner should be a standard ODP logging tool for planning purposes, i.e. it should be run in all holes that are designated for standard logging."

10. COSOD I Objectives

Golovchenko provided a list of COSOD I objectives but did not have a synopsis of how ODP downhole measurements have helped COSOD I objectives to be met. Golovchenko would prepare a summary and forward it to the Chairman for attachment to the Minutes. The Chairman noted that the minutes would have to be distributed quickly in order to be incorporated within the mailout for the PCOM Annual Meeting in November/December 1990.

[ACTION: GOLOVCHENKO]

11. ODP Renewal

Panel disussed actions that might be taken over the next 12 months to facilitate ODP renewal. Recent developments include the following:

i) Publication of thematic JGR volume focussing on ODP downhole measurements

ii) Publication of translated paper by Worthington et al. on "Scientific applications of downhole measurements in the ocean basins" in a Japanese earth science journal.

iii) Presentations by Chairman to NERC (UK) and Australian VIPs on "Technological achievements of ODP".

Future suggested actions are listed below:

i) Distribution of ODP film (see JOI Report, Item 4) to member countries.

ii) Chairman to write up an invited paper for "Reviews of Geophysics" on the evolution of logging technology from early industrial applications to the present advanced scientific uses.

iii) Development of a paper, possibly for "Geotimes", on the usage of ODP data, highlighting the growth.

12. Hole Stability

Karig commented on the aftermath of Nankai. The hole stability problem is being seen as one of swelling clays. In fact, a primary cause is believed to be that the sediments are not strong enough to withstand the prevailing horizontal stresses, and that these conditions have given rise to breakouts. This contention is supported by the fact that both the major hole and the tie hole were overgauge for much of their depths, a condition which cannot be attributed exclusively to sand sloughing. It is important that this issue be resolved for it has important implications for future drilling on accretionary margins (e.g. Cascadia).

The Chairman suggested that some focussed action was needed. Otherwise, there will continue to be uncertainty about the "loggability" of holes drilled in accretionary wedges. It is important to ascertain whether the underlying problem is one solely of stress-driven breakouts or of clay swelling (which could accentuate any prevailing tectonic effects).

DMP Recommendation 90/24

"An ad hoc working group comprising engineers and scientists should be convened for a one-day meeting to review causes of hole instability in Nankai-type situations and to propose remedial action. This meeting should be scheduled to take place immediately prior to the next DMP meeting in College Station in January/February 1990."

Panel observed that the working group meeting should be preceded by a study of the mineralogy and of the mud treatment at Nankai.

[ACTION: KARIG, SONDERGELD]

Fisher will arrange for details of the mud treatment to be provided.

[ACTION: FISHER]

Fisher and Karig will arrange the organisational details including the list of invitees. Interested members of DMP will be invited to attend.

[ACTION: FISHER, KARIG]

[N.B. The date for the working group meeting has been set as 6 February 1991, subject to PCOM approval]

13. Safety

A concern was expressed about the effects of H_2S if this were to be encountered during the Sedimented Ridges leg. H_2S can cause a hardening of the logging cable if the latter is not H_2S-proof. A precaution is to wait between logging passes to allow time for absorbed H_2S to escape. This, however, will slow down the logging programme. The H_2S issue is being addressed by the Pollution Prevention and Safety Panel (PPSP). Chairman will make PPSP aware of DMP concerns.

[ACTION: WORTHINGTON]

14. Panel Membership

The Chairman reported that two panel members had asked to rotate off DMP in the near future. The Chairman would be writing to all DMP members asking for nominations for the US constituencies.

[ACTION: WORTHINGTON]

Cowan pointed out that PCOM wish to see two nominations for each slot so that they have a choice. The Chairman replied that he was unhappy with such an arrangement given that approval-in-principle now had to be sought from each nominee before PCOM was approached. It would be highly embarrassing if a person from industry secured the permission of his/her management and supplied a resume, only to be told later that the slot had been given to someone else nominated by the same panel chairman. A preferred approach, and one which involves considerably less work, is to submit to PCOM names that match the vacancies, and if PCOM find that any name is not acceptable, a fresh solicitation be made for the unfilled slot. This would still give PCOM a choice. The Chairman will solicit the views of other panel chairmen at their annual meeting.

[ACTION: WORTHINGTON]

15. Shipboard Integration of Core and Log Data

This issue was addressed through a joint session with the Shipboard Measurements Panel (SMP). The joint meeting was co-chaired by the DMP Chairman and the SMP Chairman (Kate Moran). The principal objectives were to review the recommendations of the JOI Workshop on ODP Shipboard Integration of Core and Log Data, held at the University of Miami on 29-30 August 1990, to develop from these an agreed listing of user needs for integrated core and log data, and to formulate a joint, composite recommendation for future action.

The meeting reviewed the workshop report and debated each specific recommendation. The following listing, presented here as DMP Recommendation 90/24 and duplicated within the Minutes of the SMP meeting held in Townsville during the period 9-11 October 1990, contains the agreed specification of user needs.

DMP Recommendation 90/25

"ODP Shipboard Integration of Core and Log Data, Specification of User Needs

(a) General Observations

i) Core and log data are the products of complementary measurements. Logs help to put core data in perspective; core data can be used to calibrate logs.

ii) Earth scientists are increasingly required to work with data measured at different scales and rooted in different subdisciplines. The integration of core and log data is an important component of the broader process of scale and subdiscipline integration in contemporary earth science.

iii) Computerized barrel sheets constitute a useful tool for integration and display of core and log data.

(b) General Requirements

i) Standard procedures are needed for the integration of core and log data.

ii) Integration procedures should be compatible with methods for subsequent correlation with seismic data.

iii) It is expected that a major part of the core-log correlation and definition of reference depth will occur shipboard. The procedures, however, should be sufficiently flexible to allow for review and changes at the first post-cruise meeting.

(c) Specific Requirements

Reference depth

* All core and log data should be referred and tied in to a common depth scale. These depths are to be known as the reference depth.

* The barrel sheet should have two depth columns. Core photographs and visual core description should be related to a core/section/interval depth column. All other plotted (core, log) data should be related to a reference depth column. The relationship between the two depth columns should be depicted graphically.

* Software (which runs on MacIntosh and IBM-PC compatible computers) for calculating reference depth and the core parameter file should be available on the file server on board ship. This software can then be accessed by shipboard scientists for including the reference depth in their core data files.

* The LDGO logging scientist should be responsible for copying the REFERENCE DEPTH logs to the file server. This does not include the FMS data which will be available only on the Vax station (in mbsf).

* Bottom of pipe should be used for tying logs to pipe depths.

Data Acquisition

* Standard, compatible ASCII tabular formats should be adopted for all core and log data. Drilling parameter data files should also be available in ASCII tabular formats.

* All discrete laboratory measurements should be accompanied by comments on lithology. Provision should be made in spreadsheets for a lithology comment column.

* Spreadsheet templates for laboratory data entry should be available for both MacIntosh and PCs. Data should be downloaded to the VAX at the end of each hole as a minimum so that error checks can be performed onboard in cooperation with the shipboard scientists.

* In order to achieve adequate spatial resolution, the recommended frequency of discrete laboratory physical properties measurements should be increased to a minimum of two measurements per section. Legs should be appropriately staffed in order to meet this requirement. Drilling in hard rock may necessitate an exception to this sampling frequency. In such cases, the number of samples taken can be reduced.

* To improve core data correlation, discrete physical property measurements should be selected at the same reference depths as all other core measurements.

* The physical properties laboratory should be upgraded; the mass and volume measurement devices should be connected to a PC.

* Natural gamma should be added to the MST for direct core-log integration.

* Magnetic susceptibility log acquisition (in the resolution range for sediment) should be added as part of the standard logging suite for direct core-log integration.

Data Analysis

* Processing/integration/interpolation software is needed (e.g. a modified version of CORPAC).

* Upgrades to graphics software/hardware should continue for shipboard labs. (To facilitate this and related recommendations, an additional computer person-year is recommended for science operations requirements).

* A core-log data correlation specialist should be identified within the scientific party of each leg. A key responsibility of this position is to determine the common reference depth. If necessary, additional persons to carry out physical properties measurements should be sailed to free a key staff member for this function.

* Core-log correlation involving FMS and/or BHTV data should be undertaken onboard where possible. If this cannot be achieved, then the task should be completed as part of the scientific investigations post cruise.

* Graphics must be sufficiently flexible to allow display in either leg-specific or topic-specific mode. The spreadsheet/graphics/correlation system should be sufficiently versatile to allow additional utilities to be incorporated as needed.

* A more substantial database of logs measured through pipe should be acquired and incorporated into an integrated data set for better interpretation of this data type. A calibration study of through-pipe logs should be initiated for a wide range of lithologies.

* An ad hoc specialist group should be inaugurated to review progress and to provide a forum for ongoing discussion of issues related to core-log data integration.

Data Availability

* All data must be copied to the file server for availability to all shipboard scientists. The logging scientists should be responsible for copying all standard log files in ASCII standard format and individual core laboratory scientists should be responsible for each respective core data set (physical properties, geochemistry, etc.)."

Requirements

Graham (ODP/TAMU) reviewed the equipment and software requirements for the above Recommendation to be effectively implemented.

Equipment

i) Sonic core monitor.
ii) Natural gamma (spectral) sensors within MST.
iii) Physical properties workstation.
iv) Networked magnetics laboratory workstation with discrete susceptibility data acquisition capability.
v) Core/log integration specialist workstation.
vi) Automated split core MST for digital imaging of core.
vii) High resolution magnetic susceptibility logging tool.
viii) Bottom-hole-assembly "log-pipe" marker.

Software

i) CORPAC or equivalent.
ii) Computerised visual core descriptions.
iii) Templates or macro for spreadsheet data entry.
iv) CSI "reference depth" programme.
v) Data representation on barrel sheets.

vi) Lithology comments field added to data sets.
vii) Analysis of present network system for impact on data flow and storage.

Follow-up

There was a general appreciation that the joint DMP-SMP meeting had been a great success, partly because of the groundwork done at the Miami Workshop. It was considered desirable for the two panels to meet at regular intervals, with the next joint meeting possibly taking place in 12 months' time.

16. Next DMP Meetings

The next meeting of the JOIDES Downhole Measurements Panel is scheduled for College Station, Texas, around late January/early February 1991. This meeting should be preceded by the working group meeting on hole stability. Fisher will investigate the accommodation situation and report back to the Chairman.

[ACTION: FISHER]

[N.B. The next DMP meeting has been fixed for 7-8 February 1991]

The subsequent DMP meeting, in late May or early June 1991, will take place at the Lamont-Doherty Geological Observatory, Palisades, New York. The May/June meeting is being seen as a possible opportunity for a joint meeting with the Sedimentary and Geochemical Processes Panel.

[ACTION: WORTHINGTON, MIENERT]

17. Close of Meeting

The Chairman thanked Panel Members, Liaisons and Guests for their contribution to what had been a difficult meeting because of the tough issues that needed to be addressed. He acknowledged the hospitality of the Australian ODP Secretariat, especially Tony Crawford who had made the arrangements. The meeting closed at 6.00 pm on Saturday 13 October 1990.

PAUL F WORTHINGTON
19 October 1990

ANNEXURE I

CONTRIBUTION OF DOWNHOLE MEASUREMENTS TO THE ATTAINMENT OF COSOD I OBJECTIVES

In 1981, COSOD I defined the major thematic objectives of the Ocean Drilling Program (ODP), to which the Wireline Logging Program of the ODP has made substantial contributions in the form of solutions to the problems within these themes. Wireline logging has become a critical component of the program because it provides fundamental observations of the physical and chemical state of the Earth's crust by making in situ acoustic, electrical and nuclear measurements in oceanic boreholes; it also provides the only continuous record of the wellbore.

Sedimentary History and Global Process Objectives

The geophysical and geochemical logs in ODP holes provide the only continuously recorded data which can be used for detailed examination of the impact of climate change on the sedimentological record of the past. Log data from high latitudes (Labrador and Weddell Seas), as well as temperate (Japan Sea) and tropical regions (NW Australia and Oman Margin), have shown that cyclical variations in the sedimentary record result from climate changes induced by short-period orbital changes. Log data have demonstrated these cycles in sediments as young as Plio-Pleistocene, and as old as Jurassic (Leg 129; Old Pacific Crust).

ODP well logs provide a record of sedimentologic changes caused not only by short-period climatic variations, but also by long period events. As an example, a full suite of log data from the Exmouth Plateau off NW Australia provided a continuous record of 7-12 million-year cycles that are still being evaluated in terms of eustatic changes.

Tectonics Objectives

Logs from sediments of the ocean floor record major tectonic events in a direct physical and chemical sense. Subsidence histories, over-and under-compaction, salinity and pore-fluid compositional changes, compression, and erosion all produce distinctive signals which, though often overprinting each other, can be deconvolved from the logging record.

The mechanism by which a continent is rifted apart to form a new ocean basin is of fundamental importance to the earth sciences. Logging data were critical in showing that certain margins (Tyrrhenian Sea margin) do not undergo uniform stretching, but instead follow a "saw-toothed" pattern of development. In another case, the logging data were instrumental in demonstrating that erosion rather than subsidence was responsible for the development of the margin (Straits of Florida).

Perhaps the major contribution well logs make to unravelling tectonic history is in calibrating reflection seismic records, i.e. tying the travel-time of reflections to depth and thereby to actual rock in the drill hole.

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Lithospheric Objectives

Logging is an essential element of crustal drilling programs because it provides a complete record of physical properties in the borehole, in contrast to the usually sparse recovery of core material in hard rock. Logs have been instrumental in measuring the effects of fluid/rock interaction in zones of basaltic alteration, diagenesis, and ocean/crust interchange, as well as providing a direct record of the chemical composition of pore fluids in ODP holes. Patterns of fluid flow have been studied by carefully applying currently available logging and experimental technology in ODP holes to obtain reasonable estimates of vertical flow rates and the two critical, controlling properties, porosity and permeability.

Logs also provide the only mechanism for routine measurement of the orientation of the tectonic stresses that drive the surface plates of the earth. Both the Borehole Televiewer and Formation Microscanner have recorded the direction of maximum horizontal compressive stresses in boreholes in the Indian and Pacific Oceans by imaging the orientation of breakouts in the well.

The scientific accomplishments of the wireline logging program of the ODP are covered in detail in the ODP Wireline Logging Manual, first published in 1987 and recently revised.

X GOLOVCHENKO
22 October 1990

SMP Minutes

To be handed out at meeting

000074

SSP Executive Summary
LDGO, New York, July 1990

The aims of the Site Survey Panel's Lamont-Doherty meeting were to update assessment of the CEPAC programs and to assign SSP "watchdogs" to the highest ranked North Atlantic programs as defined by PCOM at its April '90 meeting. Major additional items of business were survey assessments of three proposals new to SSP: Hess Deep, Peru Margin Gas Hydrates and the OSN pilot hole off Oahu.

For a number of the CEPAC programs, either SSP approval has already been given or there were no developments since the previous SSP meeting (April). For some proposals, however, final site locations are still to be reviewed.

Data presentations were made for the three new proposals: the Oahu pilot hole (Collins, WHOI), Hess Deep (Gilliss, WHOI; Caress & Mutter, LDGO) and Peru Margin Gas Hydrates (Brenner on the data package sent by von Huene, GEOMAR).

SSP made its first consideration of the highly ranked North Atlantic drilling proposals as identified by PCOM at their April meeting. Track charts of the Data Bank's holdings were produced. In most cases, substantial input of data from the proponents is still expected. Data packages for the North Atlantic programs will range from the fairly simple to the enormous. The Barbados and broadly-defined "N. Atlantic Conjugate Passive Margin Drilling" proposals are particularly data-intensive, in that they address several different thematic objectives or investigate several different regions, or both.

SSP "watchdogs" were assigned to specific North Atlantic proposals after protracted discussion on potential conflicts-of-interest. It was agreed to recommend SSP liaisons to DPG's.

The following consensus items arose from the meeting:

SSP CONSENSUS: Comments arising during SSP evaluation of survey packages with regard to potentially adverse downhole or oceanographic considerations should always be flagged by this panel (e.g., SSP's comments on bottom current regimes at the Northeast Australian Margin).

SSP CONSENSUS: ODP/TAMU is encouraged to conduct thorough oceanographic studies of regions scheduled for drilling, even if prior

Program experience or proponent advice suggests that no weather- or current-related problems will occur.

SSP CONSENSUS: The SSP Chairman should respond to PCOM's call for nominees to DPG's with a recommendation that an SSP member be appointed as liaison with each. For specific meetings SSP may alternatively recommend that the Data Bank manager attend. SSP must maintain both active communication with DPG's and its *independent* advisory position on the adequacy of data packages.

SSP CONSENSUS: Preliminary CHILE TRIPLE JUNCTION site locations are unchanged after PPSP preview. Proponents should now respond to the specific data recommendations from PPSP, and should also provide the SCS watergun reflection profiles that image the BSR in regions where CDP processing tends to degrade BSR imaging.

SSP CONSENSUS: No further data gathering requirements are foreseen by SSP for the CASCADIA MARGINS. Final SSP approval will await "official" site selection and the presentation of the full data sets at our next meeting.

SSP CONSENSUS: The critical data for the NORTH PACIFIC NEOGENE program are in hand. The seismic reflection data are poor for a number of sites, but are still judged as sufficient for the drilling objectives as long as high-quality seismics are run by the drillship on arrival and departure from the sites.

SSP CONSENSUS: The necessary data for the siting of the OSN PILOT HOLE (at either of the two proposed locations) probably exists. Full site survey data packages must be available for review by SSP and PPSP in September.

SSP CONSENSUS: Additional geophysical data, primarily detailed seismics to better characterize crustal structure and possible existence of rubble, are needed to assure drilling objectives in the HESS DEEP. Most of these requirements would be met if the Caress, et.al. proposal is funded. Although 2 MCS lines are proposed, the panel feels that at least 4 lines are needed (2 ea. orthogonal and 2 ea. parallel to the spreading axis) to establish whether the sections drilled are typical of the area. Deep-towed side-scan sonar is also needed to determine continuity of surface fabrics and to tie into MCS lines. SSP recommends that any transponder beacons deployed during upcoming cruises be left to aid site location for the drillship.The panel is concerned about the time needed to acquire and

assimilate the required survey data, and believes that drilling should not be scheduled before late 1992.

SSP CONSENSUS: SSP concludes that the data set for the PERU GAS HYDRATES proposal is more than adequate for drilling. The Panel recognizes the importance of this proposal, not only for what can be learned from this specific area, but for its impact on future drilling in areas marked by the presence of BSRs.

SSP CONSENSUS: SSP members may serve as "SSP watchdogs" on proposals for which they are "minor" proponents, but not for proposals in which they may be seeking funds for future survey activity.

SSP, after considerable discussion, made the following watchdog assignments:

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1. Barbados Accretionary Wedge		**SSP Watchdog (* = "minor" proponent)**
378/A Rev.: 342/A	Growth Mechanics and Fluids Evolution of the Barbados Accretionary Wedge	Moore
2. Cayman Trough		
333/A:	Tectonic and Magmatic Evolution of Pull-apart Basin: a Drilling Transect Across the Cayman Trough, Caribbean Sea	Lewis
3. Equatorial Atlantic Transform Margins		
313/A:	Evolution of a Major Oceanographic Pathway: the Equatorial Atlantic.	Pautot
346/A Rev.	A Proposal for Scientific Drilling on the Equatorial Atlantic Transform Margin.	Pautot
4. MARK area: long section of upper mantle		
369/A:	A Deep Mantle Section in the MARK Area: a Preliminary Proposal for the Ocean Drilling Program.	Hirata
5. Mediterranean Gateways		
323/A:	Neogene Evolution of Continental Basement Overthrusting and Extension in the Alboran Sea and the Development of the Atlantic-Mediterranean Gateway.	Kastens
372/A:	Cenozoic Evolution of Intermediate Water Circulation and of Vertical Chemical Gradients in the North Atlantic.	Larsen

6. New Jersey Margin Sealevel

348/A:	Upper Paleogene to Neogene sequence stratigraphy: the Ice House world and the U.S. Middle Atlantic Margin.	Kastens

7. North Atlantic: Non-volcanic Rifted Margins

334/A:	The Galicia Margin New Challenge: Drilling Through Detachment Faults Lower Crust and Crust-Mantle Boundary.	Kidd
365/A:	Conjugate Passive Margin Drilling - North Atlantic Ocean.	Louden*
366/A:	Labrador-Greenland (Preliminary Proposal)	Lewis

8. North Atlantic: Volcanic Rifted Margins

310/A:	Preliminary Proposal for ODP Drilling in the NE Atlantic: Geochemical Sampling of Dipping Reflector Sequences.	Kidd*
311/A:	The "Sedimentary Equivalent" of Dipping Reflector Sequences.	Kidd*
328/A:	Proposal for ODP Drilling on the Continental Margin of East Greenland, North Atlantic.	Meyer*
358/A:	Formation of Volcanic Rifted Passive Continental Margins: Proposal for a Drilling Transect at the Voring Margin.	Meyer
363/A:	Plume Volcanism during the late Rift to Early Drift Phase of Grand Banks - Iberia Separation.	Lewis

9. Northernmost Atlantic Paleoceanography: Arctic Gateway

305/F:	Proposal for Arctic Ocean Drilling	Larsen
336/A:	Arctic to North Atlantic Gateways, Oceanic Circulation and Northern Hemisphere Cooling.	Larsen

320/A:	ODP Drilling in the Nordic Seas (the Arctic Ocean - the Norwegian/Greenland/Iceland Sea-the NW Atlantic Ocean System), Addressing High Northern Latitude Paleoceanography and Paleoclimatology.	Larsen

10. TAG Area: High-temperature Hydrothermalism

361/A:	A Proposal for Drilling an Active Hydrothermal System on a Slow-Spreading Ridge: Mid-Atlantic Ridge, 26 N (Tag Area)	von Herzen

11. Vema FZ: Layer 2/3 Transition

376/A:	Drilling the Layer 2-Layer 3 Boundary (and the Crust Mantle Boundary) on the Southern Wall of the Vema Fracture Zone.	Hirata

12. Vema FZ: Layer 3 - Mantle Transition

376/A:	Drilling the Layer 2-Layer 3 Boundary (and the Crust Mantle Boundary) on the Southern Wall of the Vema Fracture Zone.	Hirata

13. West Florida Margin Sea Level

345/A:	Drilling Proposal for the West Florida Continental Margin, Gulf of Mexico: Sea Level and Paleoclimatic history.	Moore

The relationship of the assigned watchdogs to the newly-formed DPG's had already been discussed and is referred to in a previous SSP Consensus and in Action Item 2. Chairman Kidd will offer four names- Kidd, Louden, Lewis, and H. Meyer- as liaisons for the North Atlantic Rifted Margins DPG, and will nominate Larsen as liaison to the Arctic Gateways DPG. Moore and Kastens will be put forth as liaisons to the Sea Level Working Group. If PCOM agrees in principle to the liaisons but does not choose between the names, SSP will make its own assignments on a meeting-by-meeting basis, keeping in mind its additional recommendation concerning the Data Bank Manager's attendance at such meetings.

JOIDES OFFICE - reference SSP follow-up, Leg 136)

On October 2, 1990, as a result of a recommendation by the Site Survey Panel in July, an *ad hoc* meeting between John Collins (site proponent), Keith Louden (SSP) and Carl Brenner (ODP Data Bank) was held at LDGO to assess the data adequacy for the OSN Pilot Hole Program.

The data available for review were: 1) the *Conrad* 2308 MCS lines collected as part of the Watts/Brocher/ten Brink 2-ship Hawaiian Moat work; 2) 3.5 kHz records from the same cruise (which were basically useless); 3) the USGS-collected GLORIA images in the region; and 4) an SCS line collected along with the GLORIA survey. Site OSN-1 was preliminarily located at the intersection of *Conrad* CDP lines 303 and 304.

The meeting participants agreed that there is some difficulty in estimating depth to basement at the proposed site and its environs. The large airguns used in the *Conrad* survey do not provide the resolution needed to confidently identify the basement reflector, and the SCS record is equally ambiguous. There is a strong possibility that the strong reflector toward the bottom of the sediment column, possibly a chert, is obscuring true basement. The velocity modelling studies of the "Northern" and "Southern" areas surrounding Hawaii differ substantially, thus providing an additional degree of uncertainty. However, it was agreed that the maximum error in estimating basement depth would be unlikely to exceed 10-25%, not a significant problem in an area with a sediment thickness on the order of 250 meters.

The following conclusions were reached by the *ad hoc* committee:

1) Louden gave "official" SSP approval for drilling.

2) A bathymetric base map would be a useful addition to the data set. Collins will pursue the USGS digital data for submission to the Data Bank; Brenner will compile the map.

3) The *Conrad* ESP data should be submitted to the Data Bank. (*Note: John Mutter has since complied with this request.)*

4) The site is presently located on a slight structural bulge. PPSP has approved the site as proposed, but generally prefers that all sites, even those in innocuous areas like this, be located off structure if possible. Neither PPSP nor SSP objects if the site is moved off crossing seismic lines (to be located where sediment is thinnest, for example).

5) It is likely that core recovery in the lower section is going to be quite poor, especially if the acoustic basement reflector is indeed a chert layer. However, the reflector appears to be a regional phenomenon, and thus difficult to avoid. From results elsewhere, it is unlikely that a chert layer, if present, is very thick.

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REPORT ON DEEP DRILLING WORKSHOP
COLLEGE STATION, TEXAS
SEPTEMBER 26, 1990

Prepared by: James H. Natland

Summary

At this day-long workshop, the members of the deep-drilling task force, additional members of TEDCOM, representatives of JOIDES thematic panels, engineers of the Ocean Drilling Program, and invited experts in continental deep drilling convened to consider the technologies necessary to carry out deep drilling in the ocean basins in several kilometers of water. The discussion centered on anticipated holes of greater than 2 km and up to 4-5 km total penetration at continental margins, and holes in the deep ocean basins of about 6 km depth penetrating the entire ocean crust into the upper mantle. The centerpiece of the meeting was a series of presentations relating experiences with deep drilling in continental crust in the Soviet Union, Germany, and Sweden. Additional presentations outlined expectations for deep drilling in the ocean basins, developments in deep-drilling offshore by oil companies in the United States, and the present capabilities of JOIDES Resolution.

Two central themes that emerged from comparison of the programs in deep drilling in continental crust are 1) that it is necessary to keep deviations from the vertical within tolerable limits; and 2) that at depths greater than about 4 km, breakouts related to deep fractures and concentrations of stresses in crystalline rock are fairly likely. Each of the three deep drilling programs used quite different approaches and philosophies in dealing with these problems. The Soviets have achieved multiple penetrations of 10-14 km at two locations, the drilling in Sweden penetrated nearly 7 km in shock-fractured rock, and the German KTB initiative has completed a pilot hole to a depth of >4 km.

A concensus of members of the deep-drilling task force is that JOIDES Resolution should be the platform used in the near future for holes of up to 3 km penetration in continental-margin settings. The vessel can be used very much in its present mode for such holes and, with some additional development, in a mini-riser mode using the diamond-coring system. However, strong concerns were expressed about the pace and level of DCS development. The task force offered that there is no capability currently to drill the very deep holes in the ocean crust necessary to penetrate into the mantle. Such a project will have to be designed virtually from scratch. Finally, the task force eschewed the utility of preparing a technical report at this time, since experience has shown that very deep holes have to be individually designed, and that each has its own specific requirements. The group recommended instead that detailed site information and drilling requirements be provided as soon as possible to ODP engineers, who would then identify equipment necessary to obtain, or design and manufacture.

INTRODUCTION

The Deep Drilling Task Force appointed by PCOM in August, 1990, convened a workshop of experts in deep continental drilling, to impart their experiences to ODP engineers and invited scientific representatives of JOIDES thematic panels. The meeting was held in College Station, TX on September 26, 1990, the day before the regularly-scheduled TEDCOM meeting. Following from an original TEDCOM recommendation, the concept of the meeting was to bring together experts in deep drilling of crystalline rock in continental crust, in order to consider how the technologies they have used can be applied to deep drilling in the ocean basins. Despite the particular experience of these experts in the drilling of crystalline rock, PCOM requested that the Task Force consider all forms of deep drilling anticipated for the ocean basins, including any hole of > 2 km penetration in sedimentary or crystalline formations. The Task Force was requested to prepare a report outlining specific technologies at the end of the workshop.

Despite this mandate, the members of the Task Force declined to prepare such a report. Nor did they wish to consider convening again, or becoming embodied as any type of long-range working group to provide technical recommendations for deep drilling in the future. At the heart of this disagreement with the PCOM mandate lies a fundamental difference of opinion with the PCOM in how to go about planning a major technological enterprise. This is rooted in a very different range of experience than most of us have as scientists, and requires some careful elaboration here.

The formal recommendation of the Task Force is simply that the requirements for, and objectives of, any particular deep drilling objective be handed as soon as possible to ODP engineers, who are in the best position tp prepare a technological prospectus. Such documents and initiatives can be reviewed by TEDCOM at its regular meetings. There is no need for an intervening layer of bureaucracy which, in the views of some Task Force members, would actually impede rather than facilitate progress.

In lieu of a document prepared by the Task Force, and as PCOM liaison to the meeting, I offered to prepare a meeting summary for PCOM's use. This is that summary. But it is not a simple bare-bones outline of the meeting. The Task Force's opinion, which I think is also very much that of TEDCOM, is one we need to understand. If we end up still having a different opinion, or preceive the requirements in a different way, then we need to decide in what other way we should proceed. So this will have some personal opinions, identified as such by bold paragraphs in brackets.

MEETING SYNOPSIS

The meeting was convened by Charles Sparks, TEDCOM chair, who read the PCOM mandate. Then followed presentations by J. Natland, J. Austin, and D. Sawyer about the general requirements for deep drilling we anticipate based both on immediate proposals being considered, and likely long-range plans. At the outset, two different sorts of holes were identified: 1) holes through considerable thicknesses of sediments and sedimentary rock, chiefly at continental margins; and 2) one or more very deep holes for full penetrations of the ocean crust, as recommended in the Long-range Plan. Although PCOM specified that all holes with >2 km penetration be considered, a perusal of proposals makes it clear that even at continental margins, we are really considering at least some holes up to 4 km and even 5 km deep. Some of the scientific rationale for these holes, and the trade-offs with different types of coring strategies (i.e. offset drilling) were discussed.

[A consequence of this identification of two types of deep holes early in the meeting was fairly persistent confusion about exactly what we were talking about at different times during the day. Thus, although it was fairly evident that the presentations on deep drilling of continental crust pertained to the deep mantle hole (Mohole), it was not obvious how this experience might be related to deep holes in continental margins. These, from oil-company experience, probably will require riser technology, but there was no formal technical presentation concerning risers at this workshop. In

the end, this contributed to the unwillingness to prepare a list of technological recommendations following the workshop, and to the insistence that "specs" on individual sites are required before such recommendations can be made.]

[In summary, PCOM's request that all types of deep ocean drilling be considered was too much for a single-day workshop to accomplish. No useful technical report of such scope could have come out of the meeting.]

The most important part of the meeting was the series of presentations concerning deep drilling experience in the United States, the Soviet Union, Germany, and Sweden. Keith Millheim provided an assessment of U.S. technology, rather than a summary of particular drilling experience. There are, he says, no present limitations on platform capabilities. We can build them as strong as they need to be. There are limitations on tubulars (drill pipe, casing), coring technology, and well control. The problems become harder and more costly to solve with anticipated depth of penetration. Any very deep hole will require technology development. [I inferred one other important implication. There are significant differences between the way this is, and can be, approached in the drilling industry, than if it is government (NSF)-sponsored. The drilling industry can often be very site specific; we are used to having a generic capability which can handle multiple objectives. Industry can design holes specifically tailored to places or regions; we must prove, or establish, a generic capability which can be utilized in a number of places, which we then must justify scientifically in a proposal review procedure. This point is not sufficiently appreciated by our technical consultants, such as TEDCOM, nor probably the NSF.]

Milheim made a special point of questioning the compatibility of engineering development and the Ocean Drilling Program. He pointed to the Diamond Coring System as an example of an engineering development which has been brought to a point of technical success, but which now needs persistent testing and application to realize its potential. At the present rate we intend to test and utilize the system - once a year or even less often - we cannot learn how to use it, or even discover what its problems might be. In an oil company, the investment would be made to test such a system until it either works, and can be made to work in different circumstances, or it does not work and must be abandoned. Milheim described the scientific planners of the Ocean Drilling Program as clearly being unwilling to sacrifice scientific objectives, which can be accomplished using conventional techniques, to take the time to develop a new technique, requiring complex engineering development with some risk of failure. No major new technical initiative will succeed in this environment.

[This opinion was questioned as being out of place, or out of context, but was reiterated again, in connection with DCS development, the following day at the TEDCOM meeting. There, current alternatives to <u>JOIDES Resolution</u> were explored as a means of developing a testing program for the DCS.]

The Soviet experience at Kola Peninsula and elsewhere was explained by Dr. B. Khakhaev, Director General of NEDRA, which runs the project, through a translator. The scale of this project is enormous; not just one but 11 holes have been drilled to depths >10 km at the Kola site. Special light-weight aluminum pipe is used. Holes have been reamed and cased to 9000 m. The deepest portions of the holes are cored by a turbine device, rather than by turning the entire drill string. Changes in basement structure, chiefly metamorphic foliation, cause deviations from the vertical up to 30° in different directions at different depths. The approach has been to learn to live with this, by limiting the rate of change in hole tortuosity as a function of depth. This is done primarily by drill-string design (insertion of short and strong, lighter or heavier, stabilizers (pieces of pipe, or subs) as needed in different parts of the drill string). Rocks deep in the section (>9 km) are intensely foliated, and break up into biscuit-like pieces following coring. Core recovery in such formations is facilitated by filling core barrels with lubricating oil and/or kerosene.

The German experience was discussed by Dr. Heinrich Rischsmüller, Technical Director of the KTB. Here, foliation in crystalline rocks is the principal culprit in causing deviations from the vertical. There were also higher temperatures than anticipated, a factor in bit life. There were also some breakouts which required casing to get past. The KTB pilot hole penetrated more than 4 km, but was literally at the limit of penetration of the equipment being used. The strategy for the second and principal hole, which is planned for >10 km, has been to design a system which does everything possible to force the hole to remain vertical, or as nearly vertical as possible. The system involves special bits, weighted sections of pipe, options on types of fluids, muds, and cements to use in the hole, and continuous measurement of (thus immediate response to) hole inclination.

The drilling at Gravberg, Sweden, in a meteorite impact crater in cratonal crust, was described by Terry Brittenham, of Southern International, Inc., who supervised it. Here, in one hole with three side-tracks a diamond-coring apparatus reached 6.9 km. This was accomplished in 175 days. There was a persistent tendency for the drill string to deviate from the vertical, and breakouts at one particular depth ultimately stopped the drilling. The strategy for dealing with non-verticality was the straightforward one of dropping a wedge into the hole, and forcing the drill string to another, more-nearly side tracks, once an inclination of about 30° was reached. This was done three times. Breakouts occurred at 3800 m, and the pipe became differentially stuck at 4100 m. This was overcome by emplacing casing first at 1250 then a narrower casing string at 4100 m. Another, deeper hole is planned.

[This probably was the first time representatives of these various deep drilling ventures ever were together in one room, to compare notes on their procedures. What struck me was how different these approaches are, and how very site-specific the technical requirements seem to be. Nevertheless, I was not convinced that we can directly relate these experiences to drilling in the ocean basins, particularly in the ocean crust. We have never, not even in holes nearly 2 km deep, experienced the problem with deviations from the vertical that all of these people experienced in short order. In my opinion, this is clearly tied to lithology. The continental holes are all in complexly folded and highly foliated schistose and gneissic rocks, even very near the surface. We have not routinely cored such rocks; the only comparison is Hole 735B where we cored gneissic gabbros without breakouts and with only slight deviation from the vertical (which started because the guide-base is not quite level). Massive, non-foliated gabbroic rocks at depths up to 9 km were cored at Kola with reasonable core recovery and no breakouts. This much, at least, is common ground, but we did not have time to make detailed comparisons.

The Gravberg hole is probably closest to the scale of project we are anticipating for the deep mantle hole. It will probably take us at least twice as long to do it from a ship.]

Following these presentations, Frank Schuh of TEDCOM summarized the development of offshore drilling into progressively deeper water, and some of the specific major items that had to be designed to make deep-water exploration feasible. Two important factors have been safety and hydrocarbon containment, which have profoundly influenced requirements for platform design (able to withstand the 100-year storm) and well control (blow-out prevention, sea-floor disconnect systems, etc). Much of this was pertinent to the continental-margin drilling that we had on the agenda, but the point of it was to outline historical experience in technology development. We are talking about the same level of technology transition now.

Dan Reudelheuber of ODP then presented a summary of the capabilities of JOIDES Resolution, as perceived within ODP. The engineers are confident that holes of at least 3 km penetration, in up to 5 km of water, can be drilled with our present drilling system (rotary coring; sea-water circulation). We have by no means pushed the limitations of the drilling vessel. The DCS in mini-riser mode will allow more well control, particularly in the use of lubricants, sealants, and weighted muds, and this in turn probably will facilitate deeper penetration at continental margins. [This is probably the most important technical statement to come out of the workshop, as far as immediate planning is concerned. We may sensibly plan holes to 3 km at North Atlantic margins, and we should pursue the next phase of DCS development.]

The meeting concluded with a re-reading of the PCOM mandate by Charles Sparks, and a discussion that led to the concensus that the Task Force would not prepare a report, but that ODP engineers should be far more strongly factored into the planning process from the outset than they now are.

[At this stage, as PCOM liaison, I very strongly pushed to see if some statement concerning technical requirements of at least the deep mantle hole, which I believe has fairly specific site requirements, could be drafted. The response again was to turn the problem over to ODP engineers, and give them something very specific in terms of site requirements and objectives. The extent to which we were thinking on different wave-lengths can be gauged by the response to my statement that the DCS, in the manner we are developing it, cannot be used for a six-kilometer hole through the ocean crust. The response was, do not preclude evaluation of DCS technology for such a hole.]

[I think that this underscores why there was unwillingness to write down specific technical recommendations. The following day, at the TEDCOM meeting, we went over the four options that ODP engineers have considered for building a casing hanger for the next phase of DCS development. What the Task Force was saying, in part, was that this is the way to consider the problem. Lay all the options on the line: evaluate concepts, feasibility, safety, and costs. Have a review. Make a choice, then write a proposal. A seat-of-the-pants document now is worthless.]

After Jamie Austin had to depart, the workshop adjourned to enjoy a reception hosted by ODP.

A RECOMMENDATION

[As a result of this meeting, I would like the PCOM to discuss a general concept for integrating ODP engineering with our scientific planning. I propose that any of the various working groups or DPG's which are considering deep drilling get site-specific information together now, and present this to the ODP engineers as soon as possible. I suggest that regular, perhaps annual, meetings between these groups and ODP engineers be scheduled at TAMU to facilitate the technical planning. We need a decision very soon on what development needs to be undertaken between 1992 and 1997, so that the engineering staff at ODP can be augmented as necessary, and equipment can be designed, constructed and tested.]

[For the mantle deep hole, my judgement is that we can focus on the re-entry and casing systems during this period of development, together with evaluation of both the rotary and diamond coring systems in critical lithologies which we can target with offset drilling. We need experience at placing 1000-2000 m of casing in the upper part of the ocean crust. At the same time, we need to push for 2-3 km holes at offset holes in critical lithologies, including peridotites and gabbros, with technical evaluation being one of the rationales for drilling. This will also tell us whether offset holes are an adequate substitute for full crustal penetration.]

[The technical rationale may have to outweigh thematic priorities for a time, if we seriously intend to accomplish an entire penetration through the ocean crust. We need all the various pieces - assurance that we can penetrate the upper, rubbly, pillow-and-dike sequence in the places of most interest (i.e. somewhere on the flank of the East Pacific Rise), experience with casing, the equivalent of the KTB pilot hole in gabbros and peridotites, etc. - before we will be in a position to propose a full crustal penetration. And we need them before the next-following renewal in 1998.]

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INSTITUT FRANCAIS DU PETROLE
Division "Exploitation en Mer"
RE.20 ChS/JN n°73

11th October 1990

NINTH MEETING OF THE JOIDES TECHNOLOGY AND ENGINEERING DEVELOPMENT COMMITTEE (TEDCOM)

College Station, Texas
27th September 1990

Ch. SPARKS

EXECUTIVE SUMMARY

1. The ninth TEDCOM had the following prime objectives:

   - draw conclusions from the Deep Drilling Working Group meeting of 9.26.90
   - discuss results of Engineering Leg 132
   - discuss DCS Phase III.

2. The Committee concluded that the way to continue the reflection on deep drilling is as follows:

   - for study purposes, deep drilling sites should be defined by PCOM. Preferably three sites such as:
     . an accretionary margin
     . a passive margin
     . a lithosphere hole.

   - detailed studies of alternative technologies to meet the objectives at the defined sites should be done by TAMU or subcontracted by them.

   - results of the studies should be presented to TEDCOM at their regular meetings and, if required, at intermediate (reduced) meetings.

   - representatives of scientific panels involved in deep drilling should attend the meetings.

   - a permanent deep drilling working group, independent from TEDCOM, is not at present required.

3. Development of the DCS Phase II is proceeding steadily, but the committee considered the present practice, of testing it for short periods every 18 months, unsatisfactory. Much experience must be gained before the system becomes operational. Two possible ways of speeding up the development are proposed:

- The DCS could be installed on a separate rig/barge and tried extensively, firstly in sheltered deep water (fjords) and only later in the ocean.

- Oil companies could be invited to participate financially in a Joint Industry Program (JIP) devoted to DCS development, again on a separate rig. [TAMU to explore the possibility].

4. The DCS Phase III, without secondary platform, was discussed in detail. It was suggested it might be possible to maintain mechanical contact between the main compensator and the API string by means of sheaves and cables passing 'outside the derrick'. If the API string were to be tensioned by bumper subs, these should be below the mud line.

5. Logging in loose sand was discussed at PCOM's request. 'Dutch mud' and fluids based on peat were proposed to staunch breakouts. Logging through an inert casing/drillstring was also suggested [TAMU to explore the different options].

6. Prof. RISCHMULLER proposed that the development of a laboratory to analyse cores at high pressure (taken with the PCS) should be undertaken jointly with KTB.

7. Next meeting is planned at present for July 8-9 1991 to coincide with the Los Angeles port call of the JOIDES RESOLUTION.

LIST OF ATTENDEES

TEDCOM members and alternates:

Charles SPARKS, chairman	IFP
Roxanne CHRIST	Monash Univ.
John COOMBES	Chevron
Junzo KASAHARA	Univ. of Tokyo
Claus MARX	ITE
Keith MILLHEIM	Amoco
Heinrich RISCHMULLER	KTB
Frank SCHUH	Consultant
Earl SHANKS	MEPSI
Howard SHATTO	Consultant
Alister SKINNER	BGS
Paul STANTON	Exxon
Walter SVENDSEN	Consultant
Michel TEXIER	Elf

TEDCOM liaisons:

Barry HARDING	TAMU
Bruce MALFAIT	NSF
James NATLAND	PCOM
Paul WORTHINGTON	DMP

Thematics panelist:

Jeff ALT	SGPP

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Guests:

Boris KHAKHAEV	NEDRA
George GAMSAKHURDIA	USSR Acad. Sciences
Terry BRITTENHAM	Southern International
Joe JOHNSON	
Jack MILLER	Stress Eng.
Duke ZINKGRAF	Consultant
Joichi TAKAGI	JAMSTEC
Shinichi TAKAGAWA	JAMSTEC
Masuho SATO	Mitsui Eng.
Shigeki ISHIDA	" "
Naoto YAMAGISHI	Ishikawajima-k

TAMU staff:

Glen FOSS
Tim FRANCIS
Leon HOLLOWAY
Steve HOWARD
Dave HUEY
Tom PETTIGREW
Dan REUDELHUBER
Mike STORMS

Absent:

Harald STRAND	Norsk Hydro

TEDCOM AGENDA

September 27, 1990

1. Introduction

2. Review of ODP Legs 130/131 Operations

3. Discussion of Deep Drilling Working Meeting of 9/26/90

4. Engineering Leg 132 Results

5. DCS Phase III - Operation of System from rig floor, utilizing tensioners for outer drillstring

6. Improved logging in loose sand

7. New coring tools under development within ODP Engineering Group.

1. INTRODUCTION

Charles SPARKS welcomed participants to the ninth TEDCOM meeting and in particular new member Roxanne CHRIST, representing Australia, and special guests Dr. KHAKHAEV and Dr. GAMSAKHURDIA from the Soviet Union who had played a key role in the deep drilling workshop the previous day.

He mentioned the principal significant events (for the TEDCOM) that had occurred, since the previous meeting (Salt Lake City, Feb. 1990), namely the second engineering leg (Leg 132, June-Aug. 1990) and the deep drilling workshop that had been held the previous day (9.26.90). These were two important topics that would be discussed during the meeting.

The meeting agenda was then presented.

2. LEGS 130-131. OPERATIONS SUMMARY

Ron GROUT gave the operations reports on Legs 130-131. Leg 130 had been a particularly successful one, spread over 67 days (Jan.-March'90) in an area about 1000 nm south east of Guam, during which many ODP records had been beaten. A record quantity of core (4822 m) had been recovered at five sites with recovery rates generally around 90%. At Hole 806B an APC penetration record of 320 m had been set. In 18 days, Hole 807C was drilled (with the RCB) to 780 mbsf and then cored to 1528 mbsf (not quite an ODP record, which still stands at 1682 mbsf on Leg 126).

Leg 131 which took place on Nankai (S. Japan) from late March to early June 1990 in water depths around 4700 m was less successful. Great problems were caused by the Kuro-Shio current which at speed of 2-3 knots tended to set the drill string into violent vibration. This hampered operations and tended to damage tools that were passed down the pipe. Running casing proved difficult and at one point could only be achieved by moving the ship up-current and allowing it to drift 25 miles during the make up operation.

Drill-in casing (90 m long) was used for the first time (for ODP) on Hole 808C in order to prevent the collapse of the sands in the upper sections. The hole was then deepened to 1327 mbsf using the RCB. Some through-pipe logging was done to 750 mbsf.

Many sophisticated experiments with new tools could not be performed as planned because of buckled casing (during deployment), hole stability and drill-string vibration problems. The 'Lateral Stress Tool' and the 'Pressure Core Sampler' (PCS) were both deployed successfully. The 'ONDO tool' could not be deployed at Hole 808E since it would not pass through the BHA (see 4 below).

The operations schedule for Legs 133-140 is included at the end of this report (Appendix A).

3. DEEP DRILLING WORKING GROUP MEETING (9.26.90)

Charles SPARKS gave the following brief appreciation of the DDWG meeting of the previous day (the DDWG is the object of a separate report):

The tone of the meeting was set by an initial presentation of the deep-drilling objectives of the scientific community of ODP given by James NATLAND/James AUSTIN/Dale SAWYER. Participants had heard about a series of objectives including several holes in the Atlantic to 2-2.5 kmbsf, several LITHP holes to 2.5 km and an ultra deep hole to 6 km penetration below 4.5 km of water.

A series of presentations then addressed the technological problems that had been encountered to date when drilling ultra deep holes 'on land'. Keith MILLHEIM spoke of areas where further development is required. These included tubulars, fluids, well stability and the problem of achieving a straight hole without 'dog-legs'.

Dr. KHAKHAEV presented the russian experience that had been acquired while drilling super-deep wells at eleven sites in the Soviet Union, including KOLA SG3 (12 km penetration to date). The principal problems that recurred had been related to 'break outs' and to deviations from the vertical. The latter had reached 30° on several occasions. Heinrich RISCHMULLER was also particularly concerned by these problems at the KTB site for which sophisticated technology had been developed, which should limit deviations. Terry BRITTENHAM presented similar experience that had been obtained at the swedish Gravberg No.1 well which had been drilled to 7 km.

Frank SCHUH retraced the oil industry experience as it had moved into deeper and deeper water, contrasting this with the ODP experience which consisted of starting in ultradeep water and trying to obtain deeper and deeper penetration. He found it difficult to summarize the 'additional difficulties' that might be anticipated when drilling ultra deep holes, in the ocean.

The core of the working group had then attempted to address the very pecise questions that PCOM had included in the mandate (Aug. 90). PCOM requested a document that would present 'alternative technologies', with estimations of costs, which would allow deep penetration wells (>2 km) to be drilled in different geologies beneath the ocean.

During the subsequent discussion participants found it impossible to address PCOM's questions in the time available. They concluded that serious studies must first be done. Since these cannot be done by TEDCOM members themselves, it was suggested they should be done by TAMU based on projected site information to be provided by the panels (LITHP, TECP, PCOM). TEDCOM members would assist TAMU as required, at regular TEDCOM meetings and at additional meetings, if necessary. Since the principal parties concerned would then be TAMU and TEDCOM it seemed logical to keep the activity with in the present TEDCOM and not create a separate working group, as had originally been proposed. Representatives, of the scientific panels involved, would be encouraged to attend the TEDCOM meetings concerned.

Keith MILLHEIM suggested that TAMU should not only look to the TEDCOM for advice, but should also seek the reactions of companies to the proposed methods of achieving deep drilling objectives.

Tim FRANCIS reminded participants that engineers had been asking scientists to define deep drilling objectives for years. He suggested PCOM should define three holes as follows:

- one in an accretionary margin
- one in a passive margin
- a lithosphere hole.

If possible sites 504B and/or 735 should be included, since experience had already been gained in these areas.

4. ENGINEERING LEG 132 RESULTS

The results of the second engineering leg were presented by Mike STORMS and Steve HOWARD.

Mike STORMS reminded participants that Leg 132 (Pusan-Guam, June 2nd-Aug. 5th 1990) had been devoted to testing seabed hardware as well as the Phase II version of the DCS (4500 M capability). The status of the various subsystems is given in Appendix B.

After a few days spent returning to Hole 808E (of Leg 131) where the 'ONDO tool' (temperature measuring device) was finally deployed (see 2 above) for long term exploitation by Japan, the JOIDES RESOLUTION moved on to the BONIN site (Eng. 5), where the new mini Hard Rock Base (HRB) was deployed mid-June. This base, which had been presented at the previous TEDCOM, had been designed to allow the API string to be connected/disconnected at the seafloor level, and hence to allow the DCS string to be run without having the API bit heaving in the hole.

Several problems were encountered with the HRB. Insufficient syntactic foam caused the cone to flop to one side and made reentry very difficult. Finally the cone broke off during one of the attempts. A special fishing tool with lateral flow thrust was then fabricated on board and with it both the upturned cone and the HRB were successfully 'reentered' and retreived. With additional buoyancy on the cone, the HRB was run again, but it was only on the fourth running that it was installed as intended. Difficulties encountered on the second and third runnings related to getting the BHA to penetrate to the right depth, and to instability of the base (rocking about diagonal feet).

The running of the DCS began on July 1st in 1800 m of water, following which the API string was connected to the HRB and tensioned up (15 tonnes). Some problems were encountered with the soft ware resulting from vibrational interference with the accelerometers. After ironing these out, coring began on July 7th when 85 cm of 'vesicular bassalt' were pulled. Difficulties were then encountered with latching the core barrel, with circulation which tended to block, and with hole stability. Penetration became very slow. When the DCS was finally pulled (after 8.4 m penetration, 1.1m core recovery) the diamond bit was found to be completely worn.

On second running, performance was considerably improved (12 m penetration, for 7 m of core in half a day). The bit then penetrated a zone of easy drilling and core recovery fell to zero. The core catcher had been designed for rocks and proved totally inadapted to recovering cohesionless material. Bits failed and may have junked the hole. The DCS was finally pulled on July 17th after recovering 10.78 m of core.

The JOIDES RESOLUTION then moved to SHATSKY RISE where the seabed connection system, without HRB, was deployed. It was intended to jet in 50 m of casing with cone and J connector at top end. The casing was accidentally lost, and could not be replaced. After adding mass to the cone base, this was lowered to the seabed and jetted in the length of the connector (3 m). Difficulty was found in disconnecting the BHA. The DCS was finally not deployed at the SHATSKY RISE site.

About the bit failures, Wally SVENDSEN said the bit manufacturers must be recontacted. More experience must be gained.

Alister SKINNER added that very slow flow rates (5 gals/min) should be used and special core catchers were required when coring friable material. Attempts at coring sand with the DCS on the BUCENTAUR had been disastrous even at 10 r.p.m. The sand had fused with the bit.

There was much discussion about the stability of the cone on the HRB and the procedure for reentry. Mike STORMS said it would be redesigned with a smaller cone, without buoyancy. Stability would be achieved by raising the gimble.

About the problem of detecting latch-in of the core barrel, by monitoring mud pressure kicks, Wally SVENDSEN warned that this is not definite. It is possible to get a kick without latch in.

Keith MILLHEIM added that ways should be found for speeding up the development of the DCS (which had only been deployed for a few days on Leg 132). He suggested two approaches: either take a separate rig and tryout the DCS, first in calm deep water (fjords) before moving out to the ocean; or contact oil companies to get them to pay part of the development and again do this on a separate rig. It is not realistic to proceed with such a complicated development by trying it for a few days every 18 months. (The next trial of the DCS is scheduled for autumn 1991 on EPR).

The design changes to the DCS and HRB that are being considered as a result of Leg 132 are included in Appendix B.

5. DCS PHASE III

Dan REUDELHUBER presented TAMU's ideas for a Phase III version of the DCS, in which the platform (hanging from the compensator) would be suppressed.

The principal motivation for this change is safety and efficiency of operation. If the secondary platform were removed, men would work on the rig floor. The consequences of a failure of the API string would be much less dangerous for them. Running and retrieving the DCS string is very long at present, since it takes around 18 hours to unhook and store the platform before the DCS stands can be pulled, (and the same time to rig it up again).

Four concepts were presented, based on:

- standard tensioners for the API string
- compact tensioners for the API string
- API string with slip joint (bumper sub) above the mud line
- 'extended' drill string compensator.

The advantages/disadvantages of the four concepts, as TAMU sees them, are included in Appendix C.

The third concept seemed the simplest, but was judged unworkable by many participants. Mud weight would cause the joint to expand and the string to buckle. Even without that, the moment in the joint, caused by ship offset and current would induce friction, which would probably stop the joint from sliding as required. The system could be workable if the connection/disconnection of the API string were made well below the mud line, which would allow the bumper sub to be down hole and hence guided by the well walls.

In all systems, if the DCS secondary compensator were suspended from the main compensator, in series, it would be necessary to tie the latter in some way to the top of the API string, which would constitute the only available 'reference point'. It might be possible to do that by a servo mechanism, but an alternative would be a mechanical connection (as at present) but using sheaves and cables, which could be made to pass around the rig floor.

Barry HARDING asked TEDCOM members to continue to think about the problem, and if they had any new ideas on the matter to sketch them out and send them to him.

6. IMPROVED LOGGING IN LOOSE SAND

At the request of PCOM (meeting of AUG. 1990) the TEDCOM was asked 'to consider the problem of stability of holes in loose sand and to advice on how to improve the ability to log in these environments'.

Paul WORTHINGTON said that some suites could be logged through the pipe, but this was to be avoided if possible. Logging through the wall, by Lamont, had produced degradation of data.

Alister SKINNER mentioned 'dutch mud' that glues the pipe wall but does not affect the properties that are being measured. This had apparently been tried in Australia. George GAMSAKHURDIA mentioned that in Russia special fluids are used, based on peat, to staunch breakouts.

The possibility of lining the hole with inert (plastic?) casing or including similar material in the drill string, was also mentioned.

TAMU will explore the different options.

7. OTHER ODP TOOL DEVELOPMENTS

Tom PETTIGREW and Dave HUEY gave the final presentation devoted to the many other tools (excluding the DCS) that are continuing to be developed by TAMU. Illustrations of some of these are included in Appendix D.

The 'Reentry Cone Seal' was designed for sealed reentry in hydrothermal areas. It would be tried on Leg 136 for the first time, where pressure variations of +/- 50 psi were expected. The system was designed to be operated by an ROV or mini-submarine that would 'land' on the top of the cone and take samples.

The drill-in casing was designed for use in unstable zones and had been used on Leg 131 (see 2 above) through 86 m of unstable ground.

The Pressure Core Samples (PCS) is continuing to be developed. It is at present on board the JOIDES RESOLUTION but was damaged during Leg 131. Replacement parts will not be available before Leg 135. It has so far been deployed five time (3 times on Leg 124E, twice on Leg 131). Tim FRANCIS added that, the system was principally interesting for gas hydrates.

A 'pressure core sampler sample chamber' is being designed to receive samples from the PCS at pressures upto 10 000 psi. Heinrich RISCHMULLER proposed that the development of the laboratory, necessary to study the PCS samples, be undertaken as a Joint Venture with KTB.

The vibra-percussive corer, which is on the ship at present, is designed for coring in sand. Pumped fluid induces percussive downward action, when the tool is not advancing. The frequency depends on the flow but is in the range 40-60 Hz. It has been run ten or twelve times already. Frank SCHUH warned that pressure pulses can yield the pipe! He also added that the frequency of the vibration should be chosen as a function of sand particle size.

The Sonic Core Monitor (SCM) was presented in detail (see Fig. in Appendix D). It is a sophisticated system for orientating core and identifying the precise level from which it is taken (upto now this could only be done when there was nearly 100% recovery). The core is scribed as it enters the barrel. The position of the top of the core is established as a function of time by means of a sonic signal reflected from the top of it. Meanwhile the orientation of the barrel is continuously recorded. It is hoped that it will be possible to continuously corelated the three bits of information.

The MDCB (ex Navil drill) has undergone a complete redesign, since it had been realized that the initial version had a built-in defect. It was inherently unstable since the W.O.B. increased when the motor laboured, causing it to stall. In the new design, flow paths through the thruster and through the motor are no longer in series. Interchangeable nozzles allow optimization of the desired W.O.B. at various flow rates. The thruster unit also affects a seal downhole causing the circulating fluid to be channeled selectively through the mud motor and to the outlet ports at the face of the diamond core bit.

The new version of the MDCB will be tested on Leg 134.

8. CONCLUSIONS

Charles SPARKS summed up the meeting by saying that he thought the ninth TEDCOM had achieved three important things:

- It had clarified how ODP should proceed with addressing ultra deep drilling, namely that TAMU should do specific studies for sites to be defined by PCOM. Progress and results should be presented to TEDCOM periodically at regular meetings and at special (more frequent) ones. Results should also be presented to companies.

- It had suggested ways of speeding up DCS development either through using another platform or (more interestingly) by obtaining oil company participation through a Joint Industry Program.

- It had contributed significantly, through discussion, to the definition of DCS Phase III.

9. NEXT MEETING

At present the next meeting is scheduled to correspond with the port call following Leg 138, namely Los Angeles July 8^{th}-9^{th}, 1991, so that the meeting can be combined with a ship visit. If an earlier meeting should seem preferable, given the speed and number of developments taking place at ODP, TEDCOM members will be informed accordingly.

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APPENDICES

ODP OPERATIONS SCHEDULE

000110

Leg	Cruise Dates	Days at Sea	In Port
133 - NE Australia	09 August-11 October 1990	62	Townsville 11-15 Oct 90
134 - Vanuatu	16 October-17 December 1990	62	Suva 17-21 Dec 90
135 - Lau Basin	22 December 1990 - 28 February 1991	68	Honolulu, 28 Feb-02 Mar 91
136 OSN-1	03 March - 20 March 1991	17	Honolulu 20 Mar 91 (Scientific Party Change)
137 Engineering 3A	21 March - 01 May 1991	41	Panama 01-05 May 91
138 E. Equatorial Pacific	06 May - 05 July 1991	60	Los Angeles 05-09 July 91
139 Sedimented Ridges I	10 July - 11 September 1991	63	Victoria 11-15 Sept 91
140 Engineering 3B	16 September - 13 November 1991	58	Panama 13-17 Nov 91

APPENDIX A

Revised 26 September 1990

STATUS OF HARD ROCK BASE (HRB) SUBSYSTEMS

	SUBSYSTEM	STATUS
I.	GIMBAL	FULLY OPERATIONAL
II.	MODULAR TANK CONCEPT	FULLY OPERATIONAL
III.	FLOATATION	TO BE PHASED OUT[1]
IV.	CASING HANGER	FULLY OPERATIONAL
V.	LANDING SEAT/CUTTINGS REMOVAL	QUASI OPERATIONAL[2]
VI.	LEG SUPPORTS	QUASI OPERATIONAL[3]
VII.	BALLASTING	FULLY OPERATIONAL
VIII.	CONE	REQ'S SIZE REDUCTION[1]
IX.	TENSIONING TOOL	TO BE REDESIGNED[4]
X.	STRESS JOINT	FULLY OPERATIONAL
XI.	MINI RISER CONCEPT	FULLY OPERATIONAL

[1] ELIMINATE SYNTACTIC FOAM BY USING SMALLER LIGHTER CONE AND COUNTER BALANCING CASING HANGER.

[2] NEED TO STRENGTHEN KEYS TO PREVENT LANDING SEAT ROTATION AND INVESTIGATE POSSIBLE FRICTION TAPER MODIFICATIONS.

[3] INVESTIGATE STRONGER/FEWER SUPPORT LEGS.

[4] ELIMINATE SHEAR PINS AND STRENGTHEN FABRICATION.

BONUS

NEW HRB DEMONSTRATED CAPABILITY TO BE MOVED AT THE SEA FLOOR FOR MULTIPLE HOLES ON-SITE OR RECOVERED TO THE VESSEL FOR POTENTIAL MULTIPLE SITE USAGE.

STATUS OF MODIFIED DCS REENTRY CONE SUBSYSTEMS

	SUBSYSTEM	STATUS
I.	CONE	FULLY OPERATIONAL
II.	CASING HANGER	FULLY OPERATIONAL[1]
III.	BASE STRUCTURE	FULLY OPERATIONAL
IV.	DISCHARGE TUBES	UNTESTED[2]
V.	COLLECTOR MANIFOLD	UNTESTED[2]

[1] INVESTIGATION OF FABRICATION Q/C CONTROLS AND FIT TESTING IS WARRANTED.

[2] SYSTEM WORKED DURING LIMITED TEST OF DRILL-IN BHA BUT NOT TESTED WITH DCS.

STATUS OF DCS CORE BARREL SUBSYSTEMS

	SUBSYSTEM	STATUS
I.	CORE BARREL	FULLY OPERATIONAL[1]
II.	RETRIEVAL SYSTEM	FULLY OPERATIONAL
III.	DIAMOND BITS	FULLY OPERATIONAL[2]
IV.	CENTER BIT	FULLY OPERATIONAL
V.	BIT DEPLUGGER	FULLY OPERATIONAL
VI.	HANDLING SYSTEM	FULLY OPERATIONAL
VII.	LINERS	FULLY OPERATIONAL
VIII.	CORE CATCHERS	REQ'S VERSATILITY[3]

[1] WILL EVALUATE INCORPORATION OF FLOAT VALVE IN ORDER TO MINIMIZE BACK-FLOW.

[2] WILL REQUIRE MORE DRILLING EXPERIENCE TO REFINE BIT LIFE AND PENETRATION RATE.

[3] WILL EXPLORE ADDITIONAL TYPES OF CORE CATCHERS FOR UNCONSOLIDATED SEDIMENTS.

NOTE

ALL MECHANICAL PROBLEMS ASSOCIATED WITH LEG 124E WIRELINE CORE BARREL SYSTEM HAVE BEEN SOLVED.

LEG 132
HRB/DI-BHA DESIGN CHANGES UNDER CONSIDERATION
(AS A RESULT OF LEG 132 TESTING)

- ★ SMALLER DIAMETER (EIGHT FT) GIMBALED REENTRY CONE POSSIBLY HINGED FOR HANDLING EFFICIENCY ON RECOVERY (CHEAPER/OPERATIONALLY MORE EFFICIENT/STORABLE)

- ★ RAISE GIMBAL POINT/COUNTER BALANCE/ELIMINATE BUOYANCY (CHEAPER/OPERATIONALLY MORE EFFICIENT/STORABLE)

- ★ ADD SINGLE ELECTRONIC TILT BEACON TO HRB (ABSOLUTELY MANDATORY TO SAVE SHIP'S TIME AND TO MINIMIZE RISK OF FAILURE - COST CAN POSSIBLY BE AMORTIZED OVER SEVERAL DEPLOYMENTS IF HRB'S ARE RECOVERED)

- ★ ADD BULL'S EYE RINGS (2 EACH) TO OPPOSITE CORNERS OF HRB (MAXIMIZE POTENTIAL OF LOCATING ACCEPTABLE LANDING SITE AND MINIMIZE TIME EXPENDED)

- ★ REDESIGN HRB SECTIONS FOR OPTIONAL STEEL PLATE BALLASTING (STEEL SHOT/CEMENT ALTHOUGH A REASONABLE IDEA IS NOT ALWAYS AVAILABLE FORCING THE USE OF LARGER/LESS EFFICIENT WEIGHT TO VOLUME RATIO MATERIAL SUCH AS THE PIG IRON BILLETS USED ON L132)

- ★ RECONSIDER QUESTION OF 3 LEGS VERSUS 4 ON HRB (EVIDENCE OF TOTTERING (4 LEG BASE) SUGGESTS A 3 LEG DESIGN TO BE MORE STABLE - THE DEBATE RAGES ON)

- ★ ELIMINATE SHEAR OUT DOGS AND STRENGTHEN TENSIONING J-TOOL (THIS TOOL MECHANICALLY FAILED ON L132. THE DECISION WAS MADE TO ELIMINATE THE SHEAR OUT FEATURE, STRENGTHEN THE TOOL BODY, AND RELY ONLY ON THE SHEAR OUT BOLTS IN THE TAPERED STRESS JOINT FLANGE FOR EMERGENCY DISCONNECT)

- ★ MULTIPLE STAGE DRILL-IN-BHA (THE DI-BHA CONCEPT WAS PROVEN VIABLE ON L132, HOWEVER, FRICTION TAPER ANGLE MUST BE REVIEWED AND TORSIONAL KEYWAYS IN RECONE. ALSO IT IS UNLIKELY A DEPTH OF 100-150 METERS REACHABLE-MUST CONSIDER TWO STAGE SYSTEM)

LEG 132
DCS DIAMOND BIT/CORE BARREL DESIGN CHANGES UNDER CONSIDERATION
(AS A RESULT OF LEG 132 TESTING)

- GREATER SELECTION OF CORE CATCHER OPTIONS
  (ADD SPRING, DOG, AND FLAPPER TYPE C'CATCHERS IF POSSIBLE)

- MULTIPLE CORE CATCHER CAPABILITY
  (ABILITY TO RUN MINIMUM OF TWO C'CATCHERS SIMULTANEOUSLY)

- POSITIVE TELL TALE OF LATCH-IN
  (ELIMINATE GUESS WORK ASSOCIATED WITH CHALKED/PAINTED DOGS)

- GREATER SELECTION OF DIAMOND BITS
  (INCLUDING PILOTED IMPREGNATED BITS)

- ADDITION OF CHISEL TOOTH BIT DEPLUGGER
  (WITH SEDIMENT TRAP POCKETS)

- POSSIBLE ADDITION OF DRIVE SAMPLER/PISTON CORER OPTION
  (F/SAMPLING FORMATIONS UNRECOVERABLE WITH ROT/CIRCULATION)

DCS Phase III
"Extended" Drill String Compensator

- Advantages:
  - Might be least cost
  - Extension of existing proven operating mode
  - Probably quickest to implement
- Disadvantages:
  - Core length restricted to length of DCS cylinders minus secondary heave
  - Tension members traverse through drill floor
  - Handling time for tensioning ring
  - Requires rotating bearing

Notes:

DCS Phase III
Bottom-String-Mounted Slip Joint

- Advantages:
  - No loss of workspace around moonpool
  - Reduced maintenance/handling/cost compared to tensioners
  - Simple
- Disadvantages:
  - Must have torque transfer mechanism if use J-latch approach
  - Requires accurate space-out in order to minimize length
  - Requires dynamic seals with no access during drilling operations
  - Must trip string to maintain
  - Relative motion between strings-effects must be studied

Notes:

DCS Phase III
Compact/Below Rotary Tensioners

- Advantages:
  - Same as conventional tensioners
- Disadvantages:
  - Same as conventional tensioners plus
  - Restricts main deck and mezzanine work space

Notes:

DCS Phase III
Conventional Tensioners

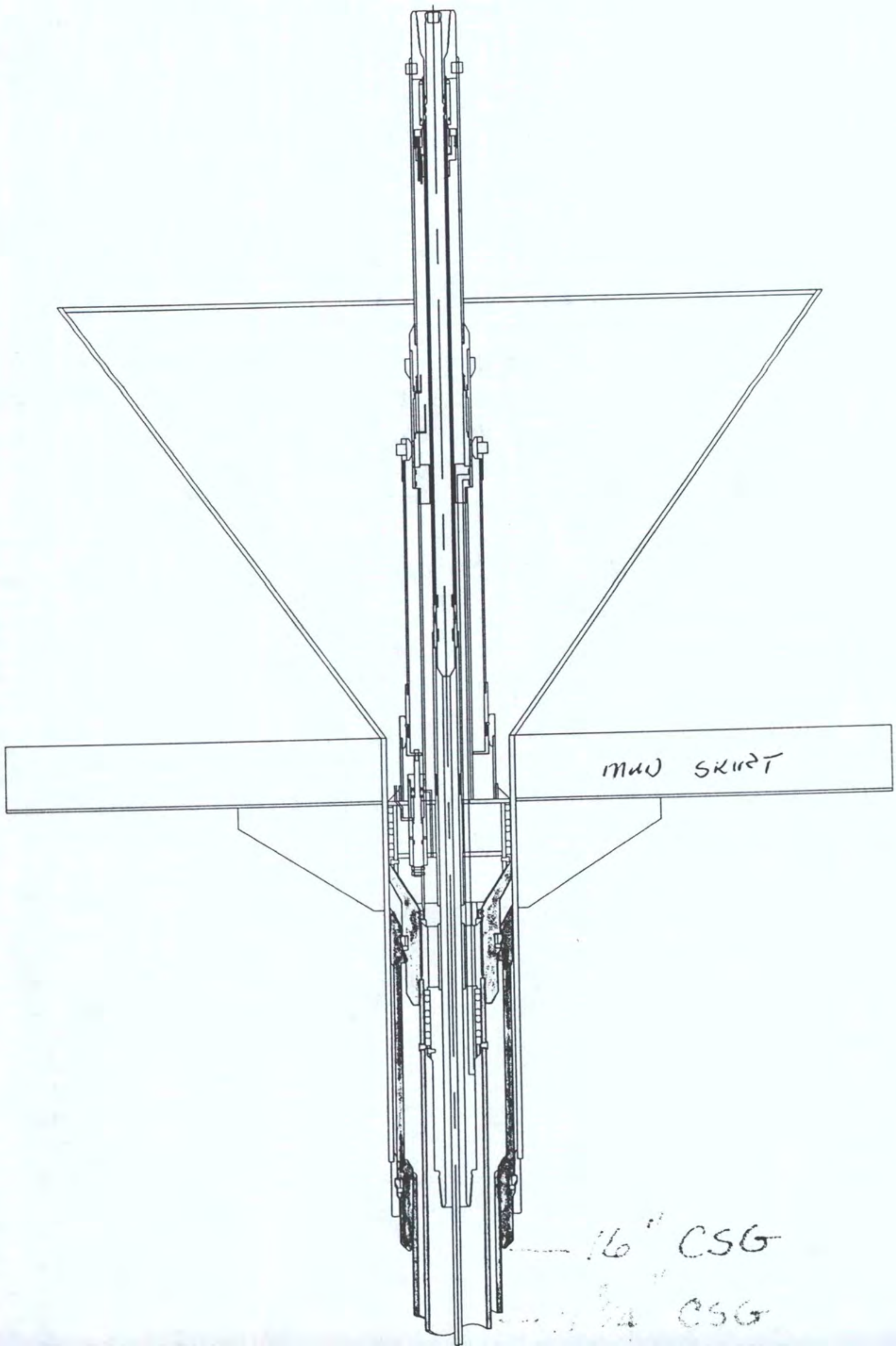
- Advantages:
  - Old hat
  - Long stroke available (50-ft)
- Disadvantages:
  - Handling time (tensioning ring, lines, etc.)
  - Needs bearing for vessel heading changes
  - Maintenance (slip/cut, seals, etc.)
  - Recoil protection needed
  - Cost/complexity/all new tensioning equipment needed
  - Shipboard installation time

Notes:

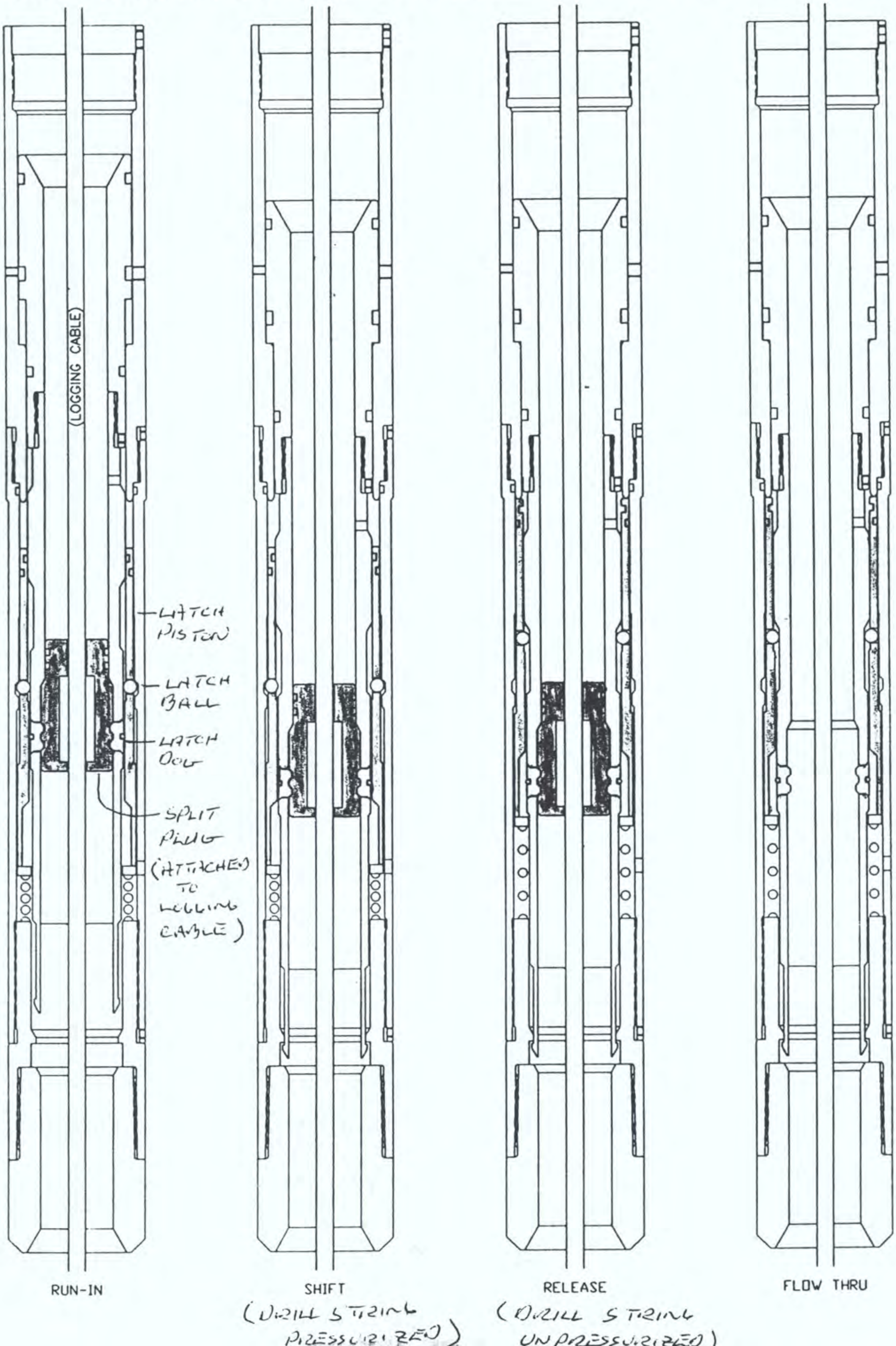
000120

APPENDIX D.1

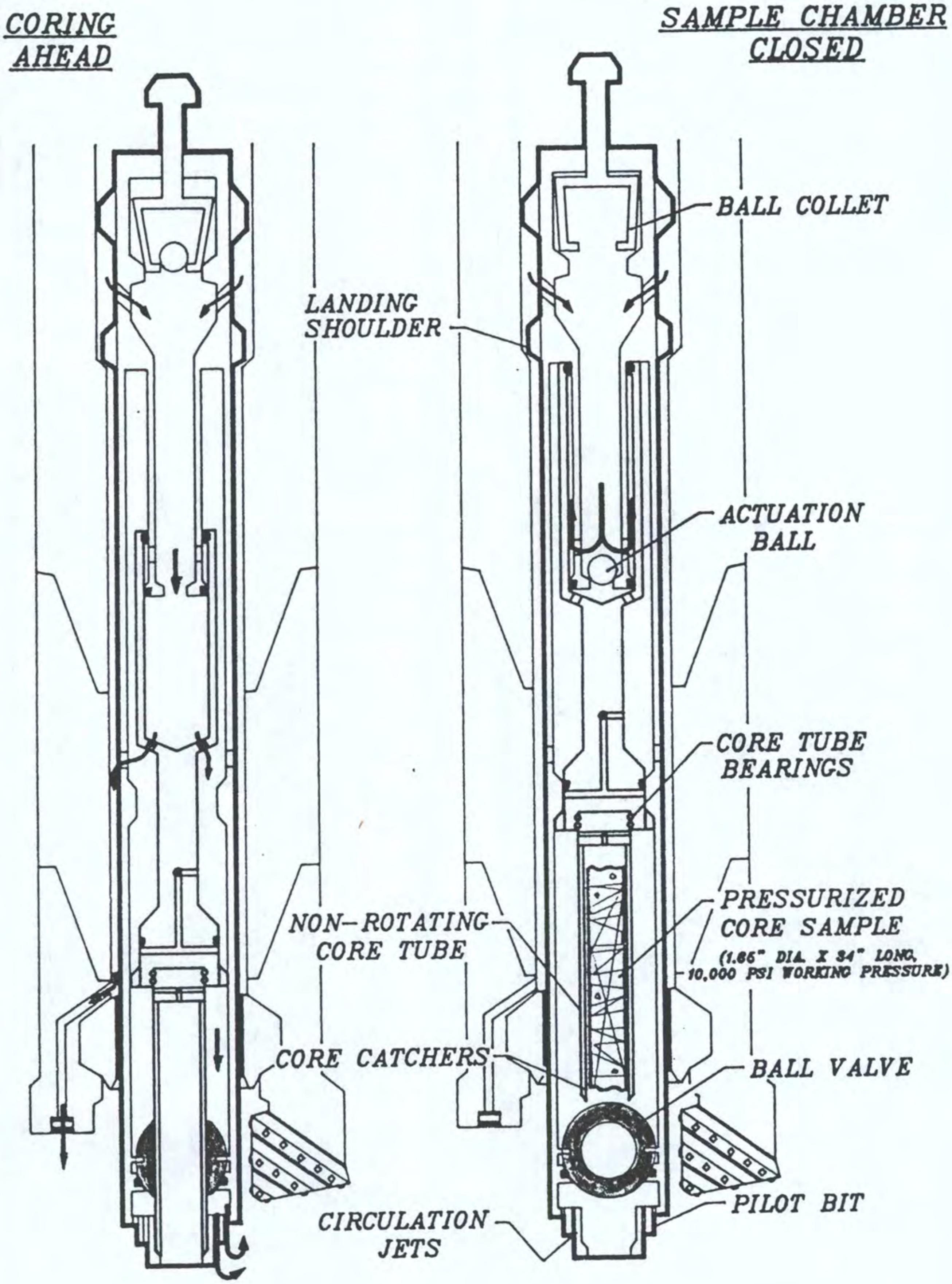
OCEAN DRILLING PROGRAM
REENTRY CONE SEAL

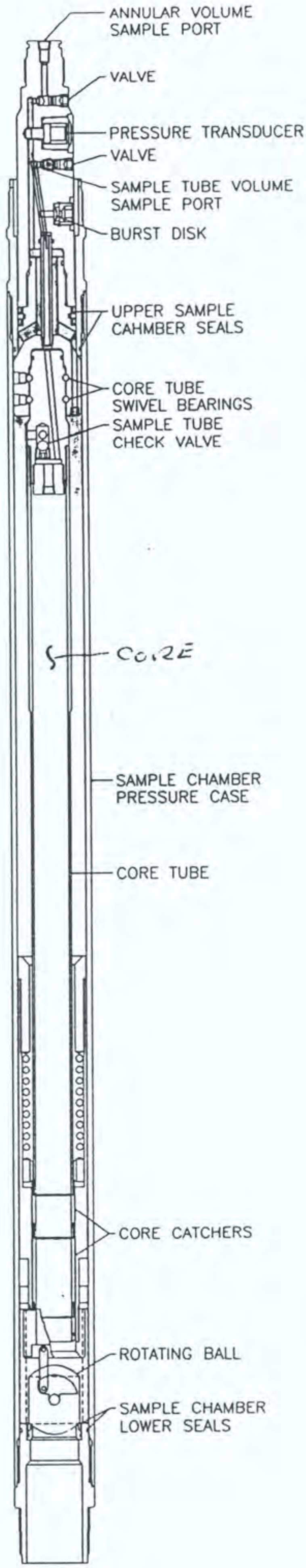


TAM STRADDLE PACKER–DOWNHOLE FLOW METER GO-DEVIL



PRESSURE CORE SAMPLER (PCS)
OPERATING SCHEMATIC





TWO ISOLATED SAMPLING/INJECTION PATHS

PRESSURE

CORE

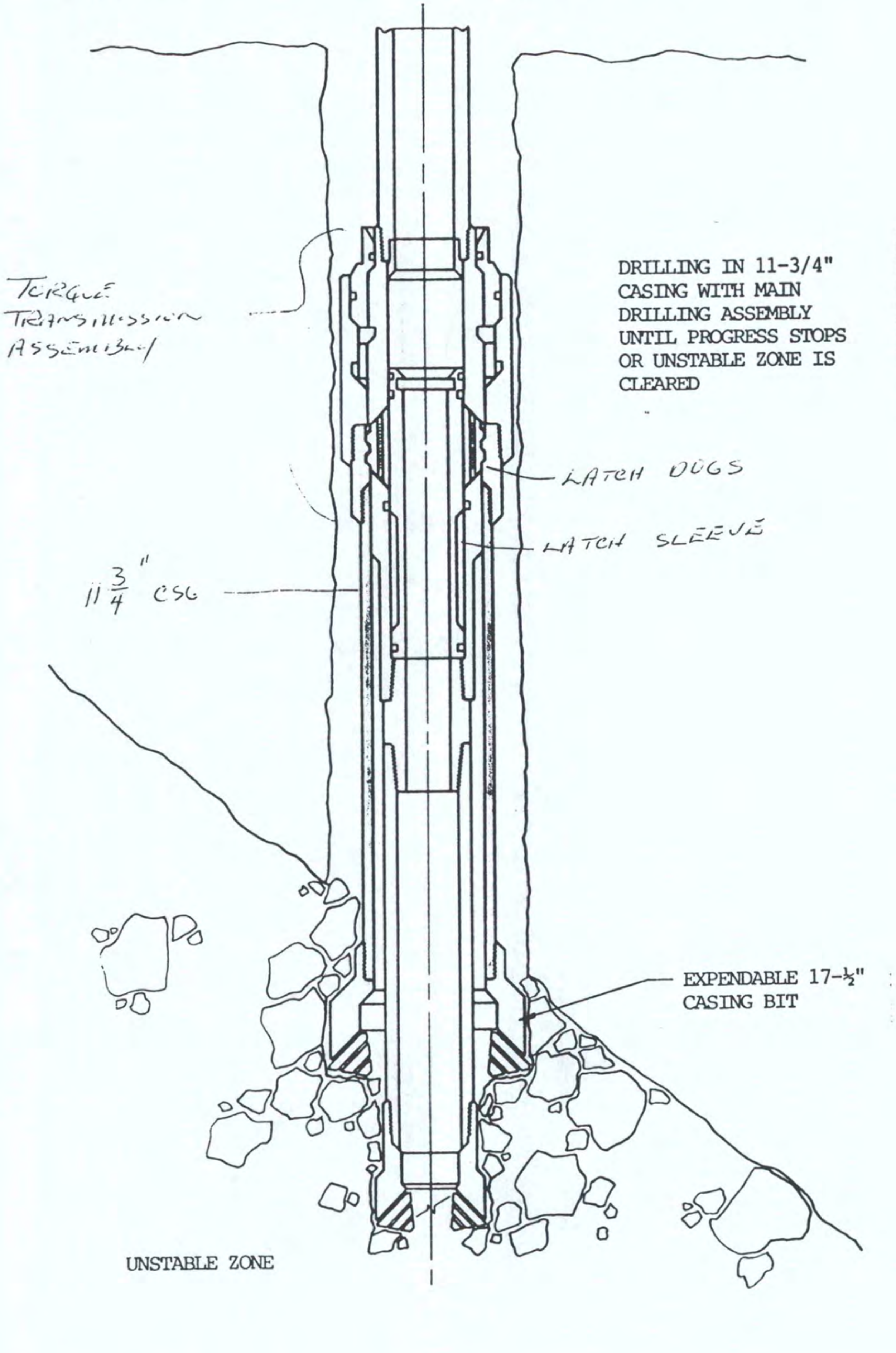
SAMPLER

SAMPLE

CHAMBER

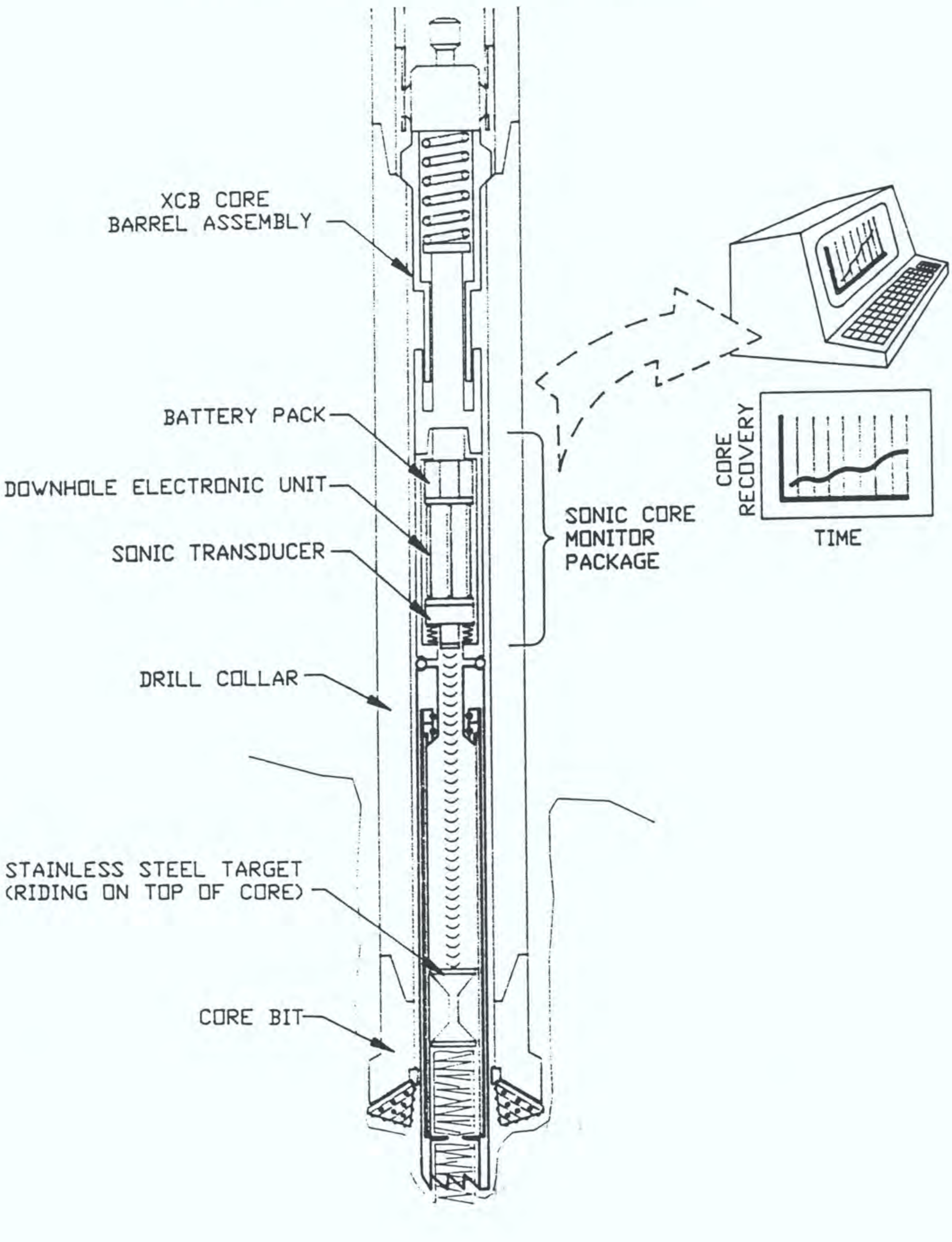
000124

OCEAN DRILLING PROGRAM
DRILL-IN CASING SYSTEM (DIC)



OCEAN DRILLING PROGRAM
SONIC CORE MONITOR

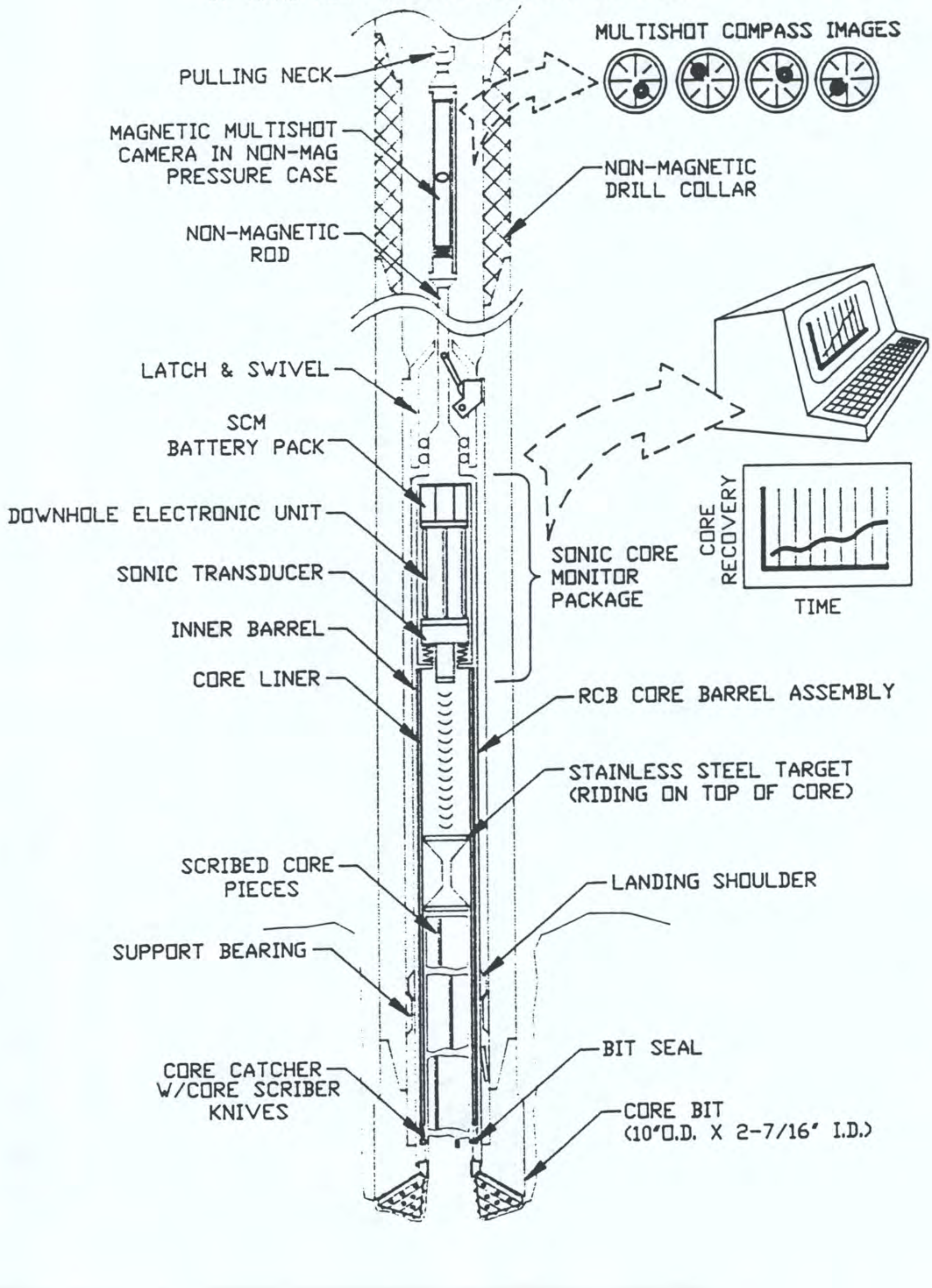
PHASE I
FEASIBILITY PROTOTYPE W/XCB SYSTEM



000126 *OCEAN DRILLING PROGRAM*

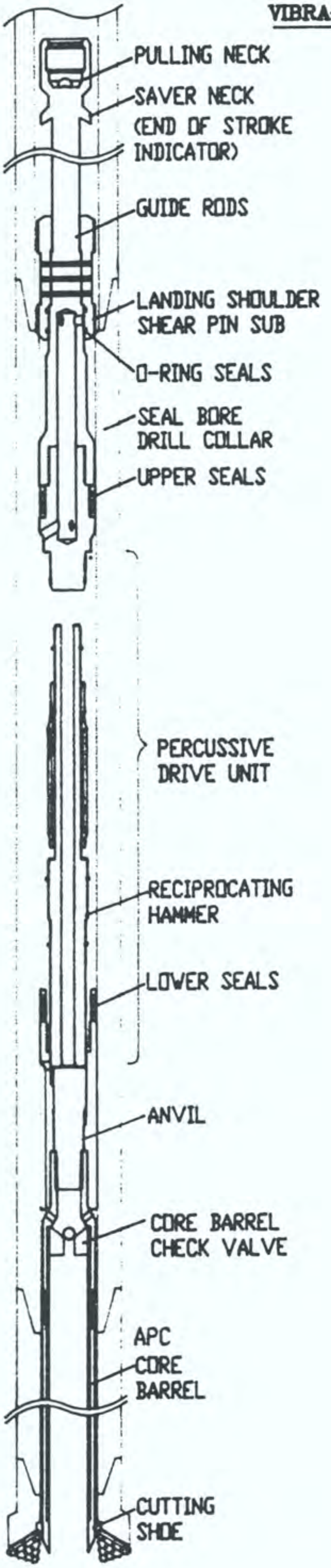
SONIC CORE MONITOR

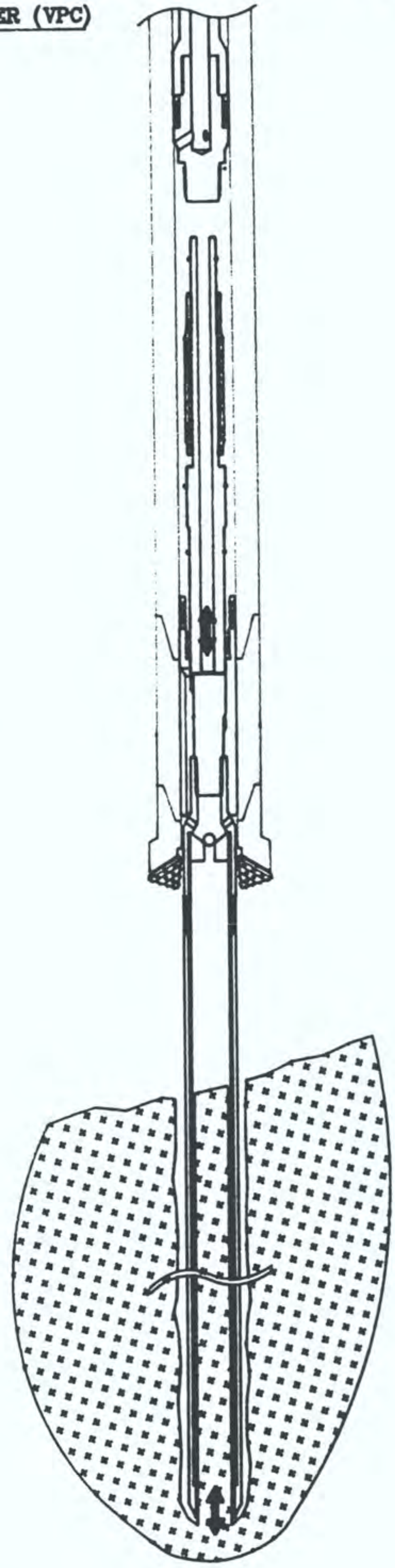
PHASE II - RCB
W/ HARD ROCK CORE ORIENTATION CAPABILITY



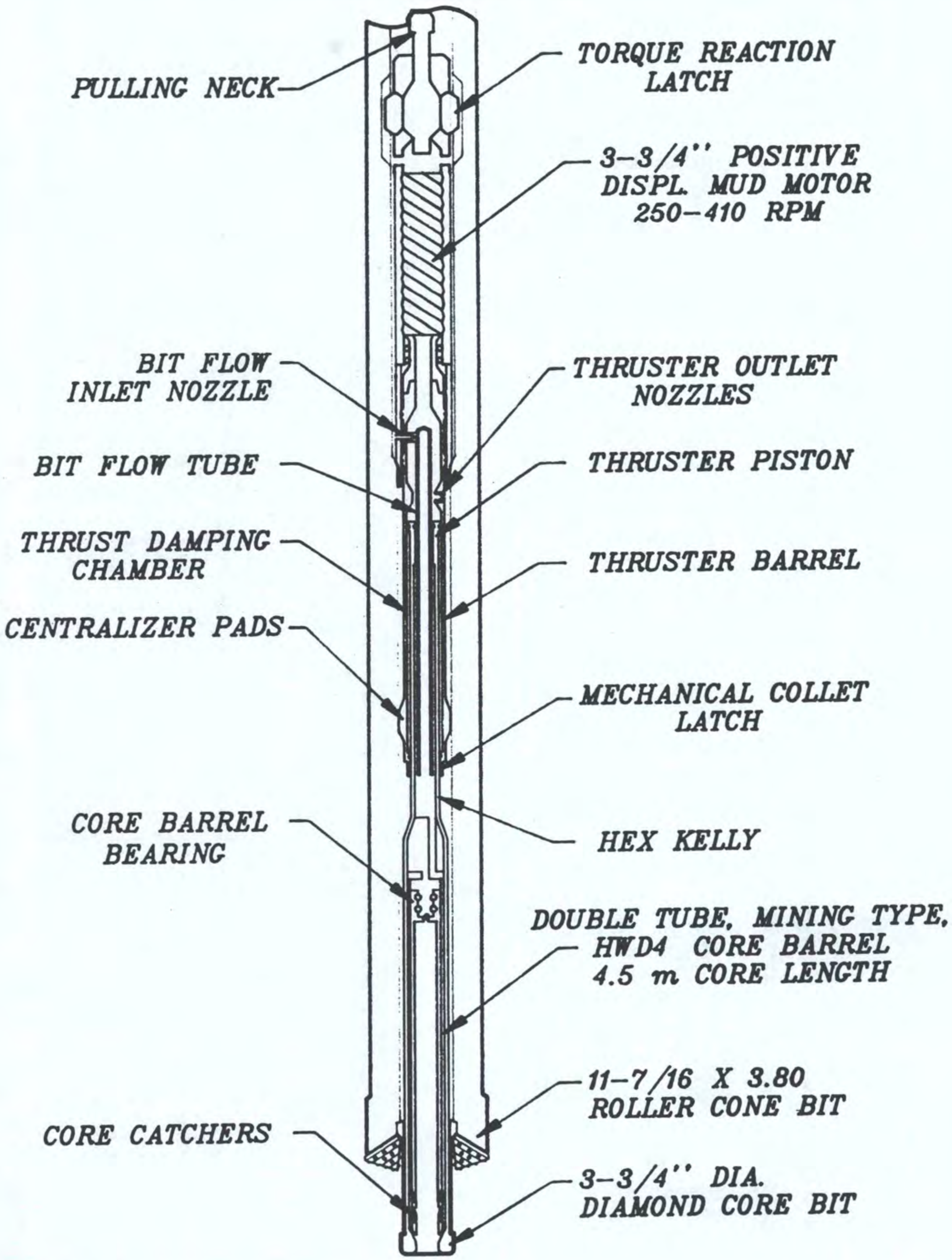
OCEAN DRILLING PROGRAM

VIBRA-PERCUSSIVE CORER (VPC)





MOTOR DRIVEN CORE BARREL
(MDCB)
OCEAN DRILLING PROGRAM



Information Handling Panel Meeting

8-10 October 1990

Basel, Switzerland

Attendees: John Saunders, Ted Moore, Mike Loughridge, Volkhard Spiess, André Schaaf, Will Sager, William Riedel, Chao-Shing Lee, Ray Ingersoll, Brian Funnell, Woody Wise, Patsy Fryer, Yves Lancelot, Kathy Lighty, Russ Merrill, Robin Reynolds, and Henry Spall.

Executive Summary And Recommendations

As has been our custom in recent times, the panel discussed at length the **Publications Report (Appendix 1)**. The IR volumes have achieved their target publication time of 10-12 months, and the SR volumes are approaching a publication time of 36 months post cruise. A new reporting style by the publications group emphasizes the performance of individual volumes in the publication process. The panel was particularly concerned with the functioning of the Manuscript Coordinators and with the quality of the SR Index. The following recommendations were made:

> PCOM endorse and support the retention of the second manuscript coordinator at ODP on a permanent basis. [p. 3]
>
> ODP provide manuscript status reports to the Editorial Review Board (ERB) on a monthly basis. The ERB should use this report to identify tardy authors and reviewers and assume the responsibility of reminding authors and reviewers of their deadlines. [p. 3]
>
> The ERB should meet near the time of the manuscript deadline in order to identify manuscript-related problems, coordinate the final review process, and identify referees. [p. 3]
>
> ODP use the expanded Table of Contents for the Initial Reports volume (as illustrated in the Publications Report Attachment 5). [p. 4]
>
> ODP amend its policy on the number of plates per paper to allow co-chief scientists to assign as many as 15 additional plates if needed to achieve the scientific objectives of individual papers. In high latitude areas this number could be increased to as many as 25 additional plates. [p. 4]
>
> ODP produce a limited number of an updated, second video disc of core photographs. The remaining copies of the first video disc should be distributed to appropriate technical libraries. [p. 4]

The **Data Base Report** contained many aspects including the development of new software for inputting the Visual Core Descriptions and micropaleontological data - the two most labor-intensive parts of the ODP data base. The panel was generally pleased with the progress made on these programs. New problem areas that need to be addressed include the capture of SR volume data in the data base, and dealing with user-created spread sheet data base entry forms. The following recommendations were made:

> ODP integrate the Cepek data base into the DSDP data base, and we encourage our German colleagues to help Cepek complete the remaining DSDP legs for this data base. [p. 2]

ODP optically scan the lithostratigraphy summaries for inclusion as digital images on future DSDP CD-ROMs, as well as for ODP CD-ROMs. [p. 5]

ODP establish the format for the stable isotope database. [p. 7]

ODP start incorporating the below listed data from scientific Results volume into the ODP database: $CaCO_3$-$C_{org.}$; stable isotopes; trace element geochemistry; major element geochemistry; any non-tabulated paleontologic data; optical scans of the site lithology summaries. [p. 7]

ODP include the biostratigraphic zone of samples in the paleontologic database. [p. 5]

ODP continue to recognize the usefulness of user-developed and spreadsheet software, and make shipboard scientists (including ODP scientific representatives) aware of the requirements placed on shipboard data collection by the need for maintaining a reliable and consistent database (including error checks and formats). They should further help developers and users of such non-ODP software packages to assure that at least the minimum requirements for database entry are met. [p. 5]

ODP include on newly-designed barrel sheets paleontological sample locations, zonal (or age) calls, and abundance and preservation estimates. These latter notes may be appropriately incorporated in the "Description" column. [p. 6]

ODP include smear slide descriptions in the "Description" column of the newly-designed barrel sheets. [p. 6]

ODP establish a new database that relates the standard shipboard determined depth (Core, Section, Interval) to "adjusted" depth. [p. 6]

Any use of "Meters Below Sea Floor" (MBSF) in Proceedings Volumes be explicitly qualified as to what (if any) adjustments have been made to this measure. [p. 6]

If SMP feels it is appropriate to use letter designations (i.e., C, A, R) for abundance ranges in smearslide descriptions, numerical ranges of abundance for these letter designations should be specified and that the midpoint of this range should be used for the database entry. [p. 6]

The panel endorsed the prioritized list of shipboard computer upgrades submitted in the **Computer Services Report**.

The **Curatorial Report** indicated that ODP had managed to decrease the average response time for sample requests. They continue to be concerned with the preservation of the cored sections, many of which have deteriorated badly. The panel endorsed increased efforts by this group to preserve and repair existing cores; as well as a revisions in policies concerning the manufacture of thin sections and labeling rock pieces. The following recommendation was made:

ODP should set as a goal to respond by letters (Fax, E-Mail) or phone to sample requests within two weeks of receipt. If there are problems, the requestor should know about them; if there are not, then give an estimate of when the samples will arrive. [p. 8]

The **Micropaleontological Reference Center Report** included a tour of the facilities at Basel. Everyone was impressed with the setup and noted the usefulness of these centers for training, as well as research purposes. The following recommendation was made:

> As soon as the MRC database is available, John Saunders provide a map of zones represented in the Micropaleontological Reference Centers and that these maps be sent to shipboard paleontologists as part of their pre-cruise information package. [p. 8]

The **Borehole Research Group Report** focused on the new Formation Microscanner data that is now becoming available. The following suggestion was made:

> The Borehole Research Group consider putting their log data on 16 mm film for ease of rapid scanning and browsing of the log data; and for the purpose of long term archiving of their log data, they transfer the log data on magnetic tape to optical discs. [p. 7]

The **National Geophysical Data Center** demonstrated a test version of the new ODP data base CD-ROM. A MacIntosh version of the DSDP data base access software is coming soon. It will include some search capabilities.

Action items are listed at the end of the minutes.

The meeting of the IHP was held at the Natural History Museum in Basel. After introductions and announcements from our host, John Saunders, the following items of business were addressed.

Report on Action Items. Discussion of many of the action items were held for individual reports of ODP; however, the following items were discussed separately.

1. R. Merrill reported that low quality figures in the I.R. volumes were traced to the CAD system, which has now been replaced.

2. The log data distribution policy was addressed in a letter from Roger Anderson to the panel and basically stated that he saw no need to change that policy. T. Moore will contact Roger to explain the IHP's concern that two points be addressed: (a) that logging scientists either solely, or in cooperation with other members of the scientific party, be responsible for turning a scientific report on logging results for the scientific results volume, and (b) that requests from scientists not participating in a leg for logging data prior to the twelve month moratorium on sample/data distribution be approved by the co-chiefs/shipboard party and that the obligation to publish the results of studies of such data in the SR volume be made clear to those who receive the data [ACTION ITEM 1].

   Y. Lancelot commented that although PCOM had instructed IHP to inform them of scientists who apparently had not lived up to their obligations, he personally felt it was a bad policy to write letters to such scientists which might be construed as accusatory.

   R. Merrill commented that it was also important for people who receive logging data be informed that results of their studies on these data must be published in the open literature.

3. V. Spiess reported that P. Cepek had received no response from ODP acknowledging receipt and "readability" of the data base tape that he sent them. K. Lighty said the tape was at ODP and could be read. V. Spiess added that further work on the Cepek DSDP data base was temporarily delayed, but he thought it might start up again soon, if funded by BGR.

   The Panel recommended that ODP integrate the Cepek data base into the DSDP data base, and we encourage our German colleagues to help Cepek complete the remaining DSDP legs for this data base.

4. M. Loughridge reported that DSDP CD-ROMs have been sent to the Micropaleontological Reference Centers (MRC's).

PCOM Report. Y. Lancelot reported that PCOM is very interested in FMS (formation microscanner) data and asked if it were being published. R. Merrill said Legs 126-128 do have FMS data as microfiches in the IR volumes, but does find them a bit hard to read. The panel expressed concern over producing material that was not useful, but R. Reynolds responded that the microfiches could be very helpful as an index to what was available and provided a fairly good idea of the quality of the data. She further suggested that Benson Printer copies are better for purposes of comparison with logs and cores. The BRG is open to suggestions on better ways to present and make available the FMS data.

Y. Lancelot reported that a film (co-produced by JOI) on ODP Leg 105 will be distributed to PBS, A&E TV channels in the United States. J. Saunders asked if European-VCR format copies (especially of the shorter version of the film) could be made available.

The likelihood of the USSR being invited to join the ODP has increased. EXCOM has recommended that Soviet observers be placed on panels as soon as approval of their invitation to join is received.

The ODP staffing of legs has been reported and indicates that 50% of participants are U.S. (half JOI institutions, half non-JOI) and 50% are non-U.S. partners.

Yves asked if there would be SR volumes coming out of the Engineering Legs. R. Merrill responded that it would vary (at the discretion of the chief scientists) depending on the amount of scientific results derived from the recovered cores.

Publications Report (see Appendix I). R. Merrill presented the written report and noted that ODP publications had caught up on IR volume publications and had achieved its publication target of 10-12 months post cruise. The SR volumes are now approaching the 36 month post-cruise target originally set for these volumes and will continue to strive for the 30 month target set by PCOM.

R. Funnell commented that as the tremendous effort expended in catching up is somewhat lessened, ODP should direct their attention to enhancing the quality of the SR volumes. In particular, W. Wise noted that many papers suffered in their final production from not having a very careful editorial check prior to typesetting. B. Funnell felt the Publications group should begin to tighten editorial standards and increase emphasis on technical editing and checks for consistency.

R. Merrill noted there has been some confusion over the deadlines for synthesis papers versus those of other scientific results. He is working with the scientific parties to clear up this confusion, and is working with the scientist to minimize delay in the production schedule (see graph 2 in reports for individual legs).

T. Moore noted that the new reporting format was very useful and asked that the publication progress of all legs be reported in this fashion, including those SR volumes which are now approaching (or are past) their manuscript deadlines. He was mildly surprised that the length of each step in the publication process did not show positive correlations with the total months post cruise of publication itself. However, some steps do show a positive relationship with publication time. If the average initial submission of manuscripts is greater than 16-18 months, publication time is likely to be greater than 30-36 months. If the time between receipt of the last review and the return of the revised manuscript is (on the average) greater than about one month, the volume tends to be delayed beyond the target date, as it is when the maximum time between the revised manuscript being received and final acceptance (or rejection) decided exceeds six weeks. These relationships, derived from data presented in the publication report, are generally consistent with guidelines used by ODP. The size of the volume does not seem to be related to publication time.

T. Moore further noted USSAC, at its recent meeting, had indicated that the Manuscript Coordinator position seems to be one at which some bottlenecks in manuscript flow may occur. They felt it very important that the Manuscript Coordinator provide the Editorial Review Boards with regular monthly reports on the status of all manuscripts. The panel discussed this suggestion, the difficulties in providing these data, and how the ERB could and should function. They made the following recommendations:

> ODP provide manuscript status reports to the Editorial Review Board (ERB) on a monthly basis. The ERB should use this report to identify tardy authors and reviewers and assume the responsibility of reminding authors and reviewers of their deadlines.
>
> The ERB should meet near the time of the manuscript deadline in order to identify manuscript-related problems, coordinate the final review process, and identify referees.
>
> The Panel recommended that PCOM endorse and support the retention of the second manuscript coordinator at ODP on a permanent basis.

W. Sager noted that a flow chart (event vs. time) indicating when the Co-Chiefs and ERB's should do what might be a good way of synthesizing their responsibilities.

R. Merrill presented a draft of a revised Table of Contents for IR volumes, as asked for at our last meeting. The Publication group pointed out the high degree of repetitiveness in this form (Appendix I, Attachment 5); however, the panel found the revised version to be useful.

> The Panel recommended that ODP use the expanded Table of Contents for the Initial Reports volume (as illustrated in the Publications Report Attachment 5).

R. Merrill requested guidance on the updating of the core photo video disc. The panel felt the video disc was valuable both as an archive medium and as an index to cores and core photos.

> After some discussion, the Panel recommended that ODP produce a limited number of an updated, second video disc of core photographs. The remaining copies of the first video disc should be distributed to appropriate technical libraries.

I. Gibson, in a letter to the panel, asked that an independent evaluation of the ODP Index be conducted. He supports the panel view that a good Index is very important to the program and that the ones produced in recent volumes are very much better than earlier versions. M. Loughridge noted that with the CD-ROM version of the DSDP index, some of the problems with it can be overcome. H. Spall suggested that the AGI indexing structure might be needed. W. Riedel concurred that the structure provided by the AGI, with a flexible, but defined "dictionary" of terms, headings and hierarchy, was a "top-down" structure and was probably preferable to the "bottom-up" creation of the "dictionary" by scanning the volumes themselves. The structure provided by the "bottom-up" technique (which is presently being used) is practically non-existent. The question remains can we afford to extend the index far enough down in an AGI-style structure to be of real use to the specialists (who the panel now considers to be the target audience). After considerable discussion, the panel asked R. Merrill and H. Spall to investigate the AGI approach further. [ACTION ITEMS 2,3]

V. Spiess raised the issue of the need for additional plates for some paleontologic papers in areas where exciting new sequences are recovered, and especially where the detailed (and well documented) stratigraphies of these sections are critical to the scientific objectives of the leg. W. Wise spoke in support of change in the ODP policy of limiting each author to 5 plates. The panel discussed the issue and noted that the $75 charge to the author for extra plates was minimal and that only a very few cases where more plates were vitally needed can be documented.

> After this discussion, the panel recommended that ODP amend its policy on the number of plates per paper to allow co-chief scientists to assign as many as 15 additional plates if needed to achieve the scientific objectives of individual papers. In high latitude areas this number could be increased to as many as 25 additional plates.

As previously requested by the panel, R. Merrill showed a mock-up of a site chapter in the IR where figures are placed close to the text in which they are first called. This placement lengthened the chapter by about 10 percent and left a lot of "white spaces" on the pages. The panel preferred the revised version, but thought that some of the white spaces could be removed by not having double column breaks at new headings and perhaps adjusting print size. The panel understands that changes may have to be deferred until the printing contract comes up for renewal.

Data Base Report (Appendix II). T. Moore reported that JOI will be funding the gathering of DSDP "bluebook" data to be entered into the DSDP data base (as recommended by this panel). We have identified four categories of data that should be gathered: $CaCO_3$-C_{org}, stable isotope, and major and trace element geochemistry. We have been asked by T. Edgar to add to this list an optical scan of the lithologic summaries for each site. [ACTION ITEM 4]

> The Panel recommended that ODP optically scan the lithostratigraphy summaries for inclusion as digital images on future DSDP CD-ROMs, as well as for ODP CD-ROMs.

C. Mato requested that we endorse having a "critical boundary interval" data base setup. After a careful explanation of the need for this data base and an evaluation of what was (or would be) available in the ODP data base, the panel felt that the specified needs could be best filled by extracting specific information from the data base. We did feel, however, that the biostratigraphic zone for each paleosample should be in the data base, as specified by the description of the paleo-data input program submitted by J. Firth to the panel paleontologists.

> The Panel recommended that ODP include the biostratigraphic zone of samples in the paleontologic database.

The J. Firth draft specifications have been looked at by Riedel, Saunders, and Moore and their individual comments sent to J. Firth. The panel urges the Data Base Group to proceed with the development of this program as soon as possible.

The panel expressed its approval of the good progress made with data base development and with the development of software by this group. However, Checklist IIa has been very slow in coming. Hopefully the program described by J. Firth will be more speedy. W. Wise noted that one of his students has been able to export an Excel spreadsheet to McDraw in order to create a publication-quality paleontologic range chart. This is a slick solution to many problems and overcomes some of the shortcomings of Checklist II.

K. Lighty and R. Merrill described the difficulties in taking data from user-developed software and spreadsheets and entering it into the ODP data base:

a) There is no commercial software (presently available) that would allow direct uploading of data from a spreadsheet (like Excel) into a standard data base; furthermore, information necessary for a straight transfer is proprietary and unavailable. Thus data has to be downloaded in an ASCII file and then loaded into S1032 with separate software.

b) Cross checks with other files (error checks to see if core sample exists, core designation is correct, etc.) are usually not included in these user created programs. If these checks are not made at or near time of data entry, subsequent corrections are extremely time consuming and difficult.

c) If users are not aware of the exact needs of the data base (as specified by IHP, SMP and other panels and working groups) some of the necessary data may be missed altogether. This happened on one leg when the physical property data was only entered on a spreadsheet.

The panel discussed the many sides of these problems and recommends that:

> ODP continue to recognize the usefulness of user-developed and spreadsheet software, and make shipboard scientists (including ODP scientific representatives) aware of the requirements placed on shipboard data collection by the need for maintaining a reliable and consistent database (including error checks and formats). They should further help developers and users of such non-ODP software packages to assure that at least the minimum requirements for database entry are met.

K. Lighty presented the latest progress on the visual core description (on the MacIntosh). The progress is substantial and it includes some ingenious innovations. Having reviewed the presently proposed and early versions of the display panels, IHP recommends that:

> ODP include on newly-designed barrel sheets paleontological sample locations, zonal (or age) calls, and abundance and preservation estimates. These latter notes may be appropriately incorporated in the "Description" column.
>
> ODP include smear slide descriptions in the "Description" column of the newly-designed barrel sheets.

The panel also notes results of the core-log integration workshops, and feels that there will be an increasing demand for "wiggly-line" display space on the barrel sheet. These will likely include high resolution logs (e.g., FMS), Multitrack sensor data, and color data. Going to a "2 page barrel sheet" may be desirable, at least for some sites.

It is also clear that needs for barrel sheets may vary widely from leg to leg and even site to site. It is important to provide both a consistent set of basic data on the barrel sheets and space for a flexibility in the display of correlatable ancillary data (including photos).

R. Merrill presented more information (Appendix III) on the digital image capture and analysis system. Previously, the panel had shown some alarm at the amount of data that would be generated by the routine use of this device. The color scanner being developed by N. Pisias, with its 512 channels of data capture, is also a major data "fire hose" with uses that are complementary to those of the digital imaging system. The use of 8 mm tapes seems to be an effective and inexpensive way of capturing and storing data from these systems, however, we need some experience in their use. Will they bottleneck the core description process? How can they be best employed to replace the presently used Munsell code?

T. Moore presented some results of the core-log data integration workshop, and in particular, the recommended changes to present policy in establishing a "real" depth (m) below sea floor (MBSF) using logs, FMS, and the sonic core tracking device. Core Section Interval (CSI) depths would be unchanged and drill string depth would still provide what we recommend calling "shipboard depth." Adjustments to the depth of the recovered intervals within the cored intervals would result in what we recommend calling an "adjusted depth" (*not* "real" depth as specified in the workshop report). A new data base must be created that would consist of a look-up table that relates CSI to this "adjusted depth." "Adjusted depths" between these CSI tie points would be linearly interpolated. After extensive discussion on this matter, the panel agreed on the need for "adjusted depths" and recommends that:

> ODP establish a new database that relates the standard shipboard determined depth (Core, Section, Interval) to "adjusted" depth.
>
> Any use of "Meters Below Sea Floor" (MBSF) in Proceedings Volumes be explicitly qualified as to what (if any) adjustments have been made to this measure.

K. Lighty mentioned the apparent disagreement between SMP and IHP recommendations regarding the recording of abundances in smear slide descriptions.

> The panel felt that this disagreement is easily resolved by the recommendation that if SMP feels it is appropriate to use letter designations (i.e., C, A, R) for abundance ranges in smearslide descriptions, that numerical ranges of abundance for these letter designations be specified and that the midpoint of this range be used for the database entry.

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In regard to capturing data that appears in the ODP SR volume, we recommend that:

ODP establish the format for the stable isotope database.

ODP start incorporating the below listed data from scientific Results volume into the ODP database: $CaCO_3$-$C_{org.}$; stable isotopes; trace element geochemistry; major element geochemistry; any non-tabulated paleontologic data; optical scans of the site lithology summaries.

Computer Services Report (Appendix IV). R. Merrill reported that about two thirds of the group's effort is spent creating new software and about one third on maintaining old software. ODP recognizes that there is a continuing need for software development, but lacks sufficient staff to meet the needs in a timely fashion. They have used outside software when available and when it addresses ODP needs (or can be altered to meet these needs). Some flexibility is required because of unanticipated problems that arise on a leg and changing requirements from leg to leg.

R. Merrill presented a prioritized list of desired upgrades to shipboard hardware. BCOM has made available $37,000 for such upgrades. The list (which greatly exceeds this amount) is based on evaluations of the shipboard party at the end of each cruise and generally follows the guidelines previously expressed by IHP. The panel endorses the priority list which emphasizes bringing the scientists PC's up to speed (i.e., matching some of the Mac capabilities) and replacing all PRO-350's. SMP may identify some very critical needs to replace or upgrade lab computers which might alter this list somewhat.

Borehole Research Group Report (Appendix V). R. Reynolds reported that a new logging manual will be out soon. Requests for logging data are up markedly in 1990; the Formation Micro Scanner (FMS) is one of the popular new tools that shows great potential for both giving a clear "picture" of the hole and relating cores to logs. Processing time of the FMS logs requires about 3 hours CPU per 50M FMS data. Y. Lancelot noted that speedy onboard production of the blueline of the FMS log was very helpful. Onboard processing of the FMS may be achieved by Leg 134. The new Vax station 3200 is on board. Schlumberger has been helpful in development and use of FMS and FMS processing but there are still some problems in adapting their software for our use (e.g., accurate re-scaling of the logs). The panel viewed Leg 128 data comparing logs to FMS, and some comparisons of logs and cores put together by R. Reynolds. The panel viewed some microfiches of FMS data (as included in the volumes).

M. Loughridge pointed out that the fische data, although good as an index, is difficult to browse. A 16 mm film of the data could be zipped through a lot faster. Furthermore, long-term storage of log data on tape takes a lot of space and is not as stable as storage on optical media [ACTION ITEM 5].

The Panel recommended that the Borehole Research Group consider putting their log data on 16 mm film for ease of rapid scanning and browsing of the log data; and for the purpose of long term archiving of their log data, they transfer the log data on magnetic tape to optical discs.

Curatorial Report (Appendix VI). R. Merrill reported that turnaround time on sampling was improving and was on target for West Coast and Gulf Coast repositories. The panel asked where were the lag times in the system. R. Merrill responded that some requests did not provide complete information, others were in conflict with sampling policy and had to be checked. In addition, there are administrative checks that had to be made. Also, during the sampling process if a core is found to be in poor shape, it is "rehabilitated" before sampling proceeds. Anything unusual like this will slow the process. After later discussion, the panel recommends that:

> ODP should set as a goal to respond by letters (Fax, E-Mail) or phone to sample requests within two weeks of receipt. If there are problems, the requestor should know about them; if there are not, then give an estimate of when the samples will arrive.

Results of the geriatric core study were presented, but there were no volunteers among the panel to take over some of the needed measurements (Appendix VI-B).

The panel reviewed the various attachments to Appendix VI. The panel endorsed an increased effort to repair and preserve cores (Appendix VI-A), but suggested that the budget be reviewed and revised.

The revision in the policy for producing thin sections (Appendix VI-C) was endorsed, as was improvements in the labeling of hard rocks (Appendix VI-D).

National Geophysical Data Center (Appendix VII). M. Loughridge reported that good progress is being made with the DSDP reference CD-ROM and with the Mac-version of the DSDP data base access software. This new software will allow some on-line searching of the data prior to downloading it. This will also be available for the ODP data base software. A demonstration disk of the ODP data base (containing two legs and carbon-carbonate data) was viewed by the panel on John Saunders' PC.

Micropaleontologic Reference Centers (Appendix VIII). J. Saunders presented a report on the MRC's and noted that another batch of samples have been recently processed and distributed. A. Sanfilippo was awarded the contract to produce the radiolarian slides. Saunders hopes to initiate a formal reporting of the MRC's on an annual or bi-annual basis, and feels that it would be important to have all the curators meet in the near future and discuss procedures and needs. The panel suggested that he help develop a JOI workshop for curators and interested paleontologists.

Saunders also presented the design of a MRC data base that he hopes to build. The panel strongly supported the development of this data base and recommended that

> As soon as the MRC database is available, John Saunders provide a map of zones represented in the Micropaleontological Reference Centers and that these maps be sent to shipboard paleontologists as part of their pre-cruise information package.

The panel felt that the educational and training potential of the MRC collections could be emphasized. They do provide a wealth of material that could be used by paleontologists both before and after they go out on ODP legs. This would be particularly useful to scientists unfamiliar with the region sampled by their assigned ODP legs.

The panel discussed again the feasibility of putting a reference collection on the ship, but generally concluded that such collections would not last long unless personally supervised. The panel does endorse anyone who wishes to loan a personal reference collection to individual scientists for use on the ship, but emphasizes that each shipboard paleontologist receiving such a valuable collection should accept personal responsibility for it.

J. Saunders conducted a tour of the MRC at the Natural History Museum. The panel was extremely impressed with the preparation, organization, and ease of use of the collection. We were particularly impressed by the handy reference volumes, including the marked up volumes of DSDP/ODP showing sampled sections.

NEXT MEETING:

The next meeting of the IHP is tentatively scheduled for 18-20 March 1991 at ODP/TAMU.

The panel ended the meeting with a unanimous vote of thanks to J. Saunders and the Natural History Museum for hosting our meeting. We all enjoyed our tour of the museum, the Chinese dinosaurs, our evening banquet, and the City of Basel itself. Thank you, John.

ACTION ITEMS:

1. Ted Moore call Roger Anderson regarding logging data policy.
2. Russ Merrill contact Jan Blakesley regarding imposing an AGI-type structure on the ODP Volume Index.
3. Henry Spall contact AGI regarding the indexing of the ODP volumes. How much could they help in establishing a structure.
4. Representative of the ODP Data Base Group contact Ellen Kappel (JOI office) to facilitate capture of DSDP "bluebook" data and to establish the format of the delivered product.
5. Mike Loughridge contact the Borehole Research Group in order to aid in trying out 16 mm filming of log data.

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EXECUTIVE SUMMARY: STRATEGY COMMITTEE
ad hoc subcommittee of JOIDES PLANNING COMMITTEE
Joint Oceanographic Institutions, Inc.
Washington, D.C.
29 May 1990

As decided upon by PCOM during its Paris meeting, the purpose of the inaugural meeting of the STRATCOM subcommittee was two-fold:

1.) To facilitate renewal of ODP:

- by examining and implementing ways to showcase and enhance the program's effectiveness, both within the U.S. and among the international partners.
- by presenting such strategies to PCOM at its August, 1990 meeting.
- by reporting on STRATCOM existence and its initial deliberations to EXCOM during its joint meeting with the ODP COUNCIL in June, 1990, with a view to enlisting its active support in the renewal effort.

2.) To examine various means of showcasing ODP's accomplishments to a growing number of detractors, as evidenced by recent correspondence to the JOIDES Office (see PCOM Agenda Book, Paris Meeting, 4/90).

STRATCOM was also to recommend to PCOM at its August meeting whether or not a continuing mandate for its existence was warranted.

Identification of Themes to Serve a Focused Drilling Program

Discussion culminated in a recommendation to PCOM for consideration of the following themes for a focused approach to ocean drilling (no priority order):

- **HIGH-RESOLUTION NEOGENE PALEOCEANOGRAPHY TRANSECTS**
- **SEA-LEVEL STUDIES**
- **DEEP-DRILLING TO UNDERSTAND THE STRUCTURE AND FLUID DYNAMICS OF ACCRETIONARY PRISMS**
- **PASSIVE MARGIN EVOLUTION**
- **EVOLUTION OF SEDIMENTED AND UNSEDIMENTED RIDGE CRESTS**
- **OFFSET DRILLING FOR DEEP LITHOSPHERE OBJECTIVES**

Publicity/"Dog and Pony Shows"

Discussion resulted in a recommendation to JOI, Inc. to hold a presentation similar to its well-received National Science Board program (perhaps in modified form) before the combined EXCOM/ODP COUNCIL at its 20-21 June meeting in Washington, D.C., with a view to soliciting EXCOM response concerning subsequent scheduling and formatting of such events in member countries.

Maximizing Impact of the Long Range Plan

Given ODP's existing liaisons with FDSN and GSGP, and probable future liaisons with InterRIDGE, Nansen Arctic Drilling Program, IGBP and

JGOFS, STRATCOM will formulate a series of one-page summaries of ODP's existing and newly evolving relationships with a number of important global initiatives in the earth sciences.

Those initiatives are listed, along with suggested authors (no priority order):

- GLOBAL CHANGE (B. Ruddiman/N. Pisias)
- TECHNOLOGY DEVELOPMENT (C. Sparks/B. Harding)
- GLOBAL SEDIMENTARY PROCESSES (M. Arthur)
- RIDGE CREST PROCESSES (J. Malpas/B. Detrick)
- HIGH-LATITUDE DRILLING (G. Brass/L. Johnson)
- CONTINENTAL DRILLING (T. Pyle)

The written summaries will be included with the JOI, Inc. brochure, intended as a popular summary to accompany publication of the LRP.

Other Recommendations

For PCOM

In light of the themes listed above (while stressing that they are a flexible framework, into which modified/new themes could be incorporated), STRATCOM suggests to PCOM that it charge the thematic panels to go beyond existing, unsolicited proposals and Detailed Planning Group drilling plans to synthesize a prospectus involving a finite number of long-term focuses of ODP, each perhaps consisting of 4-6 drilling legs. The following questions must be addressed:

- **How will such programs be tackled effectively?**
- **Who will the proponents of these programs be?**
- **Do the proposals exist to tackle these programs effectively? If not, how will these proposals be generated?**

STRATCOM felt that such a strategy could perhaps be in place for the advisory structure before November 1991.

STRATCOM considers that its *ad hoc* status as an executive subcommittee of PCOM is appropriate and should be retained.

For JOI, Inc.

Consider augmenting the number of LRP/brochure packets to be published (currently ~2,500) to include more mailings to international partners (now set at ~200 each) and perhaps to more/other U.S. organizations.

For National Science Foundation

Approach the Ocean Studies Board of the National Academy of Sciences (and perhaps other, similar review bodies as deemed appropriate) for a formal review of the LRP.

STRATCOM felt that such an initiative would blunt unofficial criticism of ODP, while encouraging official, and perhaps constructive, suggestions for program improvement over the long term.

MINUTES

STRATEGY COMMITTEE

ad hoc subcommittee of JOIDES PLANNING COMMITTEE

Joint Oceanographic Institutions, Inc.
Washington, D.C.
29 May 1990

MEMBERS: Dr. James Austin, PCOM, chairman
Dr. Ralph Moberly, PCOM
Dr. Margaret Leinen, PCOM
Dr. John Malpas, PCOM
Dr. Nicklas Pisias (primary author of the ODP Long Range Plan)
Dr. Thomas Pyle, JOI, Inc.
(a senior member of the West German scientific hierarchy tentatively scheduled to attend did not)

GUEST: Dr. James Baker, JOI, Inc.

Introduction

As decided upon by PCOM during its Paris meeting, the purpose of the inaugural meeting of the STRATCOM subcommittee was two-fold:

1.) To facilitate renewal of ODP:

- by examining and implementing ways to showcase and enhance the program's effectiveness, both within the U.S. and among the international partners.
- by presenting such strategies to PCOM at its August, 1990 meeting.
- by reporting on STRATCOM existence and its initial deliberations to EXCOM during its joint meeting with the ODP COUNCIL in June, 1990, with a view to enlisting its active support in the renewal effort.

2.) To examine various means of showcasing ODP's accomplishments to a growing number of detractors, as evidenced by recent correspondence to the JOIDES Office (see PCOM Agenda Book, Paris Meeting, 4/90).

STRATCOM was also to recommend to PCOM at its August meeting whether or not a continuing mandate for its existence was warranted.

General Discussion

In advance of the meeting, correspondence had circulated between Austin and Moberly concerning possible agenda items. All members and Tom Pyle received copies, and that correspondence is included (see Appendix A).

Given the ad hoc status of STRATCOM, initial discussion focused on the role ODP does and should continue to play vis-a-vis other "big science" initiatives.

Moberly set the tone by stating that ODP's primary function, over the next few years, ought to be to satisfy the interests of thematic panels, the U.S., and the international partners. Baker contributed that the program should address the needs of the professional earth sciences community first.

Malpas described the present situation in Canada, where competition among existing earth science programs is intense. Of the four major initiatives currently being developed internally: ODP, LITHOPROBE, continental drilling and global change (which in Canada means study only of the last 10K years of earth history), only ODP and LITHOPROBE are now being financially supported. Only two of these four will be supported in the future as well. To continue to attract support, ODP must liaise with other programs and offer "lollipops" to the international partners in the form of both thematic and regional ocean drilling initiatives of particular interest to them.

Most important, Malpas felt that ODP must make a major commitment to one (or more) of the tenets that got it funded originally: high latitudes, "natural laboratories", and deep drilling. In other words, STRATCOM should rally the PCOM to "bite the bullet", i.e., commit to a few programs and do them properly.

Pisias felt that the Long Range Plan (LRP) has been written to illustrate a phased approach to problem-solving with the drill, and emphasized that ODP is not yet ready to do some things, e.g., deep drilling.

Pyle evinced some sympathy for a "high risk-high return" drilling program, perhaps once a year. Austin and Leinen responded that such science must still have the scrutiny and endorsement of the thematic panels prior to its inclusion in the drilling schedule.

Identification of Themes to Serve a Focused Drilling Program

Discussion continued concerning possible strategies for implementing a more focused approach. The following were discussed:

- ask each of the international partners to name their scientific priorities, while soliciting learned bodies within the U.S. (perhaps the National Academy of Sciences) to do the same.
- modify the existing program to rely less on unsolicited proposals, and more on thematic panel/working group/detailed planning group syntheses (perhaps of unsolicited proposals, at least in part) addressing important themes emphasized in the LRP. PCOM could then take such input to establish a finite number of programs to receive intensive drilling effort.

The overriding perception of STRATCOM was that the thematic panels should still do much of the work, given guidance from the PCOM (with specific reference to the April PCOM motion concerning the 1990-1993 four-year plan for concentration of drilling in the Pacific and the Atlantic north of the equator) and with cognizance of the thrusts of other international science initiatives.

- perhaps the November 1990 Annual PCOM Meeting with Panel Chairmen should be the time to get this process started, after a general discussion within PCOM in August.

A long discussion followed during which STRATCOM considered themes which might be appropriate for a focused effort, but without regard to a regional (e.g., Pacific) emphasis. First, the scientific objectives listed for Phase I of the LRP were discussed in detail (see p. 103, LRP): "Given the present level of technology and the present status of planning, the following themes will be part of the main focus of ODP: high-resolution Neogene paleoceanographic transects, sea-level studies, 1.0-1.5 km deep holes on accretionary wedges, plate kinematic studies, deep holes at fast-spreading, unsedimented ridge crests and intermediate-spreading, sedimented ridge crests, and coordination of Arctic drilling efforts." Then, STRATCOM considered themes highlighted as objectives of the existing body of unsolicited proposals from all oceans ranked highly by the thematic panels. STRATCOM recognized that both groups of themes were generally similar, particularly when LRP phase I themes were modified [as above] to include drilling activity in any ocean.

The discussion culminated in a recommendation to PCOM for consideration of the following themes for a focused approach to ocean drilling (no priority order):

- **HIGH-RESOLUTION NEOGENE PALEOCEANOGRAPHY TRANSECTS**
- **SEA-LEVEL STUDIES**
- **DEEP-DRILLING TO UNDERSTAND THE STRUCTURE AND FLUID DYNAMICS OF ACCRETIONARY PRISMS**
- **PASSIVE MARGIN EVOLUTION**
- **EVOLUTION OF SEDIMENTED AND UNSEDIMENTED RIDGE CRESTS**
- **OFFSET DRILLING FOR DEEP LITHOSPHERE OBJECTIVES**

STRATCOM considered whether the paleoceanography theme was broad enough to satisfy the community's known temporal and latitudinal interests, and concluded that this theme might need to be discussed further within PCOM, perhaps to include Mesozoic and high-latitude aspects.

Publicity/"Dog and Pony Shows"

STRATCOM then turned its attention to the complex issue of generating positive publicity for ODP prior to and during the renewal period (1990-1992).

The committee was aware of EXCOM's stated intent to have each international partner organize its own publicity campaign, perhaps coordinated by JOI, Inc., and that letters expressing JOI's willingness to coordinate such efforts had already been sent to EXCOM members by Baker (for an example, see Appendix B). PCOM had also heard in April about JOI's well-received mid-March presentation about ODP to the National Science Board.

Malpas informed STRATCOM that each international partner will have its own timeline for renewal. (The Canada /Australia [CAN/AUS] timeline can be found on p. 7 of the January, 1990, issue of *The Resolution Report*, the newsletter of the Canadian Secretariat of ODP.) He detailed CAN/AUS plans for generating renewal enthusiasm, including 1.) a conference on ocean drilling during the Townsville, Australia port-call of the *Resolution* (October, 1990), with invited politicians from the U.S. as well as Canada and Australia, 2.) a 1.5-day meeting on global change during the Victoria, B.C. port-call (July, 1991), and 3.) a possible international session of ODP during the PACRIM meeting in Bangkok, Thailand (October, 1991). Such a meeting might include highlights of the Victoria meeting, perhaps special sessions on technology, and invited science presentations. He suggested that a JOI-coordinated "dog-and-pony show" for CAN/AUS might need to precede the Victoria meeting by 6 months-1 year.

Further discussion resulted in a recommendation to JOI, Inc. to hold another such presentation (perhaps in modified form) before the combined EXCOM/ODP COUNCIL at its 20-21 June meeting in Washington, D.C., with a view to soliciting EXCOM response concerning subsequent scheduling and formatting of such events in member countries.

<u>Maximizing Impact of the Long Range Plan</u>

Discussion centered on ways to maximize the impact of the LRP for scientific audiences of various interests. STRATCOM formulated one action plan, as follows:

Given ODP's existing liaisons with FDSN and GSGP, and probable future liaisons with InterRIDGE, Nansen Arctic Drilling Program, IGBP and JGOFS, STRATCOM will formulate a series of one-page summaries of ODP's existing and newly evolving relationships with a number of important global initiatives in the earth sciences.

Those initiatives are listed, along with suggested authors (no priority order):

- GLOBAL CHANGE (B. Ruddiman/N. Pisias)
- TECHNOLOGY DEVELOPMENT (C. Sparks/B. Harding)
- GLOBAL SEDIMENTARY PROCESSES (M. Arthur)
- RIDGE CREST PROCESSES (J. Malpas/B. Detrick)
- HIGH-LATITUDE DRILLING (G. Brass/L. Johnson)
- CONTINENTAL DRILLING (T. Pyle)

The written summaries will be included with the JOI, Inc. brochure, intended as a popular summary to accompany publication of the LRP.

Austin volunteered to solicit these write-ups, edit/reformat them, and if necessary get outside review in time to meet JOI, Inc.'s publication schedule (~July, 1990).

<u>Other Recommendations</u>

<u>For PCOM</u>

In light of the themes listed above (while stressing that they are a flexible framework, into which modified/new themes could be incorporated), STRATCOM suggests to PCOM that it charge the thematic panels to go beyond existing, unsolicited proposals and Detailed Planning Group drilling plans to synthesize a prospectus involving a finite number of long-term focuses of ODP, each perhaps consisting of 4-6 drilling legs. The following questions must be addressed:

- **How will such programs be tackled effectively?**
- **Who will the proponents of these programs be?**
- **Do the proposals exist to tackle these programs effectively? If not, how will these proposals be generated?**

STRATCOM felt that each thematic panel could perhaps generate such a prospectus once a year, for incorporation into the following fiscal year's program plan at the Annual PCOM Meeting with Panel Chairmen each November. Although the November 1990 meeting was probably too early to ask for such syntheses, the group felt that such a strategy could perhaps be in place for the advisory structure before November 1991.

STRATCOM considers that its *ad hoc* status as an executive subcommittee of PCOM is appropriate and should be retained.

Formalizing its identity would require EXCOM approval, which STRATCOM felt to be undesirable, at least for the moment.

Malpas felt that enthusiasm should guide participation in STRATCOM, and he said that he would endeavor to continue to speak on behalf of the other international partners.

For JOI, Inc.

Consider augmenting the number of LRP/brochure packets to be published (currently ~2,500) to include more mailings to international partners (now set at ~200 each) and perhaps to more/other U.S. organizations.

Austin suggested targeting high school districts as well as college geoscience departments, in order to bring knowledge of ODP to prospective undergraduate as well as graduate students in earth science.

Pyle acknowledged that JOI, Inc., in addition to generating the brochure to accompany the LRP, had approached Thomas Horton Associates concerning a film incorporating ODP footage for possible airing on the Arts and Entertainment network, as well as for National Geographic Explorer. He suggested that this might be enough for the time being, given the difficulty and costs of generating "popular" science literature.

For National Science Foundation

Approach the Ocean Studies Board of the National Academy of Sciences (and perhaps other, similar review bodies as deemed appropriate) for a formal review of the LRP.

STRATCOM felt that such an initiative would blunt unofficial criticism of ODP, while encouraging official, and perhaps constructive, suggestions for program improvement over the long term.

Future Meeting Schedule

STRATCOM decided that Austin/Moberly could speak on its behalf during the upcoming meeting of EXCOM/ODP COUNCIL, and therefore that a meeting of the full committee at that time would be unnecessary. Whether or not further meetings of the committee are warranted will await general PCOM discussion in August.

Conclusion of the Meeting

The inaugural meeting of STRATCOM adjourned at 4:30 PM.

EXECUTIVE SUMMARY: STRATEGY COMMITTEE II (STRATCOM II)

ad hoc subcommittee of JOIDES PLANNING COMMITTEE
at Joint Oceanographic Institutions, Inc.
Washington, D.C.
25 September 1990

As decided upon by PCOM during its August meeting at Scripps Institution of Oceanography, the purpose of the second meeting of STRATCOM was two-fold:

1.) **To facilitate renewal of ODP.**
- by examining and implementing ways to enhance the program's effectiveness, both within the U.S. and among the international partners
- by presenting such strategies to PCOM at its November, 1990 meeting

2.) **To examine various means of showcasing ODP's accomplishments.**

****

STRATCOM emphasized short-term (i.e., pre-1993) strategies with a series of recommendations (no priority order):

I. Members of STRATCOM (Austin, Beiersdorf, Leinen, Malpas, Moberly) and other members of PCOM as appropriate or desirable should make themselves available for oral presentations on ODP in aid of renewal.
(Note: EXCOM input on timelines for renewal necessary and desirable for such activity.)

II. Members of PCOM will be asked to submit summary slides (or art which can be converted to slide copy, perhaps by JOI, Inc.) for such [renewal] presentations, and to showcase themes summarized by the LRP.

III. Members of PCOM, perhaps in consultation with outside parties (e.g., members of some of ODP's formal liaison groups) will be asked to prepare short, popular articles based upon the 1-page inserts in the LRP brochure. These inserts emphasize ODP's relationships with other, ongoing initiatives in the earth sciences.

IV. PCOM will be asked to endorse a JOIDES-sponsored meeting showcasing the thematic impact of ODP on the international earth sciences community.

- similar to COSOD's in form and size.
- will emphasize ODP's accomplishments, but not be limited to them.
- probable date: spring, 1992 (would require BCOM action 3/91).
- several mega-themes discussed, to be discussed further at 11/90 PCOM meeting.
- potential convenors and members of both scientific and general organizing committees discussed, to be modified based upon further discussion at 11/90 PCOM meeting.

MINUTES

STRATEGY COMMITTEE II
ad hoc subcommittee of JOIDES PLANNING COMMITTEE

Joint Oceanographic Institutions, Inc.
Washington, D.C.
25 September 1990

MEMBERS:
Dr. James Austin, PCOM, chairperson
Dr. Margaret Leinen, PCOM
Dr. John Malpas, PCOM
Dr. Thomas Pyle, JOI, Inc.
Dr. Helmut Beiersdorf, Germany
Dr. Ralph Moberly, PCOM (absent)

INTRODUCTION

As decided upon by PCOM during its August 1990 meeting at Scripps Institution of Oceanography, the purpose of the second meeting of the STRATCOM subcommittee was:

"To address the best ways to present the recent accomplishments and advances of ODP, and to illustrate the promise of the program over the next ten years, with the objective of enhancing the chances for renewal." (Moberly, charge to the group, 9/3/90)

- by examining and implementing ways to showcase and enhance the program's effectiveness over the next two years, both within the U.S. and among the international partners
- by presenting such strategies to PCOM at its November 1990 meeting
- by reporting on continuing STRATCOM deliberations to EXCOM during its October 1990 meeting, with a view to enlisting its active support in the short-term renewal effort

As an *ad hoc* subcommittee, STRATCOM was also to recommend to PCOM at its November meeting whether or not a continuing mandate for its existence was warranted.

PRELIMINARY DISCUSSION

In light of Iraq's invasion and occupation of Kuwait and the resultant precipitous increase in world oil prices, initial comments revolved around the potential need for immediate increases in international partner fees to cover rising fuel costs for the drillship. STRATCOM members felt that this might be more palatable to all concerned if such increases carried a tag, e.g., for the support of development of advanced technology. T. Pyle and J. Austin agreed to bring this up before EXCOM.

Malpas then focussed the meeting around advertising the program, which he felt must emphasize an interdisciplinary approach. He suggested a series of "popular" articles concentrating on ODP's relationship with other ongoing international earth sciences initiatives (e.g., global change, etc.). These articles could use as a starting point the 1-page inserts already produced by STRATCOM for the LRP brochure (see **Recommendations** below).

INDIVIDUAL PERSPECTIVES

Beiersdorf presented the array of West German activities in support of renewal (see Appendix I). He stressed that such activities involved three avenues: scientific, political and popular. The following are highlights of his presentation:

- "If there were no ODP, it would have to be invented!"
- The steady flow of publications from ODP has lead to a lessened awareness of the program's continuing significance.
- Dedicated members of the ODP advisory structure (e.g., PCOM members) must give talks to the community in support of ODP (see **Recommendations** below).
- ODP depth and breadth must be showcased using dedicated volumes of peer-reviewed journals.

Beiersdorf commented further that a series of such strategy papers should soon be published in Germany, designed for three levels: executive summary for the non-scientist, a similar summary for the scientist, and the entire document for the interested scientist/potential participant.

- "Global changes are the central aspect of geology."
- ODP is perhaps the longest-standing earth sciences program with an active field operations aspect.
- Press releases should only be released occasionally, not necessarily before/after every leg. At present, the "hot" science items coming from ODP are not getting the right kind of public relations attention.

****

Malpas presented the perspective from Canada (see also the minutes of STRATCOM I, 8/90 PCOM agenda book).

- The Resolution Report reaches about 950 around the world 3-4 times/yr.
- Commitment to LITHOPROBE (3 yrs/$12M) already made. ODP must compete with Global Change and Continental Scientific Drilling programs for remainder of available funds in Canada. Unifying funding body is the Canadian Geoscience Council.
- Some perception within Canada that the best science has already been gotten from ODP. Why continue participation?

****

Leinen commented that ODP must be sold as being vital to other programs. She cited examples of the [obvious] linkages between ODP and Global Change:

- Drilling provides the geologic record of changes in the carbon system.
- ODP provides data on the stability of the ocean-atmosphere system through time.
- In the future (no funding at present), scientific ocean drilling would provide input on biogeochemical dynamics/earth system history.

RECOMMENDATIONS

Based upon the preliminary discussions noted above, STRATCOM felt that the 1-page inserts that it had prepared for insertion in the LRP brochure could be amplified into short, "popular" articles emphasizing ODP's interrelationships with other, ongoing international earth sciences initiatives. The following recommendation resulted:

Members of PCOM, perhaps in consultation with outside parties (e.g., members of some of ODP's formal liaison groups) will be asked to prepare short, popular articles based upon the 1-page inserts in the LRP brochure. These inserts emphasize ODP's relationships with other, ongoing initiatives in the earth sciences.

Malpas said that CAN/AUS renewal would be helped most by an international effort, particularly in the form of individuals coming to Canada to showcase ODP's accomplishments. He felt that such presentations could come primarily from STRATCOM members, who were already committed to the renewal effort. Ensuing discussion led to the following [general] recommendation:

Members of STRATCOM (Austin, Beiersdorf, Leinen, Malpas, Moberly) and other members of PCOM as appropriate or desirable should make themselves available for oral presentations on ODP in aid of renewal. (Note: EXCOM input on timelines for renewal necessary and desirable for such activity.)

There was also some enthusiasm for the "cardboard box" approach, i.e., gathering enthusiastic letters of support for various countries' continuing participation in ODP.

****

STRATCOM then saw a short clip of the ODP film shot during Leg 105, produced by Thomas Horton Associates (courtesy Lee Stevens, JOI, Inc.). The film will be divided into five "acts": program history, the ship itself, core (i.e., what happens to samples, from rig floor to archiving), science (co-chief interview, in this case M. Arthur), and the "big picture" (i.e., ODP in relation to the rest of the earth sciences). The ~45 minute film will be available in mid- to late October 1990. There is a firm offer from the Arts and Entertainment cable network to show the film on its "Living Dangerously" series during the spring of 1991. Lee Stevens is also talking with National Geographic, Nova, etc. There will be unlimited access for noncommercial, nonbroadcast use. STRATCOM generally liked the film's quality and content, and both Malpas and Beiersdorf requested the clip for renewal efforts in Canada and Germany, respectively. (However, at the moment there is no money in the JOI, Inc. budget for copying and distributing the film.)

The film clip kicked off further discussion on how individual PCOM members could aid renewal efforts, which generated a third recommendation:

Members of PCOM will be asked to submit summary slides (or art which can be converted to slide copy, perhaps by JOI, Inc.) for such [renewal] presentations (see second recommendation above) and to showcase themes summarized by the LRP.

Final discussion centered on the possibility of a COSOD-type meeting designed both to emphasize ODP's accomplishments, while at the same time concentrating on ODP's interactions with other international science programs. Such a meeting would be open to all interested parties, and have convenors from both inside and outside the scientific ocean drilling community. The following recommendation resulted:

PCOM will be asked to endorse a JOIDES-sponsored meeting showcasing the thematic impact of ODP on the international earth sciences community.

- **similar to COSOD's in form and size.**
- **will emphasize ODP's accomplishments, but not be limited to them.**
- **probable date: spring, 1992 (would require BCOM action 3/91).**
- **several mega-themes discussed, to be discussed further at 11/90 PCOM meeting.**

STRATCOM listed pertinent candidates for convenors and a steering committee based upon its own experience, with further input to be derived from general discussion within PCOM at its November, 1990 meeting.

By consensus, STRATCOM affirmed its desire to continue as an ad hoc subcommittee of PCOM.

STRATCOM II adjourned at approximately 3 PM.

Dr. Helmut Beiersdorf

c/o BUNDESANSTALT FÜR GEOWISSENSCHAFTEN UND ROHSTOFFE

FEDERAL INSTITUTE FOR GEOSCIENCES AND NATURAL RESOURCES

Hannover, Sept. 27, 1990

Ref.: B 3.3 - Bei/Koh
(Please include in reply)

BUNDESANSTALT FÜR GEOWISSENSCHAFTEN UND ROHSTOFFE
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Austin TX 78759 - 8345
U S A

T E L E F A X 001-(512) 471 0459 - Page 1 of 8

Dear Jamie,

Please find attached the clean version of my hand-out script for the STRATCOM members. The Selling Points and Essentials could be used for an INSTRUCTION for ODP SELLING AGENTS.

Best wishes,

Helmut

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MAJOR SELLING POINTS

If there were no deep-sea drilling program it had to be invented

(The huge number of proposals demonstrates the need to penetrate the ocean floor in order to gain knowledge which cannot be gained from outcrops or by other means. Scientists got so used to the steady flow of exciting results of ODP that they don't realize what would happen if it dies.)

Sea-floor geology is an integral part of earth's geology

(Our knowledge of continental geology came not only from attempts to prove great theories but simply from systematic mapping; therefore exploring the seafloor is necessary as was exploring the continents a century ago; drilling is more needed than on land, because there are less outcrops - though seafloor geology seems to be easier to understand, which in fact is not true, because there are more active processes going on e.g. diagenesis, tectonics, volcanism).

Since it is impossible to do all the ocean drilling necessary to catch up with the on-land state of knowledge gathered during the last 150 years, ODP focuses on the most important problems only.

ESSENTIALS

1. Sampling is essential to ground truth geophysical models or interpretations of other remotely sensing geosciences.

2. Sampling of the ocean floor without drilling will remain incomplete.

3. The state of geological mapping of the ocean floor is poor compared to continental mapping.

4. Mapping raises questions - They can be answered by remotely sensing methods or sampling, i.e. conventional sampling (dredging, grabbing, gravity-, vibro-, or piston-coring) or drilling.

5. Conventional sampling is confined to seafloor-near substrates.

6. The outcropping or surface-near substrates have only a limited potential for deciphering the earth's history and processes.

7. Substrates which cannot be reached by conventional sampling have to be recovered by drilling or in other words drilling is the essential form of sampling anything beyond the reach of conventional sampling.

8. A vast majority of processes which shape the face of our planet takes place in or below the oceans:

   Earth crust and its cover of biological remains and detritus from continents is formed and destroyed under the cover of water which is 73 % of the earth's surface. Formation and destruction are geological processes which can only be understood if the crust and its cover are penetrated deeply enough, i.e. by drilling.

9. The history of the last 170 m.a. is best preserved in the oceans but can only be deciphered by deep drill holes into the blanket of fossil remains of marine life and detritus from the continents, because with outcrops one can hardly study a complete section of these sediments.

   Note: We have to repeat our arguments in support of ODP from time to time, because there are newcomers in the decision making process. The L.R.P.D. does rarely address this.

10. Drilling is expensive, only a concerted internationally funded effort can be the base for a successful drilling program.

000156

LONG RANGE PLANNING DOCUMENT (LRPD)

I. Reading of LRPD by Politicians
(re: Executive Summary)

They will politely tell you (secretly) that they did not understand what you mean with

- plate tectonics (how the mosaic of plates of which the hard outer shell of our planet consists is created and destroyed)
- biostratigraphic dating
(animal and plant remains of ancient times are used to date the precipitates from the water column ......)
- midocean ridges
(the high-rising 60.000 km long earth-spanning systems in the ocean where volcanic activity steadily forms new earth crust)
- seafloor spreading
(the process during which ......)
- subduction zones
(the places where sediment-laden ocean crust (outer shell) is consumed, often in conjunction with the formation of deep-sea trenches)

Missing is: Paleo-oceanography, -climatology (past = key to the future)

ODP not only has chartered the RESOLUTION but has made it the most advanced drillship.

There is no hint to the interdependence of disciplines:
Paleo-oceanography depends on Oceanography
Paleo-biology depends on Biology
Paleo-climatology depends on Climatology

Completely Missing:
Oil industry) they benefit from
Mining industry) our ideas (biostrat.time scales, new explor.models etc.)

The most visible results, the DSDP/ODP I.R.'s and Proc. are used in more than x libraries including academia, government, industry.

How many publications have evolved from DSDP/ODP?

ODP is a master example for an international scientific program without an international mother organisation!

II. International Cross-Pollination

When the Long Range Plan is read - not much is said about internationality, and how it benefits all participating countries.

> This may not be an U.S. issue but, the LRPD has to be sold in other countries as well, hence it should be stressed more than it is. Small countries are more depending on than the U.S. However, the U.S. would not be able to run ODP alone!

Note: Each science foundation leading manager would like to see that his country is as important to the project as any other!
(The whole chapter on education is mostly lacking this approach.)

III. The "Why Drill" Point - it is sold insufficiently!

- The past is the key to the future: detailed records ... (see p. 2)
- Deep-sea sediments can provide the most complete sections covering the history of the last 170 million years.
- The former applies as well to drilling oceanic crust and upper mantle.

IV. TO PCOM/EXCOM for their note book

which goals need **longterm committments** by panelists?

Regional targets? no — except high latitude drilling (tool and operation development)

Local targets? no

high risk - high return targets	
deep crustal drilling	yes
deep basin drilling	
natural lab's	
seismic networks	

That means **careful panel staffing and rotation** of membership

→ **dedicated people only**

This sounds unpopular but ensures continuity in planning (you need corporate memory - carriers of ideas!)

This **will solve a lot of strategic questions**

(Dedicated people will work harder to sell the program)

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PCOM must have the breadth and skill in selecting panelist who fit these requirements.

EXCOM has to be educated (You don't have to convince E. SEIBOLD, but others may have to be convinced - we are doing brilliant science in most fields but we shrug from a few crtics (or retractors) who have only vaguely expressed their reasons for criticism (e.g. Bob Coleman or Ken Hsü).

V. Political Eye Catchers

Holes into Earth Interior from the JOIDES RESOLUTION -
Proposal for a Decade of Ocean Drilling (1993 - 2003)

Inner Space (though occupied by the entire Oceanography - but philosophically the inner space can only mean the space beneath our feet exactly to the center of the earth)

VI. The figure-heads (spear-heads?) of the program

E X C O M	Chairman)	Washington DC
		Tokyo
P C O M	")	Paris
		London
		Ottawa/Canberra
		Bonn
Sci Community		Strasbourg

Nat.'l Coord.

Sci Operator

They must know all of the selling points.

VII. Other shortcomings of LRPD

We mention

Core Archives
DHM Data Bank
Proceedings

We do not mention

DSDP/ODP Site Survey Data Bank

The grey literature syndrom

I.R.s and Proc. are the most visible result of DSDP/ODP

a) its a unique data base
b) it is read, regardless whether it is called grey or blue/mauve
c) there may be mediocre articles but the majority is good enough to be cited.
d) We have to produce more synthesis volumes; that will depend on the I.R.s and Proc.'s, and, hence, demonstrate that the I.R.s are the indispensable most visible results.
e) We depend on it; any other form is unthinkable; if there were no I.R.'s and Proc.'s they would have to be invented.
f) However, improvements should be made: Synthesis chapters should be solicited from the various disciplines, and incorporated in the volumes for each leg or in special issues.

Dog & Pony Show / Road Show:
Please avoid this wording - this will not be perceived with enthusiasm. We show a white elephant!

CAN/AUS: Who comes to PACRIM or Victoria Port call from funding agencies; does CAN/AUS Consortium need "foreign" support?

VIII. Solicitation of Proposals

ODP must generate its own proposals, not only carry out solicited ones!!! Otherwise it will be considered a service company.

IX. Enthusiasm

John Malpas is entirely right; but the enthusiasm should rest with the entire PCOM; if it doesn't, PCOM will not be the proper group to manage ODP.

X. Advertisement

The brochure LRPD is fine. Do send it only to groups who have to be scientifically educated. It is not fit for releasing enthusiasm from funding agencies or competitors. A review at a second glimps will miss a lot of items essential to the community at large:

> Why do we need ODP with regard to global climatic changes, to the shortage of energy and mineral resources, to education for a global understanding of how our planet works and interacts?
> This all is mentioned but not highlighted.

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XI. Advertise ODP better

F I R E the P.R. people at ODP H.Q.; they do a lousy job!

H I R E the best geologist you can - one who has suffered once from not being able to sell!

XII. Flood of proposals

How can we fight mediocrity before proposals are submitted?

Raise the standard! Focus on themes!

XIII. Improve the relation between H.Q. & JOIDES / JOI

My perception is that Sci Operator and JOIDES / JOI see their role in ODP differently. I miss much harmony. Harmony among all groups is essential for the health of the program.

JOIDES LITHOSPHERE PANEL:

MINUTES OF 11-13 OCTOBER 1990 MEETING

TOKYO, JAPAN

EXECUTIVE SUMMARY

4.0 SHORT-TERM PLANNING

4.2 Leg 136 - Oahu Pilot Hole
Given that time constraints will not permit continuous coring into basement (and LITHP does not wish to divert time from other higher priority objectives), LITHP supports the recovery of at least the last basalt core from the base of the hole. Characterization of the oceanic crust at this site and its relation to Hawaiian hot spot volcanism addresses a LITHP objective.

4.3 Leg 137 - Engineering Leg to Hole 504B
LITHP strongly recommends that Leg 137 carry the equipment necessary to set the liner if the casing is bad and to mill with small diameter tools in order that the future of drilling at Hole 504B can be established on the first Engineering Leg.

Given that time constraints would not permit setting a hard rock guide base at either EPR or Hess Deep, LITHP recommends the following contingencies for any time available during Leg 137 (listed in order of priority):

a) Additional logs and downhole measurements (FMS, wireline packer, flowmeter/packer, digital televiewer) be run.

b) Investigation of the hydrogeochemistry of the sediments and upper basement near Site 504 (as suggested in proposal 123/E of Mottl et al.).

c) Logging sediments near Site 504.

5.0 LONG-RANGE PLANNING

5.1 LITHP strongly recommends that PCOM establish a working group on offset drilling at its November meeting.

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Its mandate should include:

- to establish and prioritize scientific objectives of a program for drilling offset sections of the crust and upper mantle.

- to identify sites where specific objectives can be addressed.

- to identify other information necessary to determine the structural and tectonic context of a drilling program.

5.2 East Pacific Rise Bare Rock Drilling
After reviewing the EPRDPG report, LITHP recommends that if drilling is progressing well at EPR-1, the time allocated to set the guidebase at EPR-2 (about 8 days) be used to continue drilling at EPR-1.

5.3 LITHP Prioritized Drilling Programs for FY'92
Six of the nine programs for the Pacific were ranked by LITHP--the other three were omitted as not within LITHP thematic interests. Three programs very highly ranked by LITHP were (in order): 1) EPR Bare Rock Drilling, 2) Hess Deep, 3) Sedimented Ridges II.

The other three proposals ranked by LITHP received notably lower ratings and were (in order): 4) Chile Triple Junction, 5) Cascadia Margin, 6) Atolls and Guyots.

6.0 OTHER BUSINESS

6.4 Next Meeting
14-16 March 1991, La Jolla, California. Host: J. Phipps-Morgan.

JOIDES LITHOSPHERE PANEL:

MINUTES OF 11-13 OCTOBER 1990 MEETING

TOKYO, JAPAN

Attending: T. Brocher, J. Erzinger, J. Franklin, S. Humphris, J. McClain, C. Mevel, D. Moos, M. Perfit, J. Pierce, J. Phipps-Morgan, G. Smith, Y. Tatsumi

Liaisons: K. Becker (PCOM), R. Buck (TECP), J. Allan (TAMU)

Regrets: R. Batiza, L. Cathles, S. Cloetingh, J. Mutter

WELCOMING REMARKS
T. Fujii welcomed the panel to the Ocean Research Institute, Tokyo and discussed meeting logistics.

S. Humphris welcomed D. Moos and Y. Tatsumi as the new members of LITHP.

1.0 LIAISON REPORTS

1.1 PCOM (K. Becker)

At present, the official liaisons from PCOM are J. Natland and J. Malpas, although liaisons may be rearranged at the next PCOM meeting. LITHP wishes to thank K. Becker for acting as liaison for the Tokyo meeting.

At its 14-16 August meeting in La Jolla, PCOM discussed the results of the test of the diamond coring system (DCS) during Leg 132. A number of problems remain, but the DCS system has proved itself capable of drilling and coring in fractured basalts. PCOM considered a proposal to insert another test of the system at Loihi Seamount immediately following drilling of the Oahu Pilot Hole in order to gain more experience with the DCS prior to scientific drilling. The proposal was turned down, and PCOM determined that the next test of the DCS will take place as planned at the EPR axis.

Schedule changes were approved by PCOM for two other legs. Three days were added to the Oahu Pilot Hole Leg to enable testing of a mechanical seal for reentry cones. The ODP Reentry Cone Seal is critical for the scientific work to be completed during the Sedimented Ridges and the EPR Bare-Rock Legs. Six days were added to the Engineering

the EPR Bare-Rock Legs. Six days were added to the Engineering Leg at Site 504B after consideration of the possible scenarios and their time estimates.
The recommendation was made to PCOM by the ad hoc Strategy Committee (STRATCOM) that, in order to facilitate renewal of ODP, six themes should become the focussed effort for future ocean drilling:

- high resolution Neogene paleoceanography transects
- sea-level studies
- deep drilling to understand structure and fluid dynamics of accretionary prisms
- evolution of passive margins
- evolution of sedimented and unsedimented ridge crests
- offset drilling for deep lithosphere objectives.

This focussed approach was not endorsed, and ODP will stay with the Long Range plan. STRATCOM will continue to work on the best ways to present ODP accomplishments in order to enhance the chances of renewal.

PCOM established mandates and membership for the North Atlantic Rifted Margin Detailed Planning Group and the Deep Drilling Working Group that were established at the PCOM meeting in Paris. In addition, two new groups were formed and their mandates determined: the North Atlantic Arctic Gateway Detailed Planning Group and the Sea Level Working Group.

PCOM asked that panels help inform the community that proposals for add-on science opportunities will be considered, and that a mechanism for handling such requests needs to be in place. This is to be discussed at the Panel Chairmen's Meeting in November.

At the Annual Meeting in Hawaii in late November, the FY'92 Program Plan will be determined based on the rankings of the candidate legs by the thematic panels.

1.2 Ocean History Panel (G. Smith)

Guy Smith presented a brief report on the last OHP meeting (29-31 March 1990). Ranking of proposals was the primary purpose of the meeting. OHP is very interested in North Atlantic drilling, particularly at conjungate margins, which may provide for some multi-objective sites in coordination with LITHP. There was also interest expressed by OHP in deep drilling capability, which would be communicated to PCOM.

1.3. Downhole Measurements Panel (J. McClain)

Jim McClain reported on the 28-29 June 1990 meeting of DMP in Seattle. Primary objectives of the meeting were to review the logging experiences during the Nankai leg and the downhole measurement plans for CEPAC, and to assess the status of the high-temperature logging needs.

The Nankai drilling was disappointing in terms of log productivity due to poor hole conditions and strong currents. The currents caused vibration of the drill pipe that damaged some instruments and caused the toolstrings to start unscrewing. In addition, there were serious hole stability problems. Similar problems of hole instability were encountered during Leg 110 (Barbados). In view of the possible drilling of Cascadia, DMP recommended that TAMU/TEDCOM carry out a review of drilling difficulties in such environments and that solutions be developed to the hole stability problem to permit logging.

High temperature logging tools developed by JAPEX (Japan Petroleum Exploration Co.) might now be available for use by ODP. A system, rated to 450°C, which includes temperature, pressure and spinner tools as well as sonic, laterolog and borehole fluid samplers, was developed in 1985 (all tools are slimhole). These need to be run separately, but combination tools are under development. Sandia has a slimhole temperature tool and fluid sampler, and some moves have been made towards a TAMU/Sandia research agreement for the development of high temperature tools. DMP will continue to monitor progress in this area.

Testing of the Geoprops Probe, which is needed for Sedimented Ridges I, is imminent. DMP recommended that, if land testing is satisfactory, Geoprops should be subjected to sea trials during Leg 135.

The Lateral Stress Tool (LAST) has been successfully used in measurements of in situ lateral stress and pore fluid pressure in three out of six deployments.

Recommendations from DMP that had been submitted to PCOM from previous meetings included:

1) Continued development of high temperature, slimhole tools
2) Renewed drilling at Hole 801C
3) Investigation of reaming technology for DCS holes
4) Shipboard integration of core and log data
5) Membership in industry consortium to develop logging technology
6) Use of a borehole magnetometer in Hole 504B.

1.4 Tectonics Panel (Roger Buck)

Since the last meeting of TECP included a joint meeting with LITHP, Roger Buck briefly reported on the ranking of proposals that was completed in a separate session. The very recent proposals for drilling in mid-ocean ridge environments using the offset hole strategy (that LITHP had ranked highly) had not been included in the TECP rankings since they had yet to be reviewed.

2.0 PROPOSAL REVIEWS

2.1 Proposal 233E Rev/3 - Central Oregon Accretionary Process (J. Moore et al.)
This mature proposal to drill the Cascadia Complex addresses a number of questions which, although not within the high priority thematic objectives of LITHP, are important. Downhole measurements need to be a major part of the drilling program; logging has not been emphasized enough in this proposal. However, this problem has largely been rectified by the report of the Cascadia Detailed Planning Group.

2.2 Proposal 265/D Add - Western Woodlark Basin (S. Scott et al.)
This letter provides an update on recent developments and near-future plans for studies in the Western Woodlark Basin. LITHP appreciates receiving this information and looks forward to receiving a revised proposal.

2.3 Proposal 317/E Add/2 - Northern Cascadia subduction zone (R. Hyndman)
Although not within the mandate of LITHP, it would be interesting to test the model because of both the pure and applied scientific interest in bottom simulating reflectors (BSRs). Geophysical logs should be available from previously drilled BSRs, and it may be possible to determine whether free gas is present. The proposed drill sites on the northern Cascadia accretionary wedge appear to be well documented.

The question of whether the outer drill string could be used as a riser with the DCS system for drilling a BSR was raised. After the meeting, J. Allan reported from the engineers that this is not possible at the present time and requires the DCS Phase III system to be operating. This would be a long-term development project.

2.4 Proposal 377/E Rev - Oahu Pilot Hole (G. Purdy and A. Dziewonski)
LITHP strongly endorses this proposal to drill a test hole northeast of Oahu as an OSN site. This is one of LITHP's four high priority thematic objectives, and the site is already scheduled for drilling.

2.5 Proposal 385/E - Oahu Pilot Hole Sediments (B. Keating)
Due to the long wavelengths (1-100's km) of most interest to the broad-band (i.e. low frequency) seismologists, LITHP feels that the VSP and logging proposed by Purdy and Dziewonski will adequately define the physical and acoustic properties for the proposed OSN.

The other stated objectives for coring the sediment do not address high-priority objectives of this panel.

2.6 Proposal 385/E Add - Oahu Pilot Hole Stratigraphy (C. Helsley)
Sampling oceanic basalts from the OSN Site to characterize geochemically and isotopically that piece of lithosphere and its relation to the Hawaiian hot spot volcanism addresses LITHP objectives. Whether the time necessary for basement coring is available or would have to be diverted from other, higher priority LITHP drilling is a serious concern. Coring the sediment is not within LITHP's area of interest; however, the panel strongly advocates that, given the time constraints, some time be reserved for the acquisition of at least the last basalt core from the base of the hole.

2.7 Proposal 378/A Rev - Barbados Accretionary Wedge (G. Westbrook et al.)
Although not addressing high priority LITHP objectives, there is some interest in the holes to study fluid processes. The link between the laudable goals of this proposal and the proposed drilling program is not clearly defined. This is of particular concern when a 3-4 leg program of 23 holes is unlikely. Hence, the proponents need to demonstrate how a subset of these goals can solve some of the outstanding problems.

The fluid processes goals are interesting but it would be helpful to see some modelling to demonstrate that pressure gradient determinations at three points will allow conclusions to be drawn about fluid flow.

This proposal will also require further development of tools and techniques for downhole measurements, which are particularly important in view of the nature of the Barbados prism and the problems encountered at Nankai Trough.

2.8 Proposal 379/A - Mediterranean Sea (J. Mascle)
This consists of two immature proposals of which only the first--to drill a 1-1/2 km mantle section in the Tyrrhenian Sea--is of LITHP interest, and is the only current proposal to drill mantle in this environment. Arguments for drilling to 1-1/2 km need to be expanded, and the implications beyond the regional problem within the Mediterranean Sea need to be examined. Of particular importance is how this drilling program may relate to ophiolites with back-arc affinities--these ideas need to be developed more fully.

2.9 Proposal 380/A Rev - VICAP (H. Schmincke et al.)
This proposal was reviewed at the March 1990 meeting, and comments included in the March Meeting minutes.

2.10 Proposal 382/A - Vema Fracture Zone (E. Bonatti)
Drilling into the lower crust and upper mantle are among LITHP's high priority objectives. In addition, investigation of vertical tectonics on a strike-slip fault could be an exciting endeavor. In terms of the first objective--structural and geochemical variations in the

lower crust and upper mantle--specific drill sites need to be identified (i.e. are there benches on the wall with a low slope and no talus cover that can be drilled?). In addition, the relation between this proposal and the French proposal (Auzende et al.) to drill the layer 2/3 boundary further upslope should be examined.

Further development of the objectives to study the vertical tectonics is needed. It is not clear that the proposed drilling will distinguish between the numerous hypotheses presented for vertical tectonics at fracture zones (in fact, many of those presented will account for only a few hundred meters of displacement). Can sampling of the carbonate be completed by dredging?

2.11 Proposal 383/A - Aegean Sea (K. Kastens et al.)
Although mostly of interest to TECP, the third objective of drilling into the "volcanic bodies" may be of interest to LITHP if they are indeed volcanic. It would be helpful if geophysical data, perhaps gravity data, could be used to assess what these bodies are or, at least reduce the possibilities (eg. could they be serpentinite diapirs, salt domes, etc.?).

2.12 Proposal 384/A Rev. - Venezuela Basin (A. Mauffret et al.)
This is an immature proposal that focusses mainly on paleoceanography. However there are two major objectives that are of interest to LITHP:
1) understanding the formation of the Caribbean oceanic plateaus
2) sampling the "native" Caribbean crust below the B" horizon.
However, the justification for the large amount of drilling requested has not been developed significantly beyond that presented in the previous proposal (343/A). The proponents need to better document how they would investigate the Caribbean window, list the specific objectives for each drill site, and indicate how this information will lead to a better understanding of lithospheric processes. There needs to be a clear problem definition and a concise statement of how the problems will be addressed by drilling.

2.13 Proposal 386/E Rev. - California Margin Drilling (M. Lyle et al.)
This proposal for California margin drilling includes no basement sampling and is not within the mandate of LITHP.

2.14 Proposal 286/E Add/2 - Hole 504B (K. Becker)
This was not a proposal, but rather a letter listing the options near Site 504 as contingencies if time is available during Leg 137. Hence, these options were considered as part of LITHP's overall discussion of Leg 137, and the conclusions are listed elsewhere in these minutes.

2.15 Proposal 387/E Rev. - Hess Deep (K. Gillis et al.)

LITHP strongly feels that the scientific objectives of this proposal are among its highest priorities. Hess Deep is presently the best place to investigate the nature and composition of the crust and upper mantle at a fast-spreading ridge.

Figure 1 points out that the structure at Hess Deep is complicated and subject to different interpretations. If the proposed drilling is going to result in a multi-leg program, then a knowledge of the regional geophysical context is absolutely essential. However, LITHP supports the view that a multi-channel seismics survey is not required prior to devoting a first leg to this project.

Interpretation of the data and analyses of the samples already collected needs to be completed as soon as possible to help elucidate the geological context, and to allow the Sites and their order of priority to be clearly defined. Consideration of the placement of seismic lines suggest that Area 3 should be deemphasized since it may be difficult to tie into later geophysical work, which would be more conveniently located west of 101°25'W. A site to address the tectonic objective (vertical versus horizontal tectonic displacement) could also be considered.

3.0 REPORTS ON RECENT DRILLING LEGS

3.1 Leg 132 - (J. Allan)

Leg 132 tested two pieces of equipment that are important to achievement of LITHP's objectives. The Phase II (4500m) DCS system, which includes the DCS, top drive, and secondary heave compensator, was field tested for the first time as an integrated system. It was deployed in conjunction with a new "mini" hard rock base (HRB) that is equipped with a gimballed reentry cone so it can be placed on a sloping ($\leq 20°$) hard-rock sea floor. Two drilling environments were planned--bare, fractured crystalline rock and a bedded chert/chalk sequence--but only the former was tested.

Site 809 was located on a small volcanic ridge on the Sumisu Rift in about 1850m of water. Some initial problems were encountered with setting the guide base and the reentry cone due to an underestimate of the buoyancy needed to right the cone to the vertical above its gimbal assembly. During further operations, the cone separated from the guidebase; however, both were retrieved separately. Once the guide base and cone--with additional flotation and an inclinometer--were in place on the seafloor, drilling began and penetrated 79 mbsf. Recovery of 64% was achieved in a highly vesicular basaltic unit demonstrating the potential of the DCS system. However, no recovery was obtained in an unconsolidated formation that was penetrated. A number of factors may have played a part: the design of the core catcher, the bit chosen, and the force of the circulating mud sprayed ahead of the core barrel.

Some redesign of two components are suggested by the Leg 132 experiences. The "mini" guide base should be mounted on three legs, the re-entry cone should be counterweighted rather than held upright by flotation, and an inclinometer should be mounted to assess guide base orientation. There also needs to be more flexibility in core-barrel assemblies and a way to prevent circulating fluids from eroding unconsolidated material needs to be devised. An unexpected benefit of the techniques used for recovery and multiple placements of the HRB was the demonstration of the proficiency of handling heavy hardware and the new found capability of retrieving guide bases.

The next test of the system will be at the EPR in about 2800m of water during Leg 140.

3.2 Leg 133 - (J. Allan)
The primary objective of drilling on the northeast Australia margin and Queensland Trough/Queensland Plateau is to examine the sedimentary response to global sea-level changes of the Late Cenozoic. As of 30 September, this Leg has broken many previous records. Thirteen sites have been drilled with 5,103m of core recovered in 735 cores (in fact, they have run out of core liners!). Total penetration so far is 7679m.

The ship is now scheduled to go to Brisbane due to a shortage of fuel in Townsville. The cost for ship's fuel has increased by 50%. If fuel prices continue to stay high, fuel costs may increase by $1-3 million for the upcoming year.

4.0 SHORT-TERM PLANNING

4.1 Leg 135 - Lau Basin
This leg has now been extended to 68 days to include the 10-day transit originally scheduled. This has been done as a "cost avoidance" measure that amounts to about $175,000.

4.2 Leg 136 - Oahu Pilot Hole
At the PCOM meeting thee was considerable discussion about moving the hole to the arch south of Oahu, which is now the preferred site.

With regard to coring at this site, Helsley's proposal to core basement is of interest. However, LITHP does not want to divert time from other higher priority drilling to accomplish continuous basement coring. Hence, given the time constraints, LITHP supports recovery of the last basalt core from the base of the hole. Characterization of the oceanic crust at this site and its relation to Hawaiian hot spot volcanism is of interest geochemically and isotopically and addresses a LITHP objective.

4.3 <u>Leg 137 - Engineering Leg to Hole 504B</u>

K. Becker presented the updated scenarios for proceeding at Hole 504B during Leg 137 (Appendix A). LITHP's recommendation that downhole logs (temperature, fluid sampling and permeability) be completed prior to milling has been included in the overall plan.

Further progress then depends on the condition of the casing. During the last two pipe trips on Leg 111, an obstruction was encountered about 100m down in the casing, within a few meters of an expansion joint. However, whether this requires repair cannot be established until it is inspected. If the casing is good, chances of getting the hole open by milling operations are estimated to be about 75%. If milling and fishing are successful and there is time to drill ahead, a test of tri-cone bits against narrow kerf diamond core bits is planned. Since this test appears to be possible within the timing of tripping the whole drill string for bit changes, LITHP sees no conflict with their recommendation to core ahead. If milling is unsuccessful, plans need to be made for the remaining time. The options are discussed below.

If the casing is bad, the current plan calls for any repair to be deferred until the science leg. Repairs could require patching or setting a new liner, after which milling with small diameter tools would be attempted to open the hole.

LITHP feels that this additional engineering work should not be left until the science leg to 504B since it delays determination of the viability of the hole for scientific drilling--and would require scheduling a leg to a hole that may not open for drilling. Hence, <u>LITHP strongly recommends that Leg 137 carry the equipment necessary to set the liner if the casing is bad and to mill with small diameter tools in order that the future of drilling at Hole 504B can be established on the first Engineering Leg.</u>

A number of scientific options are available should time arise during Leg 137. LITHP has already recommended that a full logging program be carried out prior to abandonment. The enhanced geochemical resolution tool will not be available and the sidewall coring tool will not fit in the hole. However, FMS, wireline packer, flowmeter/packer, and digital televiewer tools should be run before any recasing program. The time estimate to run the available tools is about 4 days.

Setting a hard rock guidebase at either the East Pacific Rise or at Hess Deep would be an attractive alternative. However, unless 504B is abandoned very early in the Leg it is unlikely, given the transit times to Hess and EPR, that there would be time to complete this objective.

Another possibility may be to drill a new hole nearby without coring. Such a hole may be useful for cross hole tomography experiments and to determine crustal heterogeneity on some scale depending on the separation of the holes. Such a strategy has been adapted at the KTB Site, where a new hole offset by 200m is now being drilled but not cored. However, cuttings from the hole are being recovered using the riser system--an option not available on the vessel. Consideration of a similar plan near Hole 504B would require a proposal and discussion of the optimum relative position of such a hole, as well as assessment of alternative sites for drilling a deep hole.

Investigation of the hydrogeochemistry of the sediments and upper basement near Site 504 (proposal 123/E of Mottl et al.) would provide information on flow rates and geochemical fluxes at high heat flow areas. This data set would provide a good comparison with that to be obtained at Middle Valley during the Sedimented Ridges I drilling leg.

LITHP therefore recommends the following contingencies for any time available during Leg 137:

1. Additional logs and downhole measurements should be run prior to any recasing program and before the hole is abandoned.

2. Hydrogeochemistry of the sediments and upper basement near Site 504 to determine flow rates and geochemical fluxes should be investigated.

3. Any additional time should be spent logging the sediments near Site 504.

5.0 LONG-RANGE PLANNING

5.1 Planning for Offset Drilling

One of LITHP's highest objectives is to investigate the structure and composition of the oceanic crust and upper mantle, and its variation with age, tectonic setting, and spreading history. In order to evaluate this, drilling needs to include both recovery of a complete crustal section, and a program of offset drilling to obtain partial sections of deep crustal layers and upper mantle. Total crustal penetration will require continued advances in the technological progress being made, and hence is a long-term objective. However, drilling of offset sections could provide a strategy to systematically study lateral variability in crustal structure with more immediately available drilling capabilities. As evidenced by the results of the workshop on Drilling the Oceanic Lower Crust and Mantle (DOLCUM) and by the number of drilling proposals submitted that employ this strategy, there is considerable community interest in using offset drilling to investigate the crust and upper mantle.

However, in order to optimize the scientific return from drilling offset sections in a number of different tectonic settings, an integrated strategy for study is required. The scientific problems that can be investigated need to be clearly defined, and a drilling plan needs to be developed. This is essential to allow further progress to be made on characterization of the crust and upper mantle. Hence, LITHP strongly recommends that PCOM establish a working group on offset drilling at its November meeting. Both the DOLCUM report, and a large number of drilling proposals by several groups are available for discussion.

The mandate of an Offset Drilling Working Group should include the following:

- establish and prioritize scientific objectives of a program for drilling offset sections of crust and upper mantle.
- identify sites where specific objectives can be addressed
- identify other information necessary to establish the structural and tectonic context of a drilling program.

LITHP suggests the following panel membership:

John Bartley (U. Utah)
Enrico Bonatti (LDGO)
Jack Casey (U. Houston)
George Ceuleneur (Toulouse)
Henry Dick (WHOI
* Jeff Fox (URI)
Kathy Gillis (WHOI)

Greg Harper (SUNY)
Jeff Karson (Duke)
Jian Lin (WHOI)
Catherine Mevel (Paris)
John Mutter (LDGO)
(or John Orcutt (Scripps))
** Jason Phipps-Morgan (Scripps)
Dave Vanko (Georgia State)

* Suggested chairman
** LITHP liaison

5.2 East Pacific Rise Bare Rock Drilling

A draft copy of the EPR Detailed Planning Group report establishes 9°30'N as the preferred segment for drilling with the 12°50'N segment being an alternate site if formational difficulties are encountered.

Three sites have been identified in the 9°30'N segment, with EPR-1 being the preferred location of a deep hole to 1500m. It is proposed that, during Engineering Leg 3B, guidebases be set at both EPR-1 and EPR-2. It is not clear why the guidebase will be set for EPR-2 during this Leg when, if EPR-1 becomes an established site, no drilling will be done at EPR-2 until the 5th Leg of the bare rock drilling program. If drilling at EPR-1 is proceeding well, then significant penetration could occur on the Engineering Leg. LITHP has previously recommended that a small scientific party be on board the Engineering Leg to handle samples and help make scientific decisions during the Leg.

LITHP recommends that if drilling is progressing well at EPR-1, the time allocated to set the guidebase at EPR-2 (about 8 days) be used to continue drilling at EPR-1.

Temperature is a critical parameter to measure in the downhole operations. In order to make these measurements, the need to case the hole must be considered. Since casing a DCS hole is currently not possible (and is being looked at in the long (10 year) time scale in terms of nested drill strings), testing the reaming bit is important during the first Engineering Leg.

5.3 Ranking of Pacific Proposals for the FY'92 Program

LITHP considered the nine programs described in the Pacific Prospectus for drilling in 1992. Six of the proposals were considered to be of LITHP interest and were included in the rankings. The other three--Bering Sea History, Gas Hydrate Formation, and North Pacific Transect--were omitted as not within the mandate of LITHP. The ranking is as follows:

Rank	Program	1st Place	2nd Place	3rd Place	4th Place	5th Place	6th Place
1	EPR Bare Rock Drilling	8	4	-	-	-	-
2	Hess Deep	3	6	3	-	-	-
3	Sedimented Ridges II	1	2	8	-	1	-
4	Chile Triple Junction	-	-	1	5	3	3
5	Cascadia Margin	-	-	-	4	5	3
6	Atolls and Guyots	-	-	-	3	3	6

EPR Bare Rock Drilling: drilling at 9°30'N will elucidate magmatic and hydrothermal processes at fast-spreading ridges.

Nominations for co-chief scientists:

R. Batiza	R. Hekinan
C. Langmuir	J. Cann
J. Francheteau	A. Saunders

Hess Deep: Sections of the Layer 2/3 transition and of Layer 3 addresses high priority LITHP objectives. Detailed analyses of the available video and photographic data are required soon to clearly define specific drilling sites.

Nominations for co-chief scientists:

H. Dick	J. Karson
J. M. Auzende	J. Malpas
J. Francheteau	C. Mevel
K. Gillis	J. Natland

Sedimented Ridges II: addresses fundamental hydrogeological and geochemical problems in the formation and evolution of sediment-dominated hydrothermal systems, which are of strong interest to LITHP.

Nominations for co-chief scientists:

R. Zierenberg	J. Morton
Y. Fouquet	H. Baecker
P. Herzig	

5.4 Deep Drilling Working Group

The Deep Drilling Working Group met in September to begin identifying the technologies that exist or need to be developed to achieve deep penetration. The two technical problems most discussed in connection with deep drilling were:

i) **hole stability** - which may require a sophisticated mud program that is currently not possible on the Resolution

ii) **hole deviation** - any inclined bedding will deflect the hole from vertical, causing difficulties for setting casing or running logging tools.

In addition, there is concern that, with the present level of effort, deep drilling capability may not be feasible.

However, in order to proceed further and better evaluate the situation, the TEDCOM engineers need more specific information as to the objectives and targets of deep drilling. Hence, LITHP and TECP have been asked to provide this information in the form of "example" sites, with details of anticipated lithologies, temperatures, permeability, etc.

Deep crustal drilling has long been a high priority for LITHP, and is one of four goals delineated in the LITHP Long Range Planning Document (White Paper). There are a number of important objectives that can be addressed only by deep crustal penetration:

a) interpreting the geological significance (i.e. providing ground-truth data) of the seismic models of the oceanic crust.

b) determining the nature of hydrothermal interactions and the depth of penetration of seawater into the oceanic crust.

c) providing ground truthing for crustal reconstructions based on drilling offset sections

d) recovering a section of "normal" crust and mantle rather than that from anomalous regions (e.g. fracture zones)

e) investigating deformation related to MOR processes in an undisrupted crustal section

f) drilling into seaward-dipping reflectors at passive margins

g) investigating geochemical cycling and the nature of the crust at subduction zones.

In response to the Working Group's request for "example" sites, LITHP has selected the following:

i) Zero-age crust at fast and slow spreading centers
ii) 3 km penetration off axis at fast and slow spreading centers
iii) 6 km penetration off axis at fast and slow spreading centers
iv) 4-5 km penetration through seaward dipping reflectors at a passive margin
v) 4 km penetration in a subduction setting.

Specific examples for each of these have been developed. These are currently being finalized by LITHP, and will then be forwarded to the Deep Drilling Working Group.

5.5 ODP's Long-Range Plan

LITHP began addressing PCOM's charge to consider development of implementation plans for the Long Range Plan. For each of the major objectives of interest, i.e.

1) Exploring the Structure and Composition of the Lower Oceanic Crust and Upper Mantle
2) Magmatic Processes Associated with Crustal Accretion
3) Intraplate Volcanism
4) Magmatism and Geochemical Fluxes at Convergent Margins
5) Dynamics of Oceanic Crust and Upper Mantle (Global Seismic Network and stress measurements address LITHP objectives)
10) Hydrothermal Processes Associated with Crustal Accretion
11) Fluid Processes at Plate Margins,

LITHP assessed the current status of submitted proposals and available technology to achieve the goals. This preceded discussion of both other areas of interest that would require submission of proposals, and advances that would be necessary in drilling technology and geophysical techniques in order to meet the objectives. A draft summary of the results are in preparation, and will form the basis of further discussions at the next meeting.

5.6 Evaluation of the success of ODP in addressing COSOD I themes

Five of the 12 principal themes of COSOD I fall within the mandate of the LITHP, and accomplishments of ODP drilling legs have addressed aspects of all five. S. Humphris will prepare the draft one-page summary requested by PCOM, and it will be circulated to LITHP members for comment prior to the November Panel Chairmen's Meeting.

6.0 OTHER BUSINESS

6.1 Panel Replacements

R. Batiza, L. Cathles and M. Perfit are all due to rotate off LITHP. M. Perfit has suggested he remain a member for one more meeting since his sabbatical in Australia limited his LITHP activity during 1989-90. LITHP endorses his continuation until the March meeting.

Rodney and Larry have both provided a great deal of help and advice, and LITHP wishes to thank them both. Rodney's additional work and leadership as Chairman is also greatly appreciated. LITHP recommends the following replacements:

R. Batiza's replacement:
1) J. Bender (UNC)
2) P. Michael (U. Tulsa)

L. Cathles' replacement:
1) M. Reed (U. Oregon)
2) R. Zierenberg (USGS)

C. Mevel is also rotating off. LITHP wishes to extend its thanks to Catherine for her long and valuable service, both as a panel member and as liaison to TECP.

6.2 LITHP liaisons and representation on working groups

Seird Cloetingh has been nominated as LITHP's liaison to TECP. He has not yet accepted.

Jorg Erzinger has been appointed to replace John Mutter as LITHP's representative to the Deep Drilling Working Group.

If the Offset Drilling Working Group is created, LITHP will be represented by Jason Phipps-Morgan.

6.3 Vote of thanks

LITHP thanked T. Fujii and Y. Tatsumi for all their work in hosting the Tokyo meeting. In addition, those of us who attended the post-meeting field trip very much appreciated the opportunity to visit Oshima.

6.4 Next meeting

Jason Phipps-Morgan has offered to host the next LITHP meeting in La Jolla, California, 14-16 March 1991.

000178

LEG 137

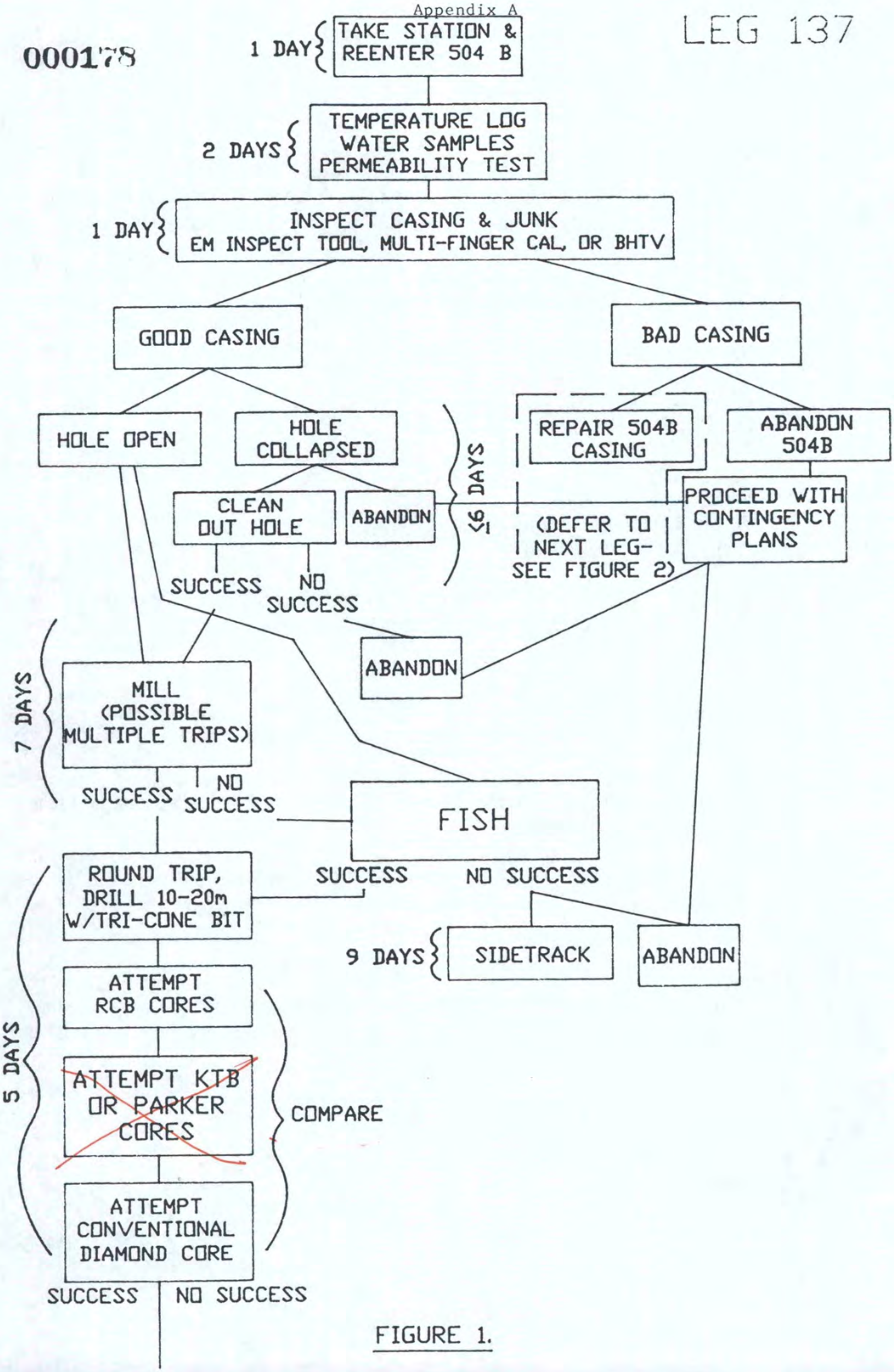

FIGURE 1.

504B REPAIR SCENARIOS

(FUTURE LEG)

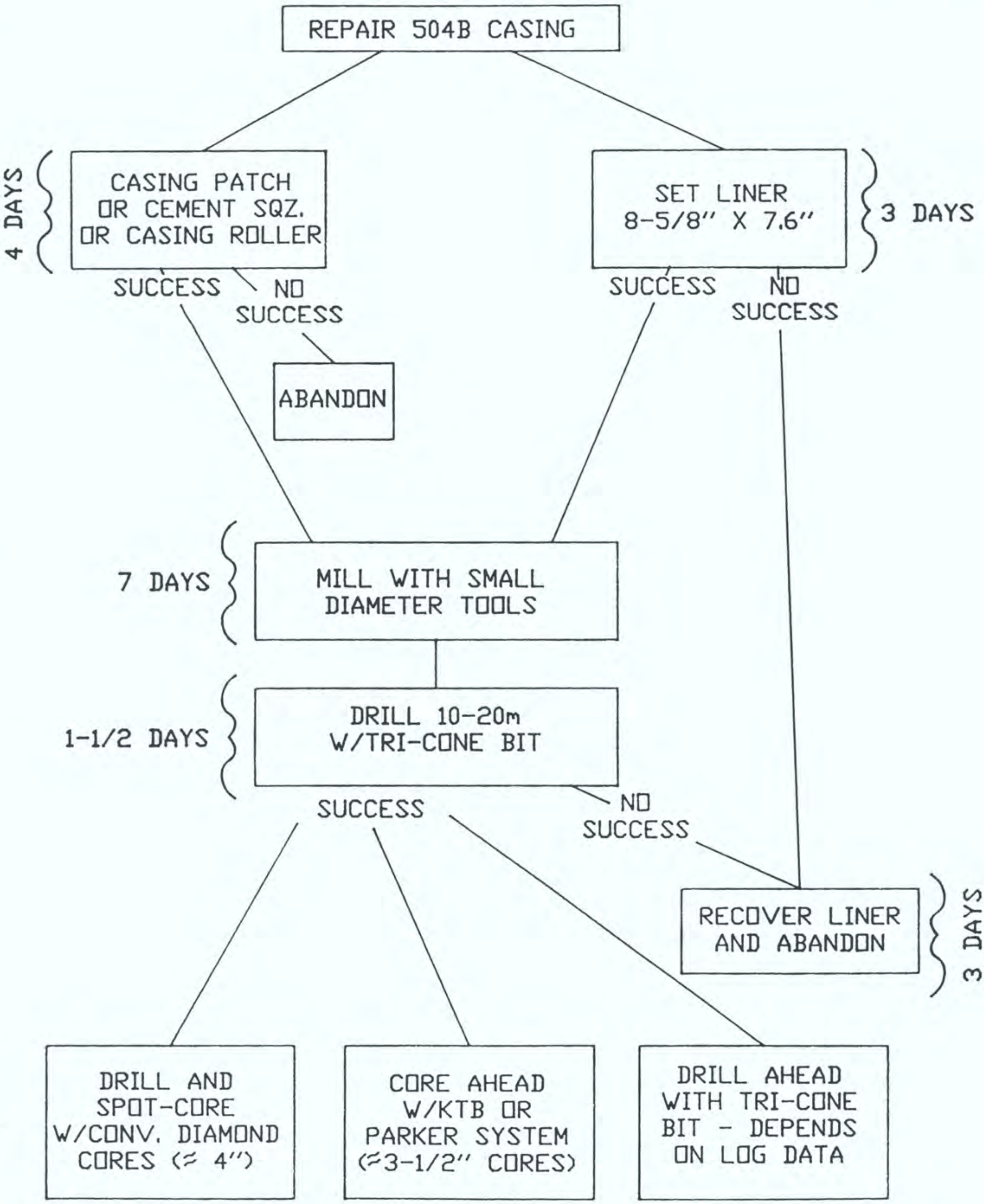

FIGURE 2.

SECOND 504B LEG SCENARIOS

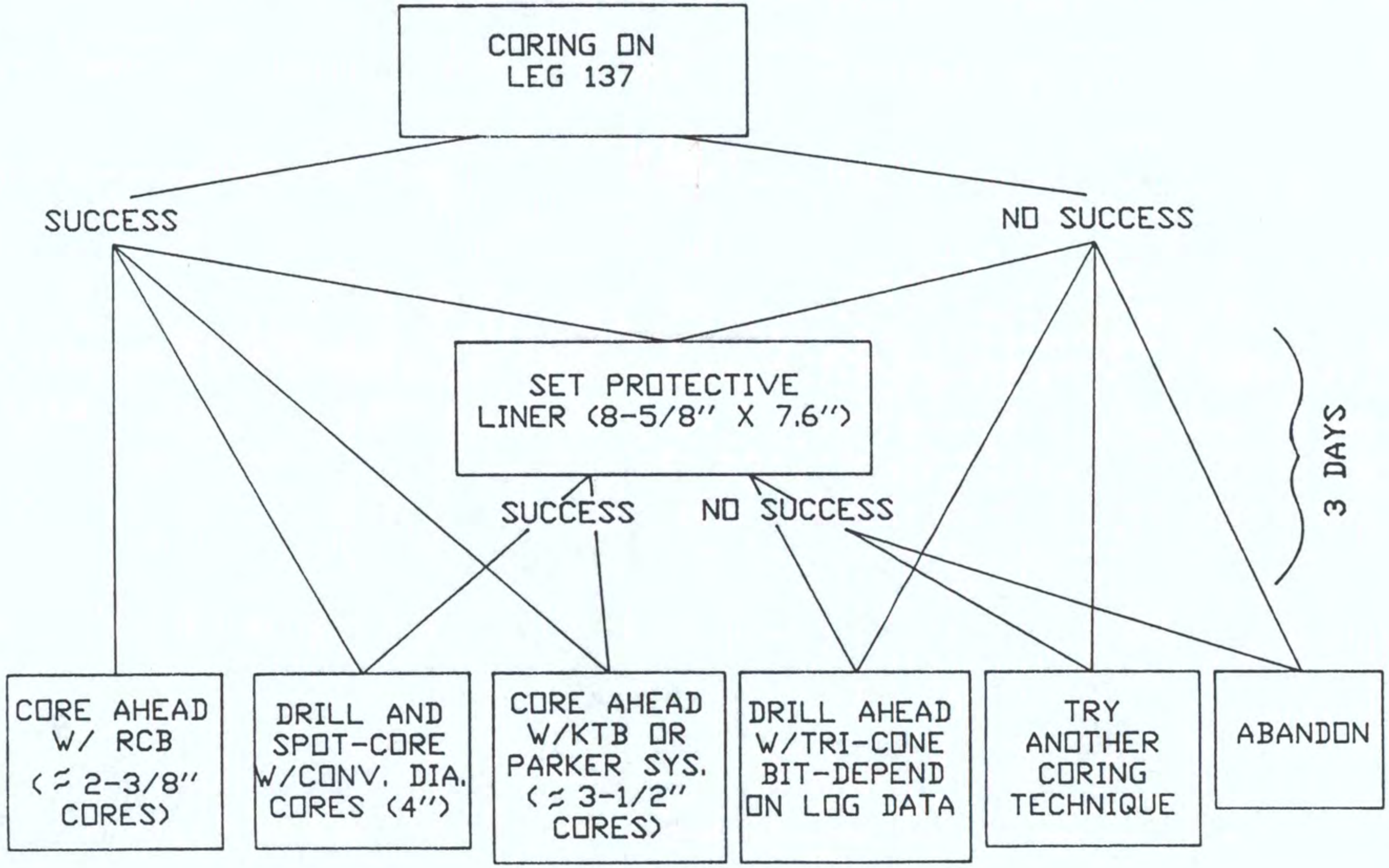

FIGURE 3.

MEETING OF JOIDES TECTONICS PANEL

Paris, France

1-3 November, 1990

EXECUTIVE SUMMARY,

1. PACIFIC PROSPECTUS TECP's votes for the Pacific Prospectus FY 1992 were:

1. Chile I,
2. Chile II,
3. Cascadia,
4. Hess Deep,
5. Atolls II,
6. N. Pacific,
7 EPR II,
8. Sedimented ridges,
9. Bering Sea,
10. Peru,
11. Atolls I.

Other comments on the Pacific Prospectus:

A. TECP voted almost unanimously (11 to 1) in favor of an integrated 2 leg Chile Triple Junction program.

B. There is a large gap (49 points to 22) between TECP's third (Cascadia) and fourth (Hess Deep) ranked programes.

C. Because the Cascadia drilling leg recommended by DPG is very full for one leg, TECP recommends that the program should be prioritized as follows:

1) Oregon holes plus Vancouver hydrate hole (V1-5

2)Vancouver holes to calibrate porosity-depth-seismic velocity relations.

2. The meeting included a joint meeting with SGPP, during which issues discussed included Cascadia, Chile Triple Junction, and Deep Drilling.

A. TECP expressed scepticism about the validity of assumptions in the Vancouver margin diffuse flow model, and questioned the need to drill the Vancouver margin at all.

B. TECP felt that the BSR problem can be approached effectively, if cautiously in Chile, obviating the need to drill Peru or Vancouver solely to address the problem.

C. SGPP expressed interest in the "hot plate" effect in the Chile Triple junction and agreed to consider the suggestion of a two-leg program to examine the margin before, during, and after collision.

D. After considerable discussion on deep drilling, the panels came to no conclusions, but they agreed to keep in touch on the issue of Deep Drilling.

3. TECP's liason with TEDCOM, Dale Sawyer, discussed the need for specific examples of deep drilling sites sites; he will prepare a generic example using a past drill site on the Atlantic margin.

4. TECP discussed PCOM's request for input on the question of focus of the future ODP. TECP felt strongly that a more focussed program should not eliminate consideration of proposals by individual scientists with bright, new ideas.

5. Offset Drilling Planning Group

TECP wishes to stress for that optimum utilization of the possibilities of offset sites, the tectonic setting of the sites must be fully documented. A variety of tectonic settings should be investigated, including both fast and slow spreading regions, areas near and away from transform faults, and regions of amagmatic extension on slow spreading ridges away from transform fault zones.

6. Previous drilling results

TECP agreed to develop by mid-November a document evaluating the current status of COSOD I themes of tectonic content:

1.B.2 a-d Origin and evolution of oceanic crust,
2.B.3-5, Tectonic evolution of continental margins and oceanic crust,
3. Early rifting history of passive continental margins,
4 Dynamics of forearc evolution,
5, Structure and volcanic history of island arcs, and
11.F.4-5 Plate Motions and reversal time scales.

7. Implementation of Long-Range Plan

TECP made a start by agreeing to appoint watchdogs to keep track of each thematic area of TECP's White Paper, within the framework of ODP superthemes.

8. Hole 504B

TECP recommends that if the hole is clear, it be logged to the extent possible. If another hole must be drilled, then the full range of measurements should be done. The scientific party involved in deepening the existing hole or drilling a new one would benefit by the presence of an expert in identification and interpretation of structural features in cores.

9. Add-ons. The Watchdogs planned for implementation of the long-range plan will look for opportunities for appropriate "add-ons".

10. The next meeting of TECP is tentatively set for March 21-23.

JOIDES TECTONICS PANEL MEETING NOVEMBER 1-3, 1990
PARIS, FRANCE

DRAFT MINUTES

PRESENT:
Ian Dalziel, UTIG, Chairman
Tanya Atwater, UC Santa Barbara
Jan Behrmann, FRG
Jacques Bourgois, France
Roger Buck, L-DGO
Mike Etheridge, Australia
Hans-Christian Larsen, Denmark
J. Casey Moore, UC Santa Cruz
Yujiro Ogawa, Japan
Mike Purdy, WHOI
Dale Sawyer, Rice University
Graham Westbrook, UK

LIAISONS:
Asahiko Taira, PCOM

APOLOGIES:
Shirley Dreiss, SGPP Liaison
David Engebretsen, U. of Western Washington (prevented from attending by terrorist threat)
Kim Klitgord, USGS
Eldridge Moores, UC Davis, (prevented from attending by terrorist threat)
Catherine Mevel, LITHP Liaison
Laura Stokking, ODP

AGENDA
Welcome and Introductions
Minutes of March 5-7, 1990 Meeting, New Orleans, LA
Report of Liaisons - ODP - Deep Drilling Working Group, Cascadia Detailed Planning Group
Proposal Review
Joint Meeting with SGPP
PCOM Action Requests —
- Options for 504B
- Evaluation of COSOD I Results
- Pacific Prospectus
- Implementation of Long-Range Plan
- Offset Drilling Group
- Add Ons

Panel Membership
Next Meeting
Appreciation

WELCOME AND INTRODUCTION

Ian Dalziel opened the meeting, Jacques Bourgois welcomed TECP to Paris and the Société Geologique de France.

Minutes

The Draft Minutes of the meeting in New Orleans, Louisiana, March 5-7, 1990 were unanimously approved.

Report of Liaisons

- Asahiko Taira reported on the recent deliberations of PCOM. He emphasized the need for TECP input to the FY 1992 Pacific Prospectus and discussed at some length the efforts of STRATCOM with regard to the renewal of ODP and PCOM's need for TECP input on the question of whether or not the program should be more focussed. There was considerable discussion. TECP felt strongly that a more focussed program should not eliminate consideration of proposals by individual scientists with new, bright ideas.

- Dale Sawyer reported on the recent meeting of the Deep Drilling. He emphasized TEDCOM's need for specific examples of likely deep drilling sites, or at least of possible examples, with specifics on the type of lithology and environment likely to be encountered. He informed TECP it was his understanding that holes significantly deeper than 2000 m were unlikely to be drilled with the present platform. He volunteered to use a past drill site on the Atlantic margin of North America as a generic example to pass on to TEDCOM in this regard.

- Casey Moore and Graham Westbrook reported on the results of the Cascadia margin DPG. TECP discussed this matter with the specific proposals.

Proposal Review

233/E Rev.3 - Fluid Process and Structural Evolution of the Central Oregon Accretionary Complex and;
317/E Add. 2 - A Test of a Model for the Formation of Methane Hydrate and Seafloor Bottom Simulating Reflectors by Drilling on the North Cascadia Subduction Zone

TECP heard a presentation from Casey Moore (233/E proponent) and Graham Westbrook on these two proposals. It is clear that the new seismic and submersible results from the Oregon-Washington margin have resulted in the clarification and refinement of the program planned for that margin that had been hoped for by the Panel. The available data were judged to assure success in studies of the microtectonic evolution of the wedge and confined fluid flow along fault surfaces. Proposal 233/E Rev. 3 was therefore judged to be of high thematic value with deficiencies that could be corrected with "add ons." These involved the need for studies of the seismicity of the margin with seismometers and tilt meters.

TECP checked Box #4 with the above comments.

There was prolonged discussion of the Vancouver margin proposal. It was agreed to consider the report of the DPG with SGPP at the upcoming joint meeting and to leave further consideration until prioritization of the FY 1992 Pacific Prospectus after that meeting.

265/D Add. - Proposal to Drill the Western Woodlark Basin

TECP re-expressed its interest in reviewing a complete proposal.

355/E Rev. 2 - Formation of a Gas Hydrate - Its Effect on Pore Fluid Chemistry, Its Modulation of Geophysical Properties and Fluid Flows

TECP appreciated the importance of investigating the formation of gas hydrate in relation to studies of heat flow in forearc regions. Heat flow can provide constraints upon modes of deformation and stress. The Panel did not, however, feel sufficiently confident of this issue to be able to give it a very high priority. It felt hydrate investigation need not necessarily be undertaken off Peru and could be combined with objectives of high priority to the tectonic panel elsewhere. Subsidence of the Peru margin associated with subduction of the Nazca Ridge, although of interest, was not of enough interest to make the Peru region of high priority to the Panel.

374/A - Mantle Heterogeneity Deep Hole at the Oceanographic Fracture Zone

TECP is interested in offset oceanic drilling proposals focussing on the coevolution of seismic horizons with lithologic transitions, observations of microfabrics in oceanic lithosphere, and understanding of the tectonics of the deep crust or upper mantle exposure.

In order to maximize TECP interest, any hole of this type should be in a region adequately constrained using appropriate seismic methods.

A weakness of this proposal (discussed by the proponents) is the position of the hole only 4.4 km from the fracture zone. Although we feel it is relevant to sample crust produced both near the fracture zone end and middle of each segment, this proposal seems to say that the middle is most important and then proposes a hole near the fracture zone. This needs to be made consistent one way or another.

We did not consider this proposal as exciting as at least one other offset drilling proposal.

We look forward to the report of the DPG on offset oceanic drilling and expect to be able to provide at least secondary support for some of this type of drilling.

TECP checked Box #1.

375/D and 387/E Rev. - Deep Drilling in Fast-Spreading Crust Exposed in the Hess Deep

375/D is an earlier version of 387/E and was therefore regarded by TECP as moot. TECP's interests in this proposal focused on the correlation of seismic horizons with lithologic transitions, observations of microfabrics in oceanic lithosphere, and understanding of the tectonics of the propagating rift.

While we generally concur that the petrologic objections can be met without additional seismic data acquisition, in that circumstance we would not be nearly as interested in supporting the drilling. The seismic acquisition may be difficult, requiring non-traditional seismic methods.

The Panel was more excited about this offset drilling proposal than others that we discussed. We consider it advantageous that the oceanic crust being rifted here is not initially unusual (as may be the case near fracture zone exposures).

We look forward to the report of the DPG on offset oceanic drilling and expect to be able to at least provide secondary support for some of this kind of drilling.

TECP checked Box #5.

376/A and 382/A - Drilling the Layer 2-Layer 3 Boundary (and the Crust-Mantle Boundary) on the South Wall of the Vema Fracture Zone — and A Proposal for Drilling into the Upper Mantle-Lower Crustal Uplifted Section at the Vema Fracture Zone in the Atlantic

Both proposals are very similar. They describe a special opportunity to sample fundamental boundaries in the oceanic crust, the locations of which are well constrained by NAUTILE observations. Although many of the objectives are not of direct interest to TECP, the Panel does see potential for a supportable program, especially if the Bonatti and Auzende proposals are combined, a means of using this location to ground-truth seismic observations of the Layer 2/3 boundary is devised, and a convincing case is made that the lineations can indeed reveal the rate and timing of the vertical motion of the transverse ridge.

TECP checked Box #3.

377/E Rev., 385/E and 385/E Add. - A Global Network of Permanent Ocean Floor Broad-Band Seismometers; A Test Site North of Oahu, Hawaiian Islands; and, Paleomagnetic, Sedimentary and Stratigraphy Studies of an ODP Hole off Oahu

TECP understands that the program is going ahead as proposed. The Panel welcomes the decision to core this hole. An exciting proposal to examine the time-dependent aspect of lithospheric flexure around the Hawaiian Islands had to be dropped for the present because of uncertainties regarding temporal control. The proposed coring program, piggy-backed on the highly-rated proposal to conduct a test of an ocean floor seismometer, will provide valuable information regarding the biostratigraphic and magneto-stratigraphic controls that are available in the Hawaiian flexural work.

378/A Rev. - Growth Mechanics and Fluid Evolution of the Barbados Accretionary Wedge

This is a very broadly-based proposal to achieve a more-or-less complete description of the Barbados accretionary complex in a four-leg drilling program. Principal goals are: 1) Follow-up work on Legs DSDP 87A and ODP 110; 2) Dynamics of frontal accretion and fluid processes in the south of Barbados Ridge; 3) Large-displacement thrusting south of Tiburon Rise; 4) Accretionary wedge-forearc basin interaction. The proposal is geared at achieving a "complete" description of accretionary wedge processes, but in its present state seems to suffer from a lack of prioritization of scientific goals. Many of the individual scientific goals are possibly too "site specific." Fundamental processes are addressed, but are not converted into a drilling program specific enough to be manageable in a limited amount of time. The proposal addresses thematic objectives, but with deficiencies.

TECP checked Box #3 (but in so doing noted, not for the first time, the short-comings of the "Box" system, as this is clearly a superior proposal).

379/A - Scientific Drilling in the Mediterranean Sea: New Prospects

TECP noted once again the potential value of the Mediterranean area for executing drilling to examine tectonic processes. Once again, however, the Panel expressed concern at the lack of specific information and lack of focus in a proposal for drilling in that area.

There is no indication of the structural setting of the peridotite in the Tyrrhenian Sea. Is it exposed in extension, intruded, or old basement?

TECP has previously expressed interest in supporting drilling on the Mediterranean Ridge. This new proposal, however, is still deficient in specifics as to the value of drilling there compared with other accretionary wedges in the world. The fact is that an incipient collision does not in itself make this a compelling target and seismic data are still not available.

TECP checked Box #3.

380/A Rev. - Drilling into the Clastic Apron of Gran Canaria: A Linked System Volcanic Ocean Island-Sedimentary Basin

This is a proposal to do a case history study of an oceanic volcano. While some of the secondary goals (e.g., lithospheric response to heating and loading, refining of island chain age progression) are of tectonic interest, they are not particularly well-addressed for this area. Thus, the proposed work was judged as not addressing high priority themes of TECP.

The panel did note that this was an especially clear, well-written proposal with straight forward goals and that it offers a chance for exceptionally good dating of the sections to be drilled. But it would have to be recast in terms of major tectonic processes (lithospheric response to load, age progression, plate kinematics, etc.) to gain high rating from TECP.

TECP checked Box #1 or, marginally, Box #2a.

381/A - Scientific Objectives for Drilling on the Continental Slope of Argentina

TECP noted the potential of the Argentine margin for interesting drilling results, particularly in the area of paleoceanography and paleobiogeography. While interested in seeing a more mature proposal, the Panel nonetheless noted the absence of clear relevance to thematic TECP goals.

TECP checked Box #2.

383/A - A Case Study of Extension Within a Continental-Continent Collision: Preliminary Proposal for ODP Drilling in the Aegean Sea

TECP has strong interest in the tectonics of the Aegean. The proponents make a good case for why the area is a good place to study continental extension in a collisional setting. The strategies are only given in sketch form. However, the third strategy did not have any interest for TECP while possibilities were seen in the first two strategies. Detailed MCS work is necessary to develop realistic strategies and identify targets. The strategies should be specific about models that would be tested by drilling.

TECP did not check a Box for this preliminary proposal.

384/A - An ODP Proposal to Study the Connection Between the Pacific and Atlantic Oceans: The Venezuela Basin and Aruba Gap

TECP is excited about the potential to characterize and date layers in the anomalously thick Caribbean ocean crust and to test the model that it originated in the Pacific basin and was inserted, after formation, into the Caribbean region.

A widespread region of anomalous crust in the old core of the Pacific plate is often attributed to voluminous, wide-spread intraplate volcanic events. If (as is often speculated) the anomalous Caribbean crust is a part of the Farallon plate and was thickened by the same event(s), this implies an amazingly broad multiplate volcanic event.

The insertion model is interesting, if true, for its own sake as an interesting plate tectonic phenomenon.

The timing of the insertion is interesting, in part because of its possible relationship to Laramide events in North America. The Laramide orogeny is postulated by many to have been caused by interaction with a flat subducting slab and the flattening of the slab, in turn, is postulated to have been caused by the subduction of anomalously thickened oceanic crust. A close correlation in time could strengthen this hypothesis.

Site A1 appears to offer the easiest location in which to reach the old ocean crust, but the panel found the presentation of its structural context confusing and were unsure how well the results from drilling of A1 could be linked with the principal areas where a rough basement reflector from the old ocean crust had been identified.

Movement on the Pecos Fault was not considered to be a problem of sufficiently high general importance to justify drilling.

The proponents are encouraged to demonstrate to the Panel in more detail (preferably with better imaging) the potential for successful drilling into old Caribbean crust.

TECP check Box #3.

386/E Rev. - California Margin Drilling: Neogene Paleogeography of the California Current and Deformation of the Gorda Plate

The bulk of this proposal is paleoceanographic and, thus, is outside the mandate of TECP. Indeed, most of the information that might be obtained concerning ocean-continent interactions is scrupulously avoided in search of hemipelagic sections that exclude turbiditic continental input. (This is appropriate.)

The possible tectonic results mentioned in the Summary (northward movement of the Mendocino triple junction and nature of the continental shelf basement) are not addressed in the bulk of the proposal.

Of considerable interest to TECP, however, are two sites on the Gorda plate, CA3 and CA4. With oriented coring and paleomagnetic measurements, the amounts and rates of crustal rotations may be determined and may help us distinguish among competing models for the internal deformation of the south Gorda plate. This is of great interest for local tectonic understanding (plate geometries, Mendocino fracture zone tectonics, triple junction tectonics, geometry and condition of the slab beneath northern California). It is also of global significance (not mentioned by the proponents) because the flexural slip model tested here is proposed as the likely deformation mechanism within shear zones of propagating rifts, both those presently active on ridge crests and those commonly found preserved as oblique disruption zones in older seafloor isochron patterns. The proponents are encouraged to pursue this aspect of their proposal at greater length.

TECP checked Box #2a.

362/E Rev. - Proposal for Scientific Ocean Drilling, Chile Margin Triple Junction, Southern Chile Trench

TECP reviewed this updated proposal and noted with enthusiasm the improvement of the images and refinement of the proposed program. Final consideration was postponed until review of the FY 1992 Pacific Prospectus and prioritization of the programs and legs presented therein.

286/E Add/2 - Layer 2/3 Transition at Hole 504/B

TECP reviewed the material available. The Panel is anxious to see logging undertaken at the site before the hole is disturbed but has no specific recommendations to put forward.

JOINT MEETING WITH SGPP

The meeting took place at 0830 hours on Saturday, November 3, 1990 at L'Université de Pierre et Marie Curie. It was jointly chaired by Erwin Suess (Chairman, SGPP) and Ian Dalziel (Chairman, TECP). The following topics were discussed:

1. Cascadia — Report of DPG

There was a wide-ranging discussion and debate regarding the relationship between the proposed Oregon-Washington and Vancouver margin drilling program. It centered mainly on the issues of confined (Oregon-Washington) vs. diffuse (Vancouver) flow. It was noted that TECP interest in the Vancouver margin drilling had declined as the proponents had shifted away from direct tectonic drilling (penetration of deep parts of the accretionary prism and tiltmeter experiments) to purely testing of a model for fluid flow. Some skepticism was expressed as to the validity of the assumptions made in the model for the Vancouver margin diffuse flow and the issue was raised as to the desirability of the "split" Vancouver-Oregon/Washington "compromise" program. For example, the question was asked as to the need to drill on the Vancouver margin at all. Could not the two types of flow be addressed more efficiently on different parts of the Oregon/Washington margin?

Discussion also covered the likely concerns of the PCSP, not only on Vancouver and Oregon/Washington, but also on the proposals to drill the Chile Triple Junction and the Peru margin where bottom-simulating reflectors (BSR) are present. The Peru program, it was noted, was specifically designed to take a cautious approach to drilling through the BSR by starting in the trough of a syncline where there is no sign of a BSR and working up-slope to areas where it is stronger. This is an area known to have a high organic carbon content. The question was asked whether this had to be done on the Peru margin where there is little tectonic interest in the drilling goals beyond overcoming the BSR "drilling barrier" in order to drill tectonic problems in forearcs elsewhere. It is felt by members of TECP that the BSR problem can also be approached in the same cautious way off Chile. Especially given the likelihood that each area needs to be treated as a separate problem, this seems to argue against spending time for tectonic drilling where there is no real scientific payoff beyond the hydrates themselves. Nonetheless the two panels concluded that the hydrate issue deserves to be investigated for its own right.

Chile Triple Junction

The revised proposal to drill the Chile Triple Junction was reviewed. SGPP expressed particular interest in the "hot plate" effect of the subducting ridge on the forearc wedge and the resulting metamorphism and agreed to consider the TECP suggestion of a two-leg program to examine the margin before, during and after collision.

Deep Drilling

Reports of both SGPP and TECP liaisons to the Deep Drilling Working Group were compared. There was considerable discussion of the future of deep drilling from JOIDES *Resolution*, from alternative platforms, and from islands (Aleutians, San Salvador). The meeting adjourned with agreement to keep in touch on this issue and others of mutual interest. It was noted that a new liaison from TECP to SGPP needs to be nominated and appointed. It was agreed to await the advent of a new chairman (Eldridge Moores) for TECP and a new UK representative (Alastair Robertson) who appears to have suitable background and may be interested in serving as TECP liaison to SGPP.

The joint meeting of SGPP and TECP was adjourned at 1045 AM.

HOLE 504B

TECP considered PCOM's request for evaluation of options for Hole 504B. TECP recommends that if the hole is clear, then it should be logged to the extent possible. TECP is aware of SGPP's desires in this regard. If another hole must be drilled, then the full range of possible logging and measurements should be done. TECP has no strong opinions on this hole, except to note that someone conversant with identification and interpretation of structural features in cores would be a valuable asset to any scientific party involved in deepening of the existing hole or drilling a new one.

PREVIOUS DRILLING RESULTS

Resuming its own meeting, TECP, considered PCOM's request for evaluation of ODP drilling results in light of the objectives outlined in the COSOD I Report that formed the basis of the proposal to initiate ODP. It was decided that by mid-November the following members of the Panel would provide Chairman-designate Eldridge Moores with a paragraph summarizing certain COSOD I themes of tectonic content:

1. Origin and Evolution of the Oceanic Crust
   B. 2a
      2b (Eldridge Moores)
      2c
      2d

2. Tectonic Evolution of Continental Margins and Oceanic Crust
   B. 3 (Ophiolite analogy) (Eldridge Moores)
   B. 4 (Transform faults) (Kim Klitgord)
   B. 5 Oceanic Plateaus and Aseismic Ridges (Eldridge Moores)

3. Early Rifting History of Passive Continental Margins (Dale Sawyer)

4. Dynamics of Forearc Evolution (Casey Moore)

5. Structure and Volcanic History of Island Arcs (Yujiro Ogawa)

11. Patterns of Evolution of Organisms
   F. 4 Plate Motions (David Engebretson)
   F. 5 Reversal Timescales (David Engebretson)

Implementation of Long-Range Plan

With regard to PCOM's request that TECP begin to address the issue of implementing the Long-Range Plan, the Panel made the following start:

Watchdogs will be appointed to keep track of proposals in each thematic area of TECP's White Paper within the framework of the ODP superthemes. In this way the Panel will be aware of progress towards implementation of the plan and will be prepared to solicit and/or write proposals in areas that are devoid of unsolicited proposals, or merely sparsely represented. Two such areas can be identified at the present time, namely plate dynamics and plate kinematics. There are no specific proposals in the former areas, and the latter is represented only by proposals chiefly for other objectives with secondary objectives in plate kinematics.

Appointment of watchdogs was left to Chairman-designate Eldridge Moores, but Mike Purdy and David Engebretson were requested to look into the two deficient areas as soon as possible pending the new chairman's action.

Offset Drilling Detailed Planning Group

Offset Drilling

TECP recognizes the unique possibilities offered by tectonic exposures of deep levels of oceanic crust and shallow mantle for composite drilling of complete crustal sections including the upper mantle. TECP, however, wants to stress that: (1) good tectonic control must exist at any given survey site; (2) various tectonic scenarios should be investigated to test different tectonic developments. Concerning (2), both fast and slow spreading oceanic crust should be tested and crust formed both close to and distal to transform faults should be included, at least in the case of slow spreading ridges. The role and mechanism of non-magmatic extension along slow spreading ridges is a high TECP priority and should be addressed away from fracture zones, perhaps midway between the magmatic maximum extension and the transform.

TECP nominations for the Offset Drilling Detailed Planning Group are:

Structure	Eldridge Moores
	Geoff Fox
	Rick Sibson
	Gordon Wisher
	John Bartley
Seismology	Bob Detrick
	Bob White
Tectonophysics	Mark Zoback
	Dan Moos

Add-ons

PCOM's request concerning "add-ons" was noted. The Watchdogs planned for implementation of the Long-Range Plan will look for opportunities for appropriate "add-ons."

Panel Membership

The following were considered suitable for membership of TECP as replacements for the present members rotating off the Panel:

I.	Dalziel	Steve Cande Tom Shipley Mark Cloos
II.	Engebretson	Charlotte Keen Jeff Karson Ann Trehu Brian Wernicke
III.	Roger Buck	Don Forsyth Mark Zoback Marcia McNutt Steve Furlong

Results of the ballot will be conveyed to PCOM Chairman, James Austin, and TECP Chairman-Designate, Eldridge Moores, by retiring Chairman, Ian Dalziel.

NEXT MEETING

The Spring 1991 meeting of TECP will be at Davis, California. Chairman-Designate Moores will host it. It is noted that Tanya Atwater cannot attend 3/1/91 to 4/5/91, Jan Behrmann cannot attend 3/6/91-3/8/91, and Ian Dalziel cannot attend 3/25/91-3/28/91. Chairman-Designate Eldridge Moores will inform the Panel members of the final dates as soon as possible.

PACIFIC PROSPECTUS FY 1992

Following extensive discussion and review of the proposals, programs and legs involved, TECP voted as follows on the FY 1992 Pacific Prospectus:

	1st	2nd	3rd	4th	5th	6th	Total Score
Chile I	11	1					71
Chile II		9	2		1		55
Cascadia	1	2	7	1	1		49
Hess Deep			2	4	1		22
Atolls II			1	2	2	2	15
N. Pacific				2	2	3	13
EPR II				1	2	3	8
Sed. Ridges				1	1	2	7
Bering Sea					2	1	5
Peru Hyd.				1			3
Atolls I						1	1

Total Score = $\sum$ (7-Rank)

(Voters)

Notes:
1. TECP almost unanimously (11 to 1) voted in favor of an integrated 2 leg Chile Triple Junction program.
2. There is a large gap (55 points to 22) between TECP's third (Cascadia) and fourth (Hess Deep) ranked programs.
3. Because the Cascadia drilling leg recommended by DPG is very full for one leg, we believe that the program should be prioritized.
   Priority One: Oregon holes plus Vancouver hydrate hole (V1-5)
   Priority Two: Vancouver holes to calibrate porosity-depth-seismic velocity relations (VI-1, VI-2d)
   We rate the VI-1 and VI-2d holes as a lower priority because: 1) It is likely that the errors in existing porosity depth functions (correctable by drilling) would not make a major change in the budget of fluid loss from sediments through compaction; and 2) at both sites only the uppermost part of the section would be calibrated.

TECP Co-Chief Nominations:

Chile Triple Junction	Steve Cande Steve Lewis Graham Westbrook Steve Scott
Cascadia	Roy Hyndiman Casey Moore

Liaisons:

Mike Purdy and Alastair Robertson are obvious choices for liaisons to LITHP and SGPP respectively. Chairman-Designate Moores will have to check on Purdy's willingness to serve (as he had left the meeting by the time this matter was taken up). Graham Westbrook will look into the willingness of his successor on TECP (Alastair Robertson) to serve as liaison to SGPP.

Proposal Presentation and Review Purpose:

Mike Etheridge provided suggestions on this subject. They will be distributed to members of TECP with the Draft Minutes of the Panel meeting for consideration at the next meeting.

The Tectonics Panel Meeting adjourned at 3:00 PM, November 3, 1990.

000194

Meeting of the Sedimentary and Geochemical Processes Panel
Université P.&M. Curie, Paris, France
2-3 November 1990

Executive summary

The highlights of the meeting were: (1) the final ranking of the drilling proposals from the Pacific Prospectus for FY 1992 and (2) a revision of the drilling plan for Cascadia which was submitted by the DPG in August. Other items included: (3) a joint session with the TECP to decide on topics of mutual interest, (4) drilling proposal review, (5) response to specific PCOM requests, (6) membership issues and (7) co-chief nominations.

Pacific Prospectus for FY 1992 drilling

SGPP considered the following addenda to drilling proposals (355/A/Add; 317/E/Add 1/Add 2; 233/E/Add 3; 266/E/Add 2), revisions (375/D; 387/E Rev. and 318/E Rev/2) which were received prior to the meeting, and recapitulated proposals from among those of the Pacific Prospectus reviewed at an earlier meeting. The panel arrived at the following ranking by ballot:

Rank		Score
1.	Modified Cascadia	7.8
2.	Modified Chile Triple Junction	7.2
3.	Modified Gas Hydrate	6.1
3.	Sedimented Ridges - II	6.1
5.	Atolls and Guyots	5.1
6.	East Pacific Rise - II	4.1
7.	North Pacific Neogene	3.6
8.	Bering Sea	2.4
9.	Hess Deep	2.0

The modifications to the DPG recommendations for the highest ranked Cascadia drilling leg are extensive and are detailed below, whereas those for the second and third ranked proposals combine objectives of the former "Peru Gas Hydrate" proposal with certain aspects of the newly revised "Chile Triple Junction" proposal. As the result a "generic" gas hydrate leg with biogenic and thermogenic end-members, Peru and Chile, respectively, is suggested.

Modified Cascadia drilling

SGPP discussed extensively the plan for drilling the Cascadia margin as it was proposed by the DPG in August 1990 and suggests the following modification:

1. *Restrict drilling on the Vancouver margin to the "BSR study" and attempt two holes; these could be VI-5 and a second one, where the BSR is weakly developed.*
2. *A reference hole is important; the site location (whether of Vancouver Island or Oregon) should be left to the discretion of the co-chiefs.*
3. *Time permitting, a site of secondary priority should be drilled through the frontal thrust area off Oregon (OM 3A) to achieve down-dip penetration of the fault. This hole needs to be cased and/or instrumented in detail.*

A second Cascadia leg, as outlined in the DPG-Report, is required to extend and complete the observations of the first one (including instrumentation and monitoring).

Leading to this revision was a discussion at the joint session with TECP, which identified apparently weakened tectonic objectives of the northern Cascadia proposal, problematic assumptions with the gas hydrate model, and a desire to make genuine progress by drilling a full-fledged "generic" gas hydrate leg rather than having this objective be part of others.

Joint session with TECP

Topics of mutual panel interest were the tectonic objectives of both the Vancouver margin (North Cascadia) and Oregon margin (South Cascadia), gas hydrate objectives at these two locations and off Chile and Peru and fluid objectives off Chile. Both panels agreed that the recently received revision of the proposal greatly improved all and added new objectives for drilling off Chile. Whereas TECP favored 2 drilling legs there to achieve these objectives, SGPP questioned the need for 3-hole transects in studying the post- and pre-collision setting and instead suggested one hole each. There was consensus, however, about the proposed plan for drilling several holes in the current collisional contact zone.

Both panels, in essence, proposed identical alternative scenarios should Site 504 B drilling run into trouble. SGPP reaffirms the importance of downhole temperature measurements and water sampling prior to disturbing hole conditions. Advances in logging technology might make a repeat logging program worthwhile. If it becomes apparent early during the time allotted for work at Site 504B that the hole should be abandoned, SGPP defers to the LITP's plan for another site (including East Pacific Rise drilling). In the event of late abandonment, SGPP suggests a new double HPC/APC-hole through the sediment column to basement including appropriate logging runs.

Both panels view the Barbados drilling as a challenge whereby many of the prerequisites spelled out in the Longe Range Plan (submersible work, 3-d seismics, new tools, emplacement of instrumentation, etc) should be realized.

Very deep drilling apparently will have such an impact on the existing mode of ODP operation (finances and time required) that alternate platforms or -for example- drilling a subduction zone from an island as is possible off the Aleutians should be seriously considered.

Drilling proposal review

Due to extensive discussion on drilling the proposals of the Pacific Prospectus, few Atlantic proposals were reviewed; a first-round evaluation identified the following ones as of potentially high panel interest:

- 365 Conjugate passive margins
- 369 MARK area
- 372 Cenozoic evolution in the North Atlantic
- 376 Layer 2/3 boundary
- 378 Barbados accretionary wedge
- 380 VICAP
- 388 Ceara Rise/West Equatorial Atlantic

They will be joined by the following proposals which were reviewed earlier:

- 332 Florida Escarpment
- 330 Mediterranean Ridge
- 345 West Florida sealevel

All will be ranked at the next panel meeting. Useful and timely feedback to proponents on their proposals is still a problem.

Membership

G. Klinkhammer (Geochemist, OSU), *K. Kvenvolden* (Organic geochemist, USGS) and
F. Sayles (Geochemist, WHOI) are the panel's nominations from a total of five geochemists considered to replace *F. Froelich* (Geochemist, LDGO) and *M. Goldhaber* (Geochemist, USGS). *Judith McKenzie* (Geochemist, ETH Zürich) is the SGPP's unanimous choice to chair the panel after the spring meeting of 1991; *E. Suess* (Geochemist, GEOMAR and current chair) has agreed to stay on for one more year as a regular panel member.

Co-chief nominations

Cascadia margin	
R. Hyndman	Geophysist, Canada
C. J. Moore	Structural Geologist, USA
M. Goldhaber	Geochemist, USA
Chile Triple Junction	
S. Macko	Geochemist, USA
P. Shanks	Geochemist, USA
T. Urabe	Geochemist, Japan
Gas Hydrates	
K. Kvenvolden	Geochemist, USA
C. Paull	Geologist, USA
K. Emeis	Geochemist, Germany
Sedimented Ridges-II	
P. Shanks	Geochemist, USA
J. Franklin	Geochemist, USA
S. Scott	Geochemist, USA

000198

OHP minutes Canberra 1990 October 19th

<u>Executive summary</u>

1. Prioritising for FY '92 drilling OHP placed:
   <u>First</u>: North Pacific Neogene Transect
   <u>Second</u>: Atolls and Guyots
   <u>Third</u>: Bering Sea

The remaining are of no interest to OHP and were not discussed. The basis for the order is minuted.

2. OHP suggest that information such as tentative ship track, upcoming legs etc. should be published in a forum such as EOS, since JOIDES JOURNAL does not have wide readership.

3. OHP support the proposal that PCOM should set aside some drilling days (OHP suggest 12 per year or 2 per leg) for short objectives. To be workable, it would be necessary to publicize the ship track and to invite proposals for targets along it.

4. OHP are concerned that manuscript handling (deadline management, MS turnaround to reviewers, communication with editorial board, blue-pencilling etc) is not being handled efficiently, and that in consequence the pressure on scientists to complete MSS in a timely fashion is being squandered to the detriment of the final product.

5. OHP are convinced that blind whole-round sampling and freezing for Organic Geochemistry should be terminated at once, and that the majority of the material should be split and returned to the normal repository forthwith (priority being given to heavily-sampled APC Holes).

6. OHP would prefer to have no membership changes for their next meeting and to aim for panel turnover at the regular fall meeting. In the event that PCOM wish to replace the members due to retire, names are given.

7. In the event that leg 137 has time in hand, OHP assures PCOM that good use for paleoceonographic purposes would be made of the sites proposed in proposal 373/E.

Present: N J Shackleton, John Barron, Wolfgang Berger, Bill Berggren, Tim Bralower, Peter Davies, Albert Hine, Eystein Jansen, Dennis Kent, Thomas Loutit, Alan Mix, Hisatake Okada, Lisa Pratt, Edith Vincent; Hugh Jenkyns (PCOM), Judith MacKenzie (SGPP), Guy Smith (LITHP) and Jack Baldauf (TAMU).

Apologies for absence were received from Peggy Delaney, and from Rainer Gersonde who was to have represented Rüdiger Stein / Gerold Wefer.

Peter Davies welcomed us to Canberra on behalf of the Bureau of Mineral Resources and gave a brief introduction to the Bureau.

PCOM report (Hugh Jenkyns)

STRATCOM is a subgroup for developing the strategy for renewal of the Drilling Programme. PCOM has discussed whether the program would be best presented in terms of a small range of programs that are highly focussed, or in terms of a broader range of opportunities more along the lines of the existing themes of the LONG-RANGE PLAN. The latter approach was the consensus.

OHP is asked:

1) to integrate existing proposals into themes from the long range plan

2) to plan to obtain proposals for themes not presently represented

3) to integrate interdisciplinary interests

4) to determine whether it is necessary to identify coordinators for thematic programs.

New Working Groups and DPG's were reported:

WG on Sea Level

WG on Deep Drilling (has already met once but no report is available)

DPG on North Atlantic / Arctic Gateways

DPG on N Atlantic passive margin evolution.

HJ outlined the mandates of these groups. NJS added that he had submitted suggestions for members of the first three of these and thanked those many members who had sent their suggestions to him.

Other requests from PCOM are agenda items below.

The JGOFS' request to use leg 138 opportunity to gather information (at no cost expense to Leg 138) was approved by PCOM; OHP welcome this especially if it eases a transition to more meaningful interaction with JGOFS, if they extend their interest in fluxes over geological timescales.

Liaison with the Nansen Arctic Drilling initiative was formalized.

Liaison with GSGP was formalized and Bralower agreed to keep NJS in touch (NJS ACTION: ask PCOM chairman whether liaisons to other organizations appointed by PCOM have a mandate to inform the relevant thematic panels?)

TAMU Report (Jack Baldauf)

Jack Baldauf Reported on activities at TAMU and again OHP greatly appreciated the opportunity to be kept abreast of progress.
He reported on the state of staffing: 134 and 135 are complete and legs to 139 are in progress of being staffed.

JB then presented interesting graphs showing the number of applicants for each ODP leg (ranging from around 36 to 100) broken up by affinity. Variability reflects planning lead-time (eg 115 was scheduled at short notice) as well as true community interest. It was questioned whether people in the scientific community realized that they had such a high chance of success in applying.

Here as well as elsewhere in our discussions it was questioned whether the JOIDES journal is read (as opposed to circulated) sufficiently widely to inform the community. It was suggested that JOIDES Office should use another forum (eg EOS) on a regular basis to announce opportunities, indicate the likely ship track, indicate areas for which proposals would be welcome, list upcoming legs, list priority themes...

Moving to publications, JB showed how the production is moving towards the target production schedule and indeed one A-volume has already beaten the 12 month target. Despite the loss of some real science OHP are pleased to see this trend. However they do have some constructive concerns:

1) several members feel that time and effort in TAMU is being wasted copy-editing initial submissions and that this time should be devoted only to revised MSS. Some authors re-write to such an extent that almost nothing that had been copy-edited survives, while others feel inhibited from reacting to reviewers because of the apparent "finality" of the copy-edited document. On the other side it was reported that revised MSS pass without further attention, so that errors that would have

been spotted by the copy editor, as well as more trivial features that he/she would have changed, go through to the final print. It was also reported that, in some cases, the copy-editing is scientifically wrong; possibly TAMU should include a statement that the copy-editor's notes are not "final".

2) several members noted that the review process is sometimes very seriously delayed with MSS sitting on a desk in TAMU, that could be out in the process, not so much through individual failing, as because somebody else is responsible for approving the reviewers. NJS suggested that in most cases MSS could be sent straight out on day of arrival, after a secretary has telephoned a potential reviewer (from the list identified by the author) to confirm his willingness.
The Review Board would simply be notified, with the freedom to suggest additional reviewers if they felt it necessary. It was suggested that on occasion members of the Review Board show personal bias to such an extent that it might be fairer to the authors to give more responsibility to disinterested personnel in TAMU.

Engineering Leg Report

Jack Baldauf reported on the engineering successes and scientific failures of Leg 132. Concern was expressed that so much emphasis was put on success whereas by comparison with the expectation that sufficient drilling would be achieved to justify the presence of a skeleton scientific party, the leg was a failure.

Leg 133 Report (Peter Davies)

Peter Davies and Judy Mackenzie reported on the successes of Leg 133. The leg drilled 36 Holes at 16 Sites with excellent APC recovery, but poor recovery in reefal material. A preliminary report was circulated. OHP were delighted by the scientific expectations aroused by the presentation.

Prioritization of the FY '92 options (Final CEPAC Compilation)

The philosophy of prioritization was discussed. Jenkyns reassured the panel that the plans for FY 1992 are not pre-determined and that PCOM will make the plans on the basis of panel prioritization rather than on the plan outlined a year ago (which contained no program with any content of interest to OHP. For the benefit of new members who had not been present at the last meeting when the whole range of proposals including those in the CEPAC prospectus had been ranked, a brief discussion of each of the three proposals with OHP content was held. In the subsequent voting 9 members rated the North Pacific Neogene transect highest.

The North Pacific Neogene transect is an essential component of the strategy formulated in the COSOD 1 report, wherein latitudinal and depth transects are drilled to delineate the evolution of critical components of the ocean circulation system. The North Pacific has up to now yielded little of its history because so many of our tools depend on the presence of carbonate microfossils. Now a range of sites have been identified taking advantage of the survey and piston coring of Detroit and Patton-Murray Seamounts that will fill several needs in the region including the history of both surface- and deep- water mass evolution in the N.W. and N.E. Pacific. The leg will sample high resolution Neogene sections that are important in relation to our long-term goals in "Short-period climatic change" and in "The carbon cycle and paleoproductivity". OHP considers these High-Latitude North Pacific sites to be a critical component of its global array of high-resolution transects. Three sites at Detroit Seamount will address differences in the Neogene histories of mid-depth and deep waters (2400-3900m) with important implications for carbon cycle models. An East-West transect of three sites near 45W will extend a transect begun with Leg 86, adding valuable information on Neogene siliceous and eolian sediments, ice rafting and polar front migration. In addition significant contributions to our knowledge of Paleogene and Cretaceous paleoceanography will come from both sediment sampling and from the improved tectonic reconstruction that will result from basement dating.

Atolls and Guyot Program

The Atolls and Guyot program was rated second, with four first-place votes.

The Atolls and Guyot program addresses several topics of interest to OHP, primarily in relation to Mesozoic and Paleogene paleoceanography and low-frequency environmental variability. The most important of these is the determination of timing and causes of drowning of Cretaceous atolls in the Pacific Basin. This is a question that has concerned marine geologists for several decades, and which can only be resolved by ocean drilling. The timing of this event will be compared to the evolution of carbonate platforms in the Atlantic and Tethys, and to climatic, tectonic and eustatic events. In addition, this drilling program should obtain Cenozoic and Upper Cretaceous sections with possible recovery of rare Pacific mid Cretaceous black shales. Black shales have already been drilled on other shallow water settings in the Pacific, including Horizon Guyot and Shatsky Rise. The proposed transect should allow the evaluation of temporal and spatial occurrences of an oxygen minimum zone. In addition, it is possible that K/T boundary and Paleogene sections may be recovered at shallow burial depths.

Many of the objectives will be achieved regardless of the coring system utilized. However, it is clear that the results of the whole program will benefit greatly from successful deployment of the DCS system. We hope that every effort will be made by ODP to have the system operational for this program in 1992.

Although not primarily aimed at sea level problems, this program can make a significant contribution to our understanding of questions relating to the history of sea level, because if any sea level change observed in this environment proves synchronous with a change in a continental margin, it is most unlikely that a synchronous tectonic effect would be the cause. Even though we are not optimistic about the sea level objectives, the Atolls and Guyot program addresses several items of great interest to OHP and we strongly support implementation of this drilling program.

Bering Sea History

While rating the Bering Sea a clear third of the three OHP programs the panel do retain a very strong interest in this program. No drilling has been attempted in the Bering Sea since 1971, so that any drilling in the area must appear more speculative than drilling in easier latitudes, but the panel consider that reconnaissance drilling may often produce more exciting results than highly focussed and well-planned drilling, and that there is a place for excitement in a program such as ODP.

The Bering Sea History program addresses Cretaceous through Neogene climatic and oceanographic objectives of OHP in the highest-latitude region of the North Pacific. These studies will fill an important gap in high-latitude regions and are needed for comparison with completed transects in the Antarctic and Norwegian-Labrador seas.

High resolution studies of dominantly biosiliceous sediments will document Plio-Pleistocene environmental changes in the Bering Sea including productivity and sea ice histories. Records of ice-rafted debris will document onset and variability of continental glaciation in the circum-N-Pacific region. This proposal will study the environmental effects of the opening water mass exchange between the Pacific and the Arctic, and the Bering Strait. Although sparse, carbonate presence may allow the construction of isotopic records and possibly provide a climate proxy for the Arctic.

Any Cretaceous and Paleogene sediments that will be recovered will provide a unique high-latitude record for the North Pacific. Currently, no pre-middle Miocene deep-sea reference sections exist for the North Pacific north of 40^{o}9N. These records may provide critical correlation to the Cretaceous-Paleogene of the Russian platform.

Leg 137 Options

Leg 137 is intended to work on Hole 504B, clearing junk and deepening the hole. However, it is possible that this operation will fail and the hole may be abandoned before the end of the available time. In case of this eventuality OHP reexamined Proposal 373/E for APC work in the area. NJS pointed out that it had been difficult for him to guide OHP towards prioritising this proposal since the strongest arguments would have been based on his own work, still in press. However, he pointed out that the data from Site 677 was already obtaining considerable attention and that high-resolution studies of all the four main fossil groups are now being undertaken (in Texas, Bergen, LDGO, Stockholm, Cambridge). The following points were noted in support of further APC coring nearby: 1) because the target overlap for 677A and 677B was only 1.5 meters, several inter-core gaps are not in fact covered. 2) the Hole 677B terminated at 100 mbsf so that no inter-core gaps are covered below that depth. 3) APC coring was not carried as deep in section at Hole 677A as could be hoped. 4) In view of the importance of the record from Site 677 for astronomical calibration of the Plio-Pleistocene timescale, independent data from a nearby site would be especially valuable. 5) the objectives of proposal 373/E (related to spatial differences in down-hole diagenetic change associated with pore-water convection patterns) may have important implications for the paleoceanographic (particularly isotopic) record deeper in the section.

Whole Round Sampling

OHP were unanimously opposed to the continuation of blind sampling for freezing, just in case the samples might be of greater value in the future. The revelation that requests for these samples has been minuscule, reinforces the widely held belief that this procedure is wasteful of resources and ship-board manpower, and on many occasions significantly hampers the achievement of the scientific objectives of the drilling. Strong arguments were made that the existing frozen sections should be split and returned for normal access, especially those from APC cores in which high-resolution studies are commonly carried out, as well as in other Holes where sampling pressure is high.

The alternate view was offered that portions of the frozen samples, or a subset, should be retained frozen to enable comparisons to be made ("geriatric studies"); these could be much less than 30cm whole rounds and still enable continuous records to be developed where these are desired. It was also pointed out (with turkeys in the freezer as an analogue) that the procedure of simply freezing is not appropriate for true long-term preservation of organic materials, and that freeze-drying followed by storage under nitrogen would be appropriate in situations where there is a genuine interest in pristine long-term storage.

Add-on Proposals

NJS outlined the suggestion he had made to PCOM, that PCOM announce that in each year a certain number of days would be set aside for drilling, on the basis of "add-on" proposals that used the opportunity of the announced ship track to proposed limited targets which could be achieved in a very short time. Such proposals could dispel the notion that the program is inflexible, could significantly increase the number of people whose proposals influence the program and could significantly ease the possibility for an "outsider" to have an impact. Disadvantages would be the need for additional site-survey and safety panel work, the need to staffing to be responsive with the possibility of the legs being more varied than has been the case in many recent legs.

Despite the difficulties, OHP unanimously supported the proposal that PCOM should seriously consider such a scheme on the basis of about 12 days per year (2 days per leg) being the maximum time available.

After reviewing proposal 386/E (see below), OHP returned to the question posed by PCOM as to whether a Santa Barbara Basin single hole should be proposed, should PCOM agree to set up the scheme. This would appear to be an ideal case, since OHP had already prior to its previous meeting, received a letter proposal that a single APC site should be occupied in the Santa Barbara Basin in transit, and a proposal for this hole is now embedded in Proposal 386/E. OHP unanimously agree that this would make an excellent Site to open the scheme, for the following reasons:

a) There is broad interest in the paleoceanographic community for drilling in Santa Barbara Basin (see letters by J. P. Kennett, J. Barron; proposal by Lyle et al., 386/E).

b) In the context of Global Climate Change, a recently convened panel on Earth System History (NSF, July 1990) identified two topics as being of the first priority:

1) high resolution studies of climatic fluctuations and
2) the role of the ocean in the global carbon cycle.

c) The Past Global Change (PAGES) component of the International Geosphere Biosphere Program (IGBP) is especially focussed on the past 2-3 glacial cycles.

d) Along similar lines, there is a new initiative from DOE for studies focussed on ultra-high resolution of recent changes in sediments related to the CO_2 problem.

The sediments in the Santa Barbara Basin are ideally suited for ultra-high resolution studies of marine records with regard to change and of the global carbon cycle. They are being deposited in a semi-enclosed basin with a sill depth within the oxygen minimum zone. Thus, little oxygen enters the basin. The high productivity in overlying waters, due to seasonal upwelling, leads to a high supply of organic matter and corresponding depletion of oxygen in the bottom water. As a consequence, anaerobic conditions develop near the sea-floor, preventing benthic macrofauna from disrupting the sediment. A bacterial mat develops which acts as a sediment trap. Seasonal changes in the quantity and quality of sediment supply provide for annual varves. The existence of both a terrigenous-clastic and marine-biogenic signal allow for detailed reconstruction of climatic fluctuations. Due to the high organic carbon content of the sediment, the carbon isotopic record of carbonate can be directly compared to the carbon isotopic composition of individual biological markers on a lamina by lamina basis.

During El Nino periods supply of organic matter to Santa Barbara Basin is greatly decreased. At those times, benthic macrofauna can invade the deep basin due to a rise in oxygen content. The bacterial mat is then destroyed and varves are damaged. Thus, the sediments contain also a record of the frequency of El Nino events.

The sedimentation rate (0.5 to 1 m/1000 yr) is such that APC coring to about 300 mbsf should retrieve a substantial portion of the Pleistocene record (ca. 0.5 million years). High resolution studies on the effect of sun spot cycles (11 yr.) and other solar cycles should be possible. A tie-in to deep-sea stratigraphy would greatly enhance our knowledge about the history of coastal upwelling in the Milankovitch time scale. This knowledge is necessary to properly understand changes in the carbon dioxide content of the atmosphere as seen in ice cores.

Time requirements:

Detour during transect Los Angeles - Victoria about 4 hrs.
Set-up and leave site about 6 hrs.
Drilling (1/2 hr per core for 30 cores) 15 hrs.
TOTAL: 25 hrs.
With Double-APC Total: 40 hours.

We recommend that the proposers of Proposal #386 be contacted and asked to prepare the necessary documentation for their site CA-10, for possible inclusion in Leg 139 or wherever PCOM deems appropriate within the Central and East Pacific program.

Proposal Reviews

General discussion

OHP had a fruitful discussion of reviewing procedure. NJS admitted that proponents were perhaps not receiving as much feedback as they desired. At present the Chairman is provided with a form to fill out which implies that comment from the panel for transmission to the proponent is only required if the proposal is of interest but has deficiencies. One question is what form of comment should be sent to a proponent whose proposal, even if re-vamped in a major way, is unlikely ever to be drilled in a program such as ODP. On the other hand even a very highly-rated proposal has a low chance of being drilled: that is the proposal that really deserves further work to enhance its chances. WHB suggests that the form should be redesigned to easily give the proponent an idea of the likely timescale for further action if any. NJS proposed that, in future, instead of asking a panel member as watchdog to abstract a proposal for the benefit of the panel, he would assign the task of writing a review of the proposal, after the panel discussion, and ensure that the proponent receives the review. This will certainly result in the proponent getting more feedback than at present. In discussion, several other pieces of information were identified that could also be of use to a proponent: an idea of the planned ship schedule (or advice as to where this information is to be found); information as to what proposals are currently highly rated; knowledge of the identity of the panel member acting as watchdog/reviewer; the membership of the panel (or the source of the information) so that the proponent can identify a friend who can explain the situation; advice on the "political" aspects, such as, that a focussed proposal is more likely to succeed than a catch-all proposal for the same area.

380/A REV No OHP interest

381/A OHP discussed this at their last meeting although it was a preliminary submission. T J Bralower is the watchdog.

382/A No OHP interest

383/A No OHP interest

384/A A Mauffret, G Wagoner and J Diebold: An ODP Proposal to Study the Connection Between the Pacific and Atlantic Oceans Venezuela Basin and the Aruba Gap

This proposal contains elements that interest the OHP panel. However, the potential ocean history is not well developed and is only generally addressed. The OHP panel considers that the paleoceanography would be better presented as a separate proposal. Alternately, the panel recommends that paleoceanographic objectives be added.

Specifically, examination of the carbon cycle could be addressed by comparing onshore (rich units La Luna Fan) to what might exist offshore in an attempt to determine how long-term, high productivity can be sustained.
If the proponents would appreciate help on the OHP aspects, OHP recommends the proponents contact Professor Isabella Premoli-Silva (University of Milano) or Dr Larry Peterson of RSMAS (University of Miami) for advice. Dr Premoli-Silva has both panel and Caribbean WG experience; Dr Peterson has expertise and interest in Caribbean ocean history.

385/E OHP declined to review this since it is apparently already scheduled, but note that for PCOM to agree to an "add-on" of this nature is in the spirit of the OHP resolution relating to such proposals.

386/E REV Lyle et al. California Margin Drilling.
Alan Mix watchdog. This is a re-working of proposals 271/E and 350/E taking account of earlier OHP communications. It addresses questions of considerable importance to OHP; both from the point of view of the importance of the ocean current, and of the high productivity associated, this system must be investigated by drilling at some stage.

387/ No OHP interest

388/E Curry, Backman and Shackleton Ceara Rise Transect
(P. Davies chaired the discussion; Alan Mix watchdog). This proposal had been solicited by OHP so as to ensure that when plans are made to drill the western equatorial Atlantic are being discussed a depth transect is among the options. The following points were made:
1) survey data are needed (as the proponents appreciate)
2) the chosen depth spacing is somewhat arbitrary but survey will probably firm it up; if possible a deeper end-member would be desirable.
3) the possibility of turbidites crossing the Ceara Rise was brought up by Mix (work by J. Damuth).
4) the question of the optimum site for deepening to Mesozoic objectives will be considered by Bralower.
5) Kent will investigate the magnetic properties of DSDP354 so that the proponents can better predict the chances of good magnetostratigraphy being obtained.

247/E ADD OHP noted this addition, comprising a manuscript submitted to Paleoceanography by Zahn, Pederson, Bornhold and Mix entitled: Water Mass Conversion in the Glacial Subarctic Pacific...

PCOM agenda item: achievements in relation to COSOD-1 objectives

Jenkyns explained that PCOM would like input from thematic panels (as well as from individuals, co-chiefs etc) on the success that ODP has had in relation to the objectives prioritized at the COSOD-1 meeting in 1981 that provided the blueprint for ODP. This input is likely to be used in the renewal process. There was considerable discussion as to what the chief achievements had been.

What follows is the input compiled at the meeting; NJS will refine it to the required 1-page length as a separate exercise. It was agreed that the exercise had been of value to panel members.

Reconstructing Vertical and Horizontal Palaeo-Oceanographic Transects was a major strategy evolved in COSOD I. Legs 107, 108, 112, 113, 115, 117, 119, 120, 130, 138 all contribute to a global array, which will be to first order completed for the Neogene by transects in the North Pacific, across the Californian Current, in the Western Equatorial Atlantic and in the Norwegian Sea. Drilling in the depth range of Intermediate Waters is also required to provide adequate vertical coverage. This drilling strategy has been extremely successful, contributing to many of the themes listed below.

Orbital variations

High resolution study of ODP's continuously cored sections have led to the view that orbital rhythms are pervasive in the record of past climates (DSDP Leg 94 and ODP Legs 108, 111, 117, 121, 129, 130, and others planned). The ocean sediments act as multi-channel recorders of various aspects of climate change, with orbital signals recorded in carbonates, magnetic susceptibility, wind-blown sediments, faunal and floral indices, stable isotopes, well-logs, and other parameters. The orbital signatures vary spatially and evolve through time. This important result has major implications for mechanisms of climate change, such as decoupling of monsoonal circulation in the tropical Atlantic and Indian Ocean from high-latitude climates.

Orbital Tuning of Geological Timescale

Huge advances for the past 3 million years (Legs 94, 108, 111) and material recovered that may extend calibration significantly (Leg 121, 128, 130, 133). Further extension into the Paleogene has been slower than was hoped, although recently exciting work using DSDP sections has been published for the Oligocene (leg 73) and the Latest Mesozoic-early Cenozoic (Legs 39,72 and 74).

Carbonate Stratigraphy

APC coring has recovered undisturbed carbonate cycles to a depth of approximately 300 mbsf, corresponding (in pelagic carbonates) to the last 10 million years. Detailed correlation of carbonate cycles between adjacent sites at different water depths reveals an important paradox (Leg 130): the differences in carbonate percentages are much too small to account for the differences in sedimentation rates. This implies that carbonate dissolution conditions the sediment for increased loss of non-carbonate material. The finding it has important implications for the nature of the CCD, and for the interpretation of carbonate cycles in the context of CO_2 fluctuations.

Patterns of Evolution of Micro-organisms

Spatial-temporal biogeographic patterns are being studied in the framework of an improved chronologic framework. Knowledge of high latitude assemblages in the northern (Legs 104, 105) and southern (Legs 113, 114, 119, 121) hemisphere have been considerably improved. We have a much better understanding of faunal and floral response (turnover, speciation) to oceanographic and climatic events (eg Paleocene/Eocene boundary, Eocene/Oligocene boundary, mid-Miocene cooling). Morphometric (shape analysis) studies are now being conducted on calcareous and siliceous microfossils, yielding testable models of speciation. Recovery of a large number of K/T boundary sections provide the data for extinction and recovery patterns in different microfossil groups.

Continental History

Mesozoic/Paleogene warm vegetated Antarctic Continent documented (Legs 113, 119, 120). Glacial history of Antarctica well defined back to around 40my (Leg 119) and earliest Antarctic ice-rafting history documented in Leg 113, 114, 119, 120. Detailed history of glaciation in the N-Hemisphere documented back to the late Miocene, with major intensification at 2.5 and 1 Ma (Legs 104 and 105). Aridity history of tropics deciphered (Legs 108, 117, 121).

Polar Oceans, Northern Hemisphere

Reconstructions of deep water characteristics show that deep water formation in the Norwegian-Greenland Sea goes back to the middle-late Miocene boundary, and has been variable since that time (Legs 104, 105). Intensification of temperature gradients and deep-water overflows happened in the Pliocene at 4Ma (Legs 104 and 105).

Polar Oceans, Southern Hemisphere

Extraordinary temperature structure, perhaps providing the best evidence for "warm salty bottom water", in the Eocene (Leg 113); detailed reconstruction of circulation history through the Cenozoic (legs 113, 114, 119, 120).

Carbonate Platforms

ODP advances in understanding carbonate platforms include defining: The relations between platform evolution, plate motion, climate and sea level. The dependance of basin sedimentation on platform growth. The age and origin of the Great Barrier Reef (133), the mechanisms of platform dolomitization (133). Lateral progradation as a fundamental process in platform evolution (115). Sea level change in the Plio-Pleistocene and mid Miocene.

Substantial advances have been made in understanding the relationships between platform evolution, on the one hand, and plate motions, climate and sea level, on the other (Legs 101,115 and 133).

Mesozoic oceans

ODP advances in Mesozoic Paleoceanography include:

Recovery of Upper Triassic Shallow water and fore-reef sediments, the oldest marine sediments in DSDP/ODP. These sediments include some of the oldest calcareous nannofossils (ODP Leg 122, Sites 761, 764).
Recovery of sediments deposited in the Jurassic Superocean including cyclic radiolarites similar to those from Tethys (ODP Leg 129, Site 801).
Recovery of early Cretaceous high-latitude black shales (ODP Leg 133, Site 393).
Recovery of the Cenomanian-Turonian boundary OAE (ODP Leg 103, Site 641; ODP Leg 122, Sites 762, 763).
Recovery of relatively complete K/T boundary sections in a latitudinally diverse range of sites ODP Legs 113, 199, 120, 121, 122, 130.
Absence of Cretaceous black shales in the deep sea documented in many fine intervals when they might be expected eg Leg 122.

History of Earth's Magnetic Field

The routine operation of a cryogenic magnetometer on the JOIDES RESOLUTION, combined with a zinc-coated drill string to minimize contamination, and APC coring, have allowed real-time magnetobiostratigraphic analysis. There are areas/intervals where the magnetic record is intrinsically poor (eg, pre-Pleistocene on leg 108, 121, 130. This is now known to be related to diagenetic reduction of magnetic minerals. Magnetic results from Leg 115 and Leg 121 place important constraints on true polar wander and the hotspot reference frame.

Evolution and Extinction

The material collected by DSDP/ODP for paleoceanographic purposes has provided the ideal base for studies of the evolution of calcareous and siliceous microfossils. Nevertheless concern exists that other resources (eg funding) do not enable these studies to be completed. OHP are convinced that the perceived failure to accomplish COSOD-1 goals in this area is not due to lack of proposals or to lack of suitable sites actually drilled, but to insufficient advantage being taken of the material collected.
The need for a workshop on opportunities for studying evolution were identified. Bralower, Berggren, Barron will contact other interested parties and formulate a proposal.

PCOM Request (Motion relating to the Long-Range Plan).

OHP discussed the four questions from PCOM and considered that they deserved little attention (or that OHP chairman did not fully understand PCOM's request).

Specifically:

1) It is already OHP policy when ranking proposals, to group them according to the themes outlined in the long-term plan and to prioritize them within those themes (see minutes of last meeting).

2) It already OHP policy when they perceive a need for proposals in particular areas, to seek means of obtaining proposals to cover them (see, eg, Proposal 388). However, they are also aware that it is undesirable to solicit proposals from outsiders without taking account of the reality that with only a total of six legs a year for all themes from all panels, the most likely interval that will elapse between initial submission of the proposal and eventual drilling is infinity. One should only solicit proposals for goals that have reasonable priority.

3) OHP do not consider that coordinators are needed for themes. OHP considers that such an approach would alienate the community, stifle innovation, and create a situation in which the program was indeed a closed-shop run by insiders (noting that whenever an outsider comes into the system, he/she immediately is deemed an insider).

4) OHP do not feel they can be faulted for failing to integrate interdisciplinary interests.

Other business

NJS reported a letter from J-P Valet requesting endorsement of his request for dedicated C-holes at four leg 138 sites, in order for him to do non-destructive measurements on complete sections for rock- and paleo-magnetic objectives. OHP consider that, at this stage, the request can only be handled in the normal manner by the co-chiefs and the remainder of the scientific party. The point was made that Valet is one of three invited scientists interested in the magnetics area and that it would be inappropriate for the panel to make any recommendation that would give him privileged access to the material. Were the panel to have wished to make recommendations, they would certainly first have sought arguments for whole-core analysis, rather than channel-samples. In addition, the panel felt that, since the overall objectives are likely to require third holes to ensure 100 per cent stratigraphic cover, and that this carries the implication that samples must be available from all three holes in such situations in order that the scientific party can actually take detailed samples through 100 per cent sections, it would not be appropriate to dedicate whole holes for a single purpose, even if it were non- destructive. The panel do of course anticipate that Valet will find support for his objectives among the Leg 138 party.

Panel membership

NJS explained that, in his opinion, the October meeting is the appropriate one for new members to arrive, and that he intended to request that the two members (Kent, Berger) whose three years have ended, be permitted to remain members through the next meeting.

The panel agreed whole-heartedly, particularly bearing in mind that we have four new members at this meeting, none of whom have previous panel experience.

In the event that PCOM insists on replacing Kent and Berger the panel discussed their requirements. It was universally agreed that when Kent is replaced, it should be by another magnetostratigrapher, preferably one with both Mesozoic and Cenozoic expertise, and suggest:
Jim Channell
Neil Opdyke

Notwithstanding the PCOM remark on Mesozoic expertise the panel considers that its weakness in Paleogene expertise is more serious. It was noted, however, that the panel is heavily dominated by members with no previous panel experience and has few members with a breadth of experience over the wide area that we are responsible for, and that they would be minded to ask PCOM to renew Berger's membership because of his immense breadth, enthusiasm and wisdom. If PCOM feel unable to do this, two names were identified:

Jim Zachos PhD c. 1988(Michigan) Stable isotopes, trace elements, paleoceanography. No panel experience, 1 (check) ODP leg
Anne Boersma PhD c. 1975 (Microclimates, New York). Benthic foraminifera, paleoceanography. No panel experience, 3 DSDP/ODP legs, broad knowledge of existing sites. Both have particular Paleogene expertise extending into the Mesozoic and the Neogene.

Fall 1991 meeting

Barron drew attention to the fact that in October 1991 Japan will host the final meeting of IGCP project 246 "Pacific Neogene Events in Space and Time", which will be attended by Okada and probably by Barron. Okada would be happy to host an OHP meeting in Yamagata (which would not be as expensive site as Tokyo is) and Barron pointed out that there are several panel members who would certainly attend the IGCP 246 meeting if their way to Japan were paid. This would undoubtedly have a significant effect on the extent to which ODP achievements were recognized in the final reports of the meeting. He mentioned that the attendance will be interesting, in that it will include many geologists from smaller Asian countries with knowledge to which we do not usually have access. OHP agreed that, despite the fact that it is unfortunate that the travel costs will be higher than the likely alternative (France, taking a normal rotation), it would be extremely desirable to be able to accept Okada's invitation (Oct 4-6 1991), and NJS agreed to seek provisional approval from PCOM so that members can make plans. It is hoped (next item) that the intervening meeting will be an inexpensive one.

Next Meeting

Considerable difficulty was found in identifying a convenient time and place. Bralower offered to host the meeting at Chapel Hill, University of North Carolina, February 28 - March 2.

Items to report

Kennett has USSAC support to organize an Antarctic Synthesis Workshop at UCSB, August 28 - 30, 1991. (NB: DATE CHANGE: NOT THE DATE GIVEN IN CANBERRA).

A USSAC workshop on the Paleogene is being held at Lake Arrowhead, January 4 - 6, 1991.

Letters relating to the proposed system to facilitate the acquisition of biostratigraphic data into the Joides Resolution computer system were read. OHP biostratigraphers were asked to prepare a response.

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CASCADIA MARGIN DETAILED PLANNING GROUP FINAL REPORT

INTRODUCTION

A series of proposals for drilling in the Cascadia margin (Fig. 1) have been presented and modified in response to thematic panel input. Vancouver Island proposals have addressed progressive diffuse regional fluid expulsion from the accretionary wedge. Oregon margin proposals have addressed fluid movements focused by fractures and permeable strata. Recognizing the tectonic and geochemical thematic interest of drilling the Cascadia Accretionary Prism, but lacking the information necessary to choose those parts of the proposals of highest purity, PCOM established a Cascadia Margin Detailed Planning Group (DPG) in January, 1990. PCOM charged the DPG to examine the Cascadia Accretionary Drilling proposals and provide a prioritized plan for drilling. If the highest priorities could not be addressed in one leg, PCOM instructed the DPG to make suggestions for later drilling.

The DPG met in Quinault, Washington during August 9-11, 1990 and developed, as reported below, a minimum one-leg drilling plan (Cascadia I) that addresses the highest priority scientific issues on the Cascadia Margin in a coordinated fashion. A follow-up leg (Cascadia II) was also planned that would greatly enhance the drilling program and build upon the accomplishments of the first leg.

THEMATIC GOALS

COSOD II gave high priority to drilling convergent margin accretionary prisms because of their importance to interpretation of ancient accretionary wedges now exposed on land; to understanding the coupling of tectonic processes and fluid flow and fluid overpressuring; and because of their geochemical contribution to the budget of greenhouse gases, the chemical balance of the oceans and arc volcanism. This interest has been iterated by the thematic panels. The Tectonics Panel (TECP) has identified drilling to determine deformation processes at convergent plate boundaries as a major theme and specifically noted the importance of fluid pressure and chemical reactions in influencing tectonic deformation and processes in this setting. TECP stressed the need to establish sediment and fluid budgets in a few selected regions and the benefits of establishing downhole observatories in these same areas. The benefits of concentrating efforts on a few end-member examples has also been noted by an ODP Working Group on Drilling to Understand the Fluid Regimes of Accretionary Wedges. The Sedimentary and Geochemical Processes Panel (SGPP) has identified the circulation of fluids as a high priority, and circulation in active margins as the highest priority over the next few years. SGPP has ranked drilling in the Cascadia margin as their highest priority for 1991 drilling; TECP has ranked Cascadia drilling as their third highest priority.

SCIENTIFIC OBJECTIVES

One of the major scientific problems may be reduced to several time-dependent mass balances or budgets. Inorganic and organic compounds and water enter the prism in water-saturated sediments riding on the subducting oceanic plate. As the sedimentary wedge thickens, the organic material in the sediments is transformed by bacteria or heat, or a combination of those two factors, and breaks down, producing methane and CO_2. Deformation, heating, and volatile generation propel and pressurize the pore fluids. The scientific problem consists of defining the budget and ultimate fate of sediment, water and dissolved chemicals. The problem is complicated by the non-linear nature of almost all of the interactions. For example, pressure exerts a strong non-linear influence on permeability as it approaches lithostatic values, which, in turn, exerts a tremendous influence on the direction, rate, and style of fluid flow. Chemical precipitation and dissolution affect the permeability in a power-law

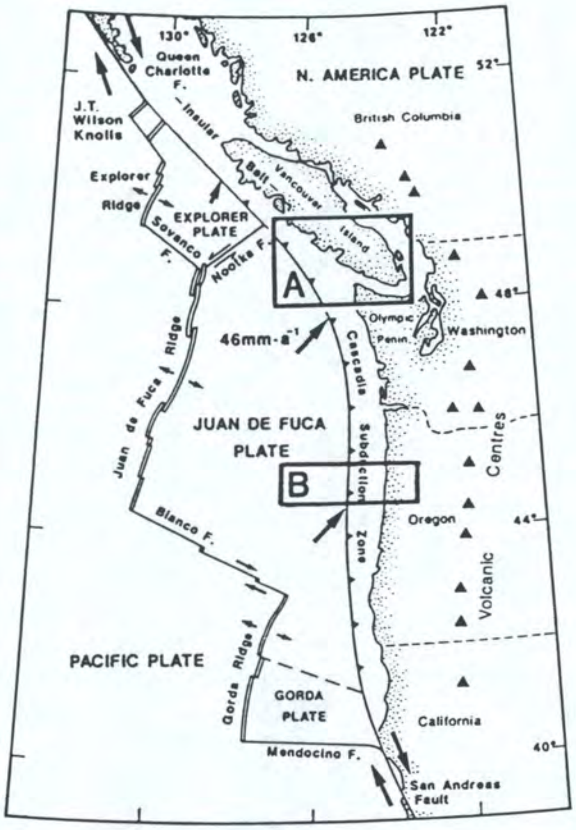

Figure 1. Continental margin of southwestern Canada and northwestern United States showing the plate-tectonic regime and main tectonic elements. (A) Vancouver Island margin and (B) Oregon margin study areas.

fashion, which can similarly affect chemical and fluid migration.
The synergistic changes in physical properties and consequent evolution of structural style caused by fluid flow is another critical scientific problem to be addressed in accretionary compexes. Porosity loss through consolidation and cementation reduces rock permeability and increases strength, which, in turn, alters the deformational style and leads to creation of alternate fluid conduits. This coupled structural-hydrogeologic system is ideally studied in accretionary prisms because in that region saturated sediments are presently being transformed to rock at high strain rates. Information gleaned from the analysis of drill cores taken from these active areas and determination of the pressure, temperature, and fluid composition conditions that pertain during deformation provides the best basis for interpretation of rocks in ancient accretionary prisms now subaerially exposed.

This DPG report describes a program that will substantially define the water and chemical mass balance, and the style of fluid movement within and through the Cascadia margin accretionary complex (Figs. 2, 3, & 5). The program will also define the synergistic structural and hydrogeologic evolution and cementation of the sediments. The Cascadia margin, as briefly summarized below, is an unusually active accretionary margin of particular societal interest and scientific accessibility. It has been particularly well surveyed in two areas from differing, but complimentary, scientific perspectives. Specifically, the coordinated program of drilling will:

(1) Measure the fraction of pore fluid expelled in a diffuse (*i.e.* not fracture-controlled) fashion (Fig. 2).

(2) Determine the source of fluids moving in fractures and determine the different geochemical consequences of the different fluid sources (Fig. 5).

(3) Determine, in a comprehensive way, how fluids control geotechnical properties and structural fabrics developed in association with the various expulsion processes.

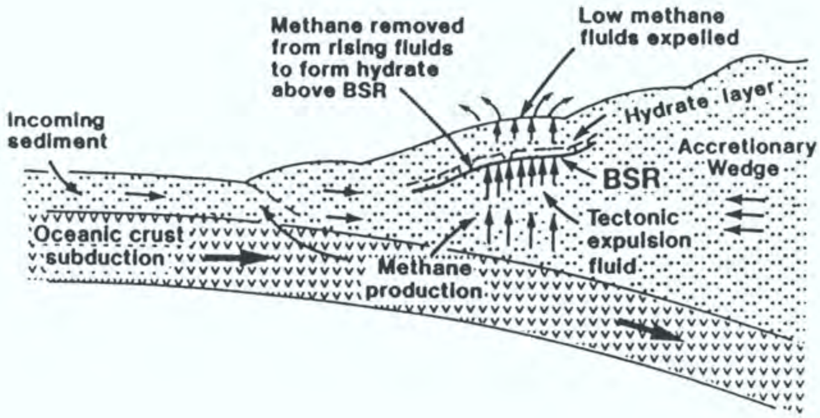

Figure 2. Schematic cross-section of an accretionary prism illustrating the fluid expulsion model for Bottom Simulating Reflector (BSR) hydrate formation.

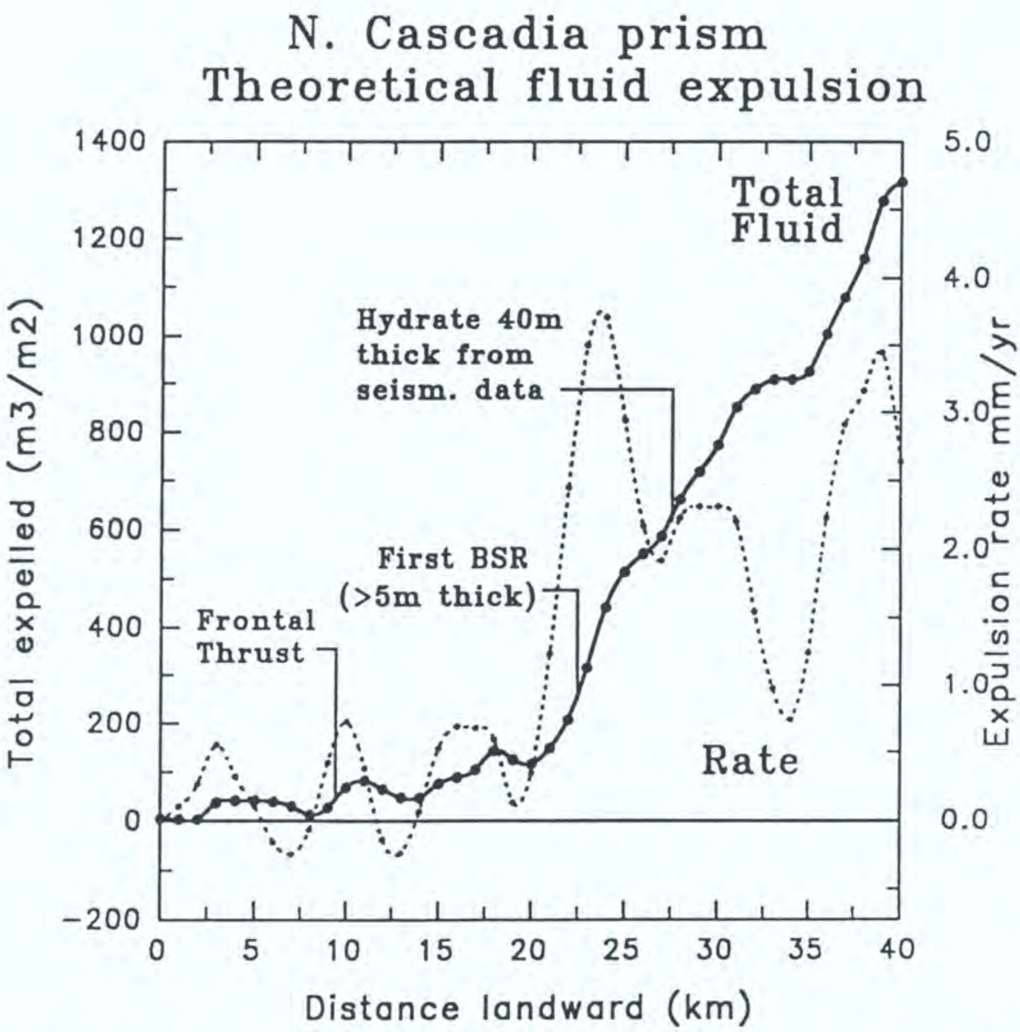

Figure 3. Simple theoretical model for progressive fluid expulsion landward across the northern Cascadia accretionary sedimentary prism. Note the inferred progressive thickening of the BSR hydrate layer.

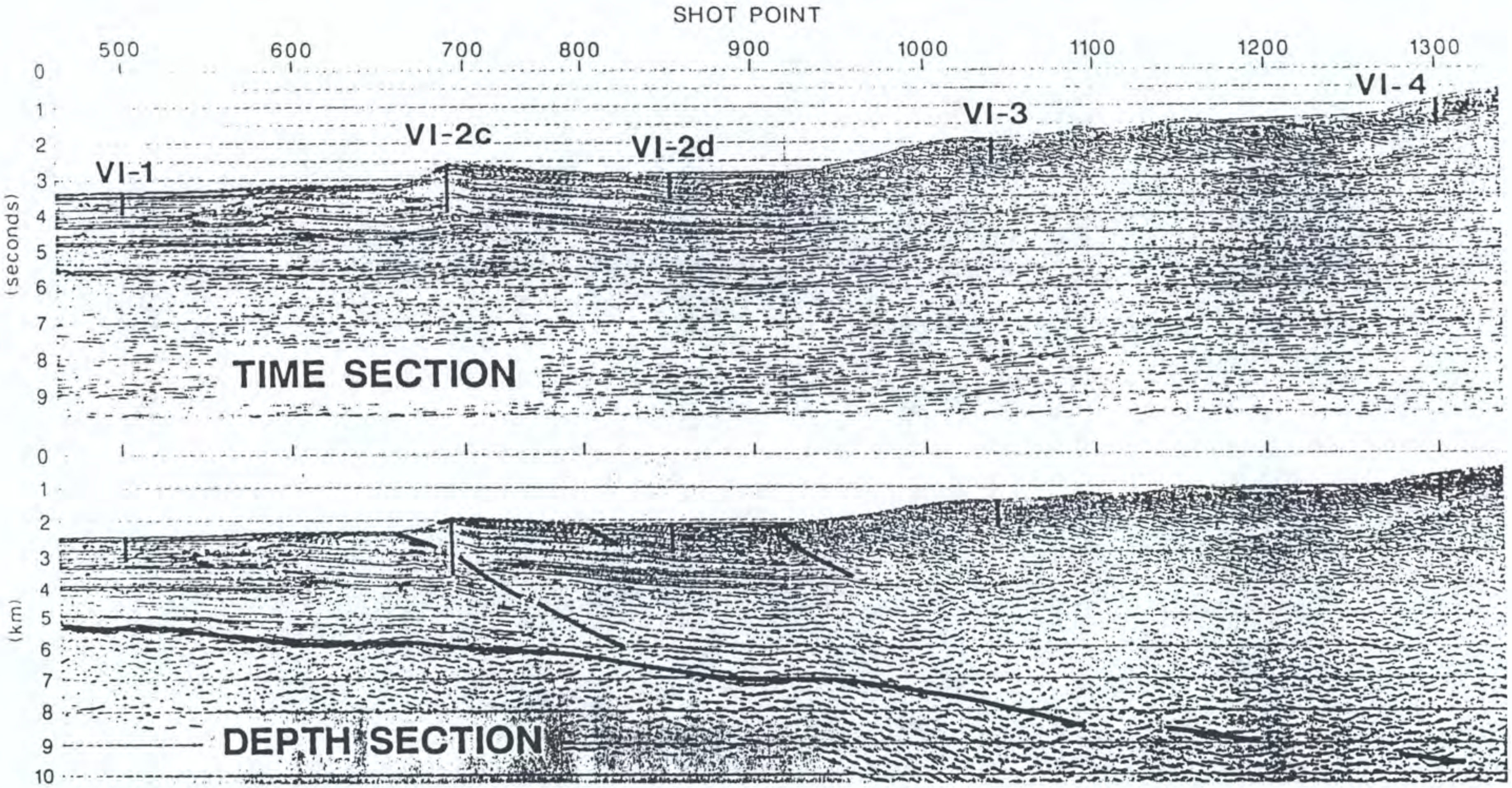

Figure 4a. Seismic section 85-01 across the northern Cascadia margin at Vancouver Island with the proposed drill sites VI-1, VI-2d and VI-3.

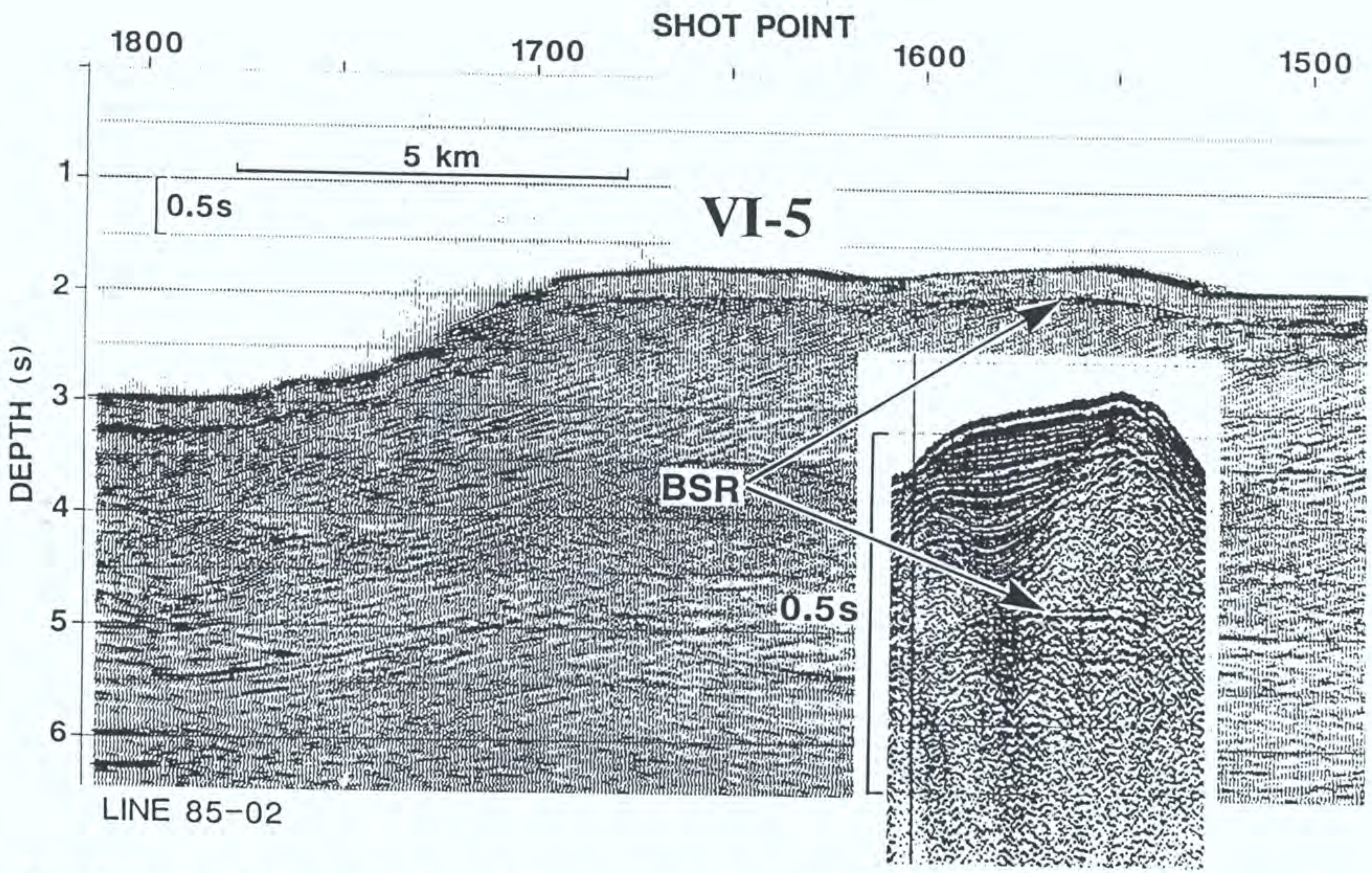

Figure 4b. Northern Cascadia seismic section 85-02 illustrating the BSR and drill site VI-5; the inset is from a single-channel seismic line.

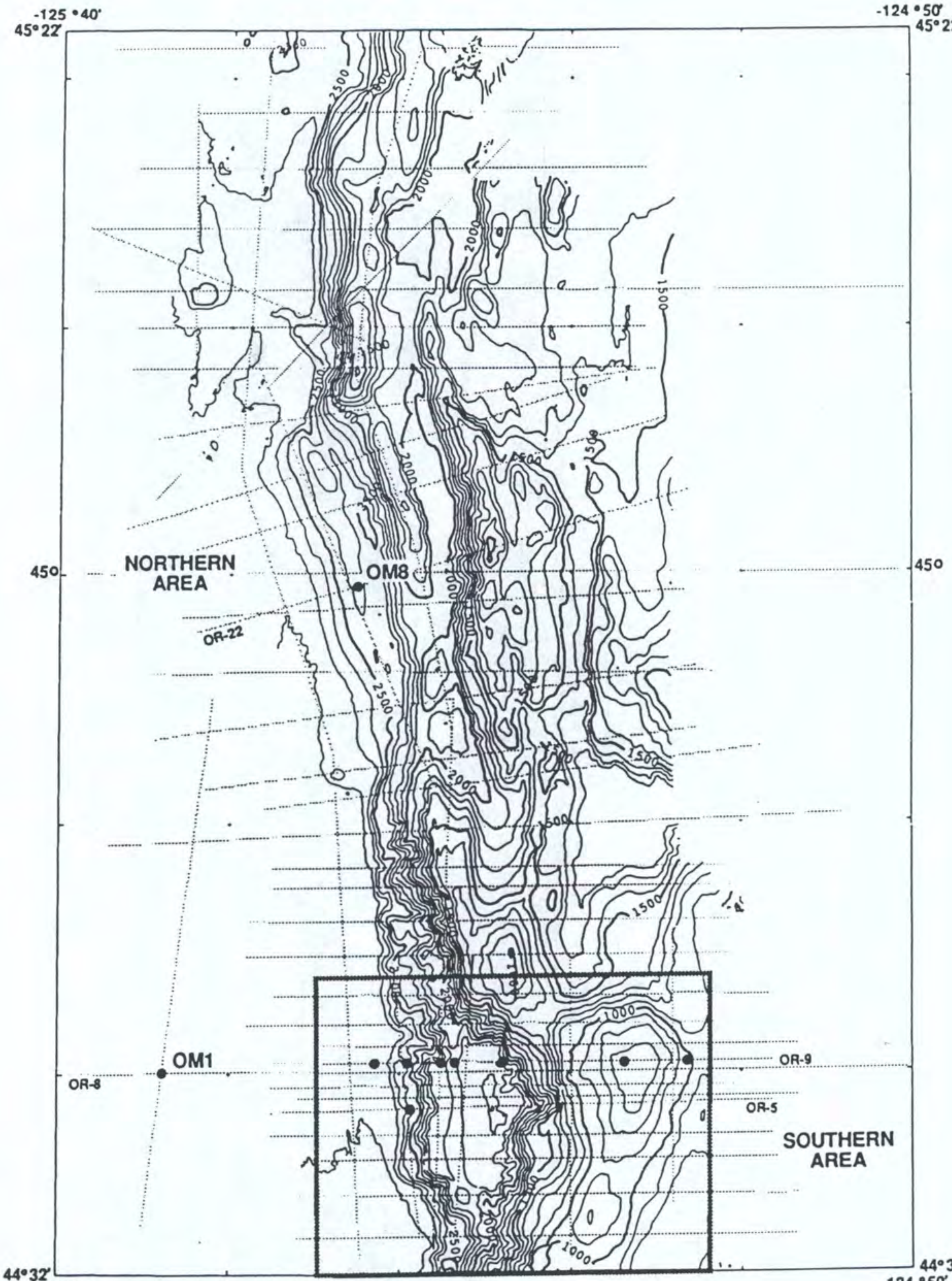

Figure 5. SeaBeam bathymetry with overlay of multichannel seismic survey (MCS) tracklines (dotted lines). Proposed drill sites indicated by OM-1 and OM-8 and solid dots inside lined box (see Figs. 7-9).

Many of the important scientific objectives of the Cascadia margin investigation can be achieved in one drilling leg. However, the DPG strongly recommends a second leg (Cascadia II) to retrieve instrumentation from the two initial observations (installed during Cascadia I), test new instrumentation in these holes, install seismic instrumentation, and, depending on the results of the long-term observatory experiments and the results of the first leg, carry out additional drilling and other critical and complementary experiments.

STRATEGY AND SCIENCE PLAN

The northern Cascadia transect drilling plan is directed at testing and calibrating three techniques for determining the progressive fluid loss and fluid mass balance across the accretionary prism. Information on the partitioning of fluid loss through diffuse expulsion and focused venting may also be obtained by the differences between the estimates that give total fluid loss and those that measure primarily diffuse loss. These essential data are required to constrain theoretical models of fluid expusion (Fig. 3). The three techniques are:

(1) The reduction in porosity landward in the wedge as inferred from seismic-velocity data. Calibration of the applicable porosity-velocity relation should be an important result. This technique gives the total fluid loss.

(2) The inferred downward decreasing temperature gradient from seafloor heat-probe data and the temperature at the hydrate bottom simulating reflector (BSR) from the hydrate stability field. Calibration of the BSR hydrate stability field should be an important result.

(3) The thickness of the hydrated sediment layer at the base of the stability field, estimated from seismic data, which is postulated to be proportional to the total fluid diffusely expelled upward. Drilling through the BSR will also provide a more general test of the new model for the formation of hydrate BSRs that depends on upward fluid expulsion (Fig. 2).

Preliminary application of this methodology of subtracting estimates of the diffuse flow (*i.e.*, over scales of several hundred meters; thermal profile, and hydrate thickness) from those of the total flow (porosity loss) suggests that at least half the water expulsion budget can be attributed to diffuse expulsion. The main outstanding uncertainties in the fluid expulsion estimates that can be addressed by drilling are: the applicable velocity-porosity relations, the true temperature-depth profiles, and thus the upward fluid advection, the temperature at the BSR, the thickness of the BSR hydrate layer, and the relation between fluid expulsion and hydrate layer thickness. The methane concentration in porewaters above and below the hydrate layer as a function of depth, the salinity and CO_2 content of the hydrate, and the amount of methane in the hydrate layer are all important additional objectives. Once the methodology is calibrated, high-resolution seismic data and heat-probe data may be employed to determine fluid expulsion over broad areas on the Cascadia margin, and on other accretionary wedges.

The second complimentary half of the Cascadia drilling program is the definition of fluid venting that is focused by fractures. Of particular interest is the fact that fluids of different origin (*e.g.* source, depth, *etc.*) appear to produce different styles of carbonate cementation with different isotopic signatures. If the pattern can be understood in the comparatively simple context of a currently active prism, much information on fluid movement and expulsion might be unlocked from the geologic record of older prisms - the classic uniformitarian geologic approach.

Preliminary results suggest that the fluid sources vary primarily as a function of distance into the prism and the type of focusing fault. For example, faults dipping toward the seaward side of the margin (landward vergent) sole just above the basaltic oceanic crust and appear to produce fluids with greater amounts of mantle helium. Vents along landward-dipping faults (seaward vergent) may tap fluids from the prism interior. Vents on the shelf (farther into the margin) appear to be more gas-rich

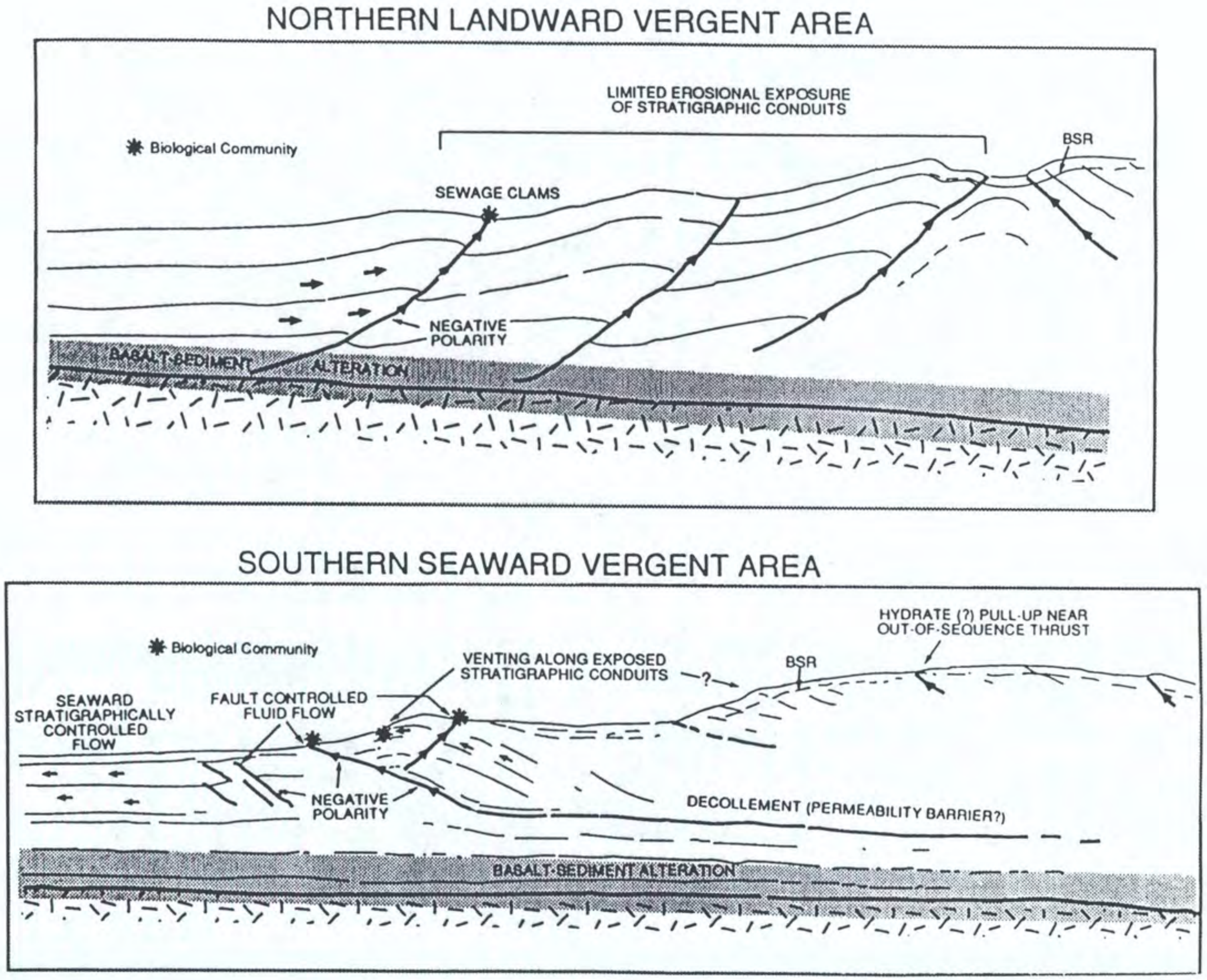

Figure 6. Conceptual cross-sections showing geologic setting and possible fluid expulsion scenarios for central Oregon margin.

TABLE 1. CASCADIA I DRILLING AND DOWNHOLE MEASUREMENT TIMES (DAYS)

Site	Priority	Location Latitude, Longitude	Water Depth (km)	Penetration (km) (days)	Drill[a] Time	STD[b] logs + FMS	WSTP 6 runs	CONE[c] PLUG	PACKER drill string	PACKER wire line	VSP	BHTV	TOTAL
VI-5	1	48°40'N 126°50'W	1350	600	3.1	1.5	0.3	4.5	0.7	0.7	1.5	0.3	12.6
VI-1	1	49°09'N 126°37'W	2500	600	4.5	1.6	0.3	-	-	-	-	-	6.4
VI-2d	1	28°16'N 126°24'W	2100	500	3.6	1.6	0.3	-	-	-	1.5	-	7.0
VI-3*	2	48°19'N 126°17'W	1350	500	3.1	1.5	0.3	-	-	-	-	-	-
OM-3	1	44°38.53'N 125°19.55'W	2655	540	3.5	1.7	0.3	4.5	0.7	0.7	1.5	0.3	13.2
OM-3A	2	44°40.37'N 125°19.55'W	2625	585	3.5	1.7	0.3	4.5	0.7	0.7	1.5	0.3	-
OM-7	1	44°40.38'N 125°07.34'W	668	300	1.6	1.2	0.3	-	-	-	-	-	3.1
OM-7A	2	44°40.38'N 125°03.12'W	1005	630	2.9	1.6	0.3	-	-	-	-	-	-
OM-8	1	44°59.55'N 125°22.22'W	2400	660	4.8	1.7	0.3	-	-	-	-	-	6.8
OM-4+	1	44°40.37'N 125°19.69'W	1020	700	4.6	1.7	0.3	-	-	-	-	-	6.6
OM-2+	1	44°40.37'N 125°21.58'W	2865	640	4.0	1.8	0.4	-	-	-	-	-	-
													55.7
												Total Time[d]:	57.7

[a] Estimates for single hole, using APC/XCB to TD or bit destruction
[b] Assumes SES
[c] Includes time to drill hole B to 500 m, set casing, and install plug
[d] Total time includes two extra days for additional downhole experiments (Geoprops/LAST)
* This site to be regarded as alternate to Site VI-5
+ Only one site between these two will be drilled, depending on results of previous sites

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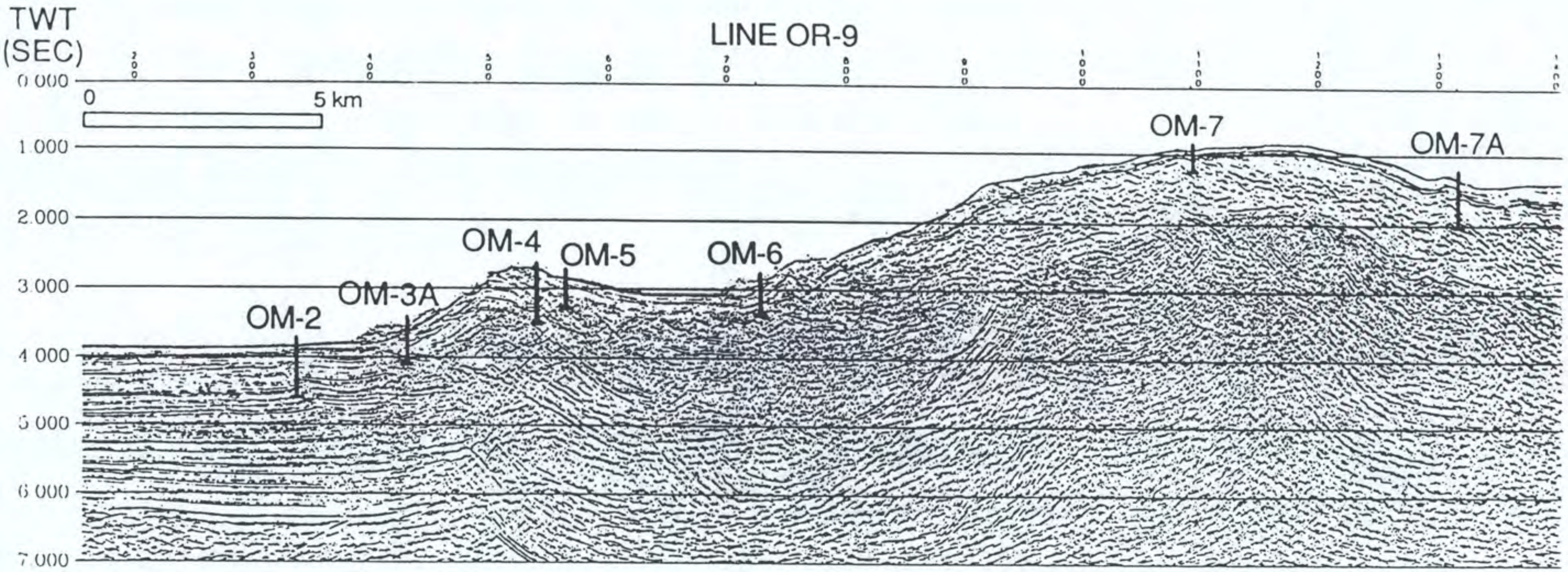

Figure 7. Multichannel seismic line OR-9 showing proposed drill sites OM-2, 3A, 4, 5, 6, 7 and 7A crossing the marginal ridge and second ridge.

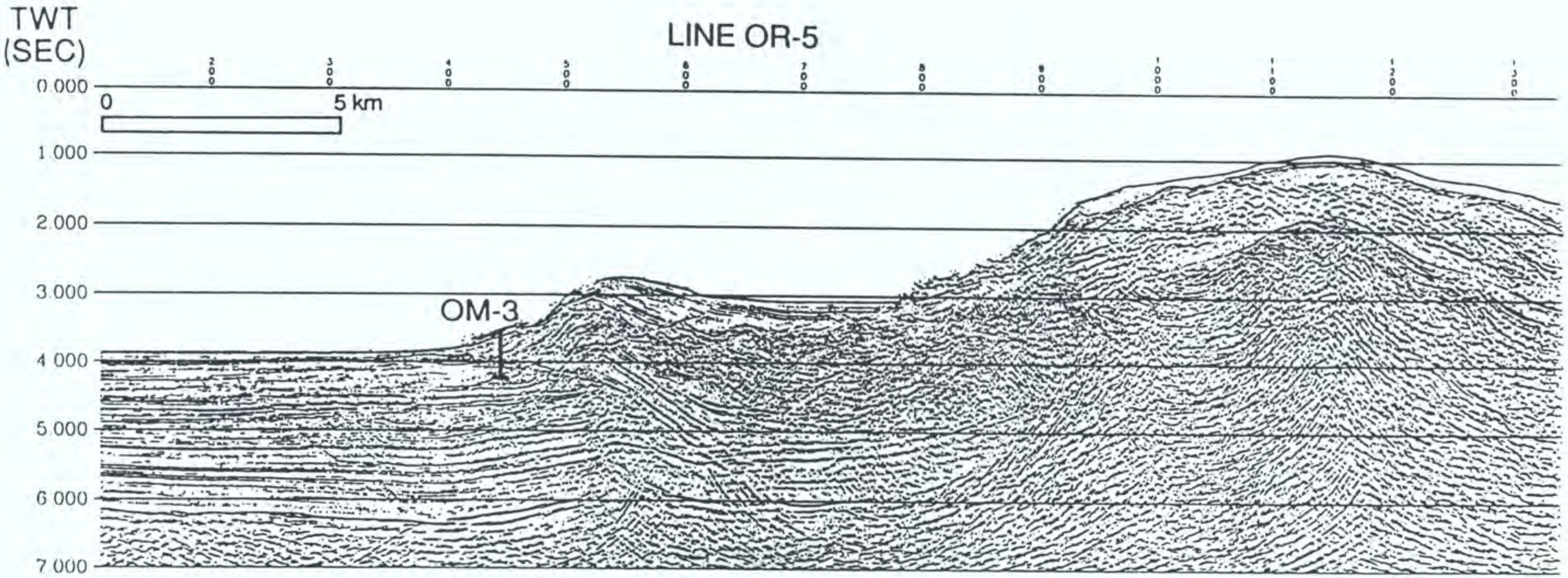

Figure 8. Multichannel seismic (MCS) line OR-5 showing proposed site OM-3 penetrating the frontal thrust.

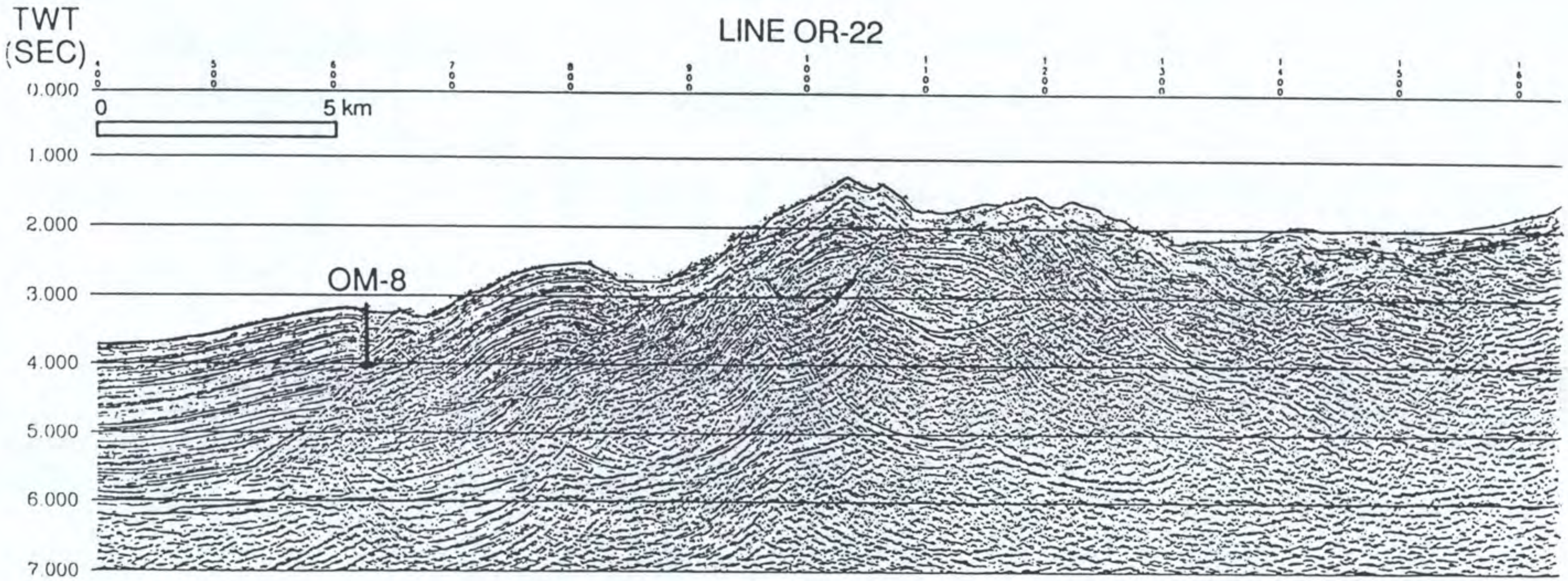

Figure 9. MCS line OR-22 showing landward-vergent structure characteristic of the northern area. Note the deeply rooting frontal thrust and reversal in vergence landward of shot point 1100.

and are characterized by periodic gas-bubble release, which builds chimneys.

The program will drill several end-member structures associated with active vents. Determination of the deep fluid chemistry, when combined with chemical-flux measurements from geochemical sampling barrels deployed by *ALVIN* at the vent sites, will allow direct measurement of the fluid flux. The approximate validity of this technique has been demonstrated by comparison to mechanical-flux measurements assuming a plausible deep-water chemistry. The technique needs to be calibrated by drilling.

In addition, core samples in the faults will sample cements that may record the history of fluid venting. Fabric analysis will reveal much about the history of fault movement, especially if the fabric can be related to cement paragenesis or otherwise dated.

The Cascadia I leg is proposed to start with the highest priority site on the Vancouver Island margin profile, the hydrate calibration hole (VI-5; Figs. 4a & b). This hole will be cased and fitted with a reentry cone for logging. Upon completion of the scientific work it will be plugged with an instrumented bore-hole seal to monitor long-term changes in pore pressure and temperature. The change in porosity in the area will then be addressed by drilling a reference hole in undeformed sediments and holes in the coherent and incoherent stages of sediment deformation.

After 26 days, regardless of the progress of this initial portion of the program, the ship will move south to the Oregon margin and emplace a similar observatory in the frontal thrust that taps the basal décollement (Figs. 5-7, & 9). The remainder of the leg will address a seaward dipping fault which extends to basement (Figs. 5, 8), a fault in an older portion of the prism (associated with a domed hydrate horizon), and venting associated with proto-deformation seaward of the prism toe. Although it is more difficult to assess the integrated rate of fracture venting because of the high variability, it is expected that the results will allow a first-order inventory. Areal mapping of the carbonate cements with GLORIA and SeaMARC-1A sidescan sonar profiling will assist the inventory. The history of venting inferred for deep cementation will be particularly important in this regard.

The overall result of the leg should be an excellent first assessment of the fluid and chemical budget of an important accretionary margin, and the installation of two observatories with the potential to indicate the temporal variability of margin hydrogeologic processes as well as carrying out long-term permeability experiments and obtaining fully equilibrated temperatures.

ADVANTAGES OF THE CASCADIA MARGIN

The Cascadia margin has several features that make the scientific studies required to assess the mass-balance relations particularly feasible.

(1) The margin is shallow. Water depths in the active accretion zone are less than 3 km, and in places less than 1 km. The shallow water depths significantly reduce drilling time, but more importantly allow stacking velocities from a normal-length seismic streamer to be used to determine the accurate sediment velocities and thus porosity. Also at the shallow depths of the Cascadia margin, the stability of the saline hydrates containing CO_2 that are likely to be found can be addressed with little extrapolation of laboratory data.

(2) In the critical areas, a uniform layer of hemipelagic sediment covers the margin, allowing unusually complete and high-resolution heat-flow surveys.

(3) The prism is one of the most intense in terms of fluid and volatile expulsion. This is because the mass flux of sediments into the prism is large and because, due to ocean upwelling at this eastern Pacific site, the organic content of the sediments is large. The large fluid and volatile flux increases all signals (for example, the thermal perturbation signal is resolvable), and thus reduces the errors in the mass-balance calculations.

(4) The Cascadia margin is unusual in its widespread carbonate cementation. These cements, which probably play an important role in the evolution of

permeability across the prism, also provide a historical record of fluid flow and composition.

(5) Potentially key variables differ along the strike of the margin. This feature may be particularly important for subsequent investigations. Convergence rate increases by a factor of 4 from south to north along the margin as the strike-slip component of convergent motion is reduced to nearly zero. Fault vergence changes from landward to seaward and back. Some faults penetrate to basement while others sole out in the sedimentary section.

(6) The margin is particularly close to major ports and oceanographic institutions. This is important for the servicing of observatory instrumentation, and increases the relevance of the monitoring and tectonic investigations that could relate to earthquake prediction.

(7) Parts of the Cascadia margin are exceptionally well surveyed with closely spaced seismic coverage, seismic refraction, heat flow, GLORIA and SeaMARC I and II coverage, and accurate high-resolution heat-flow surveys. More than 40 *ALVIN* dives to active vents (defined by biologic communities) off Oregon allowed definition and mapping of prevalent carbonate pavements associated with the vents.

(8) The main groups of proponents have addressed the margin from complementary perspectives. The DPG considers this healthy competition and difference in viewpoint a particular advantage.

Perhaps the most unique aspect of Cascadia compared to other siliciclastic accretionary margins is the measurable diffuse discharge. The diffuse expulsion, as contrasted to focused venting, is uniquely susceptible to quantitative measurement at Cascadia and appears to be a significant fraction of the total expulsion there. Once diffuse expulsion is determined, focused discharge can be obtained by subtraction from the total compactive expulsion. Quantitative determination of focused venting is difficult to estimate by local measurements because of its high areal and temporal variability.

DRILLING PLANS

Table 1 presents the plan for the Cascadia I drilling program. The holes are listed in order of priority for both the Vancouver and Oregon transects. After 26 days, the ship will transit from the Vancouver to the Oregon sites. The objectives of each drill hole are discussed below.

Vancouver Island Margin Progressive Fluid Expulsion Transect

Drilling along the Vancouver Island transect will concentrate on diffusive fluid flow through the accretionary prism and will test the gas hydrate model described in Figure 2. The proposed sites (Figs. 4a & b; Table 1) were selected from a list of sites described in the gas hydrate proposal recently submitted to JOIDES, and older JOIDES proposals 237/E, 317/E , and 317/E Addendum.

VI-1: Cascadia Basin deep-sea reference site

The operations plan specifies an approximately 500-m single-bit hole; coring, standard logging, good HPC and WSTP temperatures, and limited geotechnical measurements.

This site provides a reference for the velocity-porosity relation and the porosity-depth function of the incoming sedimentary section prior to accretion and deformation. It also gives the reference temperature-depth and heat-flow profile, and pore-fluid geochemistry.

VI-2d: Region of coherent seismic stratigraphy landward of main deformation frontal thrust

The operations plan specifies an approximately 500-m single-bit hole; coring, standard logging, good HPC and WSTP temperatures, and geotechnical measurements; a VSP is desirable. This site documents the porosity reduction and associated physical properties changes resulting from the initial "coherent" phase of deformation. In this zone there are well defined and separated thrusts that cut through most, if not all, of the sedimentary section. The porosity loss and temperature-depth data will document the total fluid loss and the rate of expulsion. Multichannel seismic velocity and velocity-porosity relations will be calibrated. Core and downhole measurements will determine the change in physical properties and pore pressures associated with the fluid expulsion.

VI-5: Hydrate Hole

The operations plan specifies an approximately 700-m hole with casing for long-term monitoring instrumentation and packer pore pressure measurement; coring, logging, good HPC and WSTP temperatures, detailed downhole geotechnical measurements, and VSP.

The three techniques for gephysically (remotely) determining fluid expulsion, *i.e.*, the porosity loss from velocity, the thermal technique and the seismically determined thickness of the hydrate layer should all be compared and calibrated in this hole.

The site is located in a region of incoherent deformation, where the prism has doubled its incoming thickness and where there is a continuous and clear BSR meeting drilling safety requirements. This site defines the distribution of hydrate associated with the BSR, determines the concentrations of methane, CO_2 and other pore fluid constiuents as well as differences in sediment diagenesis above and below the BSR, and calibrates seismic inferences about BSRs. This hole tests the fluid expulsion model for BSR hydrate formation. This is the top-priority hole in the Vancouver Island margin, and should be drilled first. After coring and measurement it will be sealed with the instrument to monitor downhole temperature and fluid pressure. It will then become one of the two downhole observatory holes to be established on the leg.

If the hole cannot penetrate the BSR for safety reasons, it should penetrate into the hydrate layer as close to the BSR as possible (<300 m, single bit) and VI-3 should penetrate to greater depth elsewhere in the incoherent deformation zone where there is no BSR, to meet the other fluid expulsion objectives.

VI-3: Region of incoherent deformation where prism has doubled its incoming thickness

The operations plan specifies an approximately 700-m hole, cased for long-term measurements, with coring, high-quality logging and downhole fluid sampling and measurement, good temperatures, geotechnical measurements, and VSP. This site documents the porosity reduction and associated physical-properties changes resulting from the phase of pervasive "incoherent" deformation. The porosity loss and temperature-depth data will document the total fluid loss and the rate of fluid expulsion, and calibrate the regional seismic-velocity and thermal techniques for expuslion monitoring. The hydrate objectives may be incorporated in this hole. If a BSR cannot be penetrated for safety reasons, this hole must be sited in incoherent deformation zone where the BSR is absent.

Oregon Margin Focused Fluid Expulsion Transect

Drilling spanning the Oregon margin will concentrate on conduits of focused fluid flow occurring principally along faults (Fig. 6). The overall goals of the program are to study the synergism of fluid flow and structural evolution and evaluate how flow may affect the geochemical cycle. The proposed drill sites will examine the frontal thrust in two areas, first, where it roots in a décollement beneath the accretionary prism and, second, where it verges landward and penetrates completely to the young, hot oceanic crust. The fluid and structural evolution in the frontal thrust will then be compared to up-slope sites through a backthrust in the hanging wall of the thrust and an out-of-sequence thrust 15 km landward. Every site will penetrate a conduit traced from a surface vent or a conduit that shows an acoustic signature consistent with high fluid content or fluid flow (negative polarities or upward deflection of a hydrate layer).

The proposed sites (Figs. 7-9; Table 1)

are selected from a more extensive list in the August, 1990 revision of the Oregon Margin drilling proposal, recently submitted to JOIDES, and older proposals 233/E and 233/E Revision-2. The sites are located in seaward and landward vergent areas of the, respectively, Southern and Northern Areas of Figure 6.

Sites OM-3 & 3A: Penetration of the frontal thrust and sources beneath the accretionary prism

Site OM-3 or OM-3A, penetrating the frontal thrust, will test whether it and the associated décollement provide a conduit for deeply sourced fluids (Figs. 7, 9). Site OM-3, on seismic line OR-5 (Fig. 9), has a high probability of encountering active fluid flow because the frontal-thrust zone in that region supports a vent biological community and a significant amplitude anomaly with probable reversed polarity is observed along the fault. Site 3A, on line OR-9, also shows a significant amplitude anomaly, but the frontal thrust was barren of biological activity in a 1984 *ALVIN* dive program, indicating no active fluid expulsion (Fig. 7).

Drilling will encounter the frontal thrust between 400-500 m. If active fluid flow is confirmed by geochemical or temperature anomalies, the hole will be cased through the thrust and a packer will be set in a perforated interval to determine fluid pressure and permeability in the thrust. Finally, the borehole will be plugged with the instrumented borehole seal.

Sites OM-7 & OM-7A: Fluid flow from older sources, out-of-sequence thrusts

Sites penetrating the out-of-sequence thrusts cutting the second ridge will examine the fluid flow and synergistic structural evolution from sources in the older, more structurally evolved portion of the accretionary prism (Fig. 7). On the second ridge, the principal drilling targets are two areas of very high back-scatter in SeaMARC-1A and GLORIA images that correlate with faults on the seismic lines. It is believed that back-scatter patterns may reveal carbonate deposits or winnowed sand around vents and, therefore, proposed sites OM-7 and OM-7A on Line OR-9 should penetrate the faults. The fault at OM-7 cuts the slope cover and is associated with a pull-up in the hydrate; this hydrate pull-up suggests active fluid flow which would bleed off any fluid trapped within the hydrate. Site OM-7 would be cored and logged.

Site OM-8: Fluid from the oceanic crust

Site OM-8, located on Line OR-22 (Fig. 8) penetrates the frontal thrust of the landward vergent area and would determine if fluids can have sources near the oceanic crust through a thick sedimentary section. In this region the frontal thrust roots within several tenths of a second above the oceanic crust under nearly 4 km of sediment. The oceanic crust is young (9 m.y.) and presumably hot, and probably still undergoing alteration at 200-300°C. The goal is to ascertain how these young, hot fluids alter and otherwise affect the structural evolution of the fault. The occurrence of clam beds along this fault and the high-amplitude reversed polarity reflections at depth both argue for active fluid flow. Total drilling depth is estimated at about 700 m. This site would be drilled and logged utilizing the GEOPROPS and LAST tools.

Site OM-4: Evolution of fluids in the hanging wall of the backthrust

Site OM-4, located on Line OR-9, is designed to evaluate the source depths for the fluids and to determine whether the fluids flow up the backthrust, perhaps from its anastomosing intersection with the frontal thrust (Fig. 5). From a geochemical perspective, the site would examine fluid evolution in the hanging wall of the frontal thrust. Additionally, site OM-4 could provide information on the permeability structure of the fault and ascertain how it might capture fluid flow from the adjacent stratified rocks.

The topographic slope marking the trace of the back thrust in the seaward vergent area supports several well developed active vents with biological communities, cabonates, and methane- or hydrogen sulfide-bearing fluids, or both. Site OM-4 would involve standard drilling, coring and logging. If GEOPROPS is available, pore pressure and pemeability measurements will be made.

DSDP Site 174: Reference Site

The Cascadia drilling program does not explicitly include a reference site. However, DSDP Site 174 is located along the transect (about 100 km seaward of the deformation front) on the Astoria Fan and will provide useful baseline data. Site 174 penetrated 879 m, nearly reaching the oceanic crust. The site includes basic physical-property measurements, as well as determinations of the isotopic composition of methane and carbon dioxide. If the Cascadia I leg demonstrates exciting results off Oregon, a complete reference site is anticipated in a follow-up leg (Cascadia II).

STRATEGY FOR CASCADIA I DOWNHOLE-MEASUREMENTS PROGRAM

Downhole Measurements

The downhole-measurements program at Cascadia has three major goals: fluid, dissolved gas, and methane hydrate sampling; (2) measurement of sediment physical and geotechnical properties; and (3) the contruction of temperature *vs* depth profiles under *in situ* conditions in the drillholes (Table 1). Many of the more important parameters are collected redundantly and are complementary to core measurements so that a single tool failure will not jeopardize the entire program.

Much of the *in situ* sampling will be carried out using the WSTP during drilling; together with the HPC-T recorder, these will be the primary tools used to measure subsurface temperatures. The pressure core barrel will be deployed during coring to bring back solid samples and hydrates for analysis. Additionally, the wireline packer will collect larger fluid samples from intervals of interest. All of these samplers retain *in situ* pressure so that dissolved gases can be studied.

The standard suite of ODP logging tools will provide high resolution profiles of the physical properties (sonic velocity, porosity, electrical resistivity, and density) and lithology (elemental composition) needed to assess the progressive dewatering and cementation of the accretionary prism. They will also be used to calibrate geophysical observations, especially for the velocity-porosity correlation, which provide the regional framework describing this margin. To further calibrate the reflection seismic profiles, the planning group recommends that vertical seismic profile experiments (VSP) be carried out at the two long-term monitor sites and at VI-2d. The planning group also recommends that all holes be logged with the Formation Microscanner (FMS) to image sedimentary structure and hole elipticity in general, but, in particular, to image the structure of the clathrate sections and fault planes. The high resistivity contrast between hydrates and normal deep-sea sediments and the stabilizing effect of hydrates on the borehole should make the imaging task simple to perform.

While the FMS is useful for imaging sedimentary structure and fracture, it cannot provide total coverage of the borehole. For this reason, the group recommends bore-hole televiewer (BHTV) logging of important intervals where structural orientation is of critical interest. A new digital BHTV is being tested on Leg 134, and should be available for Cascadia drilling.

The changes in geotechnical properties associated with progressive fluid loss will be measured *in situ* by the Lateral Stress Tool (LAST1 and LAST2) and the GEOPROPS probe, as well as through core measurements.

Changes in downhole heat-flow gradients and the regional pattern of heat flow on the Cascadia margin are extremely important for assessment of fluid expulsion rates and diffuse *versus* focused fluid flow. *In situ* temperature will be measured in each of the holes with the APC temperature shoe and the WSTP during the drilling phase. Temperature logs will be collected on each of the standard logging runs; the multiple temperature logs can be used to estimate equilibrium gradients in the sedimentary section. The high-resolution temperature profiles will also delineate zones of fluid flow into the borehole as distinct temperature anomalies.

Long-Term Monitor Sites

The long-term monitor sites are a major focus of the downhole measurements program. They will be loci of major logging and fluid-sampling efforts, and will also be used to measure geotechnical properties of the accretionary prism. Each monitor site will have a minimum 500-m-deep cased hole, to be perforated at zones of interest for fluid studies. During the first leg, each monitor hole will be packed off in casing for a hydraulic seal now being developed for use on the sedimented ridges drilling program, Leg 138.

The hydraulic seal will have an attached thermistor chain, differential pressure-measurement and fluid-sampling capability. The data and fluid samples can be collected by either the drillship or a submersible.

The pressure measurements will provide a long-term estimate of the permeability, based upon the recovery of borehole pressure through time in the sealed hole; while both temperature and pressure time series will provide information about long-term variation in fluid flow and also an estimate of fully equilibrated temperature and pressure.

TECHNICAL ASPECTS

Subduction complexes have proven to be difficult environments for drilling. Hole collapse has severely curtailed the downhole measurements program on several ODP and DSDP legs; this working group has designed the Cascadia drilling to minimize these problems. On Leg 131, the most recent subduction-zone drilling in the Nankai Trench, technical difficulties associated with hole stability were substantially increased because of drill-pipe "strumming" induced by the strong Kuroshio Current. The majority of downhole measurement failures were caused by instruments being vibrated apart while passing down the drill string. Nevertheless, hole closure was also a serious obstacle to the successful completion of the downhole measurement program; possible causes that resulted in hole collapse during Leg 131 included clay swelling, formation overpressure, and high formation stress.

Environmental conditions at Cascadia should be much better than at Nankai for two reasons. First, the surface currents off Cascadia are weak and variable, thus drilling in this margin will not face the formidable "pipe-strumming" problem that caused such damage at Nankai. Second, the lithology of Cascadia is much more favorable to hole stability. DSDP Site 174 in the Cascadia Basin and Site 175 on the Oregon subduction complex during Leg 18 both had good hole conditions, and showed no evidence of swelling clay problems. Unconsolidated sands hampered core recovery but did not affect drilling, as there seemed to be sufficient mud interbeds to maintain the hole. However, drill-in casing should be available on Cascadia drilling legs in case unconsolidated sands should prove to be a problem. This technique proved successful for stabilizing the upper 100 m of unconsolidated material at Nankai. Diagenetic carbonate cementation will also help stabilize the Cascadia drill holes: The lower unit of Site 175 (120-233 mbsf) is a firm mudstone cemented with carbonates; surface observations on core and exposed canyon outcrops on the Oregon margin indicate that cementation in the area is pervasive.

Hole closure at Nankai could also have been associated with formation overpressure. To maximize the potential for success, the first leg of drilling will be devoted to shallow objectives (300-700 mbsf) which present fewer technical difficulties and are less likely to be affected by formation overpressure. Packer experiments will be carried out in perforated casing at the two cased long-term monitoring sites (Table 1); the monitor program itself depends only upon the successful emplacement of the reentry cone and casing. The newly redesigned side-entry sub (SES) will also make logging operations safer and more efficient. More ambitious objectives have been left for a second leg of drilling, which can be carried forward more easily based upon the results of the first leg.

Given the above considerations, the Cascadia DPG believes that the proposed program has a high potential for success; however, it recognizes that the problems dependent upon hole stability in accretionary prisms are still realizable at Cascadia. While the planning groups knew of some technical means of stabilizing holes (*e.g.* the use, after drilling, of heavy mud and KCl), none of the members of the DPG are experts in hole stability. Thus the DPG endorses the recommendation of the DMP that a working group consisting of the co-chief scientists, TEDCOM members, and TAMU engineers continue to explore means to maximize hole stability well before drilling on Cascadia commences.

CASCADIA II DRILLING PROGRAM

The second Cascadia drilling leg will follow the first leg by about two years and will provide the opportunity to: (1) update and expand the downhole observatories; (2) conduct a comprehensive geotechnical program; and (3) establish reference sites for the fluid-geotechnical transect off Oregon. Cascadia II drilling will occupy 4-5 sites (Table 2).

A top priority for the second leg will be to reoccupy the downhole observatory sites, retrieve and redeploy the pressure-temperature instrument packages. Emplacement of downhole seismometers for long-term monitoring of subduction-zone seismicty is a high-priority objective. Downhole tiltmeters would also provide useful long-term information on local deformation. The GEOPROPS and LAST-2 instruments should be fully operational and reliable by the time of Cascadia II. Extensive use of these instruments is planned for the several new holes that would be drilled on the second leg, providing a comprehensive geotechnical measurement program. This program would yield high-resolution data on the vertical evolution of physical and mechanical properties at several sites. When integrated with data from the Cascadia I sites and seismic velocities, this data set will define, for the first time, the lateral gradients in physical and mechanical properties across an accretionary prism.

DSDP Site 174 undoubtedly will provide a useful seaward reference for the Cascadia I sites, but drilling a seaward reference site is of high priority for Cascadia II. This site will establish a baseline reference for physical- and mechanical-properties measurements across the Oregon prism.

The proposed drill sites for Cascadia II are as follows:

(1) A 1-km-deep hole will be drilled in the abyssal plain off Oregon (OM-1) to provide baseline data on fluid contents and physical and mechanical properties. Extensive use will be made of geotechnical instruments at this site.

(2) A 700-m-deep hole will be drilled into the proto-thrust zone off Oregon (OM-2) in order to sample fluids being expelled seaward of the frontal thrust and to document changes in physical and mechanical properties in the proto-thrust zone. This site would be a candidate for an additional downhole observatory.

(3) A second hole would be drilled near Cascadia I Site OR-3 which would penetrate the frontal thrust at a different depth. This hole would provide information on fluid-flow rates as well as additional structural and physical-properties data around the frontal thrust. The single-bit hole would be drilled to about 900 m.

(4) A second hole would also be drilled at the Vancouver BSR site (VI-5) to further test the diffuse-flow model for BSR formation. This hole would attempt to penetrate the hydrate zone in an area without a clear BSR for comparison to site VI-5, which will penetrate a strong BSR. This hole should be drilled to at least 1 km. The hole will provide additional structural data in the zone of incoherent deformation and directly evaluate the effect of hydrate on diagenesis.

(5) A landward reference hole will be drilled on the Oregon margin upper slope to document the subsurface geology in this region of poor seismic imaging, and provide a tie to extensive land geological studies. The hole would be drilled to about 1 km, and would be cased and instrumented.

TABLE 2. CASCADIA II DRILLING AND DOWNHOLE MEASUREMENT TIMES (DAYS)

Site	Water Depth (km)	Penetration (km)	Drill Time (days)	STD logs + FMS	WSTP 6 runs	Cone Plug	Packer	VSP	Geop. LAST	BHTV	Objectives	Comments	Total
OM-2	2865	700	4.1	1.8	0.4	-	-	1.5	1.5	-	protothrust	one hole APC/XCB	9.3
OM-13	2050	900	9.9	2.0	0.4	0.5	1.0	1.5	1.5	0.3	downdip penetration of fault	two holes, one cased to 500 mbsf	17.1
OM-1	2900	1000	10.8	2.3	0.4	0.5	1.0	1.5	1.5	-	reference hole	two holes, one cased to 500 mbsf	18.0
OM-11	500	1000	7.6	1.5	0.4	0.5	1.0	1.5	1.5	0.3	landward site	two holes, one cased to 500 mbsf	14.3
VI-10	1350	700	3.4	1.8	0.4	-	-	1.5	1.5	0.3	complement to BSR site	one hole APC/XCB	8.9
												Total:	67.6

Energy, Mines and Resources Canada — Énergie, Mines et Ressources Canada

Earth Sciences — Sciences de la Terre

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V8L 4B2

Centre géoscientifique du Pacifique
9860, chemin Saanich ouest
C.P. 6000
Sidney, C.-B
V8L 4B2

000237

Your file Votre référence

Our file Notre référence

90-11-14

Dr. James Austin
JOIDES Office
Institute for Geophysics
University of Texas at Austin
4701 Mopac Blvd.
Austin, Texas 78759

Dear Jamie:

Thank you for your invitation to come to the upcoming Planning Committee meeting to present the work of the East Pacific Rise Detailed Planning Group. I will be coming to the meeting with a final version of the group's report for distribution. This will incorporate the comments from the Lithosphere Panel and, I hope, revised operation time estimates as provided by the ODP engineering group.

Sincerely,

Earl E. Davis
Pacific Geoscience Centre

Canada

000238

Copy to: 000239
✓A. Maxwell via
J. Austin
J. Baker

THE WHITE HOUSE

WASHINGTON

October 31, 1990

NOV 5 1990

Dear Professor Helsley:

In December 1989 you wrote to me concerning Soviet participation in the Ocean Drilling Program. Since that time we have studied that question carefully. I am pleased to write to you on this occasion to inform you that, on behalf of the Government of the United States of America, I have extended an invitation to the Soviets to participate in the Ocean Drilling Program.

I am sure, from the enthusiasm of your letter and your firm conviction that the Soviets should participate, that this news will please you as immensely as it does me.

Thank you again for your interest in this matter and for writing to me to express your view. I look forward to excellent cooperation with the Soviets in the ODP and to marvelous results.

Sincerely,

D. Allan Bromley

D. Allan Bromley
Assistant to the President
for
Science and Technology

Professor Charles E. Helsley
Director
School of Ocean and Earth Science
and Technology
University of Hawaii
2525 Correa Road
Honolulu, Hawaii 96822

000240

NATIONAL SCIENCE FOUNDATION
1800 G STREET, N.W.
WASHINGTON, D.C. 20550

DIVISION OF OCEAN SCIENCES
OCEANOGRAPHIC CENTERS AND FACILITIES SECTION

M E M O R A N D U M

November 05, 1990

TO: ODP Council Members

FROM: D. Heinrichs, HEAD OCFS

SUBJECT: USSR Membership in ODP

Dr. D. Allan Bromley, Assistant to the President for Science and Technology, extended an invitation on November 2 on behalf of the government of the United States to the government of the Union of Soviet Socialist Republics to participate in the Ocean Drilling Program. Individual letters went to Academician Marchuk, President Academy of Sciences, Academician Laverov, Chairman State Committee for Science and Technology, and Academician Ossipyan, co-chair of US-USSR Joint Commission in the field of Basic Scientific Research. The USSR Academy of Sciences is identified as the implementing agency.

Dr. Frederick M. Bernthal, Acting Director NSF, also sent an invitation from NSF with a draft Memorandum of Understanding to Academician Marchuk. The draft MOU maintains the open scientific principles embodied in the existing MOU's and includes the standard levels of participation, advice, and financial support. The next step required is a response from the USSR Academy of Sciences with dates of initiation and a formal signing of the MOU. I am optimistic the final arrangements for Soviet membership will be completed within the next several months.

In closing, I wish to thank you for your support during this long and arduous discussion within the U.S. government. The unanimous endorsement of Soviet participation by the international community was of major assistance to issuing the invitation.

Donald R Heinrichs

cc: JOIDES Office
JOI, Inc
Texas A&M

FOR YOUR INFORMATION

Heinrichs, Brown, J. Austin, JOI Board

RECEIVED OCT 1 9 1990

000241

October 15,1990

Prof.Dr.James Baker
Dean
JOI

Dear James:

This is the reply to your letter dated on Sept.10.

By now,I presume that you might already receive several Japanese docummemts with one translation in English which contain articles of Japanese Deep sea drilling vessel planning.

I sincerely appreciate your invitation to your meeting First Tuesday" seminar.

April 2 may be good time for me.

But,still,it is not certain yet.

That means the content of my presentation.

Just recently,we got a news that Russia is constructing the deep sea drilling vessel which may be in operation in 1993.

If this is a fact,it may affect on the Japanese plan.

So that,let us contact each other continuously.

Awaiting for your favor,

Sincerely yours

Noriyuki Nasu

Noriyuki Nasu
12-27-301
Yochomati
Shinjuku-ku,Tokyo 162
Japan

000242

THE UNIVERSITY OF NORTH CAROLINA
AT
CHAPEL HILL

Department of Geology
919-966-4516

CB# 3315, Mitchell Hall
The University of North Carolina at Chapel Hill
Chapel Hill, N.C. 27599-3315

Dr. James Austin, Jr., Chair
Planning Committee
Institute for Geophysics
University of Texas
Austin, TX 78759-8345

September 1, 1990

Dear Jamie,

This letter summarizes the results of a session which was held at the Cretaceous Rhythms, Events and Resources (Global Sedimentary Geology Program Project CRER) meeting in Denver, August 19-24 to consider future Cretaceous objectives in ODP. In attendance were over 100 members of the international scientific community who work on Cretaceous problems. Our group discussed the following subjects.

A. Our number one priority among existing drilling proposals is the Pacific Guyot drilling program. We wish to stress that this program will address several objectives which are common to thematic goals in COSOD I and II, your Long Range Plan (May, 1990), and the CRER white paper. These include determining:

1. The timing of major atoll drowning in the Cretaceous and associated causes.
2. Growth rates, anatomy and facies relations of different parts of Cretaceous atolls by drilling in lagoonal, reefal and apron sequences.
3. Regional tectonics and subsidence histories of the Pacific Superswell and Darwin Rise.
4. Sea level chronostratigraphy and magnitude of sea level changes independently, if tectonic processes can be isolated out.

We point out two further points. Critics have suggested that the relevant sediments would be difficult to date. Jerry Winterer has obtained new planktonic foraminiferal data from dredge samples which allow tight constrainment of the age of drowning of one of these guyots. In addition, above the guyots there should exist a relatively complete middle and Upper Cretaceous section which may possess Aptian-Albian and Cenomanian-Turonian boundary black shales (a semi proxy for Shatsky Rise drilling), a possible Cretaceous-Tertiary boundary and a relatively complete Cenozoic section.

These guyots have fascinated marine geologists with a very broad range of scientific interests for the past century. A comprehensive drilling program of these structures will interest a broad range of geologists with no connections and little previous interest in ODP. Such highly visible science will bolster the image of ODP in the general geologic community. This program has been rated highly by both OHP and SGPP panels. We strongly encourage you to place Pacific Guyot drilling on the ship schedule.

B. In our planning session, we discussed potential drilling objectives of CRER in the Atlantic Ocean. In the near future we will submit a long range statement of top priority thematic interests of our group and a list of drilling programs which have been suggested to meet these goals. We are currently contacting the proponents of those proposals which are currently in the works in order to better focus their proposals to address these thematic goals. For those programs which are not addressed by an existing proposal, we are in the process of soliciting proponents who will be submitting preliminary proposals in the next few months.

C. Our group is concerned about the lack of Cretaceous representation on the current OHP and SGPP panels, and the absence of most Cretaceous paleoceanographic themes from ODPs lists of long term scientific objectives. Numerous Cretaceous drilling proposals have not received adequate attention either as a result of the lack of interest from these panels, or due to inadequate response and advice from panel chairs. We are optimistic about a fruitful interaction between GSGP and ODP, which will further the scientific success of both groups. However, in order for our group to put together a comprehensive set of mature ODP proposals which will address our thematic goals, we feel that it is crucial that the Planning Committee significantly increase the representation of members with Cretaceous expertise on thematic panels as soon as possible.

Yours sincerely,

Timothy J. Bralower

T.J. Bralower

E.G. Kauffman

M.A. Arthur

D.J. Bottjer

(ODP-GSGP Liason group)

cc T. Pyle

000244

ETH Eidgenössische Technische Hochschule Zürich

Ecole polytechnique fédérale de Zurich
Politecnico federale di Zurigo
Swiss Federal Institute of Technology Zurich

Geologisches Institut
Prof. K. J. Hsü
Durchwahl-Nr.: 01 / 256 3669
Fax nr.: 01 / 252 7008
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Geologisches Institut
ETH-Zentrum
CH-8092 Zürich

Dr. Ralph Moberly
Hawaii Institute of Geophysics
University of Hawa
2525 Correa Road
Honolulu, Hawaii 9
USA

October 3, 1990

Dear Ralph:

I was in China shortly after Sy took his own life. Since I came back, I have been in contact with Jerry Winterer and Sy's Northwestern colleagues, and learned a few more details. I visited Sy last November, and was concerned about him. When Jerry Winterer's call came, I knew what the bad news was.

Jerry has written a memorial for the GSA. I have decided to dedicate my new book *The Challenger at Sea* to Sy's memory. The chapter 10 will be my informal memorial of Sy. I am sending you a copy of the manuscript draft, not so much to ask you to check the accuracy of factual data, as to ask you if I am guilty of poor taste. Please let me know if the unconventional way of paying a last tribute to him is proper.

The Challenger at Sea has a subtitle, a personal story of the deep-sea drilling, 1968-1983. It has been written in the style of Menard's The Ocean of Truth, except I make no pretension of making it a scholarly treatise of history of science. I was somewhat harsh on JOIDES in my first draft, which was written in 1980. Now that I could take a distant view, I grow very fond of the memories.

By the way, I saw John Knill, head of NERC and Gene Seibold, head of ESF. They are either lukewarm or downright hostile to NEREIS. The British, of course, will like to retain their special relation to the US. The Italians and Germans, as I understand, are loyal to the JOIDES. I think the atmosphere now seems far more friendly than it was since we last corresponded. If there is anything on this side of the Atlantic I could do in a positive way, I shall be glad to oblige. I think one should start to think about life after 1994.

With best regards,

Sincerely,

Ken

Ken Hsü

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000245

8 November 1990

Professor K. J. Hsü
Geologisches Institut
ETH-Zentrum
CH-8092 Zürich
SWITZERLAND

Dear Ken:

As I have recently replaced Ralph Moberly as chairperson of the JOIDES Planning Committee, he thought it appropriate to send me a copy of your 10/3/90 letter to him expressing your willingness to help ODP achieve both short-term renewal and long-term scientific success.

First, let me thank you on behalf of ODP's scientific advisory structure. Your earlier correspondence critical of scientific ocean drilling had a profound catalytic effect on changing PCOM's vision of its role in both advocating renewal and guiding ODP through a difficult transition from primarily regional reconnaissance to a more profound (and hopefully as exciting) thematic emphasis. As an example, PCOM now maintains an *ad hoc* subcommittee (STRATCOM) specifically dedicated to renewal activities.

One of STRATCOM's proposals is to send its constituent PCOM members (and others as necessary and/or appropriate) to give presentations showcasing ODP's accomplishments to aid renewal efforts in partner countries. I have just returned from such an activity in Australia, which I think proved fruitful for all concerned. Another recommendation is for selected PCOM members to prepare a series of "popular" articles on ODP to broaden the program's appeal to the educated non-earth scientist. As chairperson of STRATCOM as well as PCOM, I welcome your reasoned input on any other avenues which will help those of us "inside" ODP dismantle barriers that separate ocean drilling from other earth science initiatives.

You mentioned "life after 1994." I agree. With the recent publication and circulation of the Long Range Plan (LRP), ODP is now ready to take the long-term view. Frankly, the challenging scientific objectives we have in front of us now require it. ODP's thematic panels are for the first time prioritizing drilling targets on a global basis. They are also in the process of making the LRP an action as well as a planning document, which will take advantage of ODP's new emphasis on engineering and

OCEAN DRILLING PROGRAM

000246

technology development to address ambitious scientific goals throughout the 1990's and into the 21st century.

Thank you again for your contributions and advice to ocean drilling. I look forward to hearing from you again - we do listen and attempt to respond!

Sincerely,

Jamie

James A. Austin, Jr.
Senior Research Scientist/PCOM Chairperson

JAA/ja

cc: A. Maxwell
T. Pyle
B. Malfait

000247

Sandia National Laboratories

Albuquerque, New Mexico 87185

November 6, 1990

Dr. James A. Austin
Chairman, ODP Planning Committee
Institute for Geophysics
University of Texas
8701 Mopac Blvd.
Austin, TX 78759-8345

Dear Jamie:

I have read with considerable interest your abstract "ODP Plans for Ridge-Crest Drilling," scheduled for presentation at the forthcoming AGU meeting. The plan that you outline brings thoughts to my mind of the rewarding scientific and technical issues that we have faced in the Thermal Regimes portion of the Continental Scientific Drilling Program.

I would like to take this opportunity to make a few comments on the technical issues that you have addressed in your abstract. I have had the fortune to be a close observer of the TAMU efforts to develop the diamond coring system since its conception, and I must give Barry Harding and his staff a note of congratulations for their accomplishments in putting together a very complicated shipboard system. The task here was not easy and many obstacles were overcome. I do point out that there is a considerable difference between actually drilling with a diamond system and with a more conventional rotary rig. Thus, the inclusion of a conservative driller experienced in high-temperature diamond coring would be a useful addition to the ship's company.

I further note that logging in a slim-high-temperature hole is a challenge perhaps more difficult than coring. The issue here is that there is no industrial infrastructure supporting the work such as there is regarding diamond coring or downhole measurements in more conventional environments. Thus, the Thermal Regimes effort has come to rely on good core recovery, extensive temperature logs and fluid sampling experiments. Presently, we are doing a good job of temperature logging, but we have come to realize that out sampling work is deficient. Perhaps we can find ways to work together to solve some of these problems.

In any event, if there is anything that I can do to further the ODP effort, please let me know.

Sincerely yours,

Peter

Peter Lysne
Geoscience Research
Drilling Office
Division 6252

PL:6252:ia

Copy to:
Dr. Thomas E. Pyle, JOI; Dr. Paul F. Worthington, DMP

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V8L 4B2

Your file Votre référence

Our file Notre référence

90-11-14

Dr. James Austin
JOIDES Office
Institute for Geophysics
University of Texas at Austin
4701 Mopac Blvd.
Austin, Texas 78759

Dear Jamie:

As some discussion about the timing of a second Sedimented Ridges drilling leg may come up at the Planning Committee meeting at the end of the month, I thought it would be appropriate to convey my thoughts to you about this matter.

It will be important to know PCOM's decisions regarding their committment to and scheduling of a second leg as early as possible for two important reasons: 1) The pre-cruise meeting for leg 139 will take place in early February. In preparing the final drilling prospectus, it will be critical for us to know (to the best of your ability to say) the likelihood of the second leg taking place. We plan to order drilling in much the same way as outlined in the Sedimented Ridge DPG report, with regional hydrothermal objectives placed primarily in the first leg. This places the equally high priority objectives of detailed sulfide drilling in a second leg. This makes good sense technically and scientifically; however, without some assurance that the second leg will take place, there will be considerable pressure to lay out the drilling in a less ideal way. 2) For many of the invited leg 139 shipboard party, decisions of whether to participate will depend in part on the scheduling of the second leg (i.e. whether it would follow the first by one year, two years, or several years).

I won't belabour the justification for devoting two legs to this work or for drilling in the general order proposed in the SRDPG document. I should point out, however, that since the diamond coring system will not be used during leg 139, none of the detailed sulfide drilling will be accomplished during this leg (some was recommended in the SRDPG report, p. 11). This part of the program probably offers one of the lowest-risk/highest- payback opportunities for the DCS; thus scheduling the second leg centred around its use seems virtually imperative.

Canada

In the absence of other constraints, the optimum time for a second Sedimented Ridge leg would be two years after the first, i.e. in the Summer of 1993. This would provide time for adequate digestion of the results of the first leg, and some breathing room for those scientists who would like to consider participation in both programs.

Thank you for consideration of these points, in behalf of all those involved in or concerned with the outcome of this program.

Sincerely,

Earl E. Davis
Pacific Geoscience Centre

c. M. Mottl
J. Malpas

000250

Posted: Fri, Oct 19, 1990 3:27 PM EDT Msg: FGJA-4444-4144
From: JOI.INC
To: drilling
Subj: U.S. Drilling Poster

Attention all fans of ocean drilling past and present:

The JOI/U.S. Science Advisory Committee is supporting the publication of a poster commemorating twenty years of achievments in scientific ocean drilling. Our idea is to create a time line highlighting major scientific and engineering breakthroughs of DSDP and ODP.

What's exciting? When did it happen? Where can we find photos or diagrams descriptive of these events? Please send any suggestions or ideas to:

Jenny Granger
JOI/U.S. Science Support Program
Suite 800
1755 Massachusetts Avenue, NW
Washington, DC 20036-2102
(202) 232-3900 FAX: (202) 232-8203
E-Mail: JOI.Inc (Omnet)

Logs of Proposals received by the JOIDES Office since August 1990 and Listing of proposals

(from Peter Blum)

Note 1:

A modified proposal log sheet which emphasizes the listing of scientific objectives is presented (for proposals received after August 1990). Proposal summaries are given on the back pages of the new log sheets. In the case of addenda recently received at the JOIDES Office, the log of the original proposal is also attached. Suggestions to make this log more useful/efficient (data content, distribution) are welcome.

Note 2:

The numbering of proposals received at the JOIDES Office is slightly modified. The indices (A, B, C, D or E) following the three-digit reference number, and indicating one of five major ocean areas, are omitted. This modification was made because: 1) proposals are primarily evaluated thematically, and not regionally; 2) the one-out-of-five code is neither sufficient for planning purposes (Bering Sea, Chile Triple Junction, and all in between were E-type), nor is it self-explanatory; and 3) the code doesn't ease proposal handling at the JOIDES Office whatsoever, but rather complicates the use of the reference number as data base key field.

Proposals submitted prior to October 1990 can be referred to with or without the ocean-indices, since the three-digit numbers will remain unchanged (i.e, there won't be any confusion). However, the JOIDES Office will omit them in reference to earlier proposals, and suggests that panels/watchdogs/proponents do the same.

Three types of references will be used from now on. A new proposal submitted to the JOIDES Office will get a three-digit proposal number followed by four dashes, e.g., 999----; the same number will be followed by [-Add] or [-Rev], respectively, if addenda or a revised version of the proposal are received.

Using the number alone (999, or 999@) should be taken to reference all submissions related to a proposal. Proposal 247, for example, includes the following submissions :

Ref.No	Old ref.	Received at JOIDES Office
247----	247/E	11 July 1986
247-Rev	Rev. 247/E	19 Jan. 1988
247-Add	Supp. 247/E	7 July 1988
247-Add2	247/E Add	17 Sept 1990

Due to former practice, a revised proposal submitted prior to October 1990 will occasionally show a reference number different from its original version (e.g., 387-Rev is a revision of 375----). This inconsisteny in numbering is not corrected for because it would possibly create, rather than resolve confusion.

000252

ODP PROPOSAL LOG SHEET

412

JOIDES No: 385/E Received: 8/90

General Title: Paleomagnetic, Sedimentary, and Stratigraphy Studies of an ODP Hole off Oahu.	**Proponents:** B. Keating
Area: Pacific : Hawaii	**Contact Proponent:** Dr B. Keating H.I.G. University of Hawaii Honolulu HI 96822 USA Tel.: 808 9565227 Fax: 808 956 2538
1st Submission: Contact Acknow.: Dr B. Keating Date acknow.: 8/90	**Objectives:** Study of paleomagnetic stratigraphy and stratigraphy of ash units to develop age constraints by coring the OSN hole.
Comments: Preliminary This preliminary proposal is related to proposal 377/F Rev. for seismometer emplacement south of Hawaii.	

Eval. Panels	Copied to
TECP	JOI
OHP	SS Databank
SGPP	Sci. Operator
LITHP	DMP

PROPOSED DRILLING SITES

Site Name	Latitude	Longitude	Water depth	Penetr. Sedim.	Penetr. Basem.	Comments
						To core the OSN hole proposed by Purdy (proposal 377/F Rev.)

ABSTRACT

The author proposes that coring be a fundamental objective for the OSN hole to be drilled off Oahu. A combination of paleomagnetic reversal stratigraphy and stratigraphy of ash units should make possible to develop age constraints in these deposits in which dating and stratigraphy are controversed. Coring will make also possible to establish physical and acoustic properties for the OSN hole proposed by Purdy (proposal no: 377/F Rev.)

ODP PROPOSAL LOG SHEET

000253

413

JOIDES No: 385/E Add. Received: 8/90

General Title:
Paleomagnetic, Sedimentary, and Stratigraphy Studies of an ODP Hole off Oahu

Proponents:
C.E. Helsley

Area: Pacific ; Hawaii Islands

Contact Proponent: Dr C.E. Helsley
Hawaii Institute of Geophysics
University of Hawaii
Honolulu
HI 96822
USA
Tel.: 808 956 8760
Fax: 808 956 25 38

1st Submission:

Contact Acknow.:
Dr C.E. Helsley
Date acknow.:
8/90

Eval. Panels	Copied to
TECP	JOI
OHP	SS Databank
SGPP	SCi. Operator
LITHP	DMP

Objectives:
Study the timing of volcanic events. Detailed study of the past magnetic field in the Central Pacific during the Cenozoic period. Study of the physical properties of the sedimentary and basalt sections.

Comments: Addendum
This proposals supplements the proposal 385/E and is related to proposal 377/F Rev. for seismometer emplacement south of Hawaii.

PROPOSED DRILLING SITES

Site Name	Latitude	Longitude	Water depth	Penetr. Sedim.	Penetr. Basem.	Comments
						To core the OSN hole proposed by Purdy (proposal 377/F Rev.)

000254

ODP PROPOSAL LOG SHEET

414

JOIDES No: 386/E Rev. Received: 8/90

General Title:
California Margin Drilling: Neogene Paleoceanography of the California Current, Coastal Upwelling, and Deformation of the Gorda 'Plate'

Proponents:
M. Lyle, J. Barron, R. Jarrard, S. Halgedahl, J. Gardner, R. Karlin, J. Kennett

Area: Pacific ; California Margin

1st Submission:

Contact Acknow.:
Dr M. Lyle
Date acknow.:
8/90

Eval. Panels	Copied to
TECP	JOI
OHP	SS Databank
SGPP	Sci. Operator
LITHP	

Contact Proponent: Dr M. Lyle
Borehole Research Group
Lamont-Doherty Geological Obs. Palisades
NY 10964 USA
Tel.: (914) 359 2900 (914) 365 3182

Comments: Revised
This proposal is a revision and a combination of two earlier proposals: 271/E and 350/E.

Objectives:
Neogene fluctuations in the strength of the California current due to climatechange. Fluctuations of the upwelling. Primary productivity response to Neogene climate change. Calcite compensation depth change.

PROPOSED DRILLING SITES

Site Name	Latitude	Longitude	Water depth	Penetr. Sedim.	Penetr. Basem.	Comments
CA-1	41°40'N	125°00'W	1500			Hemipelagic clays
CA-2	39°58'N	125°27'W	2927	320	10	Hemipelagic clays, andesite
CA-3	41°38'N	125°40'W	3000	250	0	Hemipelagic clays.
CA-4	41°00'N	1265°45'W	3150	190	0	Hemipelagic clays.
CA-5	39°10'N	127°50'W	4200	450	0	Hemipelagic clays
CA-6	40°59'N	130°07'W	3273	115		Hemipelagic clay
CA-7	38°25'N	123°58'W	1600	150		Hemipelagic clays
CA-8	37°00'N	123°20'W	2575	250		Hemipelagic clays
CA-9	35°10'N	121°31'W	1000	350		Hemipelagic clays
CA-10	34°16'N	120°04'W	570	300		Hemipelagic clays
CA-11A	34°30'N	122°05'W	3750	350		Hemipelagic clays
CA-11B	34°50'N	122°05'W	4000	400		Hemipelagic clays
CA-11C	35°40'N	121°50'W	3520	300		Hemipelagic clays
CA-11D	32°50'N	120°50'W	3800	350		Hemipelagic clays
CA-12A	34°00'N	123°10'W	4300	300		Hemipelagic clays
CA-12B	33°20'N	122°40'W	4200	250		Hemipelagic clays
CA-12C	34°30'N	124°00'W				Hemipelagic clays
CA-13	32°50'N	123°20'W	4300	130		Hemipelagic clays
CA-14	28°54.5'N	117°31.1'W	3549	163		Hemipelagic clays

ABSTRACT This proposal is a revision and combination of proposals 271/E and 350/E. It is proposed to drill two transects , one near Cape Mendocino and near Cape Conception, and one site off Baja California in order to study the Neogene evolution of the California current. The paleoceanographic goals of the drilling program are: 1) to determine the Neogene fluctuations in the strength of the California Current due to climatic change and how the variability has affected heat and salt transport in the Pacific Ocean. 2) To determine how upwelling along coastal California has fluctuated through time and if the fluctuations are related to changes in the California Current strength. 3) To determine how primary productivity has responded to Neogene climate change in the California Current and in the coastal upwelling areas. 4) To determine calcite compensation depth changes in the northeast Pacific by means of the depths transects. In addition, drilling of the set of transects needed to study the evolution of the California Current will provide important information about the tectonic evolution of the Pacific margin of North America. A supplemental objective will be to provide valuable information for understanding geomagnetic secular variation and the nature and timing of geomagnetic excursions smaller in scale than magnetic reversals.

ODP PROPOSAL LOG SHEET

000255

415

JOIDES No: 233/E Rev/3 Received: 8/90

General Title:
Fluid Process and the Structural Evolution of the Central Oregon Accretionary Complex.

Proponents:
J.C Moore, L.D. Kulm, B. Carson, E. Suess, G. Moore, G.R. Cochrane, B.T.R. Lewis, M. Mackay

Area: Pacific : Central Oregon accretionary prism

1st Submission:

Contact Acknow.: Dr J.C. Moore

Date acknow.: 8/90

Eval. Panels	Copied to
TECP	JOI
OHP	Sci. Operator
SGPP	SS Databank
LITHP	Cascadia DPG

Contact Proponent: Dr J.C. Moore
Earth Science Department
University of California, Santa Cruz Santa Cruz
CA 95064 USA
Tel.: (408) 459 2574

Comments: Revision
Third revised version of proposal 233/E.

Objectives:
To study fluid flows in relation with structural evolution and hydrogeology, and geochemical cycle

PROPOSED DRILLING SITES

Site Name	Latitude	Longitude	Water depth	Penetr. Sedim.	Penetr. Basem.	Comments
OM-1			2865			
OM-2			2865			
OM-3			2655			
OM-3A			2625			
OM-4			2040			
OM-5			2123			
OM-6			2145			
OM-7			668			
OM-7A			1005			
OM-8			2400			

ABSTRACT

The central Oregon subduction zone is marked by conspicuous fluid venting and associated carbonate cementation, occurring in an environment of active upwelling and rapid clastic sedimentation over young, hot oceanic crust. Fluid flows through both stratigraphically- and fault-controlled conduits, constituting a dual permeability system. The fluid flow changes the sediment properties and therefore affects structural evolution which in turn modifies the geometry and types of fluid conduits. Changes in sediment properties are caused by fluid flowing from altering oceanic crust through the altering volcaniclastic sediments, transporting and redepositing significant quantities of calcium and other chemical constituents. The authors propose eight drill sites to examine fluid sources from shallow and deep levels to ascertain 1) how fluid flow affects the structural evolution and the hydrogeology and 2) how such fluid flow may affect the geochemical cycle. In order to investigate the range of possible conduits and alterations, drill sites are located in a seaward vergent structural regime (shallow to moderately sources), a landward vergent structural regime (deep sources), and upslope area of out-of-sequence thrusting (older? sources).

000256

ODP PROPOSAL LOG SHEET

416

JOIDES No: 355/E Rev/2 Received: 8/90

General Title: Formation of a Gas Hydrate - its Effect on Pore Fluid Chemistry., its Modulation of Geophysical Properties, and Fluid Flow.	**Proponents:** R. von Huene, E. Suess, K. Emeis, T. Shipley, K. Kvenvolden
Area: Pacific ; Peru margin	**Contact Proponent:** Dr R. von Huene GEOMAR D-2300 Kiel FRG Tel.: 431/ 720 2271 Fax: 431/720 2293
1st Submission: Contact Acknow.: Dr R. von Huene Date acknow.: 9/90	**Objectives:** To characterize the base of the gas hydrate zone and test the precision of indirect geophysical mesurements of free gas hydrate quantities at the BSR. To study tectonic erosion caused by Nasca ridge. Paleoceanography.
Comments: Revised Second revision of proposal 355/E (9/89).	

Eval. Panels	Copied to
TECP	JOI
OHP	SS Databank
SGPP	SCi Operator
LITHP	

PROPOSED DRILLING SITES

Site Name	Latitude	Longitude	Water depth	Penetr. Sedim.	Penetr. Basem.	Comments
						No detailed location of the sites.

ABSTRACT

Drilling through the base of a gas hydrate at a strong bottom simulating reflection (BSR) would further knowledge of hydrate formation and enhance the rationale on which to judge the safety of ODP continental margin drill sites. An area has been found on the Peru margin where the BSR may be penetrated safely. The area is in a synclinal axis where free gas and fluid migrate away from the structural low. A strong BSR on one flank weakens toward the synclinal axis allowing progressive drilling from an axial site adjacent to the BSR to drilling at sites where the BSR is stronger. Results from the first hole can be used to upgrade safety assessments for the net one by constraining the quantities of free gas and hydrate estimated at a proposed site from seismic data. The unique objective of penetrating the BSR is amplified by ocean history and tectonic objectives. The cores would test previous drilling results indicating reduced anoxia during glacial relative to interglacial periods, contrary to glacial/interglacial relations observed at all other upwelling margins. Cores would also test a proposed tectonic relation between the coeval subduction of the Nazca Ridge and subsidence of the Lima forearc basin.

000257

ODP Proposal Log Sheet

387-Rev

Revised proposal 375----
Received: Sep 4, 1990

Deep Crustal Drilling in Fast-Spread Crust Exposed at Hess Deep

Brief title: Deep drilling of fast-spread crust, Hess Deep

General area code: **E-Eq-Pac**

Proponents: Gillis, K., Lonsdale, P., Dick, H.J.B., Natland, J.

Contact:

Dr. Kathryn M. Gillis
Woods Hole Oceanographic Institution
Woods Hole, MA 02543

Tel: 1 (508) 457-2000
FAX: 1 (508) 457-?
Tmail:

Objectives:

	LRP
1. Igneous, tectonic, and metamorphic evolution of fast-spread oceanic crust.	1/2
— Sampling a complete section of oceanic crust generated at a fast-spreading ridge.	
— Relative timing and rate of magm. intrusions, creation of permeability, seawater-rock interaction.	2/10
— Intrusive vs. structural character of layer 2/3 boundary (effect on hydrothermal systems).	2/10
— Relationship between ductile extension and primary magmatic stratigraphy.	
— Interpretation of seismic reflectors in terms of the geometry of magma chambers.	
— Relationship between depth of brittle-ductile transition and spreading rate.	
2. Structure of the Hess Deep Rift Valley.	
— To further understand the process of rifting in young oceanic crust.	
— To test vertical movement of mantle horsts, serp. diapirs vs. lowangle detachment fault models.	1

Proposed Sites:

Site Name	Position	Water depth	Total penet	Brief site-specific objectives
Hess1	2°15.7'N/101°33'W	4500	1000	Layer 2/3 transition and the upper level plutonics.
Hess 2	2°15.2'N/101°33'W	5000	1000	Long sect. of lower level plutonics, transition across Moho.
Hess 3	2°18.0'N/101°31.6'W	3075	1000	Long sect. of lower level plutonics; transition across Moho.
Hess 4	2°16.5'N/101°27.0'W	4100	1000	Trans. across low. plutonics and Moho into shallow mantle.
Hess 5	2°22.1'N/101°16.8'W	1650	2000+	Complete crustal section; transition into layer 3.
Hess 6	2°21'N/101°16'W	3200	1000	Long continuous section of upper plutonics

Specific area: Hess Deep rift valley

Comments:

Proposal acknowledged by JOIDES Office on: Sep 4, 1990
Proposal forwarded for evaluation to: LITHP, OHP, SGPP, TECP
Proposal copies to: JOI, SO, SSDB

000258

Proposal Reference No.: 387-Rev (Rev. of 375----)

Title: **"Deep Crustal Drilling in Fast-Spread Crust Exposed at the Hess Deep"**

Proponent(s): H.J.B. Dick, K. Gillis, P. Lonsdale, J. Natland

Summary

A series of offset, multiple re-entry drill holes are proposed for the Hess Deep rift valley in the western Pacific, where 1.2 Ma East Pacific Rise (EPR) crust has been exposed in the wake of a propagating rift. The exposure in the Hess Deep rift valley offers a unique opportunity to sample a representative section of normal ocean crust formed at the fast spreading EPR. In particular, exposure of lower crustal rocks along the walls and floor of the rift valley will allow for a complete crustal section to be sampled in a series of disconnected but spatially associated holes. Six sites are outlined which were located on the basis of *Nautile* and *Alvin* dive programs. The objectives of these sites include the Layer 2-3 transition, the upper and lower level plutonic sequence, and the transition into the shallow mantle. The overall goal is to characterize the igneous, metamorphic, and structural history of the recovered cores to develop a model for the evolution of oceanic crust formed at a fast-spreading ridge.

[Summary by proponents]

000259

ODP Proposal Log Sheet

247-Add2

Second Addenda to 247-Rev

Received: Sep 17, 1990

Water Mass Conversion in the Glacial Subarctic Pacific (54°N, 148°W): Physical Constraints and the Benthic-Planctonic Stable Isotope Record

Brief title: Water mass conversion, glacial subarctic Pacific

General area code: **S/arct-Pac**

Proponents: Authors: R. Zahn, B.D. Bornhold, A.C. Mix

Contact:

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The University of British Columbia
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Objectives: See proposal 247-Rev

LRP

Proposed Sites: See proposal 247-Rev

Site Name	Position	Water depth	Total penet	Brief site-specific objectives

Specific area:

Comments:

Proposal acknowledged by JOIDES Office on: Sep 17, 1990
Proposal forwarded for evaluation to: LITHP, OHP, SGPP, TECP
Proposal copies to: JOI, SO, SSDB

000260

Proposal Reference No.: 247-Add2

Title: **Second addendum to #247-Rev: "Water Mass Conversion in the Glacial Subarctic Pacific (54°N, 148°W): Physical Constraints and Benthic-Planktonic Stable Isotope Record"**

Proponent(s): Authors: R. Zahn, B.D. Bornhold, A.C. Mix

Abstract

Benthic (*Uvigerina* spp., *Cibicidoides* spp., *Gyroidinoides* spp.) and planktonic (*N. pachyderma* sin., *G. bulloides*) stable isotope records from three core sites in the central Gulf of Alaska are used to infer mixed-layer and deep-water properties of the late-glacial subarctic Pacific. Glacial-interglacial amplitudes of the planktonic $\delta^{18}O$ records are 1.1-1.3*‰*, less than half the amplitude observed at core sites at similar latitudes in the North Atlantic; these data imply that a strong, negative δ_w anomaly existed in the glacial subarctic mixed layer during the summer, which points to a much stronger low-salinity anomaly than exists today. If true, the upper water column in the North Pacific would have been statically more stable than today, thus suppressing convection even more efficiently. This scenario is further supported by vertical (*i.e.*, planktic *versus* benthic) $\delta^{18}O$ and $\delta^{13}C$ gradients of >1*‰*, which suggest that a thermohaline link between Pacific deep waters and the subarctic Pacific mixed layer did not exist during the late glacial. Epibenthic $\delta^{13}C$ in the subarctic Pacific is more negative than at tropical-subtropical Pacific sites, but similar to that recorded at Southern Ocean sites, suggesting ventilation of the deep Pacific from mid-latitude sources, *e.g.* from the Sea of Japan and Sea of Okhotsk. Still, convection to intermediate depths could have occurred in the Subarctic during the winter months when heat loss to the atmosphere, sea ice formation, and wind-driven upwelling of saline deep waters would have been most intense. This would be beyond the grasp of our planktonic records which only document mixed-layer T-S fields extant during the warmer seasons.

[Abstract by authors]

ODP Proposal
Log Sheet

247-Add

Addenda to 247-Rev

Received: Jul 7, 1988

Preliminary analytical results on sediment cores from the Patton-Murray Seamount Group

Brief title: Primary sediment results, Patton-Murray Seamount Gr.

General area code: **NE-Pac**

Proponents: B.D. Bornhold, R. Karlin, T.F. Pederson, B. Blaise

Contact: Dr. Brian D. Bornhold
Geological Survey of Canada
Pacific Geoscience Center

Sidney, British Columbia

Tel:
FAX:
Tmail:

Objectives: See proposal 247-Rev

LRP

Proposed Sites: See proposal 247-Rev

Site Name	Position	Water depth	Total penet	Brief site-specific objectives

Specific area: Patton-Murray Seamount Group

Comments:

Proposal acknowledged by JOIDES Office on: 00/00/00
Proposal forwarded for evaluation to: ?
Proposal copies to: ?

000262

Proposal Reference No.: 247-Add

Title: Addendum to proposal 247-Rev: "Preliminary Analytical Results on Sediment Cores from the Patton-Murray Seamount Group"

Proponent(s): B.D. Bornhold, R. Karlin, T.F. Pedersen and B. Blaise

Summary

1) Lithology and Structure
2) Mineralogy
3) Calcium Carbonate and Isotope Stratigraphy
4) Geochemistry
5) Age and Sedimentation Rate

Conclusions

From a variety of analyses conducted on cores PAR 87-1 and -10 it is evident that on the Patton-Murray Seamount plateau:

(1) Sufficient foraminifera are present throughout at least the late Quaternary (about the last 150 ka) that reasonably high quality oxygen and carbon isotopic records can be obtained;
(2) Regional sedimentation rates have been relatively uniform and sedimentation has been relatively unaffected by locally derived turbidity currents over much of the plateau; and
(3) Very significant changes in productivity and terrigenous input have occurred in the area during the late Quaternary as shown by the repetitive succession of very distinct lithologies.

[Summary extracted from the Addendum by the JOIDES Office]

000263

ODP Proposal Log Sheet

247-Rev

Revised proposal 247----

Received: Jan 19, 1988

Oceanographic, Climatic and Volcanic Evolution of the Northeast Pacific Ocean

Brief title: Oceanographic, climatic and vulcanic evolution, NE-Pac

General area code: **NE-Pac**

Proponents: Bornhold, B.D., Karlin, R., Pederson, T.F., Pisias, N.G., Rea, D.K., Blaise, B.

Contact:

Dr. Brian D. Bornhold
Geological Survey of Canada
Pacific Geoscience Center

Sidney, British Columbia

Tel:
FAX:
Tmail:

Objectives:

	LRP
1. Neogene history of surface and deep water circul., espec. N-Pac sub-Arctic and transitional zones.	12/13
2. Possible N-PacBottomWater formation during glacial times; eff. on global heat bal./CO2 cycling.	12/13
3. Onset and history of northern hemisphere glaciation; relation to orbital forcing.	12/13
4. History of marine and back-arc volcanism and sea-floor hydrothermal activity.	10/11
5. Eolian record of atmospheric transport; tying zonal wind intensity to biostrat. zonation in N-Pac.	13
6. Biological evolution and changes in primary productivity in response to climatic changes.	13/16
7. Ocean paleochemistry and elemental cycling of nutrients.	12/13
8. Age, composition and history of seamount chains; geomagnetic and hotspot reference frames.	6
9. Spatial and temporal variation in regional sea-floor hydrothermal and submarine volcanic activity.	
10. Sediment transport processes of eolian, fluvial and ice rafted components.	

Proposed Sites:

Site Name	Position	Water depth	Total penet	Brief site-specific objectives
PM1a	54°21.924'N/148°27.313'W	3660	360	N-end of paleoenvironmental transect; hot spot nature.
PM1b	54°25.341'N/149°13.233'W	3555	360	N-end of paleoenvironmental transect; hotspot nature.
PM1c	54°22.313'N/148°54.218'W	3727	420	N-end of paleoenvironmental transect; hot spot nature.
BA 1	39°28.48'N/127°29.81'W	4284	420	S-end of paleoenv. transect; NE-Pac Neogene biostratigr.
CS 1	47°08.51'N/132°07.9'W	4300	150	Mid-lat. site in paleoenv. transect; NE-Pac Neogene biostr.

Specific area:

Comments:

Proposal acknowledged by JOIDES Office on: 00/00/00

Proposal forwarded for evaluation to: ?

Proposal copies to: ?

000264

Proposal Reference No.: 247-Rev

Title: "Oceanographic, Climatic and Volcanic Evolution of the Northeast Pacific Ocean"

Proponent(s): B. Bornhold, R. Karlin, T. Pedersen, N. Pisias, D. Rea, B. Blaise

Executive Summary

Oceanic drilling in pelagic sediment windows in the Northeast Pacific can answer some fundamental questions on ocean basin history during the Cenozoic and the response of the oceans and continents to changes in climate. The compelling paleoceanographic, paleoclimatic, and paleobiotic reasons to drill in the Northeast Pacific have remained unchanged for more than a decade. A high latitude paleoclimate transect of sites has been cited as a primary drilling objective by numerous groups, including the USSAC-sponsored INPAC and NORPAC workshops, and recently by the COSOD II Working Group on Global Environmental Change. [Seven first-order and three additional objectives are listed in original summary.]

Although the oceanographic history of the North Pacific is critical to our understanding of the evolution of mid-latitude and sub-arctic climates and life forms in response to polar cooling, it has not previously been considered as a viable drilling target. This is partly because much of the region lies below the carbonate compensation depth and many sediment section are dominated by turbidites. However, recent seismic surveys and coring on a research cruise aboard the CSS PARIZEAU in August, 1987 documented the existence of windows through the turbidite sections where carbonate and diatom rich sediments have been accumulating throughout the Neogene. j These pelagic windows occur on seamount platforms in the Gulf of Alaska and exhibit pelagic and hemipelagic sediment thicknesses up to 370 m (0.5 sec). Similar sections have been found on platforms on the SE end of the Coob-Eickelberg chain. In addition, previous rotary drilling in certain areas (e.g., DSDP Sites 33 and 36) in the vicinity of the Mendocino Escarpment reported recovery of apparently continuous pelagic and hemipelagic deposits with basal ages of from 8-30 my. We suggest that these pelagic sections represent, at last, a realistic opportunity to approach the many important high-latitude paleoceanographic questions previously thought unresolvable.

[Extracted from original Executive Summary by the JOIDES Office]

000265

ODP Proposal Log Sheet # 286-Add2

Second Addenda to 286----

Received: Sep 21, 1990

Addendum #2 for JOIDES Proposal 286/E (Layer 2/3 Transition in Hole 504B)

Brief title: Addendum #2 for [286----]

General area code: **E-Eq-Pac**

Proponents: Becker, K.

Contact:

Dr. Keir Becker
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University of Miami
Rickenbacker Causeway
Miami, FL 33149

Tel: 1 (305) 361-4661
FAX: 1 (305) 361-4632
Tmail: K.Becker

Objectives: (Also see original proposal 286----, and first addenda 286-Add.)

LRP

1. Present several of the scientific options near Site 504B to be assessed by relevant thematic panels:
   - (a) Additional logs with new and improved tools before any casing (LITHP, TECP, DMP).
   - (b) Logging sediments, which has not been done at all so far (OHP, SGPP, DMP).
   - (c) Hydrogeochemistry of sediments and upper basement (JOIDES Prop. 123----) (SGPP, LITHP)
   - (d) Double APC-coring of sediments in heat flow low near 504B (OHP, SGPP).
   - (e) Comparat. basem. hole, variability of volc./tect./alteration processes (LITHP, TECP, DMP).
2. Tabulate scales of variability to stimulate discussion regarding paired holes.
   - 100 m: Test continuity of igneous stratigraphy.
   - 100's m: Test continuity of flow units.
   - 1 km: Equal aspect ratio for hole-hole experiments.
   - 1 km: Test continuity of largest flow units (permeable caps?).
   - 1 km: Study upper crustal seismic heterogeneity.
   - 1 km: Study upper crustal hydrogeology and alteration.
   - 3-5 km: 1 to 1+ wavelength in heat flow variation.
   - 10 km: Layer 3 dipping reflector closer to surface.

Proposed Sites: See original proposal 286----.

Site Name	Position	Water depth	Total penetr	Brief site-specific objectives

Specific area: Costa Rica Rift flank

Comments:

Proposal acknowledged by JOIDES Office on: Sep 21, 1990
Proposal forwarded for evaluation to: LITHP, OHP, SGPP, TECP
Proposal copies to: JOI, SO, SSDB, DMP

000266

Proposal Reference No.: 286-Add2

Title: **"Addendum #2 for JOIDES Proposal 286/E (Layer 2/3 Transition in Hole 504B)"**

Proponent(s): K. Becker

Summary

This second addendum to JOIDES proposal 286/E has two primary purposes:

(1) To collectively present several of the scientific options near Site 504, which should be assessed by the relevant thematic panels as possible contingencies if time arises during Leg 137, the engineering clean-out of Hole 504B.

(2) To tabulate some of the scales of variability around Hole 504B, partly as supporting information for discussion of these options, and also to stimulate panel discussions regarding the use of paired holes to study crustal and hydrogeological variability. This concept has been endorsed at a recent ONR- and USSAC-sponsored workshop on "Physical Properties of Young Volcanic Seafloor", and the discussion herein might be considered some sort of precursor to a formal "504 Crustal Characterization" proposal, as has been discussed at DMP.

[Summary by proponent]

000267

ODP Proposal Log Sheet # **286-Add**

Addenda to 286----

Received: Oct 30, 1989

Update for JOIDES Proposal 286/E (Layer 2/3 Transition at 504B)

Brief title: Update of [286----]

General area code: **E-Eq-Pac**

Proponents: Becker, K.

Contact:

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Rickenbacker Causeway
Miami, FL 33149

Tel: 1 (305) 361-4661
FAX: 1 (305) 361-4632
Tmail: K.Becker

Objectives: (Also see original proposal 286----.)

LRP

1. Assessment of the engineering problems in Hole 504B: discussion of 4 options:
   (1) Redrilling;
   (2) milling and fishing;
   (3) sidetracking;
   (4) running a linear casing and drilling with medium diameter RCB or high-speed DCS.
2. Consideration of possible downhole measurement dilemma.
3. New and reassessed thematic justification for deepening 504B.

1

Proposed Sites: See original proposal 286----.

Site Name	Position	Water depth	Total penetr	Brief site-specific objectives

Specific area: Costa Rica Rift flank

Comments:

Proposal acknowledged by JOIDES Office on: Nov 3, 1989

Proposal forwarded for evaluation to: LITHP, OHP, SGPP, TECP

Proposal copies to: JOI, SO, SSDB, CEPACDPG, DMP

000268

Proposal Reference No.: 286-Add

Title: "Update for JOIDES Proposal 286/E (Layer 2/3 Transition at 504B)

Proponent(s): K. Becker

This update is intended as an addendum to proposal 286/E. Its primary purpose is to discuss two aspects of the third engineering leg to Hole 504B: (a) recent ODP assessments of the engineering problems in Hole 504B, and (b) a possible dilemma regarding downhole measurements on the engineering leg. Also, in upcoming scheduling decisions for the first year of CEPAC drilling, this update includes a brief summary of (c) new and reassessed thematic justification for deepening 504B.

[Introduction by proponent]

000269

ODP Proposal Log Sheet

286----

New Proposal

Received: Jul 20, 1987

A Proposal to Return to Hole 504B in 1990-1991, to Core and Log the Dike/Gabbro, Layer 2/3 Transition

Brief title: Core and log layer 2/3 transition, Hole 504B

General area code: **E-Eq-Pac**

Proponents: Becker, K.

Contact:

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University of Miami
Rickenbacker Causeway
Miami, FL 33149

Tel: 1 (305) 361-4661
FAX: 1 (305) 361-4632
Tmail: K.Becker

Objectives:

Objective	LRP
1. To core and log the transition between dikes and gabbros (layers 2/3).	1
2. To spur the development of the coring technology to accomplish deep crustal drilling.	1

Proposed Sites:

Site Name	Position	Water depth	Total penetr	Brief site-specific objectives
504B	1°13.61'N/83°43.82'W	3460	2000	Clean, re-case, core, log 504B and its extension into layer 3.

Specific area: Costa Rica Rift flank

Comments:

Proposal acknowledged by JOIDES Office on: Jul 20, 1987

Proposal forwarded for evaluation to: LITHP, CEPAC

Proposal copies to: SO

000270

Proposal Reference No.: 286----

Title: "A Proposal to Return to Hole 504B in 1990-1991, to Core and Log the Dike/Gabbro, Layer 2/3 Transition"

Proponent: K. Becker

Summary

Hole 504B penetrates over twice as far into oceanic crust as any other DSDP/ODP borehole, and is the only hole that clearly penetrates the sheeted dikes of Layer 2C. A VSP run during Leg 111 indicates that the gabbros of Layer 3 are probably within a few hundred m of the present total depth and are thus within reach of the next full drilling leg. Thus, despite recent drilling problems, Hole 504B may represent our best chance to successfully core deep within the oceanic crust, a goal that has been repeatedly affirmed as a top priority for ODP by COSOD, JOIDES Ocean Crust and Lithosphere Panels, and COSOD II.

Three separate drilling problems were encountered during Leg 111: (1) a diamond bit lost in the hole, (2) a flaw in the casing, and (3) poor drilling conditions due to stressing of the formation. The first two problems can be solved with presently-available technology. The third problem may be encountered in drilling any deep crustal hole; its solution requires a focused engineering effort commencing as soon as possible.

Several options are presented for a return to Hole 504B. The option favored by a clear majority of polled JOIDES scientists and ODP engineers involves a leg early in the eastern Pacific schedule to accomplish two tasks: (1) clean and recase Hole 504B and drill 100 m to test new coring technology, and (2) set one hard-rock guidebase on the EPR 13°N and drill to 50 m to test drilling conditions. Committing now to an early 'engineering leg' would allow scientific planning for crustal drilling in the eastern Pacific to be readjusted based on the degree of engineering success. It would also provide a clear thematic focus and deadline for the ODP engineering effort that will be necessary to accomplish two top priority crustal drilling objectives: drilling deep within the crust and drilling into zero-age crust.

[Summary by proponent]

ODP Proposal Log Sheet # 388----

New proposal 000271
Received: Oct 1, 1990

A proposal to advance piston core the Cerera Rise, West Equatorial Atlantic: Neogene History of deep water circulation and chemistry

Brief title: Neogene deep water circul. and chemistry, Cerera Rise

General area code: **W-Eq-Atl**

Proponents: Curry, W.B., Backman, J., Shackleton, N.J.

Contact:
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Department of Geology and Geophysics
Woods Hole Oceanographic Institution

Woods Hole, MA 02543

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Objectives:

		LRP
1.	Cenozoic history of Atlantic deep water circulation and chemistry, and earth's climate.	12/13
2.	Cenozoic history of carbonate production/dissolution, and effects of deep circul. and earth's climate.	12/13
3.	Cenozoic history of surface water and climate in the tropics; variations of oceanic ∂13C/Δ∂13C.	12/13

Proposed Sites:

Site Name	Position	Water depth	Total penetr	Brief site-specific objectives
CEA1	4°30'N/43°40'W	2800		
CEA2	4°34'N/43°32'W	3050		
CEA3	4°38'N/43°24'W	3300		
CEA4	4°42'N/43°16'W	3550		
CEA5	4°46'N/43°08'W	3800		
CEA6	4°50'N/43°00'W	4000		
CEA7	4°55'N/42°52'W	4200		
CEA8	5°00'N/42°44'W	4450		

Specific area: Eastern flank of Ceara Rise

Comments: Fewer than six sites of little value for reconstructions;
At least two, better three holes per site (total 24).

Proposal acknowledged by JOIDES Office on: Oct 9, 1990
Proposal forwarded for evaluation to: LITHP, OHP, SGPP, TECP
Proposal copies to: JOI, SO, SSDB

000272

Proposal Reference No.: 388----

Title: "A Proposal to Advance Piston Core the Ceara Rise, West Equatorial Atlantic: Neogene History of Deep Water Circulation and Chemistry"

Proponents: W.B. Curry, J. Backman, N.J. Shackleton

Abstract

The Ceara Rise in the western equatorial Atlantic provides an ideal target for constructing a bathymetric transect of Advanced Piston Cores (APC). The rise is well sedimented, with high sedimentation rates and uninterrupted sedimentation for at least the last 10 myr. Because of the nature of the sediments, we expect that high-quality paleomagnetic records will be obtained in this region. In addition, the Ceara Rise is located in the main flow path of the two principal water masses in the oceans. Mixing between these water masses creates the initial chemical and physical properties for deep water in the eastern basins of the Atlantic and for the Indian and Pacific Oceans. Therefore it is imperative to understand the history of deep water circulation and chemistry in this region in order to evaluate the changes in deep water chemistry and carbonate preservation that are observed in other ocean basins.

We propose to construct a transect of eight APC sites distributed down the eastern flank of Ceara Rise from about 2800 m to 4500 m. The average depth spacing of about 250 m is required in order to identify the past depth and shape of the mixing zone between northern- and southern-sources of deep water throughout the Neogene.

Several questions of paleoceanographic significance can be addressed by a depth transect of this type:

1. What was the history of deep water flow in the Atlantic during the Cenozoic? What has been the relationship between deep water circulation, chemistry, and earth's climate?
2. What was the history of carbonate production and dissolution in the equatorial Atlantic during the Cenozoic? How have changes in carbonate production and dissolution been affected by changes in deep circulation and in earth's climate?
3. What has been the Cenozoic history of surface water and climate in the tropics? How have the $\delta^{13}C$ of nutrient-depleted surface water and oceanic $\Delta\delta^{13}C$ varied throughout the Cenozoic?

[Abstract by proponents]

000273

ODP Proposal Log Sheet

345-Add

Addenda to 345----

Received: Oct 5, 1990

Addenda to "Drilling proposal for the West Florida continental margin, Gulf of Mexico: Sea level and paleoclimatic history"

Brief title: Addenda to [345----]

General area code: **G/o Mex**

Proponents: Joyce, J.E., Mullins, H.T., Tjalsma, L.R.C., Wise, S.W.

Contact:
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Unocal North American
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Houston, TX 77027

Tel: 1 (713) 623-8000
FAX:
Tmail:

Objectives: (See also objectives of original proposal 345----)

LRP

13/14

+1. Compare/contrast eustatic vs. ocanographic controls of carbonate depositional sequences.

+2. Application of reliable and refined benthic zonation to older parts of the section.

Proposed Sites: (See original proposal 345----)

Site Name	Position	Water depth	Total penetr	Brief site-specific objectives

Specific area: West Florida margin

Comments:

Proposal acknowledged by JOIDES Office on: Oct 9, 1990

Proposal forwarded for evaluation to: LITHP, OHP, SGPP, TECP

Proposal copies to: JOI, SO, SSDB

000274

Proposal Reference No.: 345-Add

Title: Addenda to "Drilling Proposal for the West Florida Continental Margin, Gulf of Mexico: Sea Level and Paleoclimatic History"

Proponents: J.E. Joyce, H.T. Mullins, L.R.C. Tajalsma, S.W. Wise

Summary

I. Effect of the Loop Current on the sea-level record of the west Florida margin

The Loop Current has had an effect on depositional sequence development along the West Florida margin. However, this effect has been of limited duration (post mid-late Miocene) and of limited areal extent (400-600 m isobaths). Not only is the west Florida margin an excellent site to test sea-level history along a carbonate continental margin, it also provides an opportunity to evaluate paleoceanographic history and to compare/contrast eustatic versus oceanographic controls of carbonate depositional sequences.

II. Paleodepth control with benthic foraminifera: Potential application to the west Florida margin

Paleodepth estimates based on benthic assemblages have limitations in terms of precision and reliability (with both being greater in shallower water and in younger parts of the section). The distribution of benthic foraminifera is often complex and not always well understood nor necessarily depth dependent. The Gulf of Mexico has probably been more thoroughly studied in terms of recent benthic foraminiferal distribution than any other margin in the world. No zonation limited to the west Florida margin exists, however, one could quickly be generated based on Parker's (1954) data. Given the stability of environment and the fact that this carbonate ramp existed throughout the Cenozoic, the prospects of applying such a zonation to older parts of the section are excellent.

[Summary extracted from proposal by the JOIDES Office]

ODP Proposal Log Sheet

345----

New proposal
Received: Aug 11, 1989

Drilling proposal for the West Florida continental margin, Gulf of Mexico: Sea level and paleoclimatic history

Brief title: Sea level and paleoclimate, West Florida margin

General area code: **G/o Mex**

Proponents: Joyce, J.E., Mullins, H.T., Tjalsma, R.C., Wise, S.W.

Contact:

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Tel: 1 (713) 623-8000
FAX:
Tmail:

Objectives:

Objectives	LRP
1. History of sea level change.	14
1.1. Linking deep pelagic with shallow marine sections.	
1.2. Comparison of W-Florida carbonate with New Jersey clastic margin.	
2. Cenozoic history of paleoclimate and paleoceanography from eastern Gulf of Mexico.	12/13
2.1. Cenozoic meltwater history as evidence for late Pliocene N-hemisphere mid-latitude ice.	
2.2. Origin, timing and extent of middle Miocene unconformity along W-Florida margin.	
2.3. Extent and origin of major phosphorite deposits.	

Proposed Sites:

Site Name	Position	Water depth	Total penetr	Brief site-specific objectives
WFM-A	27°06.3'S/85°08.0'E	1125	700	Pelagic high-resolution stratigraphy.
WFM-B	27°09.8'S/85°03.5'E	800	625	Miocene low-stand wedge down dip of clinoforms.
WFM-C	27°13.0'S/84°59.3'E	600	665	Miocene truncated clinoforms; toplap unconformity.
WFM-D	27°16.0'S/84°56.4'E	525	555	Shelf component of the depositional systems.
WFM-E	27°33.0'S/84°36.8'E	130	1170	Shelf erosional surfaces caused by changes in sea level.
WFM-F	27°41.9'S/84°26.4'E	90	500	Dito.

Specific area: West Florida margin

Comments: At least six sites must be drilled.
Priority for upper units I and II (late Neogene)

Proposal acknowledged by JOIDES Office on: Aug 31, 1989
Proposal forwarded for evaluation to: LITHP, OHP, SGPP, TECP
Proposal copies to: JOI, SO, SSDB

000276

Proposal Reference No.: 345----

Title: "Drilling Proposal for the West Florida Continental Margin, Gulf of Mexico: Sea Level and Paleoclimatic History"

Proponents: J.E. Joyce, H.T. Mullins, L.R.C. Tajalsma, S.W. Wise

Abstract

Carbonate ramps offer unique opportunities to study the interactions between ocean basins and surrounding land masses, and to evaluate the timing and amplitude of global sea level change. Because a number of previous studies have addressed sea level change in a clastic margin setting, and because the response to sea level change may be very different on a carbonate margin, carbonate ramps could provide important, new information concerning global sea level history. Carbonate ramps contain environmentally sensitive shallow-water deposits that record relative sea level drops in the form of diagenetic exposure surfaces, and their continuous, gentle low gradients into deeper water allow evaluation of paleodepth changes using benthic microfossils.

The West Florida margin is an excellent example of a carbonate ramp. This area meets the general requirements for a potential drilling area to address sea level change (COSOD II, 1987; ODP Sea Level Workshop, El Paso, TX 1988), including a passive marine setting, predictable subsidence history, relatively high and uniform sediment accumulation rates, available industry drill core and seismic data, on-land well sections and the promise of nearly complete stratigraphic section. Most importantly, high-resolution seismic reflection data demonstrate the high degree of lateral continuity between shallow and deep-water regions including well-developed seismic sequences.

We recommend that sea level changes be defined in shallow-water facies and that sequence boundaries then be traced to correlative conformities in deeper water where they can be accurately dated. Stratigraphically continuous, well-preserved pelagic carbonates along the west Florida slope allow a very high-resolution chronostratigraphy (between 40-50 kyr in the Plio/Pleistocene) using oxygen isotopes, biostratigraphy and magnetostratigraphy as demonstrated in ODP Hole 625B. A transect of 6-7 sites, strategically positioned along an optimal, high-resolution seismic profile extending from shallow (90 m) to deep water (1125 m), will provide documentation of the timing of sea level change and bracket amplitudes of Cenozoic sea levels.

There have been few detailed studies of climatic change in the Gulf of Mexico, despite the fact that the basin is an important link between the Northern Hemisphere terrestrial record and the open oceans. Our proposed deep-water sites provide the basis for multi-disciplinary paleoclimate studies addressing 1) the timing and magnitude of Pliocene meltwater discharge from mid-latitude ice sheets, 2) the extent of phosphorite deposits along the West Florida Margin especially within the Tertiary, and 3) the history of Loop Current circulation in the eastern basin.

[Abstract by proponents]

000277

ODP Proposal Log Sheet

389----

New proposal

Received: Oct 29, 1990

Cretaceous N-S Traverse in the Western South Atlantic

Brief title: Cretaceous traverse, Western South Atlantic

General area code: **W-S-Atl**

Proponents: B.A. Malmgren

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Tmail:

Objectives:

LRP

1. Biotic evolution — 16
   A. Macroevolution — evolutionary radiations and extinctions in Cretaceous microfossils.
   — Mode and timing of extinction and appearance patterns, and diverstiy.
   — Relation between rates of taxonomic evolution and latitude/watermass.
   — Relation between taxonomic rates and paleoenvironmental events in the Cretaceous ocean.
   B. Speciation processes and phyletic evolution in Cretaceous microfossils.
   — Mode of developement of new species (branching of lineages vs. phyletic speciation).
   — Roles of allopatry and parapatry in speciation.
   — Importance of punctuated anagenesis and "orthogenesis".
   — Influence of bathymetry on ostracod physiology.
2. Planctonic and benthonic biogeography — 13
   — Quantitative distribution patterns of Cretaceous planctonic microfossils.
   — Migration of province boundaries through the Late Cretaceous.
   — Fluctuations in location and intensity of two proposed Cretaceous gyre systems in the S-Atl.
   — Dating establishment of unrestricted exchange of deep water between the different basins.

Proposed Sites:

Site Name	Position	Water depth	Total penet	Brief site-specific objectives
(1)	6°N/20°W			Sierra Leone Rise, or south thereof (Romanche FZ).
(2)	10°S/29°W			Topographic high in S part of Pernambuco Abyssal Plain.
(3)	21°S/28°W			Or topographic high closer to Brasil.
(4)	28°S/40°W			Sao Paulo Plateau (near Site 356).
(5)	38°S/28°W			Topographic high S of Hunter Channel.
(6)	50°S/46°W			Malvinas Escarpment area (near Site 327).
(7)	—			S part of Scotia Sea or N part of Weddell Sea.

Specific area: —

Comments: Average latit. interval about 10° for optimal biogeographic coverage and resolution. Topographic highs for good carbonate sequences.

Proposal acknowledged by JOIDES Office on: Nov 8, 1990
Proposal forwarded for evaluation to: LITHP, OHP, SGPP, TECP
Proposal copies to: JOI, SO, SSDB

000278

Proposal Reference No.: 389----

Title: "Cretaceous N-S Traverse in the Western South Atlantic"

Proponents: B.A. Malmgren

Summary

See summary of objectives on Proposal Log Sheet [JOIDES Office].

000279

ODP Proposal Log Sheet # 362-Rev2

Revised version of 362-Rev (362/E Re

Received: Nov 8, 1990

Proposal for Scientific Ocean Drilling, Chile Margin Triple Junction, Southern Chile Trench

Brief title: Chile margin triple junction

General area code: **E-S-Pac**

Proponents: S.C. Cande, S.D. Lewis, G. Westbrook

Contact:

Dr. Steven C. Cande
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Palisades, NY 10964

Tel:
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Tmail:

Objectives:

LRP

Effects of ridge crest subduction by investigating "before, during and after collision zones": 8

1) Timing, rates, amplitudes, and regional extent of vertical motion within forearc.
2) Seaward limit of continental crust along the Chile margin forearc in the vicinity of the collision.
3) Nature, petrology, distribution, and chem. affin. for near-trench volcanism assoc. with collision. (4)
4) Nature of hydrothermal fluid interactions between hot subducting ridge crest and overriding plate. 11
5) Variations in stress conditions within accretionalry complex along the margin.
6) Origin of the Taitao Ridge: offshore extension of Taitao ophiolite?

Proposed Sites:

Site Name	Position	Water depth	Total penet	Brief site-specific objectives
SC-1	45°51'S/75°42'W	1615	1200	Neogene/Paleogene depos. evir.; Paleoz. metam. basement.
SC-2	45°52.5'S/75°48'W	2175	750	Neogene/Paleogene depositonal environments.
SC-2'	45°52.2'S/75°47'W	2140	900	Dito.
SC-3	45°53.5'S/75°52'W	2850	550	Age/nature of lowermost trench material; rift-axis proximity
SC-3'	45°53.2'S/75°51.5'W	2775	400	Dito.
SC-4	46°08.4'S/75°48.2'W	2320	825	Depos. environm.; sampling of hydrotherm. modified units.
SC-5	46°14.0'S/75°46.0'W	2400	700	Sampling of hydrotherm. modif. units and hydroth. fluids.
SC-6	46°31'S/75°49'W	1280	550	Depos. environm.; age of oldest sediments above basement.
SC-7	47°29.5'S/75°44'W	1875	700	Nature of basement reflector; depos. envir. of forearc sed.
SC-7'	47°30.5'S/75°47'W	2100	1200	Dito.
SC-8	47°32'S/75°55'W	2210	700	Age/origin of deepest forearc material; lith./depos. environ.
SC-9	47°33'S/76°00'W	1200	400	Lithol./depos. envir. of accreted material.
SC-9'	47°33.5'S/76°04'W	1725	550	Dito.
SC-10	44°26'S/75°30'W	1275	800	Lithol./deposit. evironments of forearc basin.
SC-11	44°27'S/75°40.5'W	940	300	Age of accr. complex/thrusting; pre-collision phys. cond.
SC-12	44°26.8'S/75°36.7'W	940	300	Age of accretion. complex, age of thrusting.
SC-12'	44°26.8'S/75°35.4'W	825	100	Lithol./depos. environm. at crest of outer arc high.
SC-12"	44°27.2'S/75°43'W	2660	300	Age of accr. sediments and thrusting; pre-collis. phys. cond.
SC-13	44°25.6'S/75°24.3W	1275	600	Lithol./deposit. environm. of older upper slope sediments.

Specific area: Southern Chile Trench

Comments: Objective for all sites: vertical motion history.

000280

Proposal acknowledged by JOIDES Office on: Nov 8, 1990
Proposal forwarded for evaluation to: LITHP, OHP, SGPP, TECP
Proposal copies to: JOI, SO, SSDB

Proposal Reference No.: 362-Rev2

Title: "Proposal for Scientific Ocean Drilling, Chile Margin Triple Junction, Southern Chile Trench"

Proponents: S.C. Cande, S.D. Lewis, G. Westbrook

Summary

The Chile triple junction region is one of only two presently active exanples of a ridge/trench collision, an event that has occured numerous times around the convergent margins of the Pacific basin. Ridge-trench collisions are likely to leave distinctive structural and stratigraphic signatures in the geological record of the overriding plate, including: 1) rapid uplift and subsidence of the arc and forearc, 2) high levels of regional metamorphism and elevated thermal gradients, 3) a hiatus in arc magmatism, 4) anomalous near-trench and forearc magmatism, and 5) localized subsidence and extensional deformation of the forearc. Also alteration, diagenesis, and perhaps mineralization of forearc materials can be expected, driven by hot fluids venting from the subducting spreading ridge.

Other questions that can be addressed are timing, rates and mechanisms of ophiolite emplacement by drilling into the Taitao Ridge, which may constitutie an ophiolite terrane in the process of emplacement, and mechanical processes active at the earliest stages of accretionary prism formation against a rigid backstop.

[Summary extracted from proponents' introduction by the JOIDES Office]

LISTING OF PROPOSALS

A: Atlantic; B: Indian; C: Southern; D: Western Pacific; E: Central and Eastern Pacific; F: Instrumental &Miscell.

JOIDES No	Title	Proponents	Country	Date
347/A	Late Cenozoic paleocean., S.Equat.Atlantic	G. Wefer & al.	G/US	8/89
348/A	Upper Paleoc. to Neog. sequence: mid Atl. margin	K.G. Miller & al.	US	8/89
349/A	Clastic apron of Gran Canaria.	H.-U. Schmincke & al.	G/US/UK	8/89
350/E	Gorda deformation zone off N. Calif.	M. Lyle & al.	US	9/89
351/C	Bransfield Strait	D.C. Storey & al.	UK/US/G	9/89
352/E	Drilling into Layer 3, Mathemat. Ridge	D.S. Stakes & al.	US	9/89
353/C Rev.	Antarctic Peninsula, Pac. margin	P.F. Barker & al.	UK	9/89
354/A	Angola/Namibia upwelling system	G. Wefer & al.	G/US	9/89
355/E	Formation of a gaz hydrate	R. von Huene & al.	G/US	9/89
271/E Rev/2	APC coring seamounts off California.	J. Barron	US	9/89
233/E Rev/2	Oregon accretionary complex	L.D. Kulm & al.	US/G	9/89
356/A	Denmark Str.,Greenl. Scotl.&Jan Mayen ridges	P.P. Smolka & al.	G	9/89
357/E Rev.	East Pacific Rise near 12°50'	R. Hékinian & al.	FR/US	10/89
286/E Add.	Layer 2/3 transition at hole 504B	K. Becker	US	10/89
355/E Rev.	Formation of a gaz hydrate	R. von Huene & al.	G/US	10/89
221/E Add.	Eastern Equatorial Pacific Neogene	N.G. Pisias & al.	US	11/89
317/E Add.	Northern Cascadia subduction zone	R.D. Hyndman & al.	CAN	11/89
358/A	To drill a transect at the Vøring margin	O. Eldholm & al.	NOR	11/89
359/A	North Atlan. conjug. passive margin	B. Tuchloke & al.	US/CAN/FR	11/89
360/D	Valu Fa Ridge (Southern Lau Basin)	U. von Stackelberg & al	G	12/89
361/A	Active Hydrotherm. Mid-Atlantic Ridge	G. Thompson & al.	US /UK	1/90
362/E Rev.	Chile margin triple junction	S.C. Cande & al.	US/UK	1/90
363/A	Plume volcanism: Grand Banks - Iberia separation	B.E. Tucholke & al.	US/CAN	1/90
364/A	Thrust units of contin. basement: central Mediter.	R. Sartori & al.	I/FR	1/90
330/A Add.	Mediterranean ridge, accretionary prism	M. Cita & al.	I/G	1/90
365/A	Conjugate passive margin - N.Atlantic	J. Austin & al.	US/CAN/FR	1/90
366/A	Labrador - Greenland (Preliminary)	M.H. Salisbury	CAN	1/90
367/C	Cool water carbonate margin: S. Australia	N.P. James	CAN	2/90
368/E	Jurassic Pacific crust: return to 801C	R.L. Larson & al.	US/UK	2/90
369/A	A deep mantle section in the Mark area	C. Mevel & al.	FR	2/90
370/A	Magmatic proces. & natur. tracers: Oceanogr. FZ	H.J.B. Dick & al.	US/CAN	2/90
371/E	To drill the Nova-Canton Trough	K. Becker & al.	US	2/90
372/A	Water circul. & vertical chemi. gradients Cenozoic	R. Zahn	CAN	2/90
373/E	Revisiting Site 505	M.D. Zoback & al.	US	3/90
374/A	Mantle heterogeneity Oceano. Fracture Zone	H.J.B. Dick & al.	US	3/90
375/E	Deep crustal drilling: Hess Deep	H.J.B. Dick & al.	US	3/90
376/A	Layer 2/3 boundary: Vema fracture zone	J.M. Auzende & al.	FR	3/90
377/F Rev.	Global network ocean floor seismometers	G.M. Purdy & al.	US	3/90
378/A Rev.	Barbados accretionary wedge	R.C. Speed & al.	US/UK/FR	3/90
379/A	Scientific drilling Mediterranean Sea	J. Mascle	FR	3/90
380/A Rev.	Clastic apron of Gran Canaria	H.-U. Schmincke & al.	G	3/90
381/A	Continental shelf and slope of Argentina	B.T. Huber	US	3/90
382/A	Upper mantle-lower crust: Vema F.Z.	E. Bonatti	US	5/90
383/A	Aegean sea: continent-continent collision	K.A. Kastens & al.	US/ESF	5/90
317/E Add/2	Seafloor bottom simulating reflectors: N. Cascadia	R.D. Hyndman	US	6/90
265/D Add.	Western Woodlark basin	S.D. Scott & al.	CAN/AUS/PNG	6/90
384/A Rev.	Venezuela basin and Aruba Gap.	A. Mauffret & al.	FR/US	7/90
385/E	Paleomag., sedi., strati.: ODP Oahu hole	B. Keating	US	8/90
385/E Add.	Paleomagn., sedim.,stratigr.: ODP Oahu hole	C.E. Helsley	USA	8/90
386/E Rev.	California margin drilling	M. Lyle & al.	US	8/90
233/E Rev/3	Central Oregon accretionary complex	J.C. Moore & al.	US	8/90
355/E Rev/2	Formation of a gas hydrate	R. von Huene & al.	G/US	8/90

000282

LISTING OF PROPOSALS

A: Atlantic; B: Indian; C: Southern; D: Western Pacific; E: Central and Eastern Pacific; F: Instrumental &Miscell.

JOIDES No	Title	Proponents	Country	Date
308/E	Reactivated Seamounts,Line Island chain.	B.Keating	US	7/88
3/E Add.	Drilling in vicinity of Hawaiian Islands	R.S.Detrick & al	US	7/88
222/E Rev.	Ontong Java Pl.: origin, sedim. & tectonics.	J. Mahoney & al.	US	7/88
155/F Rev/2	Downhole measurement in the Japan Sea	T. Suyehiro & al	J	8/88
309/F	VSP Program at sites Bon-2 and Bon-1	P.Cooper	US	9/88
310/A	Geochemical sampling ,dippings ,E-Groenland	A.Morton & al.	UK	9/88
311/A	Sedim. equivalent of dippings ,Rockall	D.Masson & al.	UK	9/88
312/A	Potential of drilling on Reykjanes Ridge	J.Cann & al.	UK	9/88
313/A	Evolution of oceanog. pathway: The Equat. Atlan.	E.Jones & al.	UK	9/88
314/D	Fluid flow & mechan. response, Nankai	D.Karig & al.	US	9/88
316/E	To drill a gaz-hydrate hole (West Pacific)	R. Hesse & al.	CONSOR.	9/88
59/A Rev.	Continental margin sediment instability	P.P.E.Weaver & al	UK/NETH/CAN	9/88
3/E Rev/2	Flexural moats, Hawaiian Islands	A.B. Watts & al.	US	10/88
315/F	Network of perm. ocean floor broad band seism.	G.M. Purdy & al.	US	10/88
275/E Rev.	Drilling the Gulf of California	Simoneit (ed.) & al	US	10/88
271/E Rev.	Paleocean. transect of California current	J.A. Barron & al	US	10/88
195/E Suppl.	Paleoenviron. and paleoclim. in the Bering Sea	D.W. Scholl & al	US	10/88
199/E Suppl.	High latitude paleoceanography	D.W. Scholl & al	US	10/88
231/E Suppl.	Plate reconstr. & Hawaiian hotpsot fixity.	D.W. Scholl	US	10/88
225/E Suppl.	Plate-Reconstr.: Bering Sea	D.W. Scholl & al.	US	10/88
317/E Rev.	Northern Cascadian Subduction Zone	R.D.Hyndman & al.	CAN	12/88
318/E Rev.	Chile Margin Triple Junction	S.C.Cande & al	US	1/89
319/E Rev.	An extinct hydrotherm. syst., East Galapagos	M.R. Perfit & al	US/CAN	2/89
320/A	High Northern latitude paleoceano. & paleoclim.	E. Jansen & al	NOR/SWED.	3/89
321/E	The EPR ridge crest near 9°40' N	D.J. Fornari & al	US	3/89
322/E	Ontong Java Plateau-pipelike structures.	P.H. Nixon	UK	3/89
323/A	Gibraltar Arc	M.C. Comas & al	CONSOR	4/89
324/A	Tecton. evol. of W. & E. Mediterr. since Mesozoic	P. Casero & al.	IT/G	4/89
142/E Rev.	The Ontong Java Plateau	L. Mayer & al.	CAN/US/UK	4/89
325/E	High temp. hydrother. site N. Juan de Fuca Ridge	H.P. Johnson & al	US/CAN/UK	5/89
326/A	Continenetal margin of Northwest Morocco	K. Hinz & al	G	5/89
327/A	Argentine continental rise	K. Hinz & al	G/ARG	5/89
203/E Rev.	Cretaceous guyots in the Northwest Pacific	E. L. Winterer & al	US	5/89
328/A	Continental margin of East Greenland	K. Hinz & al	G	6/89
329/A Rev.	Paleocommunication between N & S Atlantic	J.P. Herbin & al.	FR	7/89
330/A	Mediterranean ridge, accretionary prism	M.B. Cita & al.	I/G	7/89
331/A	"Zero-age" drilling: Aegir ridge	R.B. Whitmarsh & al.	UK/G/FR	7/89
332/A	Florida escarpment drilling transect	C.K. Paull & al.	US	7/89
333/A	Tectonic and magmatic evolution: Carribean sea	Mercier de Lepinay &al.	FR/US	7/89
334/A	The Galicia margin new challenge	G. Boillot & al.	FR/SP	7/89
335/E Rev.	Drowned atolls of the Marshall Islands.	S.O. Schlanger & al.	US	7/89
336/A	Artic to north Atantic gateways	J. Thiede	G	7/89
337/D	To test the sedim. architect. Exxon sea-level curve	R.M. Carter & al.	A/NZ/US	7/89
338/D	Neogene sea-level fluctuations: NE Australia	C.J. Pigram & al.	A	8/89
339/A	Drilling transects of the Benguela current	L. Diester-Haass & al.	G/US	8/89
340/D	Evolution of foreland basins: N. Australia	M. Apthorpe & al.	A	8/89
341/A	Global climatic change-Holocene	J.P.M. Syvitski	CAN	8/89
342/A	The Barbados accretionary prism	R.C. Speed & al.	US/UK/FR	8/89
343/A	Drill in window Cret. volc. form. Caribbean	A. Mauffret & al.	FR	8/89
344/A	Western N. Atl. Jurassic magnetic quiet zone	R.E. Sheridan	US	8/89
345/A	Sea level and paleoclim. West Florida margin	J.E. Joyce & al.	US	8/89
346/A Rev.	The Equatorial Atlantic transform margin	J.Mascle & al.	FR	8/89

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

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

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

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

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

000288

LISTING OF PROPOSALS

A: Atlantic; B: Indian; C: Southern; D: Western Pacific; E: Central and Eastern Pacific; F: Instrumental &Miscell.

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

LISTING OF PROPOSALS

Ref.No	Abbreviated Title	Proponents	ODP-Member Participation	Received
387-Rev	Deep drilling of fast-spread crust, Hess Deep	Gillis, K. & al.	US	09/04/90
247-Add2	Water mass conversion, glacial subarctic Pacific	(Zahn & al.)	CAN/US	09/17/90
286-Add2	Addendum #2 for [286----]	Becker, K.	US	09/21/90
388----	Neogene deep water circul. and chemistry, Cerera Rise	Curry, W.B. & al.	US/ESF(S)/UK	10/01/90
345-Add	Addenda to [345----]	Joyce, J.E. & al.	US	10/05/90
389----	Cretaceous traverse, Western South Atlantic	Malmgren, B.A.	ESF (S)	10/29/90
362-Rev2	Chile margin triple junction	S.C. Cande & al.	US/UK	11/08/90

Note that the indices for major ocean areas (A,B,C,D,E) in proposal reference numbers are not used anymore by the new JOIDES Office for logical and practical reasons. Proposals submitted prior to Oct 1990 can be referred to with or without the indices (since the three-digit numbers remain the same) although the JOIDES Office will omit them in reference to earlier proposals.
Types of references: [999----] new proposal; [999-Rev] revised version of #999; [999-Add2] second set of addenda to #999.

000290

May 30, 1990

Dr. Ralph Moberly
Hawaii Institute of Geophysics
University of Hawaii
2525 Correa Road
Honolulu, HI 96822

Dear Ralph:

000291

I'm not sure just how to answer your letter of May 8 protesting the "continual ratcheting upwards of the schedule." Such schedule changes are simply what happens when science plans made a year or two ahead are eventually translated into operational plans to be carried out in real time. The time differences have been additive because most of the Pacific leg objectives seem to require around 60 days rather than the usual "generic" 56 days that we plug into a strawman schedule. I'm sorry that this is a source of distress to the PCOM, and certainly understand the need to get back to the Atlantic as soon as possible, but the only way to avoid an apparent stretch in the schedule is to stop guessing at dates two years in the future. Although the Science Operator needs to work with actual port dates up to about a year in advance, we could use the less restrictive monthly notation, (i.e. June/July, August/September, etc.) for legs not yet operationally planned. Hindsight suggests that the PCOM motion to move into the Atlantic might better have said "...in the last quarter of 1992."

In answer to your question of why I believe more time is needed at Lau and 504B, I think you may have confused Lau with Vanuatu. The Lau Basin leg (Leg 135) as shown on the 5/4/90 schedule is still 58 days long, the same as shown on the rough schedule I prepared at PCOM. On an earlier schedule it was 62 days long because it ended in Papeete rather than Suva. Please note, however, that the Lau Basin sites have not been safety reviewed nor gone through pre-cruise planning, so it is possible that some accommodation may still be necessary if the objectives are to be kept intact.

Leg 134, Vanuatu, was not included in the rough PCOM schedule, but as reflected in the 5/4/90 schedule, gained six days (from 56 to 62) in the pre-cruise planning. Recalculation of time to reach basement objectives and logging requirements were the reasons for this change.

Finally, I assume that the 504B change you referred to is from 12 days on site according to the rough schedule to 15 days on site in the 5/4/90 version. I made this change because someone at PCOM (I think it was Marc Langseth) said that 12 days were not enough. Actually, both numbers are sheer guesswork at this point, so I used the recommended higher number. It can be changed if that makes a difference. I am somewhat concerned about the 62-day length of Leg 136 anyway because of the uncertainties of both 504B and the OSN (FDSN?) work. I would like to see the final operational plans trim that number back a bit, but am not optimistic that this will happen.

I hope I have answered your questions, and can only say in closing, "take heart," maybe Tim Francis can resolve the problem.

Sincerely,

Lou

Louis E. Garrison
Deputy Director

Ocean Drilling Program
Office of the Director
Texas A&M University Research Park
1000 Discovery Drive
College Station, Texas 77845 USA
(409) 845-8480
Telex Number: 62760290
FAX Number: (409) 845-4857

LEG:bk

cc: Dr. Tom Pyle, JOI

000292

September 13, 1990

Dr. James Austin
Chairman-designate, JOIDES PCOM
Institute for Geophysics
University of Texas at Austin
8701 Mopac Blvd.
Austin, TX 78759-8345

Dear Jamie:

The latest ODP Operations Schedule, revised after the August PCOM, makes this a good time to reiterate the point I made at the August meeting about the length of the drilling legs. Namely, that it is important to get the length of each individual drilling leg down to approximately eight (8) weeks at sea.

We have been getting increasing grumbles from SEDCO that the drilling legs are getting too long. While the amount of drilling activity in the oil industry has declined over the past few years, we could get away with it. Now there are signs of an upturn in drilling activity, but the labor to support it is scarce. See attached *New York Times* article. If this is so, there may be big inducements to find experienced tool pushers, drillers, etc. That makes us vulnerable to losing key SEDCO personnel from the *JOIDES Resolution.*

The four core technicians, two in each crew, have remained the same since the program started. They rank between driller and tool pusher in the SEDCO hierarchy and three of the four have worked as drillers. They are key people for the efficiency of the coring operation. Losing people like this would be a severe loss to the ODP.

I hope, therefore, that when we come to construct the FY92 drilling program at the November PCOM, we can bring the leg length down to a norm of about 56 days at sea.

With best wishes for your term as PCOM Chairman.

Best regards,

Tim

Timothy J.G. Francis
Deputy Director

TJGF:hk

Enclosure

cc: Dr. Philip D. Rabinowitz, ODP
Mr. Barry Harding, ODP

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Ocean Drilling Phil Labinowitz

"All the News That's Fit to Print"

The New York Times

National Edition
Southwest: Lower Rio Grande Valley, some showers. Panhandles, warm, a few thunderstorms. Elsewhere, partly sunny, a few thunderstorms, some heavy. Weather map is on page C14.

VOL.CXXXIX .... No. 48,355 TUESDAY, SEPTEMBER 11, 1990

Printed in Austin 60 CENTS

Prices Encourage Search for Oil, but Labor Is Short

By THOMAS C. HAYES
Special to The New York Times

DALLAS, Sept. 10 — With crude oil shortages looming for the first time in 11 years, one hope of Americans — consumers and officials alike — is for greater domestic production. And with prices surging past $30 a barrel, the stage would seem to be set for the comeback of the declining domestic oil industry.

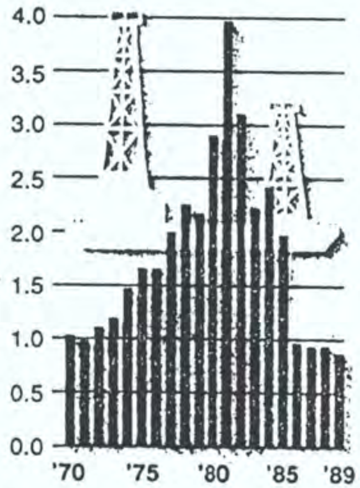
But if the stage is set, some of the production troupe is missing — the $8-an-hour roughnecks who man the rigs, as well as some of the engineers, geologists and geophysicists who find the oil and map out the drilling plans. There are already spot shortages of oilfield workers in South Texas and southeastern Oklahoma, the hottest areas for drilling at present. And should the domestic industry try to put more rigs into place to halt the nation's decline in oil output over the next few years, executives say, it will face serious delays for want of both workers and professional staff.

The labor shortage was apparent in the limited pool of rig workers before the Persian Gulf crisis erupted last month, and industry executives and experts say it can only worsen in the months ahead. For one thing, companies are cautious after their experience of a decade ago. Many geared up then for a new domestic oil boom, only to slash payrolls and abandon equipment to rust when the Organization of Petroleum Exporting Countries sent oil prices tumbling from $27 a barrel to below $10 in 1986.

"We've been a very depressed industry," said John G. Nikkel, president of the Unit Corporation, a drilling and production company in Tulsa, Okla. "Getting qualified, skilled people in the right spot, at the right time, is going to be a significant problem for us."

Most of the major oil companies, as well as hundreds of independent producers, hold mineral rights to large proven reserves. But to tap those re-

Continued on Page C3, Column 1



Decline in Drilling

Active rigs in the United States, in thousands.

Source: Baker Hughes

The New York Times

ther President Bush or President Mikhail S. Gorbachev of the Soviet Union let on in Helsinki.

News Analysis

If the Malta conference of December 1989 represented President Bush's decisive commitment to a new Soviet-American relationship, and if the Washington meeting in June signified the willingness of Mr. Bush and Mr. Gorbachev to keep plugging away even when progress proved elusive, the Helsinki get-together appears to have started something like a partnership that would begin with an increased Soviet role in Middle Eastern diplomacy.

"The idea is still new, still fragile," said an upper-echelon official at the State Department, "but if it works, we have something important here, something that could conceivably form one of the major elements in the post-cold war world."

More Than an Exercise

The one-day meeting in the Finnish capital "looked on the surface like a relatively nondescript event with good symbolism," said Robert Legvold, director of the W. Averell Harriman Institute for the Advanced Study of the Soviet Union at Columbia University. But it was, in fact, more than a signal-

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New U.S. Oilfield Problem: A Labor Shortage

Continued From Page A1

serves, they turn to drilling companies that hire workers for 30 days at a time. After the collapse four years ago, many of these workers found jobs elsewhere, whether driving trucks or working in convenience stores, and many are not eager to return to the oilfields.

The Houston-based Anadarko Petroleum Corporation, for example, had to delay a drilling program in Kansas because payroll cuts among drillers had reduced the number of specialists it needed for the deep wells it planned.

Speaking of one drilling contractor Anadarko uses, Paul Taylor, a company spokesman, said: "There used to be crews in every office that knew this technique. Now there are only two. So, you wait."

Drillers in southeast Oklahoma's Arkoma Basin and in the Austin Chalk range of South Texas also turned down bids from major oil companies to sink new wells because they could not find enough rig workers.

After 40 years in the oil business, James E. Russell, an independent driller in Abilene, Tex., who operates in Texas, Oklahoma and Kansas, is drilling with 15 rigs, down from 50 during the boom years and is cautious about expanding.

'A Lot of Interviewing'

"If we thought the price would stay up to $25 or more for an extended period, naturally we would work into it," he said. "Most people think this could just be a spike in price, and then fall back down."

Earl Ritchie, vice president of Maxus Energy's exploration unit for North America, said Maxus had been able to hire petroleum engineers and other oilfield brainpower, mostly by luring them from other companies. But he said it was becoming harder to find good job candidates. "It takes a lot of interviewing now," Mr. Ritchie said. "I don't think a lot of the people who have gotten out of the industry are going to come back."

Given the nation's production and consumption figures, this points to a serious problem. The domestic oil industry's output fell to an average of 7.3 million barrels daily in the first seven months of this year, from an average of 9 million barrels a day in 1985. In the same seven months, the nation's consumers — chemical manufacturers, utilities, car drivers, homeowners and others — used an average of 17 million barrels a day.

The shortfall was made up by imports, which averaged 8.5 million barrels a day in the period, and by a slight drawing down of existing crude stocks. But the Persian Gulf crisis has led many to fear that the country is depending on imports from an insecure source. Still, the industry feels there is too much uncertainty in that area to conclude that it is time to sink expensive new wells.

1,000 Operating Rigs

If the industry believed oil prices would hold above $25 a barrel in the coming years, it would be worth putting hundreds of rigs into exploratory drilling, as well as stepping up output in producing fields.

Analysts say that if drilling was expanded to 2,000 rigs, from the 1,000 now operating, the slide in output would be halted, and production of natural gas, which is far more plentiful, would be sharply raised. But acute personnel shortages are likely to delay drillers before the count reaches as far as 1,300.

> The need: to get 'skilled people in the right place at the right time.'

More than 200,000 rig workers and other oilfield service employees abandoned the drilling business in the last seven years, according to the Bureau of Labor Statistics. Their total employment peaked at 434,500 in 1982 during the waning months of a 10-year boom during which the Organization of Petroleum Exporting Countries pushed oil prices higher than $39 a barrel from less than $4 in 1972.

One producer in the aging fields of East Texas, T. D. Howell, kept all 18 of his rigs during the four lean years and kept an average of 12 of them active during that period. His drilling and production companies have increased the payroll to 418, from 250 in the early 1980's. He was able to do that because as a unusually conservative businessman, he had no debt to repay during the downturn.

"One of my fears is the potential pirating of our employees," he said. "If we tried to kick off another couple of rigs now, I don't know where we would get the personnel. Our rig rate has to go up so we can pay more."

One potential source of workers is a school for roughnecks that Texas A & M University reopened in July for the first time in four years at an extension center in Abilene. But its costs — $2,200 a person for room, board and instruction — kept enrollment down to a dozen men for its first two five-week sessions, despite hundreds of callers.

"Most of the guys seeking to become rig hands don't have much savings," said Will McNair, the program director. "We approached the oil industry for help and they said, 'We don't have the money, but we need the people.'"

In two dozen recent interviews, analysts, academics and executives of drilling companies and independent producers said the tight market for rig crews would sweep the entire oil and gas industry next year if drilling activity rose.

That, in turn, would lead to higher the offer of higher wages to attract a new generation of workers, and would force drilling costs higher — perhaps pushing rig rates up to $7,000 a day from the present average of $5,000.

Geologists as Consultants

George S. Dotson, president of the international drilling unit of Helmerich & Payne Inc., in Tulsa, predicted that higher oil prices would cure recruitment worries.

"If I had a 25 percent increase in wages across the board, we would be able to attract good people into the business," he said. "They won't be as effective while we train, but we'll be able to man the rigs."

There are also concerns about professionally educated specialists like petroleum engineers, geologists and geophysicists.

Fred A. Dix, executive director of the American Association of Petroleum Geologists, based in Tulsa, said many geologists laid off in 1986 and 1987 have tried to get by financially as consultants to independent producers. Others took jobs with ground water companies or government agencies.

"There is no shortage of professional geologists right now to handle an accelerated domestic drilling program," Mr. Dix said. "The immediate supply is very good, but as older people move out of the profession, there aren't going to be enough younger ones to replace them."

Collegiate membership in the geologists' association plunged to 300 last year from a peak of more than 2,000 in 1985. And the number of graduate and undergraduate students in petroleum engineering majors fell last year to 2,000, down from 11,500 in 1982, when oil prices averaged $31.22 a barrel and the rig count was more than 3,100.

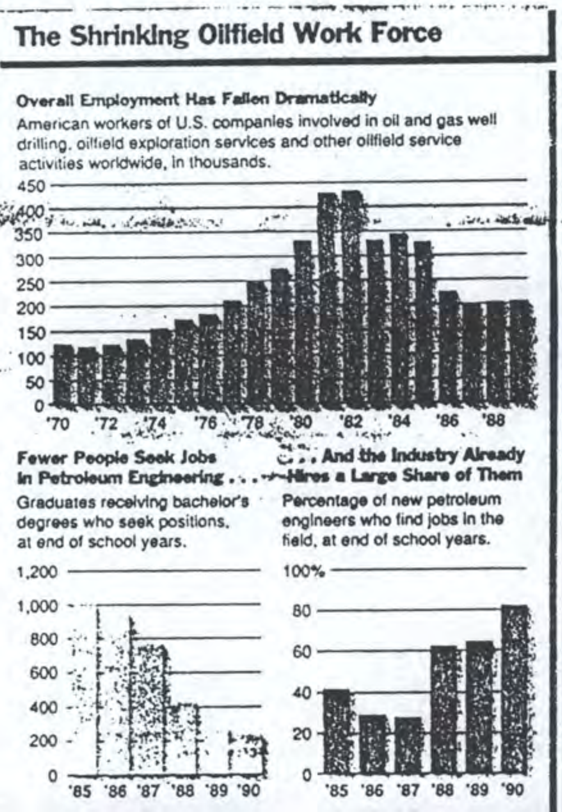
Moreover, the squeeze on bank loans, capital and oilfield drilling equipment that began after the debacle in 1986 will also contribute to a longer wait for more domestically pumped oil.

"The whole industry has been saying we need an energy policy just for the very reason of what is coming up before us right now," said Dillard S. Hammett, a vice president and director of the Energy Service Company, an oilfield service company based in Dallas. "Experienced rig workers have been in short supply for the last six to eight months."

But some players are ready to respond to casting calls from the industry. Sam Wade, a 40-year-old geophysicist in Dallas who quit his job in offshore exploration at ARCO in 1985 amid a huge layoff program, says he is eager to return to the oil business, even though the three video franchise stores he and his wife bought before he left ARCO have prospered.

Another hopeful sign is at Texas A & M, where the petroleum engineering department registered its biggest freshman class in five years last month, with more than 300 entering students, compared with 46 last year. Starting salaries for those who received bachelor's degrees last May averaged $37,500, while those with master's degrees were paid an average of $39,500.

And Harry E. Wingfield, a 19-year-old farm boy from Jasper, Tex., dug into his savings to attend the Abilene roughneck school. "A derrick man has lots of responsibility," he said. "I want to see the oilfield part of the world, make some money and go to college later on."



Seagram Stock Buyback

By Reuters

The Seagram Company announced

000295

INSTITUTE FOR GEOPHYSICS

THE UNIVERSITY OF TEXAS AT AUSTIN

8701 Mopac Boulevard · Austin, Texas 78759-8345 · (512) 471-6156 · Telex: 910-874-1380 UTIG AUS

September 19, 1990

Dr. Timothy J.G. Francis
Deputy Director
Ocean Drilling Program
Texas A&M University Research Park
1000 Discovery Drive
College Station, TX 77845

Dear Dr. Francis:

Thank you for your letter to Jamie of September 13 regarding the lengths of drilling legs.

I have enclosed a chart that I just constructed, showing the number of days at sea for each drilling leg, excluding port time. It does not show a convincing trend of increasing leg length, so that a SEDCO objection on that basis would seem to be unsupported. We suspect that their concern arises from the external, oil industry trends that you described, rather than any changes within ODP. Can you provide us with any further information regarding specific SEDCO objections? Jamie will certainly raise this issue at the next PCOM meeting, but it would be helpful to fully understand the reasoning at SEDCO.

Thank you again. I look forward to hearing from you.

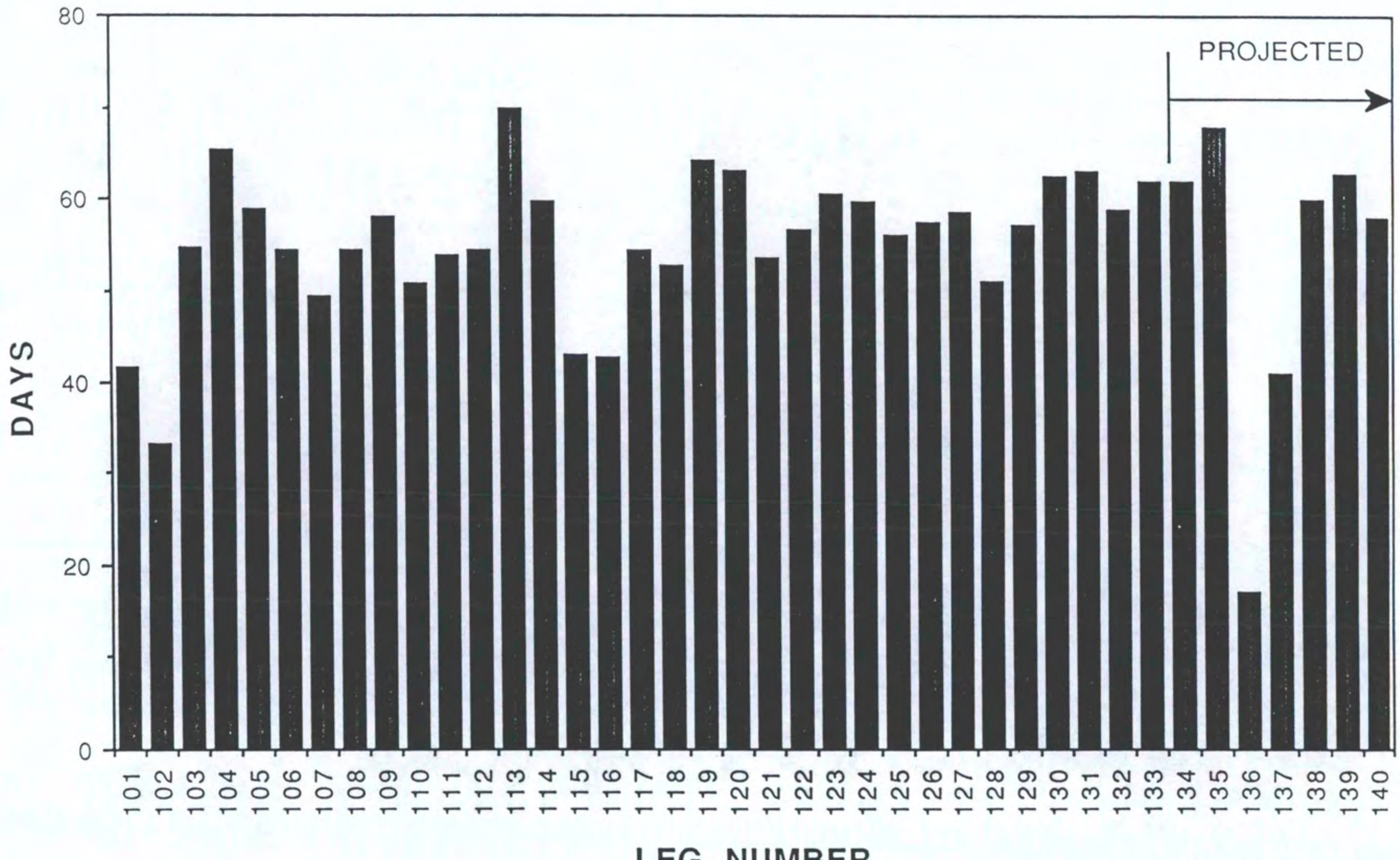
Sincerely yours,

Craig S. Fulthorpe

Craig S. Fulthorpe
Science Coordinator

cc: Dr. J.A. Austin

DAYS AT SEA DURING ODP LEGS



REVISED 11/08/90

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Reef 'too young' for oil

By JAMIE WALKER

EVIDENCE that the Great Barrier Reef is up to 40 times younger than previously thought has debunked the theory that it might contain exploitable reserves of oil.

Scientists involved in a global, $US55 million-a-year ($67 million) effort to plumb the secrets of the ocean floor have found the reef is less than one million years old and too new to yield commercial quantities of oil or natural gas.

The finding has emerged from a two-month voyage of discovery along the north Queensland coast by the research ship Joides Resolution, the focal point of the international Ocean Drilling Program, which collected more than 5km of core samples from the reef. Not one yielded a trace of oil.

Expedition co-leader Dr Peter Davies, of the Bureau of Mineral Resources, said yesterday test drilling in the Townsville Trough, off the seaward face of the reef, had also established that the underlying sediment essential to hydrocarbon development was significantly younger than anticipated.

Dr Davies said he would not rule out the presence of oil elsewhere in the vast trough, which was estimated to have potential reserves of up to 1000 million barrels and may be made available for commercial exploration under a development strategy released in June by the Minister for Resources, Mr Griffiths.

"All we can add to what was known before is that the sediment we drilled . . . is much younger than previously thought," Dr Davies said.

"There is a possible impact there on the chances of finding oil."

The possibility of oil exploration in the waters adjoining the Great Barrier Reef Marine Park, where all mining-related activity has been banned since the early 1970s, forced the Prime Minister, Mr Hawke, to rule out any form of ocean drilling that could endanger the World Heritage-listed reserve.

But according to Dr Davies, fears of the reef proper being mined were always baseless. Due to its relatively tender age, there was simply no oil to be found beneath the corals, he said.

Dr McKenzie and Dr Davies on drilling research — Picture RICHARD MURRAY

Scientists had previously believed the foundations of the reef were laid near the outer edge of the continental shelf about 20 million years ago, although these estimates had been revised down to three million years by the time the Ocean Drilling Program expedition started in August.

Now, the finding that the reef is no older than one million years, and possibly younger than 500,000 years, has raised compelling new questions about its formation and the potential for some form of catastrophic demise.

Another expedition leader, Dr Judith McKenzie, of Switzerland's Federal Institute of Technology, said the reef appeared to have been destroyed "countless times" by fluctuations in sea levels. The modern reef, for example, developed less than 8000 years ago when oceans rose at the end of the last ice age.

Dr Davies said the reef seemed to have regenerated suddenly, and on a huge scale, at least 20 times.

"When it starts it just seems to click on," he said. "But as to what happens when it goes out, we just don't know."

The Great Barrier Reef voyage was the 33rd leg of the Ocean Drilling Program, an extraordinary venture in which scientists from 18 countries are compiling a global record of geological evolution and climate change from cores taken up to 2km beneath the sea bed.