JOIDES PLANNING COMMITTEE ANNUAL MEETING
21 - 23 April, 1992
University of Texas at Austin

AGENDA

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Tuesday, 21 April 1992 (9:00 AM)

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Additional Attachments

As of April 10, 1992

JOIDES MEETING SCHEDULE

Date	Place	Committee/Panel
1992		
21-23 April	Corvallis, OR	PCOM
7-8 May	College Station, TX	TEDCOM
18-20 May	Paris, France	OD-WG
2-4 June	Windischeschenbach, Germany	DMP
6-8 June	Salt Lake City, UT	SL-WG
15-18 June	Washington, DC	EXCOM
4-6 August	Palisades, NY	SSP
11-13 August	Newfoundland, Canada	PCOM
9-11 September*	Marseilles, France	IHP
12-13 September*	Pat Bay, B.C., Canada	SMP
21-23 September*	Sante Fe, NM	DMP
22-27 September*	Iceland	TECP
26-28 September*	Kiel, Germany	SGPP
30 Sept-2 Oct*	Marseilles, France	OHP
14-16 October*	France or Tasmania	LITHP
22-23 October*	London	PPSP
1 December	Bermuda	Panel Chairpersons
2-5 December	Bermuda	PCOM
1993		
January	Australia	EXCOM
January*	College Station, TX	DMP
26-28 April	Palisades, NY	PCOM
August	Australia?	PCOM

*Meeting not yet formally requested and/or approved

ODP OPERATIONS SCHEDULE

Leg		Port of Origin†	Cruise Dates	Days at Sea	Estimated Days Transit/OnSite
142	Engineering, EPR	Valparaiso 13-17 January	18 January-19 March 1992	61	25/36
143	Atolls & Guyots A	Honolulu 19-23 March	24 March - 20 May 1992	56	12/44
144	Atolls & Guyots B	Majuro Atoll 20-24 May	25 May - 20 July 1992	56	12/44
145	North Pacific Transect	Yokohama 20-24 July	25 July - 21 September 1992	59	18/41
146	Cascadia	Victoria 21-25 September	26 September - 21 November 1992	56	6/50
147	Hess Deep	San Diego 21-25 November	26 November 1992 - 21 January 1993	56	14/42
148	Engineering, DCS IIB*	Panama 21-25 January	26 January - 23 March 1993	56	18/38
149	Iberian Abyssal Plain	Lisbon 23-27 March	28 March - 23 May 1993	56	12/44
150	New Jersey Sea Level	New York 23-27 May	28 May - 23 July 1993	56	5/51
151	Atlantic Arctic Gateways	St. John's 23-27 July	28 July - 22 September 1993	56	14/42
152	East Greenland Margin	Reykjavik 22-26 September	27 September - 22 November 1993	56	

*Assumes Mid Atlantic Ridge operation. Definition of leg awaits outcome of 142.
Back-up: Hole 504B

†Although 5 day port calls are scheduled, the ship sails when ready.

Revised 17 December 1991

JOIDES PLANNING COMMITTEE SPRING MEETING
21 - 23 April, 1992
Oregon State University, College of Oceanography
Corvallis, Oregon

AGENDA NOTES

Tuesday, 21 April 1992 (9:00 AM)

Item A.
Welcome and Introduction

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

2. Introduction of PCOM members, liaisons and guests.

Item B.
Approval of Minutes

1. The attached revised draft minutes of the 4-7 December 1991 PCOM Meeting in Austin, Texas include corrections received at the JOIDES Office through 10 April.

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 main purpose for the Spring Meeting is to plan the general direction of the *JOIDES Resolution* for the next four years (see Agenda **Items J.** and **K.**).

Other important, but subordinate, purposes are: to decide matters related to various reports from liaisons to PCOM (Agenda **Item D.**), from PCOM liaisons to thematic/service panels (Agenda **Item E.**) and from existing WGs (Agenda **Item F.**, except the Data Handling Working Group [DH-WG], see below), to hear recent scientific results from drilling off Chile (Leg 141) (Agenda **Item G.**) and scientific/engineering results from DCS IIB testing on the East Pacific Rise (Leg 142) (Agenda **Items H.** and **I.**), particularly as Leg 142 bears on the fate of Leg 148, presently scheduled as a further test of DCS IIB (Agenda **Item I. 1.**), to review PCOM's 1991 prioritization of engineering systems (particularly in light of Leg 142) and incorporate thematic panel input on non-engineering equipment needs (Agenda **Items I. 2.** and **I. 3.**, respectively), to hear a report from the DH-WG and discuss/take action on its recommendations (Agenda **Item I. 4.**), to make any adjustments in the planning structure necessary to prepare for the next four years in general and for Fiscal Year 1994 (FY 94) in particular (~ late November, 1993 - late September, 1994; Agenda **Items I. 5.** and **6.**), and to conduct routine PCOM business (Agenda **Items L., M.,O. and P.**).

In oral presentations concerning their activities, PCOM liaisons should answer any questions addressed to them by PCOM previously, stress points that bear on planning for the short (FY 93) to intermediate (FY 94), and raise any other issues that need to be resolved at this meeting. Details can be left to panel minutes (appended as attachments to this Agenda Book, if received at the JOIDES Office by 4/10/92). *(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. Tuesday: Reports by liaisons to PCOM, including a report on the meeting of the Budget Committee (BCOM), and PCOM liaisons to service/ thematic panels (except for global rankings of scientific programs) and existing WGs. All parties are urged to keep their reports and related discussions 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 New Business Agenda **Item N.**).

b. Wednesday: To start the day, a summary of scientific results from Leg 141 will be presented. A summary of Leg 142 results, both scientific and engineering, will follow. This will serve as an introduction for a more general consideration of DCS and non-DCS engineering priorities, which is in part a reconsideration of PCOM's prioritization of April 1991 (included with this Agenda Book). After lunch, there will be a discussion of non-engineering equipment needs prioritized for PCOM by the advisory panels. PCOM will next hear a report from the Data Handling Working Group (DH-WG), and discuss/act on the DH-WG's recommendations. Preparation for detailed planning for FY 94 will then be addressed, including a discussion of the need for any new DPGs and WGs. This will be followed by global rankings of scientific programs by thematic panels, presented by PCOM liaisons, which will set the stage for a PCOM motion describing the general direction of the drilling vessel for the next four years, i.e., to spring 1996.

c. Thursday: Routine PCOM affairs, personnel decisions, and any matters deferred from earlier in the week. Under Other Business (Agenda **Item P.**), potential PCOM action items derived from JOIDES Office perusal of recent panel minutes, reports and correspondence are listed. Other items for discussion may be brought forward at the outset of the meeting, or may arise during the meeting. They will probably be added under New Business (Agenda **Item N.**)

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

Item D.
ODP Reports by Liaisons to PCOM

1. EXCOM (J. Austin, liaison).

EXCOM met on 14-16 January 1992 in Bonn, Germany. The major topic of discussion was the report of the "Subcommittee on Future Organization and Management of ODP" by J. Briden (NERC, UK) (included with this Agenda Book). EXCOM supported the following resolution:

EXCOM thanks and congratulates Jim Briden for his stimulating report. EXCOM agrees with the general ideas developed in this report, and wishes to study carefully its recommendations during its next meeting. EXCOM encourages all efforts for improving the management and efficiency of the drilling program and also its internationalization.

Briden's recommendation [i], as modified by an EXCOM subcommittee, reads as follows:

The sciences that are served by ODP could benefit from regular, open scientific conferences on the Scientific Contributions of Ocean Drilling. EXCOM asks PCOM to explore the advantages of holding them during IUGG General Assemblies, and ways of achieving feedback into the JOIDES structure.

PCOM will take up this charge under Agenda **Item P.**

An EXCOM subcommittee (C. Dorman [WHOI, chair], H. Dürbaum [Germany] and D. Falvey [Australia]) is in the process of examining subcontracting interest and attendant procedures [Briden's recommendations [vi] to [ix]) and will report back to EXCOM in June 1992. The subcommittee will address: subcontracting of existing functions, new subcontracts and mechanisms, timing, and whether there is interest among existing ODP members in bidding for parts of existing and/or new subcontracts. The JOIDES Office has offered to help the subcommittee with secretarial support.

The Briden report made a number of recommendations ([x] to [xii]) re: the JOIDES advisory structure. In response to this input (and additional advice from PEC-III, whose report is currently in draft form), EXCOM and JOI, Inc. are empowering a panel to review the scientific advisory structure. Potential members have been nominated, and their willingness to serve is being ascertained. The panel should begin its task later in 1992.

EXCOM also heard reports on the status of potential new drilling platforms, and noted with great interest ongoing planning for new ocean drilling facilities as presented by Japan, Russia and France (on behalf of Europe - NEREIS). EXCOM welcomed these as potentially important contributions to ocean drilling and associated science and enhanced international cooperation, and encouraged further development of the plans in close cooperation with JOIDES. In particular, EXCOM welcomed the recent Japanese national policy which is expected to lead to increased contributions to the international science community.

EXCOM also heard progress reports on ODP renewal (see also Agenda **Item D. 3.**), which appears to be on track for a final decision by the end of September 1992.

2. BCOM (J. Austin).

The Budget Committee met on 17-18 January 1992 in Bonn, Germany (minutes included with this Agenda Book). BCOM did not consider a possible phase-down of ODP in FY 93 (if renewal does not occur), but did incorporate financial scenarios involving both 6 and 7 international partners (see also Agenda **Item D. 3.**):

> *The lower income profile for FY 93 and 94 is close to the minimum acceptable level calculated by BCOM in 1991, but will not allow substantial technical development.*

In terms of Special Operating Expenses, BCOM allocated funds primarily in support of scheduled FY 93 programs (see the minutes):

> *BCOM regarded the requested amount for Computer Services and Shipboard Science Equipment as provisional, pending further advice from PCOM.*

PCOM will take up the issue of non-engineering equipment needs, as prioritized by the advisory panels (and attached to this Agenda Book) and dealt with by the DH-WG, under Agenda **Items I. 3 and 4.**

3. NSF (B. Malfait, liaison).
   - Resource issues and budget status.
   - Renewal activities.
   - U.S. science activities.
   - Other issues.

4. JOI, Inc. (T. Pyle, liaison).
   - Status of the FY 93 to FY 96 Program Plan and budget.
   - Status of liaison groups.
   - Status of high-temperature tools.
   - Other information.

(Approximately 10:15 AM) Coffee Break

5. Science Operator (T. Francis, liaison; not to include status of DCS and non-DCS engineering and technical developments, see Agenda **Items I. 1.** and **2.**).
   - Operations of the *D/V JOIDES Resolution* since the December 1991 PCOM meeting: Leg 141 (Chile Triple Junction), Leg 142 (EPR/Engineering) and Leg 143 (A&G Leg 1, in progress).
   - Preparation for future legs: legs 144 through 151.
   - Adjustments to FY 93 operations schedule.
   - Reorganization of technical support at ODP-TAMU.

- Leg staffing.
- Publications.

6. Wireline Logging (M. Lyle, liaison; not to include status of engineering and technical developments, see Agenda **Item I. 2.**).
   - Recent operations, performance and results (legs 141-143).
   - Other comments.

7. ACTION Identification of action items from morning reports; take action or postpone (probably to Agenda **Item N.**), as appropriate.

Item E.
JOIDES Reports by PCOM Liaisons to Panels
*(Note: excluding: (a) membership issues, which will be covered on Thursday [Agenda **Item M.**], and (b) for thematic panels, details of global rankings of programs, which will be covered on Wednesday afternoon [Agenda **Item J.**])*

1. DMP (K. Becker, liaison).

(Note: The PCOM chair asks that the PCOM liaison be prepared to give the DMP report followed by a summary of the first meeting of the Working Group on In Situ Pore-Fluid Sampling.)

DMP met 28-30 January in Kailua-Kona, Hawaii (minutes attached to this Agenda Book). The Pore Fluid Sampling WG met 2 April in College Station.

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

2. PPSP (J. Austin, liaison).

PPSP met 10-11 March in Palisades, New York (draft minutes attached to this Agenda Book). PPSP considered legs 145 (all proposed sites approved) and 146 (all proposed sites approved or approved as modified, with the exception of OM sites 2 and 6 and VI Site 5a, not approved). PPSP also listened to a preview of Leg 150 from Greg Mountain (LDGO), Co-Chief Scientist designate, and noted issues of possible safety concern which will be taken up at the panel's formal review of this leg in October.

PPSP has finished a new version of the ODP Guidelines for Pollution Prevention and Safety, which is now at the JOIDES Office. The guidelines will be published as a special issue of the *JOIDES Journal* later in 1992.

3. SMP (J. Fox, liaison)

SMP met 20-22 March in Honolulu, Hawaii (minutes attached to this Agenda Book).

4. IHP (Y. Lancelot, liaison).
*(Note: I. Gibson, IHP Chair, will attend the meeting as Chair of the DH-WG [Agenda **Item I. 4.**]. He should feel free to contribute to the PCOM liaison report.)*

IHP met 1-3 April at College Station (minutes attached to this Agenda Book).

5. SSP (J. Watkins, liaison).
(Note: R. Kidd, SSP Chair, will attend this meeting as a PCOM alternate for H. Jenkyns. He should feel free to contribute to the PCOM liaison report.)

SSP met 1-3 April at LDGO in Palisades, New York (executive summary attached to this Agenda Book).

6. TEDCOM (J. Austin, liaison).

TEDCOM has not met since the last meeting of PCOM. TEDCOM's next scheduled meeting is 7-8 May in College Station. Primary items on their agenda will include DCS planning/future and preliminary review of a "deep drilling" RFP being prepared by ODP-TAMU and the PCOM Chair.

Several TEDCOM members attended a post-Leg 142 debriefing at ODP-TAMU on 6 April, where they provided useful advice to ODP engineers concerning further DCS development.

7. OHP (R. Duncan, liaison).

OHP met 5-7 March in St. Petersburg, Florida (minutes attached to this Agenda Book).

8. SGPP (M. Cita-Sironi, liaison).
(Note: P. Blum also attended this meeting, representing the JOIDES Office. He should feel free to contribute to the PCOM liaison report.)

SGPP met 6-8 March at RSMAS in Miami, Florida (minutes attached to this Agenda Book).

9. LITHP (J. Malpas, liaison).
(Note: The PCOM Chair attended this meeting, and he will contribute to the PCOM liaison's report.)

LITHP met 18-20 March in Davis, California (minutes attached to this Agenda Book).

(Approximately 3:15 PM) Coffee Break

10. TECP (B. Tucholke, liaison).

TECP met 23-25 March in Las Vegas, Nevada (minutes attached to this Agenda Book).

11. ACTION Identify action items from reports of PCOM liaisons to advisory panels; take action or postpone (probably to Agenda **Item N.**) as appropriate.

Item F.
JOIDES Reports by PCOM Liaisons to Existing Working Groups
(Note: This Agenda Item does not include a report by the In Situ Pore Fluid Sampling Working Group, given as part of the DMP report [above], or the report of the DH-WG, Agenda ***Item I. 4.****)*

1. Offset [Section] Drilling Working Group (B. Taylor, liaison).

The second meeting of the OD-WG was held 3-6 February at RSMAS, Miami, Florida (minutes attached to this Agenda Book). The report below is from the PCOM liaison:

"Offset section drilling is a strategy to understand the processes of ocean lithosphere formation by drilling key partial sections of crustal and upper mantle rocks exposed in tectonic windows. Such windows are provided by propagating rifts, fracture zone walls and transverse ridges, and median valley master faults. Offset sections are ready to drill now, using proven technologies and in temperature conditions that allow the deployment of the full suite of downhole measurements.

Less than half of an oceanic crustal section has been drilled to date. The first priority is ~~to complete a global composite section of oceanic crust and upper mantle~~, to investigate the igneous, structural, metamorphic and hydrothermal processes operative at all levels. The primary targets and processes relate to (1) the diabase dike - gabbro transition, (2) long sections of gabbro, (3) the gabbro - peridotite transition, and (4) long sections of peridotites.

First order variations in these processes occur between slow vs. fast spreading ridges. The second priority is to complete a global composite section in each environment. As faulting is integral to the formation of slow spread crust, investigating median valley master fault processes forms part of this second priority.

Second order variations occur between geochemically enriched vs. depleted areas of the mid ocean ridge and systematically within magmatic segments of all spreading systems. Establishing the effects of these variations are third priority objectives.

The OD-WG proposes a phased approach to offset section drilling in order to make successive major advances by addressing the highest priority achievable objectives in order. Recovering a long section of upper mantle peridotites is of the highest priority. Most dike-gabbro and gabbro-peridotite transitions require further site surveys to characterize them in the third dimension before they can be primary drilling targets. Therefore, advancing Hole 504B from dikes into gabbros is a high priority objective as are additional (to Hole 735B) long sections of gabbros. Successful long crustal section holes where the 3-D geometry and depth of transitions can be determined will become high priority transition drilling targets.

OD-WG proposes the following SSP site survey matrix for areas of offset section drilling:

Required: Swath bathymetry, magnetics, precise geological sampling and analyses, near bottom visual observations.
Recommended: MCS and OBS reflection and refraction, gravity, regional and near bottom sidescan.
Beneficial: Bottom gravity/magnetics/seismics, conjugate site geophysics, microseismicity data.

In priority order, OD-WG recommends the following targets for DCS IIB Engineering Leg 148 *(if drilled, see Agenda Item I. 1. below)*:

1) Vema transverse ridge limestones, 600-1000 m water depth (vertical motion history).
2) Vema Fracture Zone wall diabase dikes, 2000-2500 m water depth.
3) MARK master fault and long gabbro section, 2500-4000 m water depth."

2. Sea-Level Working Group (J. Watkins, liaison).

The SL-WG has not met since the December 1991 meeting of PCOM.

The third and final meeting of the SL-WG will be in early June in Utah. A final report should be presented to PCOM at its August 1992 meeting.

3. ACTION Identify action items from afternoon reports of PCOM liaisons to existing WGs; take action or postpone (probably to Agenda **Item N.**) as appropriate.

Wednesday, 22 April 1992 (8:30 AM)

Item G.
Scientific Results of Recent Drilling: Leg 141 (Chile Triple Junction (S. Lewis, Co-Chief Scientist)

Item H.
Scientific Results of Recent Drilling: Leg 142 (EPR/Engineering) (R. Batiza, Co-Chief Scientist)

This presentation will focus primarily on science achieved during Leg 142, and will serve as an introduction for PCOM discussion of DCS engineering - progress and prospects (part of the next Agenda Item).

Item I.
Preparation for the FY 93 Program and Beyond

1. DCS - progress and prospects.

- Leg 142/DCS Status Report (M. Storms, ODP/TAMU).

- The fate of Leg 148 (J. Austin).

At its December 1991 meeting, PCOM designated Leg 148 as a further engineering test of DCS Phase IIB, either at a site in the North Atlantic (to be determined, in consultation with advisory panels) or at the EPR. In case the DCS system did not perform optimally at EPR, PCOM formulated a Leg 148 back-up: deepening of Hole 504B. LITHP has recently endorsed this back-up plan (see their minutes).

PCOM must make a decision re: Leg 148 at this meeting. *(Note: This action must take the form of a motion.)*

Based upon the preliminary ODP-TAMU prognosis for long-term development of the DCS (above), and continuing support from most of the thematic panels for DCS technology (see their attached minutes), PCOM may also want to consider an additional motion making a philosophical commitment of drilling time for additional DCS testing as part of FY 94 drilling and beyond.

(Approximately 10:15 AM) Coffee Break

2. Non-DCS engineering developments (J. Austin).

In April 1991, PCOM prioritized engineering development as follows (numbers suggesting decreasing order of priority):

"1) Improvement and development of the Diamond Coring System.

[Note: DCS has already been discussed (Agenda **Item I. 1.** above), although PCOM may want to reiterate support for DCS as its top-rated engineering system as part of this Agenda Item.]

2) Improvement and development of the XCB Coring System.

After these major priorities, PCOM believes that development should respond to the needs of scheduled legs. This implies that the next priorities are:

3) Cork/PCS/high temperature preparations, in preparation for Leg 139.

4) Orientation needs (hard rock orientation, Sonic Core Monitor, electronic multishot), in preparation for Leg 141.

5) Vibra Percussive Corer, in preparation for scheduled 1992 SGPP objectives.

6) Motor Driven Core Barrel, in preparation for the use of GEOPROPS in Cascadia drilling, Leg 146.

Each of these development activities should be reevaluated after testing on the appropriate leg(s).
Other active development efforts should continue on an as-possible basis.
If there are short-term perturbations of the schedule, PCOM assumes that engineering development will respond to the schedule.
PCOM expects reports on the development schedule in the future so that it may reevaluate the priorities."

At the April 1991 meeting, PCOM decided to revisit the general subject of engineering development each year at its Spring Meeting, with a view to revising priorities for ODP-TAMU engineers. PCOM will do that now, starting with a review of non-DCS engineering by ODP-TAMU.

- Drilling systems (M. Storms, ODP-TAMU).

Following the review, PCOM should revise the April 1991 list (above), taking into account needs of the FY 93 drilling schedule in particular. *(Note: Any action on drilling system development/prioritization must be in the form of a motion.)*

- Priorities for downhole measurements (M. Lyle, ODP-LDGO)

- The DataNet Concept (see White Paper attached to this Agenda Book) (*Note: For the information of PCOM, the White Paper has been considered by DMP, IHP and SMP [see their attached minutes for pertinent comments]).*

- Tools and tool development.

As was true for drilling systems, PCOM's assessment of logging system priorities for the near- and intermediate future must take the form of a motion, (which the PCOM Chair will take back to EXCOM in June).

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

3. Non-engineering equipment needs (J. Austin).

At its December 1991 meeting, the Panel Chairs agreed to attempt to develop a composite "wish-list" of non-engineering equipment needs, as an aid to planning by subcontractors, particularly in terms of projecting SOE's ("Special Operating Expenses", see the attached BCOM report). S. Humphris, the LITHP

Chair, has taken the lead in this effort. Based upon a list circulated among the panels, the following table has been prepared (see also attached panel minutes for details of individual rankings):

NON-ENGINEERING WISH LIST

		OHP	SGPP	LITHP	TECP	SMP	IHP
I[1]	Pressure Core Sampler		1				
	Coring in Unstable Strata		2				
II[2]	Borehole gravimeter						
	High-T resistivity tool						
	High-res. geochemical tool	9					
	High-res. mag. susc. tool	3					
	Fluid sampling & perm.		3	3	1		
	Core, natural gamma						2
	MST upgrade, nat. gamma	5					
	Core, resistivity meas.	6					
	Sediment color scanner	8				2	
	Core barrel magnetometer	2					
	CO3 autosampler	7				4	
	Sidewall coring tool	11		1	3b		
	Catscan/X-Ray radiography		4	4			
	Auto-titration					6	
	Seismic towing system					7	
	Meas., better core-log corr.				3a		
	X-Ray, lab procedures		5				
III[3]	Core-log data integration	1		2	2	1	1
	Synthetic seis. software	10					
	Stratal geometry software	12					
	Bar code system					3	
	Seismic workstation					5	
	Improved paleo. data acq.						3
IV[4]	Composite index		6				4
	Micropaleo. ref. slides	4			3c		

[1]refers to PCOM's April 1991 engineering prioritization. Only SGPP re-reprioritized PCOM's list; [2]downhole measurements and sampling; [3]shipboard lab; [4]computing.

Based upon the overall rankings generated above, the following "short-list" has been generated by Panel Chairs (with Humphris taking the lead), for action in (the remainder of) FY 92 and FY 93:

PRIORITIZED NON-ENGINEERING WISH LIST
(Compiled by the Panels - April 1992)

I.	Core-log data Integration	
	1. Workstation and software	FY 92
	2. Natural gamma and MST upgrade (this is being worked on by TAMU)	FY 92
	3. Downhole magnetic susceptibility (under development by the French)	FY 93
	4. Discrete core resistivity (very cheap, <$2K)	FY 92
II.	Capital Replacement Equipment	
	1. Computer and software replacement for data handling (recommended by DH-WG)	FY 92 and 93
	2. Seismic data acquisition/synthetic seismogram workstation to replace existing one	FY 93
	3. Auto-titration	FY 93
III.	New/Improved Equipment	
	1. Fluid sampling and permeability	FY 92
	2. Sidewall coring tool	FY 92
	3. Sediment color scanner (cheap, ~$6K)	FY 92
	4. Core barrel magnetometer (very cheap)	FY 92

NOTES:

1) Pressure Core Sampler - the Panels reemphasized that the Pressure Core Sampler and the transfer manifold are still extremely important. There is some concern that development of the manifold is being done by a third party. However, it was not included in these rankings because it is considered an engineering development and needs to be placed highly on the Engineering Priority List by PCOM.

2) Coring in Unstable Strata - this has not been included in the list because it is listed on the Engineering Priority List and will need a number of tools to be accomplished. Drilling in such conditions was SGPP's top ranked proposal for FY 93 drilling, and development of

this capability has become a matter of urgency with the scheduling of Leg 150.

3) Fluid Sampling and Permeability - this has been included although its development has been taken over by Engineering. It was highly ranked by three of the Panels, and its inclusion here is to indicate its high priority.

Based upon the input above, PCOM should consider the panels' recommendations and either endorse, modify or reject them. In doing so, PCOM must take into account available funding sources for FY 92, along with scheduled FY 93 drilling priorities. (Note: Projected fiscal realities for FY 93 are detailed in the attached BCOM report). *(Note: Any PCOM action on this item must take the form of a motion.)*

PCOM may want to defer action on this item until after the DH-WG report (Agenda **Item I. 4.** below), which bears on a substantial subset of these recommendations.

The PCOM Chair applauds the proactive stance that the advisory panels have taken on this issue. He proposes that PCOM revisit non-engineering equipment needs each year at the Spring Meeting, in tandem with considering ongoing engineering development of drilling systems.

4. New Working Groups.

- Data-Handling Working Group (DH-WG; I. Gibson, Chair).

The DH-WG met 5-6 March in Toronto, Canada (minutes attached to this Agenda Book).

PCOM must consider the DH-WG's recommendations and either endorse, modify or reject them. PCOM may also want to link action on the DH-WG's recommendations to relevant parts of the non-engineering equipment "wish list" detailed above (Agenda **Item I. 3.** above). However, PCOM should be aware that endorsing all or part of the DH-WG recommendations will have an impact on fiscal resources available for unrelated non-engineering equipment needs. *(Note: Any PCOM action on the DH-WG recommendations must take the form of a motion.)*

Before adjournment of this meeting, PCOM should move to disband and to thank formally members of the DH-WG, if PCOM considers their task complete.

- Are any additional WGs required?

At the moment, JOIDES is supporting WG's for Offset Drilling, Sea Level and Data-Handling. The first two each have one more meeting. The third's work is complete, unless PCOM decides to extend the DH-WG mandate (perhaps by forming a Steering Group to monitor progress on the DH-WG recommendations?). By the end of 1992, all will have completed their currently assigned tasks.

5. New Detailed Planning Groups.

- At the moment, no DPG's are operative. Are new DPGs required?

For example, OHP has suggested formation of both NAAG (II) and Caribbean DPGs. LITHP is on record as wanting a TAG-DPG.

PCOM should address the need to:

- Establish any additional DPG(s)/WG(s) appropriate to prepare for scientific drilling, e.g., in FY 94 (to include no more than 5 or 6 legs in the general direction of the vessel *[to be determined below]*).
- Name an appropriate chair (or chairs), then fill and charge the DPG(s)/WG(s).
- Meeting(s) and report(s) of the DPG(s)/WG(s) ought to be completed so that report(s) can be reviewed and commented upon by panels at their fall 1993 meetings, before the 1993 Annual Meeting of PCOM with Panel Chairs.

(Note: It will be easiest if PCOM approves mandates and slates of members for any new DPGs and WGs in a single motion.)

Item J.
Thematic Rankings of Programs

Thematic panel rankings and statements of interest in individual programs are given in each panel's minutes (included with this Agenda Book, if received by the JOIDES Office by April 10). The accompanying summary table prepared by the JOIDES Office compares the rankings of the four panels. *(Note: A map prepared by the JOIDES Office summarizing the global prioritizations will also be available at the meeting for all participants.)*

Individual thematic panel rankings and the means by which those rankings were achieved will be presented by PCOM liaisons:

1. LITHP (J. Malpas).

2. OHP (R. Duncan).

3. SGPP (M. Cita-Sironi).

4. TECP (B. Tucholke).

(Approximately 3:15 PM) Coffee Break

Item K.
Setting the General Direction of the Drilling Vessel to Spring 1996

PCOM should consider primarily the global rankings of scientific programs by the thematic panels, reviewed in Agenda **Item J.** above.

During its deliberations, PCOM should also consider advice from its other panels, the Science Operator and Borehole Research Group about such factors as:

- engineering preparedness.
- logging (and other tools) preparedness.
- status of site surveys (see the attached SSP executive summary).
- weather and/or clearance problems.

In this regard, PCOM must remember the detailed discussion of DCS and non-DCS engineering priorities (included as parts of Agenda **Item I.**) which will impact planning for FY 94 and beyond. <u>The ordering of the Agenda has been changed from April 1991 because the PCOM Chair now feels that ODP's future is so inextricably bound to technology development that engineering (and non-engineering equipment) considerations must precede scientific prioritization for at least the intermediate future.</u>

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JOIDES Global Ranking 1992

Proposals ranked 15 or higher by at least one panel are mapped on the accompanying global chart and represented by ranking histograms; ranks 1-5 are represented by values of 3, ranks 6-10 by 2, and 11-15 by 1 (see "Histogram" column of this table).

Rank	LITHP	OHP	SGPP	TECP	Histogram
1	410---- Deepening 504B	388---- (NAP) Ceara Rise	* GENERIC * Gas hydrates	NARM-DPG (NAP) Non-volc. margins II	3
2	387-Rev/Leg147 Hess Deep II	NAAG-DPG (NAP) NAAG II	414---- N Barbados Ridge	346-Rev2 (NAP) E eq. Atl. transform	3
3	369-Rev (NAP) MARK lithosphere	415----/403-Rev KT-boundary	405---- Amazon fan	NARM-DPG (NAP) Volcanic margins II	3
4	361-Rev (NAP) TAG hydro	354-Rev Benguela Current	391---- (NAP) Med. sapropels	323-Rev/399---- (NAP) Alboran Sea	3
5	TIE} GENERIC ǀ Return to 735B	* 253-Rev * Pac. black shales	059-Rev3 MAP/Sed. instability	* 265----/265-Add * Woodlark Basin	3
6	ǀ SR-DPG TIE} Sed. Ridges II	386-Rev California Current	409---- Santa Barbara Basin	410---- Deepening 504B	2
7	* EPR-DPG * E Pac. Rise II	404----/406---- NW Atl. drifts/climate	330---- (NAP) Med. Ridge	400---- Costa Rica acc. wedge	2
8	376-Rev Vema FZ: layer 2/3	* 412---- * Bahamas transect	388---- (NAP) Ceara Rise	330---- (NAP) Med. Ridge I (shallow)	2
9	NARM-DPG (NAP) Volcanic margins II	Bering (CEPAC/391) Bering Sea history	354-Rev Benguela Current	414---- N Barbados Ridge	2
10	GENERIC Galapagos hydro.	* 337---- * New Zealand sea level	* SR-DPG * Sed. Ridges II	369-Rev (NAP) MARK lithosphere	2
11	TIE} 407---- ǀ 15°20'N MAR	* 347---- * South-eq. Atl. paleo.	404---- NW Atl. sed. drifts	330---- (NAP) Med. Ridge II (deep)	1
12	ǀ * 413---- TIE} * Reykjanes Ridge	363-Add Grand Banks paleo.	* 361-Rev (NAP) * TAG hydro.	333---- Cayman Trough	1
13	325---- Endeavour Ridge	* 345--- * W Florida sea level	* 412---- * Bahamas sea level	NARM-DPG (NAP) Non-volc. margins III	1
14	368---- Hole 801C return	* 338---- * Marion Pl. sea level	* Cascadia-DPG * Cascadia margin II	* 411----/415---- * Carib./KT-boundary	1
15	* 374---- * Oceanographer FZ		* 337---- * New Zealand sea level	* 375----/results Leg147 * Hess Deep II	1
16			* 360---- * Valu Fa hydro.	376-Rev Vema FZ: layer 2/3	0
17				* 362-Rev3/Leg 141 * CTJ II	0
18				363---- GB-Iberia plume volc.	0
19				361-Rev (NAP) TAG hydro.	0
20				403-Rev KT bound., G/Mexico	0
21				368---- Hole 801C return	0

* Proposals not considered drillable in FY 1994 at the time of the meetings

NAP: North Atlantic Prospectus 1991

PCOM should also consider (in no priority order):

- balance among scientific themes, both within panels and across panel lines.
- balance between extremes of drillship efficiency, i.e., (a) transiting from the highest-ranked program to the next-highest, in any ocean, as opposed to (b) picking up all ranked programs in one ocean before transiting to another.
- balance in temporal aspects, e.g., (a) the interval since the drillship was last used for the scientific interests of one part of the community, versus (b) commencement or continuation of long-term, multi-site programs that may chiefly concern one part of the community.
- objectives of COSOD I, COSOD II and the LRP.

As in past years, the JOIDES Office hopes that PCOM will conclude this agenda item with a vote on a carefully worded motion (or motions), that follows one or more straw votes. We further hope that the straw votes will lead to a general consensus before the formal motion(s). <u>The PCOM Chair will insist that any motion be written before it is offered orally.</u>

The JOIDES Office suggests that the final motion be given in a form that breaks the drillship's route by either calendar or fiscal year, with the proximal part firmer than the distal part, for example:

"PCOM sets the direction of the drilling vessel for the next four years as follows:

(1) In the remainder of FY92, confirmed as is in the current Program Plan.

(2) In FY93, and beyond to November 1993, confirmed as is in the Program Plan approved at its December 1991 meeting in Austin, Texas, through Leg 152, East Greenland Margin, ending in ????? on or about 28 November 1993. ~~In the event that DCS Phase IIB is not ready for a further test on Leg 148, Hole 504B will be substituted.~~

(3) In the remainder of FY94, in the Atlantic Ocean and adjacent seas and the eastern Pacific. FY94 Program to be finalized in November/December 1992 at the Annual Meeting of PCOM with Panel Chairs.*

~~*(4) In late 1994 through April 1996, in the general direction of highly ranked proposals in the [...list one or more general areas of the ocean, for example, 'South Atlantic and Mediterranean, followed by Eastern Pacific'...].*~~

PCOM reaffirms its stand that at its Spring 1993 meeting, and at subsequent meetings, it will evaluate again the state of panel recommendations, technological developments, and the overall state of the ODP Program, and again set the general direction of the drilling vessel for the subsequent four years, with a relatively firm early track and a relatively flexible later direction."

**defined as Caribbean, Gulf of Mexico, Mediterranean, Norwegian [including near-Arctic Ocean], Labrador.*

Thursday, 23 April 1992 (8:30 AM)

Item L.
Old Business; Continuing Issues

1. FY93 Program Plan (J. Austin). *(Note: The FY 93 Program has been summarized in a recently published Eos [AGU] article, attached to this Agenda Book.)*

- Leg 148

PCOM must decide at this meeting whether Leg 148 will be a further test of DCS IIB or a return to Hole 504B. (This should have been taken care of as part of Agenda **Item I. 1.**)

- Leg 150

The PCOM Chair directs PCOM's attention to March 10 correspondence from the Co-Chief designates, in which they desire endorsement of a strategy to include cores from a proposed (to NSF; funding decision pending) land-drilling extension of the Middle Atlantic Transect/New Jersey margin program as part of Leg 150, for archiving and sampling purposes.

The PCOM Chair favors such an endorsement, which should take the form of a motion. However, he cautions PCOM to make the action specific to Leg 150, so as not to commit ODP to long-range caretaking of products from ancillary drilling projects, except on a case-by-case basis.

- Leg 151

OHP has made the following recommendation re: NAAG I drilling:

"1. OHP strongly advises that a teamed Oden (or similar icebreaker) - JOIDES Resolution operation be scheduled for Leg 151; this operation may only be necessary for part of Leg 151 drilling.

2. This operation should be allowed to penetrate into partially ice-covered areas, as described in the Liljeström report to NAD [Nansen Arctic Drilling]. We foresee that this will imply the capability to reach all the Yermak Plateau sites mentioned in the NAAG-DPG report.

3. OHP advises that sites YERM 1 and ARC 2A be included as chief objectives of Yermak Plateau drilling."

The PCOM Chair reminds PCOM that BCOM has taken issue with the ODP-TAMU estimate of over $1M (U.S.) for an ice-support vessel for Leg 151, and is on record favoring the cheapest suitable vessel for this task. PCOM can either direct the Science Operator to lease an icebreaker for Leg 151, in support of the OHP recommendation, or live with a lesser (i.e., cheaper) vessel and potentially suffer the meteorological (i.e., ice) consequences.

2. ACTION Identification of additional action items following discussions. Some may be deferred to Agenda **Item N.**

Item M.
Membership and Personnel Actions

(Note: Overhead projections will be used at the meeting. The JOIDES Office will also have information about all proposed new panel members, if supplied by Panel Chairs in time for the meeting.)

1. Panel Chair and membership changes (J. Austin).

- DMP

The panel is looking to replace Roy Wilkins with a ("seismically numerate") candidate from the U.S., but no nominations have as yet been forwarded to the JOIDES Office.

- PPSP

No action requested.

- SMP

Bob Whitmarsh (UK) has rotated off, and will be replaced by N. R. Brereton (BGS, UK), a specialist in physical properties.

Adrian Richards (ESF) is also rotating off, and a replacement has yet to be named. *(PCOM representative from ESF, take note.)* SMP would like a sedimentologist as a replacement.

- IHP

No action requested.

- SSP

The panel has requested that Kim Kastens (LDGO) be allowed to remain on the panel. In fact, SSP would like her to take over as Chair when Kidd moves to PCOM at the end of 1992, which would commit her to panel membership for 3 more years (i.e., to the end of 1995).

PCOM will remember that at the Annual Meeting with Panel Chairs they decided to enforce Kastens' rotation off SSP at the end of 1992, in order to avoid a lengthy overlap with Greg Mountain (LDGO), who PCOM approved for SSP membership at that time. *(Note: Mountain was approached as a possible Chair, but declined in the face of impending Leg 150 responsibilities.)*

PCOM must take action. If PCOM supports the SSP recommendation, it could be viewed as setting a precedent endorsing multiple members from a single institution on a panel at the same time. Nevertheless, the PCOM Chair is supportive of the panel's recommendation *in this case*, because of the need to maintain experience on SSP, particularly in the leadership role. Words to that effect could be added to the blanket motion covering panel membership changes which PCOM will pass at the end of this Agenda Item.

• TEDCOM

No action requested.

• OHP

No action requested.

• SGPP

No action requested.

• LITHP

The panel desires replacements for Jason Phipps-Morgan (SIO) and Guy Smith (St. Louis Univ.).

For Phipps-Morgan, the panel nominates (in order): Doug Wilson (Univ. CA/Santa Barbara), Don Forsyth (Brown Univ.) and Roger Buck (LDGO).

For Smith, the panel nominates (in order): John Tarduno (SIO), Bob Karlin (Univ. Nevada/Reno), Brad Clement (Florida International Univ.) and Pierre Rochet (France).

The panel would also like to augment its expertise in LIPs (Large Igneous Provinces). Nominees are (in order): Mike Coffin (Univ. Texas Inst. for Geophys.), John Mahoney (Univ. Hawaii) and Bob White (UK). *(Note: With new additions from ESF and CAN/AUS, LITHP will have 15 members. The PCOM Chair supports the addition of LIPs expertise.)*

• TECP

The panel is losing two U.S. members: Dale Sawyer (Rice Univ.) and G. Michael Purdy (WHOI). Hans-Christian Larsen is replacing M. Cita-Sironi on PCOM. *(Note: ESF replacement needed.)*

To maintain balance in seismology, rifted margin problems and microstructure of oceanic crust (see comments in the minutes), the panel recommends the following:

Seismology (in order): A. Tréhu (OSU) *[Note: cannot be nominated, as she is already serving on SSP]*, U. Ten Brink (U.S. Geological Survey, Woods Hole).

Rifted margins (in order): C. Beaumont (Dalhousie - CAN/AUS) *[Note: Phil Symonds, AUS, is already on the panel]*, M. Steckler (LDGO) *[Note: Steve Cande, LDGO, is already on the panel, although he is moving to SIO shortly.]*, Deborah Hutchinson (U.S. Geological Survey, Woods Hole) and Mike Coffin (Univ. of Texas Inst. for Geophysics).

Ocean crust/microstructures (in order): Sue Agar (Northwestern Univ.), Jill Karstens (Univ. Hawaii).

Acceptance of slates of members
It will be easiest if PCOM incorporates all personnel changes in a single motion, with caveats noted above.

(Approximately 10:00 AM) Coffee Break

2. PCOM membership and liaison work.

- Panel meetings, before PCOM's August meeting, that will require PCOM liaisons are:

  TEDCOM, in College Station, May 7-8
  OD-WG, in Paris, France, May 18-20
  DMP, at Windischeschenbach, Germany, June 4-6
  SL-WG, in Snowbird, Utah, June 4-8
  EXCOM, in Washington, D.C., June 15-18

- Any general change of PCOM liaison responsibilities (see table)?

	EXCOM	LITHP	OHP	SGPP	TECP	DMP	IHP	PPSP	SMP	SSP	TEDCOM
J. Austin	*							*			
K. Becker						*					*
W. Berger							*				
M. Cita-Sironi → Larsen				*							
R. Duncan → [illegible]			*								
J. Fox									*		
H. Jenkyns			*								
Y. Lancelot							*			*	
B. Lewis						*					
J. Malpas		*									
J. Mutter		*									
A. Taira					*						
B. Taylor											
B. Tucholke					*						
U. von Rad				*							
J. Watkins										*	

Sharaskin *

- PCOM Liaisons to WGs:

B. Taylor	OD-WG
J. Watkins	SL-WG
K. Becker	*In situ* Pore Fluid Sampling (DMP)

- PCOM watchdogs for highly ranked programs (NAP):

Alboran Basin/Gateway & Mediterranean Ridge	Cowan* Larsen
Equatorial Atlantic Transform	Mutter
Ceara Rise	Watkins
Mediterranean Sapropels	Cita-Sironi*
~~VICAP Gran Canaria~~	Malpas
lis OD-WG proposals (treated together)	Taylor
New Jersey Sea Level (Leg 150 - still necessary?)	Sharaskin
NAAG-DPG (Leg 151 - still necessary?)	Leinen*
NARM-DPG	Duncan (volcanic)/ von Rad (non-volcanic)
TAG	Becker

*action required, because of past/current PCOM rotation schedule

Inform SSP of, and assign PCOM watchdogs for:

- the highest-ranked programs of all thematic panels (for reasons to be discussed, the PCOM Chair suggests that the top 7 of each of the thematic panels receive a watchdog [except LITHP, top 8]. This was the rationale used by the SSP.).
- all ranked programs in the general direction of the vessel (?).

3. Co-Chief nominations (J. Austin).

Where thematic panels have nominated potential Co-Chiefs for legs scheduled for FY 93, those names appear in their minutes. *(Note: The JOIDES Office will have an overhead summarizing the nominations.)* At this meeting, PCOM should forward Co-Chief nominees to the Science Operator for legs 148, 151 and 152.

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

Item N.
New Business

Agenda **Item N.** will include new action items identified by PCOM members or items that may have been postponed from earlier parts of this meeting.

Item O.
Future Meetings

The 1992 Summer PCOM meeting will be hosted by J. Malpas in Cornerbrook, Newfoundland, Canada, on 11-13 August, 1992. A 2-day field trip will follow the meeting on August ~~14~~-15, 1992. The cost of the field trip may be $75-$100/participant, if a helicopter is used.

The 1992 PCOM Annual Meeting will be held at the Bermuda Biological Station (BBS). A cost of $120/day would include accommodation and meals. Austin (still PCOM, but ex-Chair) will host the meeting. The University of Miami, Rosenstiel School of Marine and Atmospheric Sciences, which was to have hosted the Annual Meeting, will host a subsequent meeting in Miami. PANCHM will meet on Tuesday, 1 December, 1992, with PCOM meeting on 2-5 December 1992. A field trip may be arranged, probably prior to the meeting.

(Note: The AGU Fall Meeting is 7-11 December.) A deposit of $100/person will be required by BBS 4 months in advance of the meeting.

The 1993 Spring PCOM meeting will be hosted by J. Mutter at Columbia University, Lamont-Doherty Geological Observatory, on 26-28 April, 1993. No further details are available at this time.

The 1993 Summer PCOM meeting will probably meet in Australia in the second or third week of August, 1993. The Australian ODP Secretariat has now moved from the University of Tasmania (T. Crawford) to the University of New England (R. Arculus). Exact dates will have to be arranged.

Item P.
Other Business

1. Additional drilling platforms for shallow-water operations: Atolls and Guyots (e.g., MIT Guyot) and Continental Margins (e.g., New Jersey).

The capabilities of the *JOIDES Resolution* may not allow siting in shallow lagoons (although this will be tested at the end of Leg 143) and on the inner parts of continental shelves, and therefore potentially impacts planned and projected ODP drilling operations in FY 92, FY 93 and beyond. This is an issue raised by the SL-WG as a result of its initial meeting, and has been discussed in relation to drilling in atoll and guyot environments since COSOD-I. OPCOM has also considered the issue and made a recommendation re: additional platforms, which has already been endorsed by PCOM.

In response to OPCOM, H. Zaremba (ex-industry expert recommended by TEDCOM) was asked by the PCOM Chair to submit a proposal to the JOIDES Office for a broad-based study of additional platforms. A draft proposal has been submitted, but has gotten mixed reviews from a group inside and outside the JOIDES structure. In an attempt to acquire more information before action on the Zaremba proposal is taken, the PCOM Chair has taken the Science Operator and Sedco/Forex up on a (free) offer to acquire bids for mobilizing "additional platform" efforts at the two sites listed above, one from the FY 92 schedule and the other from a scheduled FY 93 activity. Resultant cost estimates are attached to this Agenda Book.

Clearly, the estimates of ~$1.8M (U.S.) are beyond present ODP capabilities, unless LRP budgets (at least) can be maintained. The PCOM Chair would like advice from PCOM on how to proceed. One (short-term) option is to commission Zaremba to expand the Sedco/Forex work for projected FY 94-FY

96 programs potentially requiring independent additional platforms, at a cost to ODP of not more than $20-30K (U.S.), but this will not make the central problem go away - insufficient funds in the current structure to allow for multi-platform operation, even though even short- to intermediate-range scientific planning requires(?) it.

2. EXCOM referral to PCOM (J. Austin).

- *The sciences that are served by ODP could benefit from regular, open scientific conferences on the Scientific Contributions of Ocean Drilling. EXCOM asks PCOM to explore the advantages of holding them during IUGG General Assemblies, and ways of achieving feedback into the JOIDES structure.*

The PCOM Chair has never been to an IUGG General Assembly, so he would like feedback from PCOM members who have attended them. This request raises the general issue of broadening ODP's appeal. Is there a middle road between funding our own conference (the COSOD model) and having individuals present their own scientific results at national and international meetings? How can we formalize feedback from regularly scheduled scientific meetings back into the JOIDES structure?

3. Fund for Lev Zonenshain (J. Austin).

Zonenshain (Russia), currently a member of LITHP, is seriously ill. A fund has been established to help with his medical expenses (see announcement attached to this Agenda Book). The PCOM Chair would like to organize a gift to the fund on behalf of ODP. Suggestions from PCOM on how to do this properly/ expeditiously are welcome. PCOM may also want to express its sympathy and support for Zonenshain with a formal statement.

4. A PCOM White Paper(?) (J. Austin)

Last, but by no means least, the PCOM Chair notes that all elements of the JOIDES advisory structure (including EXCOM!) are becoming more proactive in their approach, with the possible exception of PCOM. This has been noted by the Briden report (attached to this Agenda Book), the PEC-III report (still in draft), and a host of PCOM-bashers. The JOIDES structure is about to be reviewed formally by yet another outside body, so the external analysis continues.

PCOM has attempted to "focus" its approach to ODP science over the past several years, with little consensus - and yet ODP reviews consistently hint (or state) that PCOM ought to (must) do exactly that in order to move the program ahead. (The PCOM Chair's personal opinion is that a lack of funds for complicated technological development exacerbates the perception that PCOM is being too reactive, but that does not mean that ODP should become just an exercise in the science of the possible.)

Every thematic panel has a White Paper that guides its continuing approach to submitted proposals. Is it time for PCOM to generate a manifesto detailing its own approach to scientific ocean drilling? If so, how do we give the document the necessary punch? How do we complement and not supplant the LRP?

PCOM may not find an answer to these questions at this meeting, but the PCOM Chair proposes to have the discussion anyway.

5. ACTION PCOM should take action on any or all of the issues raised above as appropriate, in the form either of consensus or motion.

Item Q.
Adjournment

000001

JOIDES PLANNING COMMITTEE ANNUAL MEETING
4 - 7 December, 1991
Thompson Conference Center
University of Texas at Austin

REVISED DRAFT MINUTES
(April 10, 1992)

Planning Committee (PCOM)

J. Austin, Chairperson - University of Texas at Austin, Institute for Geophysics
K. Becker - University of Miami, Rosenstiel School of Marine and Atmospheric Science
M. Cita-Sironi - University of Milan (ESF Consortium)
D. Cowan - University of Washington, College of Ocean and Fishery Sciences
R. Duncan - Oregon State University, College of Oceanography
H. Jenkyns - Oxford University (United Kingdom)
Y. Lancelot - Université Pierre et Marie Curie, Paris (France)
R. Larson (for J. Fox) - University of Rhode Island, Graduate School of Oceanography
J. Malpas - Memorial University (Canada-Australia Consortium)
J. Mutter - Columbia University, Lamont-Doherty Geological Observatory
J. Natland - University of California, San Diego, Scripps Institution of Oceanography
A. Taira - Ocean Research Institute (Japan)
B. Taylor - University of Hawaii, School of Ocean and Earth Science and Technology
B. Tucholke - Woods Hole Oceanographic Institution
U. von Rad - Bundesanstalt für Geowissenschaften und Rohstoffe (Germany)
J. Watkins - Texas A&M University, College of Geosciences

Liaisons

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

Performance Evaluation Committee

J. Maxwell - University of Texas at Austin (one day only)

Guests and Observers

J. Baldauf - Science Operator (ODP-TAMU)
T. Crawford - University of Tasmania (Canada-Australia Consortium)
E. Davis - Pacific Geoscience Centre (Canada)
H. Dick - Woods Hole Oceanographic Institution
R. Grout - Science Operator (ODP-TAMU)
H.-C. Larsen - Geological Survey of Greenland, Copenhagen (NARM-DPG)
B. Lewis - University of Washington, College of Ocean and Fishery Sciences (PCOM Chairperson designate)
A. Maxwell - University of Texas at Austin, Institute for Geophysics (EXCOM; first day only)
A. Meyer - Science Operator (ODP-TAMU)

Panel Chairpersons

L. Garrison (for M. Ball) - College Station, Texas (PPSP)

I. Gibson - University of Waterloo (IHP)
S. Humphris - Woods Hole Oceanographic Institution (LITHP)
R. Kidd - University College of Swansea (SSP)
J. McKenzie - Eidgenössiches Technische Hochschule, Zürich (SGPP)
E. Moores - University of California, Davis (TECP)
K. Moran - Geological Survey of Canada, Dartmouth (SMP)
N. Shackleton - Cambridge University (OHP)
C. Sparks - Institut Français du Pétrole (TEDCOM)
P. Worthington - BP Research Centre, Sunbury-on-Thames (DMP)

JOIDES Office (University of Texas at Austin, Institute for Geophysics)

P. Blum - Executive Assistant and non-US Liaison
C. Fulthorpe - Science Coordinator
K. Moser - Office Coordinator

SELECTED ACRONYMS AND ABBREVIATIONS

AGU	American Geophysical Union
AMC	axial magma chamber
ARC	Australian Research Council
BGR	Bundesanstalt für Geowissenschaften und Rohstoffe
BGS	British Geological Survey
BHA	bottom-hole assembly
BHTV	borehole televiewer
BIRPS	British Institutions Reflection Profiling Syndicate
BMR	Bureau of Mineral Resources
BRGM	Bureau de Recherches Géologiques et Minières
BSR	bottom-simulating reflector
CSDP	Continental Scientific Drilling Program
CSG	Computer Services Group (ODP)
CY	calendar year
DCB	diamond core barrel
DCS	diamond coring system
DEA	Drilling Engineering Association
DFG	Deutsche Forschungsgemeinschaft
DI-BHA	drill-in bottom-hole assembly
DP	dynamic positioning
DPG	Detailed Planning Group
ECOD	European (ESF) Consortium for Ocean Drilling
EEZ	Exclusive Economic Zone
EIS	environmental impact statement
ETH	Eidgenössiches Technische Hochschule, (Zürich)
FDSN	Federation of Digital Seismic Networks
FMS	formation microscanner
FY	fiscal year
GSGP	Global Sedimentary Geology Program
HRB	hard rock guide base
IDAS	isothermal decompression analysis system
IFREMER	Institut Français de Recherche pour l'Exploitation de la Mer
IGBP(/PAGES)	International Geosphere/Biosphere Program (/Past Global Changes)
ILP	International Lithosphere Program
IOC	Intergovernmental Oceanographic Commission
IPR	intellectual property rights
IRIS	Incorporated Research Institutions for Seismology
JAMSTEC	Japan Marine Science and Technology Center
JAPEX	Japan Petroleum Exploration Company
JGOFS	Joint Global Ocean Flux Studies
JOI-BOG	JOI Board of Governors
KTB	Kontinentales Tiefbohrprogramm der Bundesrepublik Deutschland
LANL	Los Alamos National Laboratory
LAST	lateral stress tool
LBL	Lawrence Berkeley Laboratory
LRP	Long Range Plan
mbsf	meters below seafloor
MCS	multi-channel seismic
MDCB	motor-driven core barrel
MOU	memorandum of understanding
MRC	Micropaleontological Reference Center
MST	multi-sensor track
NADP	Nansen Arctic Drilling Program
NAS	National Academy of Science
NERC	Natural Environment Research Council
NGDC	National Geophysical Data Center
NSB	National Science Board
NSERC	National Scientific and Engineering Research Council
OBS	ocean bottom seismometer
ODPC	ODP Council
OG	organic geochemistry
ONR	Office of Naval Research
OSN	Ocean Seismic Network
PCS	pressure core sampler
PDC	poly-crystalline diamond compact (drilling bit)
PEC	Performance Evaluation Committee
PPI	Producer Price Index
RFP	request for proposals
RIDGE, InterRIDGE	Ridge Inter-Disciplinary Global Experiments (US and International)
SCM	sonic core monitor
SES	sidewall-entry sub
SNL	Sandia National Laboratory
SOE	Special Operating Expense
STA	Science and Technology Agency (of Japan)
TAMRF	Texas A&M Research Foundation
UDI	Underseas Drilling Incorporated
USSAC	US Scientific Advisory Committee
USSSP	US Science Support Program
VPC	vibra-percussive corer
WCRP	World Climate Research Program
WG	Working Group
WOCE	World Ocean Circulation Experiment
WSTP	water sampler, temperature, pressure (downhole tool)

JOIDES Committees and Panels:

DMP	Downhole Measurements Panel
EXCOM	Executive Committee
IHP	Information Handling Panel
LITHP	Lithosphere Panel
OHP	Ocean History Panel
OPCOM	Opportunity Committee (disbanded)
PCOM	Planning Committee
PPSP	Pollution Prevention and Safety Panel
SGPP	Sedimentary and Geochemical Processes Panel
SMP	Shipboard Mearurements Panel
SSP	Site Survey Panel
STRATCOM	Strategy Committee (disbanded)
TECP	Tectonics Panel
TEDCOM	Technology and Engineering Development Committee

DPGs and WGs:

A&G-DPG	Atolls and Guyots DPG (disbanded)
DH-WG	Data-Handling WG
NAAG-DPG	North Atlantic-Arctic Gateways DPG (disbanded)
NARM-DPG	North Atlantic Rifted Margins DPG (disbanded)
OD-WG	Offset Drilling WG
SL-WG	Sea-Level WG

FY93 Programs:

NAAG-I	North Atlantic Arctic Gateways, first leg (Leg 151)
NARM non-volcanic-I	North Atlantic Rifted Margins non-volcanic, first leg (Leg 149)
NARM volcanic-I	North Atlantic Rifted Margins volcanic, first leg (Leg 152)
NJ/MAT	New Jersey / Middle Atlantic Transect (Leg 150)

FY92 Programs:

A&G	Atolls and Guyots (legs 143/144)
CA	Cascadia margin (Leg 146)
CTJ	Chile Triple Junction (Leg 141)
EPR	East Pacific Rise (Leg 142)
HD	Hess Deep (Leg 147)
NPT	North Pacific Transect (Leg 145)
504B	(Deepening) Hole 504B (Leg 140)

JOIDES PLANNING COMMITTEE ANNUAL MEETING
4 - 7 December, 1991
Thompson Conference Center
University of Texas at Austin

EXECUTIVE SUMMARY

PCOM Motions

PCOM approves the minutes of the 20-22 August, 1991 PCOM meeting. (p. 7.)

PCOM adopts the agenda for the 4-7 December, 1991 PCOM meeting. (p. 7.)

PCOM endorses SMP's recommendation to increase technical support staff on board *JOIDES Resolution* by up to 2 personnel/leg. PCOM requests that ODP-TAMU provide BCOM information by January 1992 on the continuing costs of hiring and staffing the ship with these additions, with commensurate reductions in scientific participation, to evaluate its impact on the FY93 budget. (p. 20.)

PCOM confirms the necessity of carrying out feasibility studies for deep drilling as soon as possible. PCOM asks ODP-TAMU to draft a RFP, in consultation with the PCOM chair, for the hiring of one or more consultants, to carry out such studies, using candidate sites recommended by thematic panels as a basis. The draft RFP will need to be reviewed by TEDCOM at its next meeting in April 1992. (p. 25.)

With respect to the program for drilling Atolls and Guyots II, Leg 144:
Logging at Hole 801C will remain as an alternate activity if time is available after the following conditions are met (or attempted) as part of the prospectus program (in order of precedence):
1) that MIT-1 is maintained as a basement penetration site;
2) that Seiko-1, basement site, be retained to provide required latitudinal spread in basement sites;
3) that Harrie-2 be included to provide paired sites on Limalok (Harrie) to accomplish sea level/paleoceanographic (dipstick) objectives.
4) that site Syl-4 be an alternate to Syl-2A to maintain paired pelagic cap site philosophy and to optimize recovery for those objectives. (p. 49.)

Because of its impact on Leg 145 drilling, PCOM declines the request to include OSN-2 in the FY92 program plan. PCOM continues, however, to endorse the concept of dedicated holes for ocean floor seismic observatories and looks forward to receiving from FDSN a global plan for prioritized testing and implementation. (p. 51.)

PCOM endorses the plan to dedicate no more than 1.5 days during Leg 146 to replace the sensor string in Hole 857D. PCOM requests the co-chiefs of Leg 146 to provide information on the impact of this on the scientific plan for Leg 146, for PCOM to evaluate at its April, 1992 meeting. (p. 54.)

PCOM approves the following drilling schedule for Fiscal Year 1993 (assuming 56 day legs, 5 day port calls):

147	Hess Deep	26 Nov. 1992	-	21 Jan. 1993
148	Engineering - DCS Phase IIB	26 Jan. 1993	-	23 Mar. 1993

	Back-up: Hole 504B			
149	NARM non-volcanic, Leg 1	28 Mar. 1993	-	23 May 1993
150	New Jersey / Middle Atlantic Transect	28 May 1993	-	23 July 1993
151	NAAG, Leg 1	28 July 1993	-	22 Sept.1993
152	NARM volcanic, Leg 1	27 Sept 1993	-	22 Nov.1993

(p. 74.)

PCOM moves that the NARM-DPG strategy for drilling the first non-volcanic leg be adopted. (p. 75.)

PCOM endorses all personnel actions taken at the 1991 Annual Meeting. (p. 82.)

PCOM authorizes the formation of a steering group for *in-situ* fluid sampling, to be constituted as a subset of DMP effective at its January, 1992, meeting. PCOM approves the mandate and membership of the group as described in DMP recommendation 91/17, and urges that it meet in conjunction with normally-scheduled DMP meetings. (p. 85.)

PCOM Consensuses

In view of her imminent departure from ODP/TAMU, PCOM, on behalf of the international scientific ocean drilling community, expresses thanks to Audrey Meyer, Manager of Science Operations ODP, as she leaves this position after 5 years of service to ODP. In particular, PCOM recognizes the unique manner in which Dr. Meyer has handled the process of scientific shipboard staffing, involving considerable insight into the nature of the program, and the complexities that thereby arise. PCOM offer her best wishes for the future. (p. 13.)

PCOM thanks the Panel Chairs and endorses PANCHM's recommendations. (p. 31.)

PCOM supports TEDCOM's recommendation that coring time with DCS IIB be paramount during Leg 142. (p. 44.)

PCOM thanks Nick Shackleton, who is leaving the chairmanship of the prestigious Ocean History thematic panel of ODP, for his long-lasting, inspiring, perseverant leadership. (p. 78.)

PCOM thanks the North Atlantic Rifted Margins Detailed Planning Group (NARM-DPG) for its expeditious and informative report. PCOM considers NARM-DPG to have fulfilled its charge and accordingly disbands NARM-DPG. (p. 82.)

Data-Handling Working Group Mandate

PCOM endorses a 1.5-day Data-Handling Working Group to meet in eastern North America in early March, 1992, and advise PCOM on:
1) a new database structure for ODP to cope with the rapidly-expanding needs of the project, and particularly to facilitate core/log data integration;
2) an appropriate hardware/software environment for ODP in the 1990's, compatible with 1).
A written report will be prepared and ready for PCOM review at its April, 1992, meeting. (p. 86.)

Annual Meeting JOIDES PCOM
Wednesday, December 4 1991

922. Welcome and Introduction

Austin called the 1991 Annual Meeting of the JOIDES PCOM with Panel Chairpersons to order at 8:55 AM. He introduced A. Maxwell, Director of the University of Texas at Austin, Institute for Geophysics (UTIG) and EXCOM chairperson. Maxwell welcomed the attendees. He stated that UTIG was pleased to be the current host of the JOIDES Office and praised the work of the JOIDES Office staff. Though he had been associated with ocean drilling for 30 years as co-chief, panel, PCOM and EXCOM member, Maxwell felt that ODP was now in its most critical period. Long-term renewal is under consideration and good leadership is essential. Funding for science is limited and ODP must compete with other initiatives. However, PCOM has done an excellent job so far.

Austin went on to explain meeting logistics, including plans for a dinner cruise on Lake Travis that evening, hosted by UTIG. He provided coffee mugs commemorating the 20th anniversary of UTIG and also its hosting of the JOIDES Office for PCOM members, liaisons and guests. Austin explained that the PCOM member and other representatives from the USSR had been unable to attend this meeting. He then called for introductions around the table.

923. Approval of Minutes of 20 - 22 August, 1991 PCOM Meeting

Austin called for comments, corrections and approval of the minutes of the 20-22 August, 1991 PCOM Meeting held at BGR, Hannover, Germany. The minutes included modifications received through November 15, 1991.There were no further corrections.

PCOM Motion

PCOM approves the minutes of the 20-22 August, 1991 PCOM meeting.
Motion Tucholke, second Duncan Vote: for 16; against 0; abstain 0; absent 1

924. Approval of Agenda

Austin stated that the main purposes of the Annual Meeting were to exchange information between PCOM and the JOIDES panels and to prepare the one-year drilling plan for FY93. Other important, but subordinate purposes were to hear recent scientific results from legs 139 and 140, to consider modifications to the near-term (FY92) program related to possible scheduling of supplemental science and testing of GEOPROPS, decide matters related to various reports and conduct routine business (Agenda Book, blue pages 7-9). Austin asked that Panel Chairs remain, if possible, until the end of deliberations on the FY93 schedule (Friday, December 6), to be available as possible sources of information. He called for any additions to the agenda. In the absence of additions, Austin called for adoption of the agenda.

PCOM Motion

PCOM adopts the agenda for the 4-7 December, 1991 PCOM meeting.
Motion Taylor, second Natland Vote: for 16; against 0; abstain 0; absent 1

925. ODP Reports by Liaisons to PCOM

EXCOM

Austin reported that EXCOM had last met on 9-11 July, 1991, in La Jolla, California. At that meeting, EXCOM endorsed the FY92 program plan. EXCOM's motion (Agenda Book, blue pages 9-10) specified that "if Leg 140 is Hole 504B, Leg 147 will be Hess Deep". Austin reminded PCOM that they would need to nominate co-chiefs for Leg 147 at this meeting.

EXCOM also dealt with issues of renewal, which are still evolving. The UK has committed to a 5-year renewal, with a review in 1998 and a commitment in principle beyond that date. EXCOM has commissioned a subcommittee to examine additional platforms. In addition, H. Zaremba, an independent consultant based in Durango, Colorado, had been asked to prepare a proposal for a study of such platforms. The proposal should be available before the end of December, 1991, and the study should begin in January, 1992, supported by OPCOM money. EXCOM has moved quickly to analyze the effects of additional platforms, examples of which have been proposed by the USSR, Japan and France.

Discussion

Lancelot noted that he had recently visited the USSR drilling vessel and added that what Austin had characterized as a French platform was, in reality, a European platform. Von Rad explained that he had discussed the issue of additional platforms with German officials, who felt that such platforms would be difficult to incorporate into the MOUs, since they would inevitably involve increased costs. Maxwell stated that this would be a major topic at the upcoming EXCOM meeting in Bonn (14-16 January, 1992). The report of the EXCOM subcommittee (comprising only J. Briden) had been completed and was very comprehensive, incorporating the issue of involving international partners more intimately in ODP. The January EXCOM meeting would also include presentations on various national platforms.

Lancelot noted the absence of the USSR PCOM member, adding that N. Bogdanov (USSR, EXCOM) had encouraged him to report on the USSR drilling vessel. Austin responded that the status of the USSR drilling vessel was uncertain, because of current events in that country.

Malpas asked whether there would be further discussion of options for Leg 147 after the report on Leg 140. Austin replied that, following the success of Leg 140 ar Hole 504B, there was some interest in a return to Hole 504B and a proposal to do so had been submitted. PCOM might discuss the issue further if there was time.

NSF

Malfait reported that the NSF budget had been passed by Congress and signed by the US President. The total NSF budget for FY92 increased by 11.2%. (NSF had requested an increase of 17.5%.) Detailed budget information was listed in a handout distributed at the meeting. An increase of 4% has been requested for ODP, but it was not yet clear whether this would be achieved.

NSF had tried to transfer support of Antarctic logistics to the Department of Defense (DOD), but NSF funds are still being used for this purpose. Consequently, field activities in Antarctica are uncertain and personnel may have to be withdrawn.

Field programs for 1991 and 1992 are listed in the handout. For FY93, 6 programs are under review and there will be an additional round of reviews in May.

Malfait went on to discuss renewal activities (see handout for timetable). Letters to international partners on continued participation are in the mail. The letters identify *JOIDES Resolution* as the primary platform until 1998, with a review in the 1994-1996 period. NAS has begun its review of the LRP. The first meeting was on November 21 and the second was to be at AGU on December 8. The final report is due in mid-January and, together with the new (FY93-96) 4-year program plan, will be reviewed by an NSF review panel in April before being forwarded to the NSB. The FY92 program plan has been approved at $41.4M and includes an increase of $167,000 to cover some unexpected costs and overruns.

Additional funds have been provided for GEPROPS. GEOPROPS had received strong support from PCOM and DMP. ODP-TAMU presented a plan for its development and B. Carson has made a significant contribution. Malfait felt that GEOPROPS development had not turned out well and had implications for development of third-party tools. On being asked to amplify on this last point by Austin, Malfait said that people involved in development of GEOPROPS had done a great deal of work and were unhappy with the pace of development and testing. Austin said that GEOPROPS would be an agenda item for later discussion.

Malfait continued his report, noting that E. Ambos (California State University, Long Beach) would be joining NSF's ODP staff as a rotator. A proposal to build a seismometer for the OSN-1 hole was under review by NSF's ODP and Earth Sciences programs. Proposals for a full pilot experiment at OSN-1 would be submitted later. NSF's ODP and Earth Sciences programs would also jointly consider a proposal for land-based drilling as part of the proposed NJ/MAT ODP drilling program. The target figure for USSAC Calendar Year 8 (CY8) activities has been provided to JOI, Inc. Increases in travel costs were a cause for concern and would be examined by USSAC and JOI, Inc. over the next year.

Discussion

Mutter asked about the scope of the NAS review. Malfait replied that it was restricted to the LRP. In response to a question from Natland, Malfait said that he did not have detailed information on the growth in travel costs. Austin commented that there was a $70,000 deficit in travel by US personnel alone for FY91. Von Rad stated that Germany is reluctant to sign the MOU with the attachment on intellectual property rights. He felt that other international partners would have the same problem and recommended that this issue be examined by specialists.

JOI, INC

Pyle began his report with a wrap-up of of FY91 (Appendix 1). NSF has provided an additional $167,000, with the result that cost overruns will have no impact on operations. Of the additional funds provided to overcome last year's fuel cost problem, $1.17M remains. This will be applied to cover future unexpected developments and is not a bonus. Pyle foresaw no special problems for FY92. BCOM has approved OPCOM's recommendations.

Austin asked when OPCOM funds would become available. Malfait explained that NSF had originally stated its willingness to consider a $2.1M increase to further the achievement of LRP objectives. This was based on there being 7 international partners. Malfait said that he could add nothing further and that he could not say when the recommendations would be acted upon. Pyle stated that JOI, Inc. was ready to submit the proposal on the OPCOM recommendations to NSF.

Pyle went on to discuss high-temperature tools. JOI, Inc. has proposed that the US Department of Energy (DOE) fund a slimline, high-temperature, downhole water sampler, while ODP advises on construction and develops the "uphole" deck and laboratory equipment. However, it was proving difficult to get joint work with DOE started. J. Edmond (MIT) has been asked to chair an *ad hoc* geochemical advisory group to meet on December 9, 1991, at AGU. Pyle asked for suggestions for additional members from international partners.

A DCS review meeting took place at ODP-TAMU about 1 month before the PCOM meeting. It was concluded that more experience is required in coring with DCS IIB, requiring at least one more leg in addition to Leg 142. DCS III was felt to be a vital step both for safety and coring efficiency. The meeting recommended continuing with DCS III design, but deferring construction until more experience has been gained with DCS IIB.

Pyle showed a calendar for development of the FY93-96 4-year program plan (Appendix 1). The program plan must be complete by mid-March, 1992. BCOM will meet earlier than usual (in Bonn, January 16-17, 1992, following EXCOM) in order to meet this deadline.

The study of additional platforms by consultant H. Zaremba has been approved and JOI, Inc. was awaiting his proposal. JOI, Inc. wanted PCOM to coordinate and prioritize panel recommendations regarding equipment purchases, to assist with decision-making in case of conflicts and limited funds. Other matters considered by JOI, Inc. included a review of the submission of panel minutes (Appendix 1), renewal issues, and a review of international purchases and personnel.

Discussion

Austin reported that PANCHM discussed changes to the schedule of meetings which might remedy late submission of panel minutes. Lancelot emphasized the importance of prioritizing tool requirements. Austin responded that PCOM has prioritized engineering developments, but not non-engineering tasks. He added that he would propose that PCOM annually (at its April meeting) review a short list of measurement requirements. Prior to that meeting, the panels will provide a condensed list of equipment they would like to see purchased.

Taylor asked whether subcontractors' proposals for post-1993 ODP will also be available by the March deadline. Pyle replied that subcontractors will provide budgets that must be within estimates in the LRP. Austin said that he would schedule time later in the meeting for discussion of PCOM input to the 4-year program plan. He suggested that it might be important for some panel members to attend the *ad hoc* geochemical advisory group meeting at AGU and asked Pyle to provide details of time (December 9, 1991) and venue.

SCIENCE OPERATOR / ODP-TAMU

Francis commented that a large contingent from ODP-TAMU, comprising J. Baldauf, R. Grout, A. Meyer and M. Storms, was attending this PCOM meeting because of its proximity to College Station.

Francis reported that Leg 139 (Sedimented Ridges I) had shown, at the first attempt, that ODP can successfully operate in hydrothermal environments in water depths >2000 m (Appendix 2). Maintaining circulation had been successful in cooling holes. Butyrate liners were used most of the time and conventional seals proved adequate. High-temperature drill bits were not required. There had been no serious safety problems and H_2S precautions had been more than adequate. It was felt that high pH of pore fluids had inhibited degassing. Core recovery of indurated material had been low, perhaps owing to effects of thermal shock. A total of 160 m of massive sulfides had been drilled with good recovery, though hole cleaning had been difficult because of high density of cuttings. Mud circulation might be required for future attempts to drill massive sulfides. Leg 139 ended in Victoria, BC, on September 11, 1991.

Leg 140 operations at Hole 504B began on October 1, 1991, after a 15.5-day transit. The first day was spent logging and part of the FMS was lost. Five unsuccessful fishing runs were then made with different tools in attempts to recover junk left in the hole following Leg 137. A move to HD appeared probable. Finally, a double-dog fishing tool, manufactured on board, successfully retrieved the junk. Coring began on October 12 and 10 bit runs were made (Appendix 2). The record for deepest penetration, set on Leg 47, was broken on October 20. Drilling was terminated on November 6, having reached 2000.4 mbsf. Leg 140 concluded with 3 days of logging. Hole 504B was left clean and Leg 140 ended in Panama on November 12.

Coring on Leg 140 was more successful than on previous legs because of: 1) the conservative approach adopted (more mud was used and every time a core was cut, the new bit was reamed in), 2) subtle changes in bit design that led to longer rotating life, and 3) decisions made by Drilling Superintendent E. Pollard, who did an excellent job. The average rate of penetration, including pipe trips, was 15 m/day. Total time spent at Hole 504B by both DSDP and ODP has been ~180 days (~6 months) at a cost of ~$20M. Total time spent fishing or cleaning has been 37.5 days, or 20% of the total. This should be borne in mind for future operations.

Austin asked how rate-of-penetration compared to that on Leg 111. Becker replied that there was no indication that rate was decreasing. Francis noted that a great deal of the total time at Hole 504B had been spent on downhole measurements. Becker added that if that time was removed, penetration rate had been steady at ~2 m/hr.

Francis went on to report on Leg 141 (CTJ), in progress. Leg 141 sailed from Panama on November 15, 1991, for a transit to Valparaiso, where there was an exchange of personnel. The scientific party had been given the option of joining at Panama or Valparaiso. The transit provided a useful opportunity for cross-training of engineers, upgrading the geochemistry laboratory, installing the second Rock-Eval, upgrading the computer system and beginning modifications to the main core laboratory. The transit ended on November 25. Among the group boarding in Valparaiso were 4 Chilean participants, all sailing as scientists. On November 28, beacons were dropped at sites SC-3, SC-1 and SC-2. Drilling began at Hole 859A (SC-3) on November 29. Sediment was predominantly stiff clay; an early switch was made from APC to XCB coring. A number of WSTP and PCS runs had been made. The WSTP had worked well, but the PCS had not yet been run successfully after 4 attempts. No hydrates had been encountered. XCB recovery was so low that a switch to RCB coring was made at ~146 mbsf. The latest information available was that a penetration of 280 mbsf had been reached. The level of the BSR had been penetrated at ~80 m with no apparent difference in the amount of gas in cores. A temperature inversion had been encountered, with a maximum temperature of 21.5°C at 136 mbsf, falling to 10.5°C at 260 mbsf. There may, therefore, be a double zone of hydrate stability. Heavy hydrocarbons were being encountered, probably a consequence of fluid migration, which might also have caused the temperature inversion.

Francis explained that M. Storms would discuss Leg 142 (Engineering/EPR) on the following day. Legs 143/144 (A&G) had their safety review by PPSP in late October, 1991; no safety problems were expected. At the pre-cruise meeting, the A&G co-chiefs realized that there was insufficient time available to achieve the objectives set by A&G-DPG. Austin commented that drilling times had been underestimated by a total of >20 days. Francis pointed out that one source of the discrepancy was that 3 HRBs are needed, whereas only 1 had been expected. This would add 2.5 days to each site. Furthermore, *JOIDES Resolution* could only carry 2 HRBs, so that one would have to be recovered and moved. The test of the shallow-water drilling capability of *JOIDES Resolution* would be carried out at the end of Leg 143 in Enewetak lagoon; it would take a total of 60 hrs, including extra transit time. The prospectus for Leg 144 was on hold until PCOM decided whether to schedule logging of Hole 801C during the leg. A charter flight had been arranged to Majuro (port call between legs 143 and 144) for ODP personnel, since hotel accommodation is very limited.

Kidd noted that SSP was concerned about basement picks on seismic data crossing A&G sites. The best seismic data were from Enewetak; these suggested that basement at other A&G sites was likely to be deeper than originally thought. SSP had suggested that ODP-TAMU reconsider basement picks. Kidd asked whether this had been taken into account in making new estimates of drilling time. Meyer replied that it had not, and that the main reason for increased drilling times was that estimates of limestone velocities had been increased (from 2.0 km/s to 2.5 km/s). Larson commented that one additional HRB was suggested by the co-chiefs and was not in the A&G-DPG report. Austin remarked that, though some had felt that 2 legs of A&G drilling was too much, it was now clear that there was not a lot of time available.

Francis continued his report with Leg 145 (NPT), which included 4 main drilling locations, each comprising several sites. Detroit Seamount had 5 sites, up to 75 miles apart. Detroit Seamount was close to USSR waters, which would have to be entered during pre-site surveys. ODP-TAMU was, therefore, exploring the need for clearance. Requirements for drilling the OSN-2 hole had been clarified at 5.7 days, including 22 hrs contingency time (one round pipe trip). Duration of Leg 145 would be 59 days, including 18 days transit.

Leg 146 (CA) was previewed by PPSP in October, 1991; it would have its full safety review in March, 1992. Some anxiety over hydrocarbons had been expressed. Francis concluded his discussion of upcoming legs by noting that, since DCS III will not be ready in time, Leg 147 must be HD.

Regarding other matters, the Leg 138 scientific party had decided not to take all samples on board and held a 5-day "sampling party" in conjunction with the post-cruise meeting in College Station (Appendix 2). Total attendance had been 21, of whom 15 were "serious samplers". A total of 36,312 samples were taken, including 21,227 during Leg 138 and 15,085 at the post-cruise meeting. The record was still held by Leg 133, for which over 40,000 samples were taken. However, the Leg 138 scientific party were able to take fewer samples than would have been taken had all sampling been carried out aboard ship because, by the time of the post-cruise meeting, they had a carefully developed sampling strategy. The total cost of the sampling party was ~$40,000. This practice can only be followed at ODP-TAMU, and not at the LDGO core repository, because of space requirements.

Increasing use of the MST and general congestion had necessitated modifications to the core laboratory. The reconfiguration was begun on the transit to Valparaiso and should be concluded on Leg 142. There was now room for >1 MST (Appendix 2).

Status of equipment recommendations is shown in Appendix 2, as is the publications schedule. Initial Reports up to Leg 133 and Scientific Results up to Leg 119 (plus Leg 124) had been published and distributed. Leg 121 Scientific Results volume was in the process of being distributed. IHP recommended revision of the indexing system. The Leg 121 Scientific Results volume had a transitional index and the Leg 122 Scientific Results volume, to be distributed in February, 1992, would be the first with the new index.

ODP-TAMU had offered to supply an ODP poster to the institution of each PCOM member. The poster (a prototype of which was on display at the meeting) contained information on the leg in progress together with the 2 preceding and 2 upcoming legs. The poster would be updated every other leg. Those interested in obtaining the poster should contact A. Meyer at ODP-TAMU.

Additional shipboard computer systems managers would be hired to enable 2 to be sailed on each leg, as per IHP and SMP recommendations.

Francis concluded his part of the report by informing PCOM that A. Meyer, ODP's Manager of Science Operations since September, 1986, would be leaving ODP in January, 1992. J. Baldauf would be acting Manager of Science Operations until her replacement was selected.

Meyer reported on shipboard staffing. Up to and including Leg 142, there would have been just over 1000 participants, 50.3% US (see pie diagram in Appendix 2). Meyer would be staffing legs to Leg 145. A specialist in Cretaceous large, shallow-water forams was needed for Leg 143 and a physical properties specialist for Leg 145. From Leg 146 onward, J. Baldauf would staff legs. He had started on Leg 146 and would start on Leg 147 when co-chiefs had been nominated.

PCOM expressed the following consensus.

PCOM Consensus

In view of her imminent departure from ODP/TAMU, PCOM, on behalf of the international scientific ocean drilling community, expresses thanks to Audrey Meyer, Manager of Science Operations ODP, as she leaves this position after 5 years of service to ODP. In particular, PCOM recognizes the unique manner in which Dr. Meyer has handled the process of scientific shipboard staffing, involving considerable insight into the nature of the program, and the complexities that thereby arise. PCOM offer her best wishes for the future.

WIRELINE LOGGING / ODP-LDGO

Lyle reported that the number of logging strings run during 1991 would be ~70 (see Appendix 3 for comparisons with previous years) and that ~75% of holes drilled were now logged. Staffing was now adequate for handling the information flow at this level of logging (including the FMS).

Leg 139 (Sedimented Ridges I) involved a significant downhole measurements program (Appendix 3), which had been very successful, though a strain on the system. The first geochemical logs in massive sulfides were run. Large Uranium spikes were probably associated with barite. Core recovery in basement was low and logs, therefore, assumed increased importance. Intervals of low resistivity and low SP were associated with fluid inflow in Hole 857D (Appendix 3). Lyle stressed that logging in hydrothermal systems was always an experiment, because temperature conditions change.

Leg 140 logging involved some successes and some failures (Appendix 3). The FMS lost some arms in Hole 504B, but it was hoped that this problem had been corrected. Tools with nuclear sources were avoided for fear of junking Hole 504B with them. Temperature logs showed that flow characteristics of Hole 504B appeared to change from leg to leg.

Leg 142 would involve a test of logging in conjunction with DCS drilling. An outstanding question was whether logging tools could be pushed out through the end of the DCS drill pipe. The Japanese magnetometer would be tested on legs 143 and 144. It was originally intended to be attached to the base of the Schlumberger string, but was not sufficiently robust. In addition, it was no longer a high-temperature tool, as originally planned. The French (LETI) low-resolution (1.5m) magnetic susceptibility tool would be tested on Leg 145. Leg 146 would include a major downhole program involving fluid sampling and permeability measurements.

Downhole measurement technology requirements of potential FY93 programs are listed in Appendix 3. Most potential FY93 legs were not difficult from a downhole measurements perspective. An exception was TAG hydrothermal, where high temperatures were expected and the DCS might be required.

Lyle concluded his report with a note on staffing. R. Jarrard left ODP-LDGO in August and a replacement was being sought. A new assistant systems manager was being hired. The number of processing staff had now stabilized, but additions to technical operations and science staff were being sought.

Lancelot informed PCOM that a prototype high-resolution (1 cm) susceptibility tool was being tested in France. The goal for its readiness was FY93. Austin identified GEOPROPS and additional Leg 147 planning as action items for consideration by PCOM later in the meeting.

926. Annual Reports by Service Panel Chairs

DMP

Worthington stated that DMP had stabilized at 3 meetings/yr (1991 and planned 1992 meetings are listed in Appendix 4). The June, 1992, meeting would include 1 day jointly with KTB.

There had been 4 recent membership changes (Appendix 4). In addition, a replacement would be needed for R. Wilkens, preferably from a JOI institution.

Worthington listed 1991 highlights for DMP (Appendix 4). Shipboard, computer-based integration of core and log data was fundamental to the future of ODP and would place ODP ahead of any other scientific or industrial organization in the world. DMP had worked with SMP on this issue. A paper on core-log integration, presented in Australia, generated a great deal of oil industry interest. A high-temperature resistivity tool was under development in the UK. An ongoing issue was the increased failure rate of tools at high temperatures, which required redundancy. Links with SGPP included consideration of logging of gas hydrates.

The working group on *in-situ* pore fluid sampling met in Houston on August 23, 1991, convened by Worthington and D. Huey of ODP-TAMU. DMP recommended reinforcing the group's recommendations with a steering committee (Appendix 4).

Worthington went on to discuss directions for 1992 (Appendix 4). 1) Options for pore fluid sampling must be a priority. 2) Further progress must be made on integration of core and log data. 3) A public information brochure on downhole measurements was felt necessary by DMP to increase awareness. 4) Guidelines for the monitoring of third-party tools were published in the February, 1991 *JOIDES Journal*. DMP was happy with the guidelines, but their implementation was a cause for concern. Worthington proposed that DMP examine enforcement, which he stressed must be strict. 5) The new MAXIS system was the main component of future plans for log data acquisition, processing and distribution. The goal was to get log data to scientists in real time. 6) Development of COSOD II technologies should continue. Worthington highlighted measurement while drilling and borehole gravimetry; a key question was whether ODP should proceed with developments or wait. 7) DMP would pursue the topic of lithosphere characterization and address questions of how homogeneous the lithosphere is and how representative boreholes are.

DMP's causes for concern (Appendix 4) were: 1) reluctance to log because it impacts on core acquisition (Worthington characterized this as a return to a "pre-1987 mentality" with reference to the role of logs in ocean science); and 2) inadequate general awareness of the scientific legacy of ODP holes in terms of integrated databases, resulting from an over-focused mentality and antiquated views. The remedies to these causes for concern were education, information and showing results.

Discussion

In response to a question from Duncan, Worthington said that DMP members could submit a proposal to study lithosphere characterization. However, DMP received a message that this might be 2-3 yrs premature because tomography questions had not yet been resolved. Cross-hole resistivity is simpler.

Natland asked whether DMP was satisfied with the way PCOM plans logging programs. Worthington replied that DMP was happy overall with the way ODP works. However, one problem was that DMP had to provide logging suggestions for proposals when they were at an early stage, while their future evolution and likelihood of being drilled were uncertain. On the other hand, it was good to get DMP's views into the system early. He added that logging data must be core-calibrated. This became very important when recovery was low.

Von Rad informed PCOM that a 3-axis magnetometer rated to 300°C was being built by BGR and should be ready in September, 1992.

Taylor raised the issue of DMP's recommendations on logging in accretionary complexes. Worthington responded that one question was the extent to which swelling of clays is affected by drilling or by tectonics, adding that tectonics cannot be changed. Answers to all questions concerning logging in accretionary complexes cannot yet be provided. Taylor asked whether logging will be successful on Leg 146 (CA). Worthington replied that, though Nankai logging did not go well, he had been informed that CA was unlikely to give the same problems. He added that logging productivity had improved, due to use of the SES and mud treatment (though the latter was expensive). Lyle agreed that experience was being gained, but Storms added the qualifier that risk of loss of the BHA increased with use of the SES, since it encouraged perseverance in difficult conditions.

Austin asked whether the requested steering committee on *in situ* fluid sampling (Appendix 4) would have to meet separately from DMP meetings. Worthington answered that it would depend on timing of developments in fluid sampling. He felt that a balance could be achieved.

Kidd commented that he had heard a rumor of a program to log ODP holes equipped with re-entry cones. Worthington stated that there were opportunities that had not been fully utilized and that some holes were deteriorating and opportunities would be lost.

IHP

Gibson began by noting that IHP had been inherited from DSDP. Its mandate, which originally concerned publications, had been widened to include computing and data handling on *JOIDES Resolution* and also curation. Publications were under control for the most part, though some concerns remained. However, there were serious concerns about the other areas.

IHP recommendations to PCOM were summarized on Agenda Book, white pages 186-187. They were: 1) that a cumulative index for the first 25 legs be prepared; 2) that additional staff be provided at the East Coast Repository; 3) that a second shift of shipboard systems operators be authorized to allow 24-hour coverage (PCOM had already acted on this recommendation); and 4) that a working group be established to review all computer hardware and software systems (ship- and land-based).

Expanding on the working group recommendation (4, above), Gibson said that the Leg 138 scientific party had great difficulty integrating large volumes of core and log data collected because of the way data were handled on board *JOIDES Resolution* and the shipboard computer operating system, now 7 yrs old and out of date. Productivity of shipboard scientists was being affected and the system should be changed. IHP recommended some sort of review of shipboard and ODP-TAMU systems, but Gibson now feared that this might take too long.

Discussion

Pyle said that JOI, Inc. had asked ODP-TAMU to review computer systems. He felt that action should not be too precipitous since this might lead to purchase of the wrong equipment. Austin noted that the ODP-TAMU review meeting was scheduled for late January, 1992. Taylor said that any reviews should include logging data and the MAXIS system. Lyle stated that the problem was that MST files were sent to the Vax and the time delay was such that it might be too late to change the coring offset to ensure full recovery. Shackleton commented that core-log integration must be done in real-time. Speed was the key.

Natland asked what would be required. Gibson replied that a new data base structure was necessary and probably new hardware. This would impact many shipboard activities. Lancelot felt that careful planning would be required and that it might be preferable to patch up the computer system to retain flexibility in the face of rapid technological developments. Gibson agreed that flexibility was necessary, adding that there is none at present. Taylor believed that a Unix operating system was essential and that, therefore, a major hardware change would be needed. This would have to be included in the budget. Austin asked when the ship was next scheduled for yard maintenance. Francis replied that it would take place during the period beginning in November, 1993, to early 1994. He agreed that a major computer system change would take some time and could not be done during a normal port call. It might perhaps be accomplished during an engineering leg or a long port call. Storms pointed out that other systems would be introduced over the next few years, including hard-rock core orientation, SCM, drilling statistics (mud use, etc.). These would impose additional data handling requirements. Mutter suggested that leasing computers might be preferable to purchasing.

Austin said that formation of a computer working group would be deferred to later in the meeting. He commented that such a group must not work in opposition to the January ODP-TAMU internal meeting. Austin added that attendance at the ODP-TAMU meeting is open and urged that an ODP-LDGO representative attend. Francis thought that many people would attend both the ODP-TAMU meeting and that requested by IHP. Gibson suggested that PCOM might wish to mandate a consultant to study the problem instead of setting up a meeting. Austin responded that, in that case, IHP should nominate an individual. He felt that someone like W. Meyer (former ODP-TAMU systems manager) would be ideal; the individual would need to know something about ODP in addition to computing. Lancelot added that the shipboard computing system has special characteristics and the person must be familiar with shipboard systems. Austin noted that the choice should not be restricted to US consultants. Taylor asked whether PCOM should tell ODP-TAMU to replace the shipboard Vax, but Austin deferred further discussion to *Other Business*.

PPSP

Garrison reported that PPSP had met twice in 1991 and that it had been a good year for safety. PPSP reviewed Sedimented Ridges, HD, 504B, CTJ, EPR, A&G and pre-reviewed CA. PPSP approved 39 sites and was pleased with the H_2S precautions taken on Leg 139. The planned penetration of BSRs on Leg 141 (CTJ) was of great interest to PPSP. Though formerly opposed, PPSP now favored such a test. The next PPSP meeting was scheduled for mid-March, when NPT and CA would be reviewed.

SMP

The SMP annual report is summarized in Appendix 5. Moran began with a discussion of SMP's shipboard laboratory reviews. Paleomagnetics: measurements were generally good, though there were some problems with core contamination. Micropaleontology: a micropaleontological reference slide collection should be on board *JOIDES Resolution*. Physical properties: improvements related to core/log integration were needed (natural gamma and resistivity measurements were required), and the laboratory must be optimized to reduce the workload on physical properties specialists. Sedimentology: core reflectance measurements should be routinely made on sediments. Petrology: procedures were required for use of the XRF for sediment analyses. Geochemistry: a survey of geochemistry laboratory requirements had been carried out; equipment upgrades in the geochemistry laboratory were required. Underway geophysics: new navigational equipment had yet to be purchased (Meyer stated that an RFP should be released in January, 1992).

SMP felt that procedures for discrete measurement of index properties should be better defined. Too many different methods were in use. Density measurement was a particular problem. A single method would be specified to promote consistency. CATSCAN technology may enable the number of discrete density measurements to be reduced in future.

Core/log integration was discussed by SMP and DMP at a joint meeting in October, 1991. The key requirement of core/log integration was to provide the same depth scale on cores and logs. Requirements for equipment, data handling and personnel are listed in Appendix 5. Data handling requirements would require reorganization of onboard computing.

SMP recognized 3 types of core disturbance: physical disturbance by coring (downhole), contamination and pressure relief. SMP's recommendations on core disturbance are listed in Appendix 5. (Copies of SMP's report on core disturbance, arising from its October, 1991, meeting, were available at the meeting.)

SMP's 1990 recommendation that the number of ODP-TAMU technical staff be increased was reiterated. In addition, SMP felt that specific training for micropaleontological sample processing was needed. Finally, SMP discouraged cycling of technical staff among shipboard laboratories.

SMP's list of equipment needs, recommendations for upcoming legs 143/144 (A&G) and 146 (CA), and results of the geochemistry survey are presented in Appendix 5. Respondents to the geochemical survey agreed with PCOM's policy to terminate routine OG sampling, but felt that frozen samples should be retained pending results of advertising their existence.

Discussion

Lancelot asked whether hard-rock core orientation was working. Storms responded that the system would be tested on Leg 141 and comprised 3 components: scribers, SCM and electronic multishot.

Shackleton asked whether SMP had looked into APC core-stretching. Moran replied that the 10% stretching was believed to be due to the elastic response of the cores to pressure relief. Stretching may vary between 4% and 15%, depending on rheology. Measurements should be made on different materials so that the effect can be compensated for. Shackleton felt that it might be preferable to spend available funds on improving the ability to pull out the APC rather than on the breakaway piston head (one of SMP's recommendations on core disturbance; Appendix 5). Moran said that it was felt that APC pull-out had now been optimized. Storms added that APC pull-out capability had been improved recently, though there were other improvements that could be investigated. Francis pointed out that there were staffing implications of SMP's recommendations, including core disturbance studies. PCOM would have to make core disturbance an important engineering priority before ODP-TAMU could work on it. In addition, space available aboard *JOIDES Resolution* for extra equipment was limited and overloading of staff and scientists was a potential problem. Austin noted that related issues were raised by PANCHM and would be discussed later.

Natland felt that SMP was sediment-oriented. He asked whether the systematic description of igneous and hydrothermal deposits, for application to core/log integration, had been considered. Moran responded that physical properties and, e.g., XRF, were the main core/log integration tools, not visual description. Moores asked if any systematic shipboard search for structural features was carried out. Moran replied that it depended on the personnel involved and was not routine. Meyer added that ODP-TAMU was sailing structural geologists more commonly.

Taylor asked how lists of panel recommendations would be provided that were suitable for PCOM prioritization. Austin responded that a short list of non-engineering recommendations was required; PANCHM had considered this. Such a list should be available for PCOM at its April, 1991, meeting. Francis pointed out that ODP-TAMU could implement some panel recommendations without going through PCOM (e.g., the new indexing system), but that others would need PCOM prioritization.

Austin noted that PCOM considered limiting the size of scientific parties at its April, 1991, meeting. If the scientific party must remain at 28 or 29, some must be technicians. PCOM could make a stronger recommendation to this effect. Taylor felt that this approach would not work with complex instruments, e.g., XRF, where continuity was preferable. Meyer emphasized that more technicians means fewer scientists. Austin said that the MOUs were specific and that co-chief balance was less important to the international partners than their level of scientific participation. Some international partners have said that they wished to sail only scientists, not technicians. Lancelot stated that, as a representative of an international partner, he would be prepared to reduce scientific participation from an average of 2 to 1.5 scientists per leg if it would increase efficiency. Austin reminded PCOM that the idea had been to provide 2 extra technicians per leg. Cita-Sironi stated that an average of 2 scientists per leg was essential to ESF and that it would be too difficult for ESF to organize technicians. Von Rad said that Germany could not provide technicians and also preferred 2 scientists per leg. Taira and Jenkyns concurred. Lancelot felt that France would be able to find technicians on a case-by-case basis, but not continuously. Malpas stated that 2 participants per leg was the optimum for C-A, but that an effort could be made to find technicians.

Austin noted that 7 international partners, each with 2 scientists per leg, yielded 14 scientists. If the US was to maintain its balance, the total scientific party must remain at 28. Natland suggested seeking and hiring non-US technicians. Francis responded that ODP-TAMU had written to international partners on that subject, but that it would not solve the problem of shipboard overcrowding. Becker suggested that the US could cut 2 of its scientific participants. Malfait added that, according to the MOU, the addition of a 7th international partner did not require that the US increase its level of scientific participation. However, Meyer said that she was not maintaining US participation at 50%. She had raised the issue of <50% US participation to 4 separate panels, including USSAC, and there had been no objections.

Austin emphasized that hiring 4 extra technicians would have a financial impact on ODP-TAMU. However, Larson pointed out that replacing US scientists with technicians would reduce the JOI/USSAC budget for travel and science support. In response to a question from Lancelot, Malfait said that the MOUs specify an average of 2 participants per leg from each international partner. Lancelot suggested altering this to 1 to 2 participants per leg. Austin stressed that a decision would have to be made on where ODP-TAMU would get funds to hire extra technicians. A short list of panel recommendations, for PCOM to prioritize, would be required first. He asked Panel Chairs to provide him with such a list before the April, 1992, PCOM meeting. It should include cost estimates, if possible, so that PCOM could prioritize at the April meeting. Pyle recalled that this had been done a few years previously. Austin stated that PCOM can make a philosophical commitment to address the problem of technical support, but that it must be realized that there will be a budgetary impact.

Shackleton asked whether extra technicians were required to collect good scientific data or just to collect more data at all costs. He suggested using scientists to do certain jobs, e.g., run the XRF. The magnetometer was already run by a scientist. Moran responded that the goal was to improve ODP. Core/log integration could not be accomplished without more technical staff. They were also required to improve consistency in physical properties measurements. Meyer added that physical properties positions were difficult to staff because of lack of available expertise in the scientific community. Furthermore, shipboard physical properties specialists were overloaded and had little time to interpret their data. It would be a good position in which to sail technicians instead of scientists. Kidd suggested the compromise of sailing graduate students in that sort of role. However, Austin noted that 20% of shipboard scientists had been graduate students. Moran stressed that physical properties, XRF and WSTP were good examples of positions where technicians were very much needed. Lancelot commented that graduate students had sailed as physical properties specialists, but that it was a tough job with little time to interpret data and technicians would be better. Natland recommended that PCOM state its philosophical intention to proceed. Larson asked how soon the recommendations would go into effect. Austin replied that ODP-TAMU would provide information to BCOM in January. BCOM might have to go back to PCOM in April. It would be a base budget item for ODP-TAMU. The money would not become available until FY93 (October 1, 1992). PCOM passed the following motion.

<u>PCOM Motion</u>

PCOM endorses SMP's recommendation to increase technical support staff on board *JOIDES Resolution* by up to 2 personnel/leg. PCOM requests that ODP-TAMU provide BCOM information by January 1992 on the continuing costs of hiring and staffing the ship with these additions, with commensurate reductions in scientific participation, to evaluate its impact on the FY93 budget.

Motion Natland, second Larson — Vote: for 15; against 1; abstain 1; absent 1

SSP

The SSP annual report is summarized in Appendix 6. Kidd noted that little original data for programs in the North Atlantic Prospectus (NAP) was provided to SSP at its October, 1991, meeting. Data submission for review at SSP's April, 1992, meeting must be given the highest priority.

In its overview of NAP programs, SSP took on trust that those cruises that had been funded would indeed happen and that proponents had the all the data they claimed to have. AB may encounter problems with deep penetration. MS was a concept proposal. TAG may require the DCS. Survey cruises had been funded for VICAP, CR and both Vema and MARK areas of MAR.

Concerning causes for concern (Appendix 6), Kidd stressed that SSP's current responsive mode did not allow for best assessment of proposals. If data on NAP programs were received at the April, 1992, SSP meeting, this would be within 2 years of drilling. This was not a desirable situation. However, Kidd hoped that new guidelines would result in better data packages. He requested a PCOM motion on data submission and that letters be written to proponents telling them to send in their data. There were also Site Survey Data Bank requirements. Austin stated that he was prepared to write to proponents with this message. There was no dissent among PCOM members concerning this course of action.

SSP was also concerned about how to avoid PCOM scheduling exciting science for which insufficient data were available (e.g., HD). SSP would, therefore, like PCOM to provide back-up legs for FY93 programs whose data quality/quantity was questionable. This would put pressure on proponents to provide data. This might also be relevant to Arctic legs, where difficulties might arise because of drilling logistics and site-survey cruise problems. Austin noted that there were now more possibilities for back-up or alternate programs than were available during scheduling for FY92. Kidd agreed, but also stressed that it would be impossible to carry alternate programs beyond April, 1992, because this would create scheduling/staffing problems for ODP-TAMU.

SSP wished PCOM to consider the schedule of panel meetings to enable SSP to act on thematic panel input (Appendix 6). SSP guidelines were in preparation for the new ODP guide. These guidelines would include coverage of gas hydrate drilling and offset drilling. SSP requested a liaison to OD-WG.

Finally, SSP continued to be concerned about what Kidd characterized as the HD "fiasco". Austin countered that he had offered to set up a meeting between SSP and H. Dick, an HD proponent, which Kidd had declined. Kidd responded that SSP would have had no objections to HD if it had been characterized as an engineering leg. Larson asked whether PCOM could authorize drilling of sites that had not been approved by SSP. Austin affirmed that this was permissible, adding that SSP was an advisory panel; PCOM did not have to take its advice in all cases. Austin stressed that a HD data package had been aboard *JOIDES Resolution* on Leg 140, in case a move to HD had been necessary. He acknowledged that the HD situation had been an anomaly.

Kidd concluded his report by informing PCOM that 2 members would be rotating off SSP. SSP recommended a 4-year term for its members so that they could experience a complete cycle from proposal review to drilling. Austin commented that this recommendation would be considered by PCOM later in the meeting.

Discussion

Taylor supported SSP on the need to have data in the Site Survey Data Bank prior to the PCOM Annual Meeting. Legs should not be scheduled for drilling when the data are not available. Larsen felt that a communication problem existed. As NARM-DPG chairperson, he had never been informed that he should submit a data package. Austin commented that C. Brenner had been ill and would ordinarily have been more active, but that he would be resuming full involvement. Kidd felt that proponents would never submit their data until they knew that their proposal had been scheduled for drilling. Austin commented that some non-US proponents had mistakenly sent data to the JOIDES Office, instead of to the Site Survey Data Bank. Lancelot suggested that someone, probably attached to the Site Survey Data Bank, should have the duty of continuously chasing data. Austin explained that, when the JOIDES

Office notified proponents that their proposals had been included in the NAP, many revisions and addenda were received. He expected that data would come in when the FY93 schedule was publicized. Natland remarked that this situation was a predictable result of disbanding regional panels, which used to chase data. Austin reiterated that he would write to proponents of scheduled legs and back-ups to inform them of the urgency of prompt data submission.

TEDCOM

Sparks noted that TEDCOM had met only once in 1991 (in September). The gap of a year between meetings had been related to the development pace of DCS III. TEDCOM decided to wait until ODP-TAMU had sent out a detailed RFP for DCS III. TEDCOM discussed DCS, Leg 142 preparations and deep drilling studies in September, 1991, but the meeting suffered from a high rate of absenteeism, primarily among the US membership, especially the industry participants. Sparks was seeking new members and had received an encouraging response from Shell. Sparks acknowledged PCOM's assistance in finding Icelandic and USSR members, who had ideal expertise.

Sparks went on to discuss DCS issues (Appendix 7). It had been TEDCOM who first suggested use of mining drilling methods and put ODP-TAMU in touch with North Sea experts on piggy-back drilling. Since concerns were raised last year about the safety of DCS II, slingshot and drop tests had been performed with satisfactory results. SEDCO was now satisfied. The other concern, about hot fluid or gas release, was not a serious problem and could be solved by installation of diverters. TEDCOM felt that DCS II should not be condemned prematurely, particularly since DCS III would be a long-term development. TEDCOM felt that DCS II was safe, though inefficient.

An RFP for studies of DCS III was issued in June, 1991. Of 3 responses received, 2 have been followed up (Appendix 7). One of these studies involved tensioners at the surface for heave compensation (estimated cost $500,000). The other used counterweights at the seafloor and would be cheaper (estimated cost $250,000). TEDCOM preferred the tensioner option, so that compensation hardware was at the surface in case of problems. In addition, tensioners would limit axial movements between strings. However, TEDCOM recommended further study, since the consequences of the choice would be great. TEDCOM also recommended studying consequences of removing the guide horn (Appendix 7) to simplify the tensioner solution and reduce its cost.

TEDCOM was concerned that Leg 142 (Engineering/EPR) had only 35 days on site. This was short, given problems encountered on Leg 132. TEDCOM was satisfied with a number of ODP-TAMU DCS IIB developments since Leg 132 (Appendix 7). The nested DI-BHA should allow penetration of fractured material. The smaller DI-BHA had given ODP-TAMU other ideas, including reaming and also coring with the DCB. However, TEDCOM doubted that the DCB would be useful without good control of weight-on-bit. TEDCOM felt that Leg 142 had too many objectives and recommended that secondary objectives be set aside. Increased experience of operating the DCS was vital. If, e.g., 100 m of coring was achieved with time remaining on the leg, TEDCOM's recommendation would be that this be repeated, several times if possible, rather than resorting to the secondary objectives. The presence of mining drillers on board during Leg 142 was vital; TEDCOM had been informed that 2 would be present.

TEDCOM had asked for details of 3 deep-drilling sites from thematic panels. These details had been promised by January, 1991, but only those from TECP had been received then. LITHP and SGPP data were received in May and September, respectively. PCOM had not included a deep-drilling study in its recommendations to ODP-TAMU, with the result that no deep-drilling study was underway. Austin interjected that a deep-drilling study formed part of the OPCOM recommendations. Sparks stated that TEDCOM recommended that an outside consultant be used. TEDCOM's proposed schedule (Appendix 7) envisaged completion of such a study by September, 1992, but that was based on the assumption that an RFP would have been prepared by ODP-TAMU and vetted by TEDCOM by late 1991, which had not happened.

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Continuing his report, Sparks asked why PCOM had not pursued recommendations concerning deep drilling made by TEDCOM at the 1990 PCOM Annual Meeting. He added that TEDCOM was unwilling to conduct deep-drilling studies itself. The proposed outside consultant should study deep-drilling scenarios provided by thematic panels and explore limits of drilling both with and without a riser and of mining drilling. An RFP was needed. ODP-TAMU should write the RFP, which should be vetted by TEDCOM. TEDCOM would also participate in the choice of consultant. Sparks warned that if TEDCOM's schedule was not met (Appendix 7), PCOM would continue to be disappointed with progress on deep drilling.

The 3 deep-drilling scenarios provided by thematic panels are summarized in Appendix 6. High pore-water pressures predicted at TECP's North Newfoundland Basin site, a real site, would necessitate riser drilling. In response to a question from Tucholke, Moores said that the expectation of high pore-water pressures is based on observations at other locations reported by D. Sawyer of TECP. Sparks noted that the very deep penetration (5-6 km) LITHP site involved many difficulties; SGPP's Somali Basin site would also require riser drilling.

Sparks reported that KTB was open to participation in development of the PCS sample chamber (PCSSC), but that they had not been approached. TEDCOM discussed ways of supplementing income for technology development, including joint programs with the oil industry and DEA (Drilling Engineering Association) projects. AMOCO contacts had not been encouraging about joint DCS work, but ODP should continue to pursue oil industry contacts.

Discussion

Taylor asked why TECP's deep-drilling site was so shallow. Austin replied that TECP had originally presented 2 options, but that the deeper site (drilling S-reflector off Galicia) had been deemed impossible, by G. Foss of ODP-TAMU, with existing technology. Moores confirmed that TECP's original submission had been filtered by ODP-TAMU. Taylor urged that the entire original TECP package be provided to the proposed consultant. Austin stated that PCOM would need input on potential consultants. Sparks responded that TEDCOM would advise PCOM. Storms said that he would discuss deep drilling in his report to PCOM. Sparks added that ODP-TAMU had done some studies on deep drilling. In response to a question from Natland, Humphris said that LITHP's deep-drilling scenario had been derived by combining information from holes 504B and 735B. Sediment cover was assumed, i.e, bare-rock drilling was not required.

Pyle stated that he had met with KTB representatives in the summer, and that the meeting focused on downhole measurements. They had expressed interest in cooperation, but they were short of funds. Sparks replied that he had not been informed. Pyle said that he and Sparks should discuss further action.

Worthington characterized the DCS as crucial to ODP and recalled that a recovery rate of 99% had been predicted. He asked if that level of optimism remained. Sparks responded that DCS had worked well in a water depth of 200 m in the North Sea, but that weight-on-bit might be more difficult to control in deeper water owing to vibrational effects. More experience was required. Worthington emphasized that if DCS core recovery was low, slimhole logging would be even more vital and experience with that should be gained. Storms explained that slimhole diamond drilling obtained the best recovery of any rotary system. ODP's application of DCS technology offshore and in deep water would not achieve the same level of performance as on-land DCS drilling, but should still outperform other drilling systems. ODP-TAMU's goal was 50% recovery. Storms did not feel that anything close to 90% recovery would be achievable until drillers got used to the system. He added that the scientific community would be happy with 50%. Austin stressed that the community would settle for 50%, but that 50% should not become the new goal. He said that PCOM would return to the issue of DCS II, since a second deployment of DCS II (in FY93) had been deemed advisable by TEDCOM.

Francis commented that, while he favored collaboration with KTB on PCSSC in principle, this should be delayed until input has been received from the geochemical community. Sparks cautioned that any collaboration would have to be completed before termination of KTB in 1994. Austin pointed out that a third party in the US was working on a sample chamber. Francis noted that the PCS would have to be redesigned permit extraction of the sample and use of a sample chamber. Austin expressed concern that a communication problem might be developing regarding this issue.

Becker asked for clarification of the status of DCS IIB, recalling that PCOM had declined to schedule important programs in FY92 because of concerns about DCS II safety. The FY92 drilling schedule might have been very different if DCS II had been deemed safe. Sparks responded that he had not been qualified to comment on DCS safety at last year's PCOM Annual Meeting. Austin remarked that the slingshot test had not been performed at that time. Storms added that ODP-TAMU needed to examine the issue of well control to evaluate its hazard potential. ODP-TAMU did not want to use DCS in a potentially hazardous setting prior to performing this evaluation. Becker stressed the need to be careful about the information on which PCOM based its decisions. Austin reminded PCOM that it would have to consider potential locations for DCS IIB deployment when it defined the FY93 schedule.

Von Rad pointed out that SGPP and TECP deep drilling scenarios were not much deeper than the existing single leg record, but that of LITHP was very different. He asked whether any deep-drilling studies had been been carried out by the Ocean Margin Drilling Program (OMDP). Austin responded that OMDP studies always included a riser.

Austin asked whether PCOM should go on record empowering someone to study deep drilling and allocate funds for that purpose. However, he cautioned that OPCOM funds might not become available and that every time a study was commissioned something else must be dropped. Humphris stated that deep drilling of oceanic lithosphere had been a long-standing goal of LITHP. LITHP needed to know if 4-6 km penetration was feasible. If not, LITHP would have to adjust its long range plan. Moores added that this was also of importance to TECP. Mutter felt that a study to provide information on drilling limitations by experts in the field should be pursued. Austin remarked that maximizing capabilities of *JOIDES Resolution* was a matter of community will and not just technology. Sparks stated that even the deep hole proposed by TECP would need an additional platform, but Mutter felt that a study was needed in order to confirm that. Natland said that there was no current capability to drill LITHP's proposed deep hole and that a study could specify what would be required to achieve LITHP's objectives. A system to proceed with such a hole should eventually be designed. Taylor expressed 2 issues: 1) capabilities of *JOIDES Resolution* (he felt that ODP-TAMU studies had covered that point and set a penetration limit of ~2500 m), and 2) what could be accomplished with additional platforms. Austin reminded PCOM that $100,000 had been allocated from OPCOM funds for a study of additional platforms. However, OPCOM funds might not arrive. He asked whether, in that case, ODP funds should be committed to that study. Natland noted that it might not be possible to use the same platform to achieve all goals. Francis recalled that he had suggested employing another engineer at ODP-TAMU, but OPCOM had decided to hire a consultant. Malpas felt that money spent on such a study was justified in view of the amount being spent on LITHP meetings, where plans were currently being made based on inadequate drilling information. Kidd pointed out that TECP's and SGPP's proposed deep holes were almost within *JOIDES Resolution's* capabilities, but Austin responded that TECP had originally proposed a more challenging site and Shackleton added that SGPP's (Somali Basin) site required a riser. Sparks said that the riser requirement was contained in the original Somali Basin proposal. McKenzie noted that a new proposal for the Somali Basin was being prepared.

Austin asked whether, because LITHP's proposed deep hole was beyond *JOIDES Resolution's* capabilities, PCOM should commission a study looking beyond *JOIDES Resolution*, adding that *JOIDES Resolution* might be gone after 1998 in any case. Austin felt that such PCOM action was warranted and Natland agreed. Sparks proposed that, given the confusion about the scope of the study, PCOM should vet the RFP at its April, 1992, meeting, rather than adhering to TEDCOM's original timetable, which required launching the study at that time (Appendix 7). Austin stated that consultation between PCOM and TEDCOM could occur by mail, etc, prior to April.

Taylor recommended that the study include the Galicia deep site as the TECP option. Austin responded that, since the study would be looking beyond *JOIDES Resolution*, it would be open to all 4 of TECP's original proposed deep sites. All thematic Panel Chairs should re-examine their original deep drilling input with this in mind. Natland asked whether the study should proceed expeditiously even if OPCOM funding did not materialize. Austin replied that the study would use OPCOM funds if those became available. If they did not, then it was important to proceed at least as far as an RFP, though PCOM might not commit to hiring the consultant. Taylor cautioned that, if the scope of the study was too large, it might not yield useful results. Sparks asked whether consultants who are members of TEDCOM would be excluded. Austin replied that they would be eligible, adding that it would be easier for PCOM to assess in-house personnel who are familiar with ODP. PCOM passed the following motion.

PCOM Motion

PCOM confirms the necessity of carrying out feasibility studies for deep drilling as soon as possible. PCOM asks ODP-TAMU to draft a RFP, in consultation with the PCOM chair, for the hiring of one or more consultants, to carry out such studies, using candidate sites recommended by thematic panels as a basis. The draft RFP will need to be reviewed by TEDCOM at its next meeting in April 1992.

Motion Natland, second Malpas — Vote: for 16; against 0; abstain 0; absent 1

927. Scientific Reports of Recent Drilling

LEG 139: SEDIMENTED RIDGES

Davis acknowledged the excellent shipboard party on Leg 139 and onshore support by ODP-TAMU. Leg 139 had pushed some of the limits of *JOIDES Resolution* and of downhole tools. Juan de Fuca Ridge is a high-standing volcanic ridge with a deep axial valley, Middle Valley, at its north end. Middle Valley is filled with turbidites and was the focus of Leg 139. All of the sites were in close proximity and form part of the same hydrologic environment.

Site 855 was drilled in the hanging wall of the fault scarp that forms the eastern boundary of Middle Valley. An array of holes was drilled to intersect the fault, which dips at 45°. Recharge was found to be associated with the fault, rather than to occur through sediment.

Site 856 was drilled into a sulfide body next to an uplifted pile of turbidites above a laccolithic intrusion. At this site, 100 m of massive sulfides were drilled. An alteration gradient has been superimposed approaching the sulfide body. Uplift of the hill at this site appeared to postdate the adjacent sulfide body. The sulfide body was massive except for the upper 5-10 m, which comprised sulfide debris and rubble. It was impenetrable by APC. The chlorinity profile indicated the age of the sulfide body as being within the last 10,000 years. Age of the volcanism is indicated by sulfate profiles as being ~2000-4000 yrs.

Site 857 was drilled into an area of featureless seafloor as a background or reservoir site, which would provide information on fluids with a long residence time that feed active discharge at Site 858 (drilled into an area of active discharge above a buried volcanic edifice). Sediments at Site 857 were characterized by a high degree of vertical/horizontal velocity anisotropy (25%-30%), making depth estimates from seismic data difficult. Basement comprised alternating sills and sediment in the proportion of 2 parts igneous to 3 parts sediment. Sills were 1-25 m thick. Recovery was ~15%, but some sill/sediment contacts were recovered. The section was, in general, highly altered. There appeared to be a great deal of fluid flowing horizontally through the turbidites between the reservoir site and the discharge site. A packer experiment revealed that parts of the section were underpressured (below hydrostatic); pressure could not be significantly raised by pumping. The first 3 weeks of CORK data have been recovered by *Alvin*. It should be possible to determine permeability from the pressure recovery data. The CORK thermistor string available (300 m) was too short, since the hole was drilled to 1000 m. Hole 857D was warming up to equilibrium temperature. The middle section of the hole had recovered to a temperature thought to be higher than the equilibrium temperature, probably as a result of a hydrologic transient due to cross-talk between the CORKed hole and the nearby exploratory hole. It was found that the formation was significantly disturbed by drilling of the exploratory hole. A CORK was also fitted at Site 858.

Leg 139 provided important information relevant to future drilling in hydrothermal settings. Bit temperatures were much less than formation temperatures. Core and logging temperatures were also less than formation temperatures. H_2S concentrations were low. In buried, but cool, extrusives, recovery and penetration were both poor. In altered intrusives and extrusives, penetration was good, but recovery was poor (<5%-15%). In altered sediments, penetration was good, but recovery poor. In sulfide rocks, penetration and recovery (20%-30%) were initially good, but decreased as difficulty in lifting high-density cuttings was encountered. High-temperature tools were valuable, especially the Sandia self-recording tool, which could be deployed "at the drop of a hat" with the coring wire. Exploratory holes are "hydrologic headaches". Attempts had been made to cement those at sites 857 and 858 without success. Exploratory holes must be drilled far from main re-entry holes to avoid serious disturbance to the latter. Grinding to obtain pore fluids worked well even at low porosities. Finally, CORK deployments were efficient, taking only 20-22 hrs.

A video showing the operation of data retrieval from Leg 139 CORKs, taken from *Alvin*, was shown following Davis' presentation.

Leg 140: Hole 504B

Dick remarked that persistence has paid off at Hole 504B and that the success of Leg 140 was a tribute to the original proponents. Fishing tools taken on Leg 140 were not ideal as an extra and unexpected collar proved to be on the Leg 137 junk. A double-dog fishing tool devised onboard *JOIDES Resolution* was finally successful in recovering the junk. Dick felt that the decision to run the FMS first in order to gain at least some results from Hole 504B involved unwarranted risks. The FMS was a soft formation tool and parts of it were lost. Worthington responded that this was misleading since the FMS has been run successfully many times. Risks must be balanced and tools must be run if there was no reason to expect failure. Lyle added that it might be considered better to risk junking the hole at the beginning of the leg, when both time and equipment are available to clear it, than at the end of the leg.

Dick noted that the average rate of penetration during Leg 140 had been 15 m/day, the same as on legs 111 and 137 (Appendix 8). Recovery rate remained generally constant down the hole, with the exception that whenever crystal grain size increased, recovery rate increased (to 50%-60%), decreasing again when grain size decreased. This was due to fine-grained units being more fractured and veined than coarse-grained units, and was the reason that high recovery was expected in the gabbros of Layer 3. The Drilling Superintendent on Leg 140, E. Pollard, was outstanding. He made correct decisions in many difficult situations. Dick stressed the importance of having an excellent Drilling Superintendent. Hole 504B was terminated at 2000.4 m.

Temperature perturbations identified on Leg 137 were found to be subdued on Leg 140 (Appendix 8); Hole 504B appeared to be "breathing". "Crystal clots", of adhered coarse-crystal grains, were recovered. These suggested existence of some sort of large crystal mush zone and perhaps indicated that the magma body was small. Densities were approaching Layer 3 values and porosities were approaching zero downhole (Appendix 8). Seismic velocities rose and then fell downhole, suggesting that any seismic reflector at the Layer 2/3 boundary was the result of a velocity inversion (Appendix 8). A novel approach to core description had been employed during Leg 140, with 1 scientist responsible for each type of observation. This promoted consistency in observations of, e.g., grain size. A coarse/fine grain-size cyclicity suggested episodic injection of dike swarms (Appendix 8). In response to a question from Malpas, Dick said that dikes dip at 70° and are ~0.5 m thick. Therefore, ~80 were encountered in the 400 m drilled.

Dick stated that horizontal and vertical fractures encountered (Appendix 8) appeared to be drilling-related. Zinc concentrations decreased downhole (Appendix 8), suggesting that lower rocks are the source of zinc found higher in the section and in black smokers. Dick added that he expected to see this trend with other metals as penetration increased.

A total of 86 days had been spent drilling at Hole 504B, with 56 days of downhole experiments. Therefore, in effect, only 2.5 legs of actual drilling had been expended. Dick felt that this should provide a new perspective on deep drilling and that spending 3-4 legs/hole on deep holes in oceanic lithosphere was not unreasonable. He recommended an early return to Hole 504B.

Discussion

In reply to a question from Moores, Dick said that there had been no evidence of faults. Moores speculated that they might have been present in the 87% of the section that was not recovered. However, Dick noted that no mylonites were present as fragments. Responding to a question from Tucholke, Dick said that he believed that the bottom of Hole 504B was now very close to the Layer 2/3 boundary. Natland asked about BHTV and caliper results. Dick replied that he did not yet have the BHTV results and could not, therefore, describe what they revealed about dikes. He added that Hole 504B had been left in good condition, reamed and without junk. Worthington asked whether Leg 140's 12.8% recovery rate was sufficient to answer scientific questions; Dick replied that it was.

Lyle commented that stress directions at the bottom of Hole 504B were the same as at the top. Francis said that, according to ODP-TAMU, spalling of borehole walls did not appear to have occurred and that the pillow lavas were the main source of fragments. Ideally the hole should have been cased through the pillow lavas. Dick responded that that was not quite true, since there were some breakouts just above the bottom of the hole.

Malpas asked how many chilled margins had been recovered and on what information Dick's assertion that the dikes dip at 70° was based. Dick replied that 2 chilled margins had been recovered that dipped at 70°.

928. Report of the Annual Panel Chairs' Meeting (PANCHM)

PANCHM minutes were handed out and a revised version is included as Appendix 9. Humphris, *pro tem* chairperson, reported that PANCHM supported discontinuation of supplemental science, but that it still supported proposals for less than 1 leg of operations that could be built into legs at an early stage of planning. They should go through regular panel review and thematic panels would package them into single leg programs before incorporating them into a fall prospectus. Panels should consider with which legs short proposals might be merged, with a view, where possible, to forming an integrated program.

While recognizing the need to preserve fairness and openness and avoid conflict of interest, panels preferred a more proactive role in generating proposals. However, PANCHM expressed concern about excluding panel members who are proponents from voting and ranking because of potential loss of expertise. Proponents must be clearly identified and prevented from voting for their own proposals, but should be involved in ranking others. Panel Chairs should prevent lobbying by proponents in support of their proposals. Proponents could be asked to leave the room at the discretion of the Panel Chair.

PANCHM recommended that the JOIDES Office remove the numbers from the ranking boxes on proposal review forms. Thematic panels used these boxes as an indication of relevance to panel interests and would prefer to distance themselves from the idea that 1 meant poor and 5 meant excellent. PANCHM felt that voting and ranking procedures should be standardized. Already, 3 of the thematic panels use similar methods. For the spring, 1992, global ranking, thematic panels would use their own methods, but all would use a standard method in the fall. Each thematic panel would decide which proposals in the prospectus they would rank. Each panel member would rank proposals (excluding any of which they are proponents) and voting totals would be adjusted based on the number of panel members allowed to vote on each proposal.

PANCHM recommended that the JOIDES Office set new deadlines for receipt of proposals for panel review: January 1 for spring meetings and August 1 for fall meetings. Deadlines for specific years of drilling were rejected because PANCHM did not wish to destroy the image of spontaneity. A proposal size limit was also rejected because PANCHM felt that proponents should have the opportunity to include all of their information. In particular, PANCHM did not want proponents to leave out data.

During their fall ranking process, thematic panels needed to assess which proposals are "drillable" in the time frame that will be considered for scheduling by PCOM at its subsequent Annual Meeting. This would help PCOM judge which proposals were ready for inclusion in the prospectus. Furthermore, since SSP was not getting data in time, a new meeting schedule was proposed by PANCHM:

	Panel	Spring Meetings	Fall Meetings
	Thematic	Late Feb./early March	Mid-October
	SSP	Early April	September
	PCOM	Mid-late April	Late Nov./early Dec.
Primary Activity:		*Global ranking/ drillability*	*Prospectus ranking with SSP input*

SSP would impose an August 1 deadline for submission to the Site Survey Data Bank of available site survey data for globally highly-ranked proposals likely to be included in fall rankings. This would enable SSP to provide feedback to panels for their fall meetings and prospectus rankings.

PANCHM endorsed efforts of SMP, DMP and IHP concerning core/log data integration and supported their action plan to address this issue.

PANCHM discussed developments in logging, sampling and other areas. Panels would produce a combined, prioritized short-list of non-engineering needs. This list would be presented for discussion by PCOM at its April, 1992, meeting. Revised lists would be submitted annually for subsequent PCOM spring meetings.

PANCHM encouraged international partners to send alternates to panel meetings when the member could not attend.

PANCHM was sympathetic to SMP's concerns about shipboard technical support. The JOIDES Office should inform co-chiefs to pay attention to technical staff requirements for their legs and to look for technical expertise in the scientists they invited.

PANCHM was interested in helping a feasibility study of deep drilling to progress and was willing to provide liaisons.

PANCHM requested an increase in the level of financial support provided to Panel Chairs to $2500/yr. The level of support had not increased for many years and each meeting now cost panel chairs about $1000 in copying and mailing costs alone. Each Panel Chair also needed secretarial support at a level of ~20% of full time. (Some international partner panel chairs already got this.)

Discussion

Natland thought that a mechanism for incorporating short proposals should be set up. Humphris suggested involving proponents or DPGs. Austin stated that proponents would be informed early that many of these issues lay with them. This was the reason for specifying drillability.

Cowan commented that, as a PCOM member, he valued thematic panel reviews highly, Thematic panels might become more proactive, but he emphasized that what they already did was very valuable. Larson echoed Cowan's statement, adding that it was important to be both proactive and fair. He felt that the PANCHM course was fair; after all, ODP was a "user's program". Tucholke asked whether PANCHM had discussed the present system of proposal review. At present, reviews were based on maturity and thematic relevance, but what about proposal quality? Humphris replied that PANCHM had discussed that last year and had dropped the mature/immature boxes on proposal review forms. Thematic panels were also trying to be more blunt in their reviews. Tucholke felt that proponents were not sure whether they were being encouraged or not. Shackleton believed that very few proposals were so boring that ODP would never wish to drill them. The thematic panels needed to see rewritten proposals, to see how good the proposals could be, before they could be judged. Those of more questionable quality tended not to be rewritten anyway. Von Rad felt that it was important, especially for non-US proponents, to receive a letter explaining that ODP was a competitive program and that there was no guarantee that even good proposals would ever be drilled. Blum noted that the JOIDES Office already sent a cover letter saying that. Natland pointed out that ODP proposals were not treated like NSF proposals. Proponents needed to know where they stood in the rankings. Austin said that information was already being transmitted well. He expressed concern about making too strict a cut-off and discouraging proponents. However, Tucholke countered that if proposals unlikely to be drilled were not cut at an early stage, there was a risk of disappointing proponents. Mutter expressed agreement with Tucholke. Moores stated that TECP's watchdogs were empowered to tell proponents what they must do to interest TECP. Kidd confirmed the effectiveness of TECP's system. Austin commented that he did not feel ready to start rejecting proposals, though he acknowledged that that might be necessary at some future date. Taylor pointed out that proposals often needed further site surveys. If the proposals were rejected outright, the site surveys will not be funded. Austin agreed that ODP played a vital role in the funding of surveys. Mutter and Tucholke suggested informing proponents that their proposals would not be considered further until they had satisfied certain requirements. Austin replied that the panels could do that, but they must provide information to proponents and not just check a box. Shackleton said that the panels already did that.

Taylor observed that, concerning the meeting schedule, the focus seemed to be on the fall meetings. He asked whether the system was sufficiently efficient at getting information to the spring meetings. Humphris said that PANCHM felt that site survey information was most critical for planning of the 1-year ship schedule, but was of less concern for spring meetings.

Austin stated that he would ask for PCOM endorsement of PANCHM's recommendations by consensus, but first he thought it important to discuss the issue of having proponents present during panel discussion of their proposals and allowing Panel Chairs to make the distinction between simple provision of information by proponents and lobbying by them. In addition, he asked whether this should be extended to PCOM. Taylor suggested that proponents be restricted to answering questions about their proposals. Malpas agreed, but added that proponents should be allowed to correct misinformation without being asked a question. Austin was sympathetic to the PANCHM recommendation, noting that problems had arisen recently because individuals were excluded during panel rankings. PCOM would need to consider this matter before it set the FY93 schedule. Duncan suggested that PCOM would need an impartial chair for that part of the meeting and Austin agreed.

Austin felt that the PANCHM meeting had been most productive and that PANCHM chairperson, Humphris, had done an outstanding job. PCOM reached the following consensus.

PCOM Consensus

PCOM thanks the Panel Chairs and endorses PANCHM's recommendations.

929. Annual Reports by Thematic Panel Chairs

Austin explained that thematic panel reports would not include NAP rankings, which would be presented later.

LITHP

Humphris reported that LITHP met twice in 1991, once jointly with TECP (Appendix 10). Moores would discuss the joint meeting, a highlight, in his TECP report.

Humphris described LITHP's planning activities, beginning with deep drilling. LITHP's short-term strategy involved drilling of a number of scientifically-significant holes of intermediate depth (2-2.5 km?) in different settings (e.g., crust formed by fast and slow spreading, on- and off-axis sites, etc.). This approach would maximize the capabilities of *JOIDES Resolution*, maintain the pace of technological advances, and increase knowledge of the challenges involved in very deep drilling. LITHP's long-term deep drilling goal was to drill a 4-6 km hole. LITHP prepared 6 deep-drilling scenarios in the fall of 1990 and subsequently combined these into a single site, based largely on data from holes 504B and 735B. LITHP was pleased about allocation of OPCOM funds for a deep-drilling feasibility study and suggested that the study address issues of time and technology requirements, and costs of drilling both a 4 km and a 6 km hole. LITHP could then rewrite its white paper, if necessary. D. Moos was designated LITHP contact for the feasibility study.

Offset drilling constituted a second approach to LITHP's objectives. OD-WG was formed at PCOM's April, 1991, meeting. LITHP was disappointed that it had not happened sooner. A consequence of the delay was that OD-WG's deliberations had only just begun as North Atlantic scheduling was occurring. LITHP would like OD-WG to become a DPG at its next meeting and be specifically charged by PCOM with developing an initial drilling strategy for the Atlantic and laying out a provisional schedule for Atlantic drilling with specific sites. LITHP requested PCOM action on this issue.

LITHP was pleased that DCS was given top priority by OPCOM, and also that funds were devoted to logging and fluid sampling development. Humphris added that it was now clear from the success of Leg 139 that some objectives could be accomplished with conventional techniques.

Humphris went on to discuss supplemental science. LITHP was strongly in favor of S-2 (logging of Hole 801C) and was prepared to give up 3.5 days of basement drilling from Leg 144 to accomplish S-2, so long as this time was not taken from planned basement drilling at MIT-1. However, Humphris understood that drilling times had now been changed (including those at MIT guyot) and that there might no longer be 3.5 days to give up. S-3 (OSN-2) represented a high priority of LITHP. Installation of new seismic observatories should be included in implementation of the LRP. However, there was not enough drilling of LITHP interest on Leg 145 to yield the originally-required "up to 10 days". LITHP was prepared to give up its Leg 145 basement objectives to accommodate S-3 because Leg 145 did not address high-priority objectives of LITHP. However, LITHP felt that it was unacceptable to devastate Leg 145 by removing so much time. Furthermore, S-3 (now 5.7 days) still did not meet the original time limit of 4 days for supplemental science proposals.

LITHP recommended formation of a TAG-DPG to examine all available data to determine and prioritize locations of appropriate drilling sites, and also to consider how to address structural controls on hydrothermal systems through drilling.

There had been a large number of membership changes (5) during the past year. LITHP and TECP both felt that their interests were well represented on both panels.

Humphris concluded by informing PCOM that she would be leaving Sea Education Association in January, 1992, and would subsequently work in the RIDGE Office at WHOI. She asked whether that raised any concerns for PCOM. Austin replied that the change would not involve any conflict of interest.

TECP

Moores reported that TECP met twice in 1991, the second meeting jointly with LITHP in Cyprus.

One of TECP's overriding concerns was the great breadth of its charge. TECP was beginning to come to grips with the fundamental question of how to solve tectonic problems by drilling. TECP saw drilling as one of many techniques for studying tectonics, including mapping, use of submersibles, seismics and cross-sections (accurately scaled to the best extent possible). An additional panel concern was narrowness of focus in drilling proposals and lack of structural-tectonic considerations in many that could incorporate them. Moores stressed the need for interdisciplinary teams. TECP's final overriding concern was that routine shipboard collection of structural information from appropriate cores be carried out.

Additional actions and concerns arising from TECP's March meeting were: 1) shortness of Leg 141 (CTJ); 2) immaturity of HD site-survey information (however, TECP felt that, though drilling at HD may fail to penetrate the Moho, any hole there would yield new information; TECP, therefore, favored HD drilling); 3) lack of tectonic focus in the A&G program; 4) overall quality of proposals and the Etheridge checklist, which was discussed and edited (and published in the June, 1991, *JOIDES Journal)*; and 5) appointment of watchdogs.

A number of actions and concerns also arose from the October meeting in Cyprus. Moores went on to discuss these.

The Troodos complex provided an excellent model of oceanic crust and mantle and good ground truth for offset drilling. In addition, the field trip to the ophiolite, which preceded the joint TECP/LITHP meeting, enabled TECP/LITHP panel members to get to know one another better and improved coordination at the meeting.

With respect to OPCOM, TECP felt that many high-priority sites required deep drilling. The capabilities of *JOIDES Resolution* should, therefore, be maximized to achieve increased efficiency of drilling, enhance core recovery and increase the chance for success at deep sites.

TECP gave high priority to supplemental science proposal S-2 (logging Hole 801C) and would be prepared to give up basement penetration at mid-latitude A&G sites. S-3 (OSN-2) was also given high priority. TECP would be prepared to give up tectonics objectives (age and paleolatitude information at seamounts) of Leg 145, which were, unfortunately, secondary on that leg. However, TECP would like to preserve Detroit Seamount sites. TECP's priorities on Leg 145 were, in decreasing order of importance: 1) Detroit Seamount sites, 2) NW-3 basement, 3) PM-1, NW-1A, NW-4A basement.

Letters of intent received considerable discussion at TECP. It was felt that they are useful for stimulating exciting proposals and might usefully be treated more formally. TECP also supported LITHP's recommendation to change OD-WG into a DPG.

Reports of TECP watchdogs on the status of tectonic themes and areas of expertise of TECP members are summarized in Appendix 11. Moores requested that Sawyer and Purdy be allowed to remain on TECP for 1 more meeting, because of the need for their expertise.

TECP would like to have future meetings in regions where field trips could be used creatively to examine on-land exposures of oceanic features. The spring meeting would be in Las Vegas, NV, with a field trip to continental rifting features. For future meetings, a volcanic rifted margin site would be sought (perhaps the Late Precambrian of Virginia or North Carolina. Moores echoed support for the recommendation for increased financial support for Panel Chairs made by PANCHM.

Publication of articles on ODP in *GSA Today* was proceeding. An article on hotspots by R. Duncan had been published in the October issue and one on accretionary prisms by C. Moore, A. Taira and G. Moore was to be published in the December issue. Planned articles include: J. Malpas on Hole 735B and the ophiolite model, M. Leinen and others on Arctic gateways and J. McKenzie on dolomites.

Moores went on to discuss the TECP/LITHP joint meeting, held in Cyprus in October, 1991. Topics of discussion are listed in Appendix 11 together with an outline of TECP/LITHP common objectives.

Discussion

Natland expressed the view that TECP liked to grapple with grandly-stated objectives, rather than drilling legs and examination of data. He felt that the objectives were often unrealistic or, alternatively, it was difficult to see how drilling would yield tectonic information. Natland urged TECP to identify projects that are workable legs. In response, Moores asked whether it was TECP's responsibility to generate drilling proposals or to respond to proposals that are sent to it. TECP had chosen the watchdog route. When TECP encountered proposals which had potential tectonic interest, watchdogs communicated with proponents. Taylor thought it would help the community if TECP provided information on how proponents could respond to TECP's recommendation that they needed to include more tectonics in their proposals. Moores replied that most of TECP's proposal reviews contained specifics and directed proponents to the appropriate watchdog. Tectonic themes had come late to ocean drilling. They required more extensive pre-drilling surveys.

Tucholke felt that Moores had made an important point. Most tectonic objectives were 3-dimensional, whereas ODP had been a 1- to 2-dimensional program. Nobody was willing to come to grips with that; extensive 3-dimensional site surveys and drilling programs were required. Austin recalled that the EPR program was originally designed as an array of holes. This approach was abandoned when it was realized that a single hole might take ~250 days! He reiterated that drilling of 3-dimensional programs was an issue of community will.

Mutter applauded the recommendation that stress measurements be made on continental margins. He asked how deep the required holes should be. Austin quoted M. Zoback as specifying 100 m, but that this depth was in off-axis oceanic lithosphere. Moores wished to defer an answer until he could discuss the issue further with Zoback.

OHP

Shackleton began with a report on Leg 138, which had achieved all its objectives and been a great success. True 100% recovery was demonstrated in multiple holes. Bio- and magneto-stratigraphy were excellent. High-resolution GRAPE density, magnetic susceptibility and color records were obtained. Scientific objectives that would be addressed using the 35,000 samples taken included: history of the ocean current system, upwelling/productivity history, atmospheric transport, and astronomical calibration of the timescale into the late Miocene. Shackleton listed planning implications of Leg 138. The digital color scanner had been a success and should be standard equipment aboard *JOIDES Resolution*. Designation of a stratigraphic coordinator and a core-log integration scientist had proved useful. The shipboard computing system must be upgraded to handle the huge increase in data gathered. Recovery rates using the APC would be improved with better heave compensation and the phenomenon of core stretching must be understood. XCB disturbance should be reduced.

OHP had reviewed a good number of proposals and had been happy with their quality. OHP welcomed good input from the outside community and hoped that ODP would remain remain responsive and receptive to proposals and not become locked into long, preset programs. However, Shackleton acknowledged that it was easier for OHP to be purely responsive than for, e.g., TECP. Several new (late 1991) proposals would probably be highly competitive in the spring, 1992, rankings. At OHP's October meeting, 2 new proposals contained exciting science with components that some on OHP thought should be scheduled immediately: 1) Bermuda Rise (proposal 404), 1 APC-only site, very high-resolution record; 2) Hatton-Rockall (proposals 406/372), 1 APC-only site. OHP considered preparing a proposal to study intermediate water depths that would involve sites all around the world. Hatton-Rockall was an example of how such a program might be implemented. OHP considered that the Chicxulub crater, K/T boundary proposal (proposal 403) could be drilled now, but could also be improved. OHP was looking for proposals to study sequences that would enable astronomical calibration of the timescale, which might be achievable to 100 Ma.

Shackleton addressed some aspects of OHP's spring, 1991, ranking. The top 2 proposals were North Atlantic proposals and would be considered later by PCOM. The third-ranked proposal, Angola/Namibia upwelling, was of high OHP interest. Number 4 (CR) was a solicited proposal and number 5 (Shatsky Rise) would rise to number 1 when OHP thought that it was technically feasible (it involved chert/chalk drilling).

OHP remained convinced that supplemental science proposals were a good thing, but was sympathetic to PCOM's scheduling problem. The 3 supplemental science proposals had received a fair hearing. If S-3 (OSN-2) was scheduled, the following would have to be removed from Leg 145: 1) NW-4, 2) PM-1, 3) deep part of DS-1, 4) deep part of DS-3. Leg 145 was constructed by CEPAC, at OHP's request, from 3 proposals. Eliminating 1) would eliminate 1 proposal completely and eliminating 2) would eliminate the science of highest interest to the appointed co-chief, Rea. Shackleton, therefore, felt that it would be unacceptable to eliminate either 1) or 2). This left 3), which would mean eliminating the Paleogene opportunity, and 4), which would mean eliminating the Mesozoic opportunity. Both were potentially very exciting: DS-1 should provide a high-latitude, Paleogene carbonate record and DS-3 should provide a record into the mid-Cretaceous. However, OHP was ready to work with the co-chiefs to eliminate drilling. PCOM should perhaps have been more firm with the 4-day guideline, under which circumstances supplemental science might have worked. OHP was disappointed that no Santa Barbara Basin supplemental proposal was submitted in time, but that was not PCOM's fault.

Shackleton was leaving the panel and would be replaced by Delaney as chair. A true paleoceanographer was needed to replace Mix. Since both Berggren and Shackleton were leaving, OHP was losing its "grey hairs" and would prefer not to have 2 young replacements.

Discussion

Natland asked whether the Bermuda Rise and Hatton-Rockall proposals should be incorporated as short proposals, as PANCHM had suggested. Shackleton replied that was possible or, alternatively, OHP could package them as a leg, perhaps in conjunction with other panels, adding that PCOM needed to see them as a 1-leg program to be able to schedule them. PCOM could not be expected to combine them.

Francis stated that it would be difficult for ODP-TAMU to purchase and operate a color scanner in time for Leg 145. The easiest alternative would be for Mix's scanner to go on that leg. He agreed that color scanner data was important, but ODP-TAMU was pressed to buy other equipment. Austin noted that this would be one of the items on the panels' prioritized list.

Natland asked about the philosophy of OHP's ranking. He wished to gain a perspective on the ranking in the context of the larger goals of OHP. Shackleton replied that OHP has tried to complete a set of transects, both vertical and horizontal, through the Neogene. Most of that had been accomplished. The next focus would be to address the Paleogene. OHP wanted the CR program to include a Paleogene component. Shackleton added that the new chair might have a different perspective. Austin asked whether Delaney had the same sense of OHP's plans. Shackleton answered that he believed she did.

SGPP

McKenzie noted that SGPP had met 3 times in 1991 (March at ODP-TAMU, June at LDGO and November at ETH-Zürich). The March meeting had included a very valuable gas hydrates workshop, convened by E. Suess and K. Kvenvolden and attended by scientists, industry personnel and loggers. The June meeting had been held jointly with DMP and had discussed SGPP's downhole tool needs. In November, SGPP had focussed on proposal reviews.

SGPP had carried out 2 proposal rankings in 1991 (see August, 1991, PCOM minutes for details). McKenzie recognized this as an error on the part of SGPP, but emphasized that it had been done in good faith. McKenzie stressed that there was never a hint of impropriety in SGPP's actions. The second ranking in June was performed with a view to assisting PCOM because the March ranking was viewed by SGPP as being flawed; some proposals of high-priority to SGPP had ended up being ranked low. McKenzie added that multiple rankings would not recur.

McKenzie highlighted the leadership of E. Suess, past SGPP chair. She said that his guidance had been invaluable and would be sorely missed by SGPP.

SGPP had 5 main themes: sea level, fluids, metallogenesis, paleocean chemistry and sedimentary mass balance. The breadth of these topics meant that further flukes in rankings might occur in the future, since ranking inevitably depended on who was present at meetings. McKenzie characterized SGPP as a very diverse group, but harmonious.

Diversity of themes required diversity of expertise. SGPP would like to extend the term of Christie-Blick. It was very important that the replacement for Dreiss be a hydrologist. German and UK rotations were bringing 2 new organic geochemists onto SGPP, so that the replacement for Prahl need not be an organic geochemist. McKenzie noted that, since Suess had been a member-at-large, SGPP had lost a member with his rotation off the panel.

The interaction of natural gas hydrates with the thermal and fluid regimes of continental margins and in particular accretionary complexes is the highest scientific priority of SGPP. The concept of gas hydrate drilling always rose high in SGPP's rankings. The gas hydrates workshop addressed scientific and technological issues associated with gas hydrate drilling. While SGPP's 5 main themes were, in general, well covered by proposals, there was a need to put together or solicit a proposal for a dedicated gas hydrates leg. A note requesting submission of gas hydrates proposals was published in the October, 1991, issue of the *JOIDES Journal*. A working group on gas hydrates existed within SGPP. Following up on tool developments of importance to gas hydrate programs, SGPP sent a liaison to the August, 1991, meeting on *in situ* pore-fluid sampling (see DMP). Results of Leg 141 (CTJ) and Leg 146 (CA) would be important for future gas hydrate planning.

SGPP agreed with PCOM's decision to discontinue supplemental science, but supported continued consideration of proposals for <1 leg of operations and incorporation of "emergency" cases into the ship schedule. S-2 (logging of Hole 801C) was an example of the latter. SGPP supported S-2, if logging time was taken from basement objectives as recommended by LITHP/TECP. S-3 was outside the mandate of SGPP. Nevertheless, since no instrument had yet been installed in OSN-1, SGPP felt that there was little urgency for drilling OSN-2. Furthermore, S-3 exceeded the 4-day limit originally placed on supplemental science. Finally, SGPP felt that OSN might be able to make use of holes with re-entry cones previously drilled by ODP. Therefore, SGPP did not support S-3 (OSN-2).

Progress in technology was a continuing concern, particularly *in-situ* fluid sampling, porosity and permeability measurement, and recovery of sand and unconsolidated sediment. SGPP was trying hard to achieve a balance between being reactive and proactive. SGPP covered a wide range of themes and reviewed most proposals submitted to ODP. Longer meetings might help. Identification of gas hydrates as a major priority was one way in which SGPP had taken an active role. McKenzie felt that, in terms of SGPP's activities, the scales had been tipping toward the geochemical side of SGPP's mandate and that a greater sedimentological balance was needed.

Discussion

Natland asked whether SGPP had any scientific interest in logging Hole 801C. McKenzie replied that physical properties measurements on the oldest oceanic crust were important. SGPP would like the packer experiment at Hole 801C to be given a higher priority than geochemical logging.

Shackleton asked whether SGPP's sedimentological membership should be strengthened to tip the balance away from geochemistry. McKenzie felt that membership was already balanced. Austin noted that there had been arguments for a geochemical panel. SOHP was split because its mandate was too broad. He asked whether a further division was necessary. McKenzie suggested waiting a few more years. Many problems had been solved. Austin pointed out that SGPP had done more than other panels in elucidating the expertise of its members and urged other thematic panels to do so.

Von Rad wondered whether further discussion of short Atlantic proposals (e.g., Bermuda Rise and Hatton-Rockall) might be required. Austin said that he would like thematic panels to do more to integrate such proposals. He cautioned that such operations could end up requiring a week, instead of 1 or 2 days. Larson, noting that supplemental science was really "take-away" rather than "add-on" science, asked about the ruling on leg length. In the past it had been necessary only to maintain a 56-day average leg length, while individual legs might vary in length. Francis said that restrictions on leg length were a question not only of SEDCO's objections (SEDCO wants to balance the sea time of its 2 crews), but also of the turnover rate of ODP-TAMU's technicians. In addition, personnel efficiency and safety deteriorated over long periods at sea. Long legs could only be tolerated when there were very good reasons, as in the cases of, e.g., Antarctic drilling, NPT and EPR, where transits were long. Natland felt that Francis had been less flexible about leg length at previous PCOM meetings, and Mutter agreed. Francis denied that he had changed his position. Leg length could be varied, but there was a price to pay. Larson asked whether ODP-TAMU would accept a series of legs with different lengths, such that the average was 56 days. Francis replied that ODP-TAMU could live with it, but that legs must be planned so that one crew did not end up with all the long legs. Larson felt that could be done. Lancelot recalled that he had suggested sharing the load of supplemental science among several legs, but that Francis had said that was unacceptable (see August, 1991, PCOM minutes). PCOM needed to know the boundary conditions. Francis said that it was also important to prevent legs from becoming too long and that he felt the same way as before. Storms added that there were always perturbations to leg length, but that these should be avoided. ODP-TAMU was opposed in principle to a series of 50-day and 60-day legs which average 55 days.

Shackleton requested that PCOM consider von Rad's question. Each of the Atlantic legs will have ~4 more days of science than FY92 Pacific legs because of shorter transits. Short proposals should, therefore, be considered. Von Rad stated that PCOM should plan legs; PCOM could not ask OHP to do it. PCOM could fit a short proposal into any leg. Austin said that supplemental science was more complex than leg length, involving problems with staffing and publication of results. For these reasons, PANCHM decided that panels must do some integration first. Austin added that PCOM did have some flexibility in leg length. Francis said that it was up to ODP-TAMU, subject to contractual and safety obligations. The rule was approximately 8 weeks. Austin responded that there was flexibility there. Taylor noted that Francis' strongest statement was against rescheduling already-planned legs, since that affected staffing and port calls. It was easier to be flexible about future legs. Austin still felt that thematic panels should perform more of an integrative function, but that PCOM should retain the flexibility to accommodate opportunities.

930. Reports of Detailed Planning Groups / Working Groups

NAAG-DPG

Since the NAAG-DPG chair, W. Ruddiman, was absent, Shackleton gave the report. NAAG-DPG was formed to integrate 3 highly-ranked proposals. A single, good, coherent program had emerged, comprising 2 legs to be drilled in different years. The Norwegian Sea area, with its sills, was very important for understanding how the whole ocean worked; it was not simply a regional problem. Controls were subtle. The NAAG program would also study the early history of Northern Hemisphere glaciation and would yield important information on sediment budgets. The report of the NAAG-DPG was handed out at the April, 1991, PCOM meeting and was published in slightly abridged form in the June, 1991, *JOIDES Journal.*

Shackleton stressed the importance of the weather window for NAAG drilling. OHP felt that the 2 NAAG legs should not be in adjacent years. It would be preferable to evaluate the results of the first leg before scheduling the second. It was conceivable that the results of the first leg might be so good (or so bad) that there might be no need to return. In addition, the delay would provide time for incorporation of new proposals.

Discussion

Austin reminded PCOM that NAAG-DPG no longer existed, so that the program PCOM must evaluate would not evolve further. Duncan asked what the consequences would be if the second leg was not drilled. Shackleton replied that the highest-priority sites would be drilled on the first leg. If all of the highest-priority objectives were achieved by the first leg, OHP would still want the second leg, but OHP felt that it should follow the first by 2 years. Francis stated that an ice study had shown that the chance of reaching some sites was very low. Larsen agreed, and felt that the NAAG-DPG report was too optimistic. Austin pointed out that, with 2 legs worth of sites to choose from, a lot of alternates were available. Shackleton added that if the first leg failed to reach the northernmost sites, there would be a second chance in 2 years. Larson cautioned that if the second leg was delayed too long, *JOIDES Resolution* may have left the Atlantic. However, Shackleton said that OHP would be able to make recommendations on the timing of the second leg based on PCOM's 4-year planning.

Von Rad asked about possible overlaps with volcanic rifted margin drilling off east Greenland. Shackleton said that objectives of the NAAG and NARM programs were sufficiently different that NARM sites would not be optimal for NAAG studies. There were dangers in attempting to combine sites. Austin agreed, noting that that had happened on Leg 104.

NARM-DPG

Austin reminded PCOM that NARM-DPG had not yet been disbanded. This should be kept in mind when evaluating the report.

Larsen stated that NARM-DPG considered 12 proposals: 10 volcanic margin proposals, of which 4 were included in the NARM-DPG report, and 2 non-volcanic margin proposals, both of which were included in the NARM-DPG report (Appendix 12). (The NARM-DPG report was also included in the NAP.)

NARM-DPG balanced drilling between volcanic and non-volcanic margins. It selected the Newfoundland Basin and Iberian Abyssal Plain conjugates as the non-volcanic priority. Volcanic margin drilling plans were not based on a conjugate approach; rather, drilling targets were selected at 3 offsets from a supposed mantle plume.

The main questions to be answered by rifted margin drilling were related to the causes and consequences of breakup: 1) crustal nature and deformation of the lithosphere around rifted, divergent plate boundaries, 2) the role of mantle plumes in continental breakup and the structure of the plume, and 3) symmetry and asymmetry in structure, depositional environment and subsidence across the former breakup and rift zone.

Two end-members of rifted margins had been recognized: 1) volcanic, thick-crusted, and 2) non-volcanic, thin-crusted. The number of volcanic margins recognized worldwide had been increasing as more data had been collected (Appendix 12). NARM-DPG was charged with considering the North Atlantic, but did look at other areas around the world. The reasons for focusing on the North Atlantic were: 1) it was the location of a concentration of highly-ranked proposals representing a large scientific community and mature drilling strategies, 2) very large databases were in hand (including DSDP and ODP), 3) additional site surveys were scheduled or in progress and it was an easily accessible region, 4) Atlantic margins were the traditional type examples of super-continent breakup, 5) the Atlantic provided access to conjugate rifted margins that can be precisely matched, 6) the Atlantic offered type examples of both volcanic rifted margins and non-volcanic rifted margins without evaporites and with limited post-rift cover, and 7) important gateway and high-latitude drilling would be accomplished simultaneously.

The 2 types of rifted margins required 2 drilling strategies. The approach to thick-crusted volcanic margins would involve investigation of: 1) volcanic and geochemical development of anomalous igneous crust, 2) offset dependence and symmetry in relation to plume center, 3) syn-rift environment, emplacement mechanism and emplacement rate of volcanics, 4) crustal accretion rate and rate of deformation within anomalous crust, and 5) subsidence of the anomalous crust and the accretionary plate boundary. The fundamental strategy was the drilling of margin transects at different plume-center offsets.

The approach to thin-crusted, non-volcanic margins would involve investigation of: 1) nature and deformation rate of deeply-subsided and thin-crusted areas (are simple-shear detachment faults present?), 2) syn-rift environment, rift asymmetries, 3) subsidence history, 4) detailed location of the ocean-continent boundary, and 5) composition of earliest oceanic crust. The fundamental strategy was the drilling of conjugate margin transects.

NARM-DPG had proposed ~8 legs of drilling (Appendix 12), ~4 legs for each type of margin. NARM-DPG would like 2 legs/yr (1 volcanic and 1 non-volcanic) in each of FY93 and FY94 (Atlantic drilling), with the remaining 4 legs to follow a break for digestion of initial data and delayed until *JOIDES Resolution* returns to the North Atlantic. The first 2 legs would provide constraints on some first-order questions and fundamental assumptions. The following 2 legs would involve the first symmetry studies. The second wave of drilling (last 4 legs) would detail margin structures, offset and symmetry studies as required for advanced quantitative modelling. Each leg would produce original results that are not dependent on, but may receive added value from, later drilling.

Volcanic rifted margin drilling would involve 3 transects, 2 symmetric to the plume, 1 closer. Since the plume was still there (Iceland), a modern reference frame was available. The plan was to extend studies from the 10% of breakup volcanism onshore to the 90% offshore. Seaward-dipping reflectors (SDRs) were assumed to form around sea level. Drilling would test this assumption. Ties were also possible to older DSDP sites at more distant offsets from the plume. At some point, SDRs must tie in with the sheeted dike complex, but that was beyond the scope of the NARM program. The age of the negative magnetic anomaly under the east Greenland margin was important; one model implied very rapid crustal accretion. Other areas of interest were variations in volcanic productivity and thicknesses of flows.

The Newfoundland Basin to Iberian Abyssal Plain transect was chosen for non-volcanic margin drilling because of wide zones of thin crust at both margins. In addition, a fundamental problem was the existence of a well-documented breakup unconformity, eroded at sea-level and now 7 km below sea level. Furthermore, the Galicia margin (just north of the Iberian Abyssal Plain) contained mantle exposures on the outer margin. Finally, the margin was sufficiently sediment-starved that deep targets could be reached. NARM-DPG recommended that the first leg of non-volcanic drilling should take place on the Iberian Abyssal Plain. The Newfoundland Basin sites presented a greater technological challenge and data quality there was inferior. NARM-DPG also proposed a single Galicia site, just landward of the peridotite ridge, to determine what overlies the ridge in preparation for future drilling of the S-reflector in that region. This site might form part of the first leg. If time was short, NARM-DPG would prefer to include it and drop one of the other sites, but that would be up to PCOM. The S-reflector was not well-defined where it was shallow. Future drilling of the S-reflector would require 4 km of penetration.

Objectives of the first leg of volcanic rifted margin drilling were to: 1) define age, nature and emplacement environment of initial breakup volcanism, 2) sample breakup volcanism at its supposed maximum and steady-state stage, 3) investigate possible plume interaction with continental lithosphere and plume structure in terms of plume source component, thermal anomaly and possible decoupling with time, 4) help in distinguishing between active versus passive breakup by providing initial crustal accretion rates, and 5) provide subsidence data and important gateway data.

Objectives of the first leg of non-volcanic rifted margin drilling were to: 1) define the nature of the wide, thin-crusted area characterizing this conjugate margin set, 2) test whether mantle exposure along the ocean-continent transition is a laterally extensive feature at thin-crusted margins, 3) provide initial age constraints on margin development, 4) detail knowledge about the succession of rocks landward of the mantle exposure and overlying the S-reflector terrain, 5) determine subsidence histories across the rift zone (syn- and post-rift), 6) define the syn-rift environment, nature and age of breakup and the juvenile ocean to mature ocean paleoenvironment, and 7) determine the nature of the earliest oceanic crust forming along this type of margin.

Larsen concluded his report by thanking Peter Blum, JOIDES Office liaison to NARM-DPG, for his assistance.

Discussion

Natland noted that the NARM-DPG report listed the first volcanic margin leg as requiring 68 days on site. He asked how much could be accomplished toward achieving geochemical goals (i.e., variation with offset from plume) using outcrops in Greenland. Larsen replied that some had been done onshore. Larson asked how confident Larsen was about the estimate that 90% of the volcanics lay offshore. Larsen said that was an approximate figure, but that he was fairly confident about it; it was of the right order.

Von Rad praised NARM-DPG for doing an excellent job in a short time. He noted that BGR had recently surveyed the Iberian Abyssal Plain sites (a lack of site-survey data had been highlighted at the second meeting of NARM-DPG). Mutter commented that the rationale for studying conjugate non-volcanic margins had been to investigate asymmetry, but that cartoons shown by Larsen during his report (and contained in the NARM-DPG report) emphasized symmetry on the Newfoundland and Iberia margins. Larsen replied that more asymmetry existed than the cartoons indicated. Austin thanked NARM-DPG for doing a great deal of work.

OD-WG

Austin explained that LITHP was interested in modifying the mandate of OD-WG. PCOM would return to this issue.

Kidd stated that SSP desired a liaison to OD-WG. Taylor, PCOM's liaison to OD-WG, noted that requested revisions to the MARK and VEMA proposals were in the NAP and felt that there was no need for further comment until PCOM discussed the FY93 schedule the following day.

SL-WG

Watkins stated that SL-WG had met twice, in March and November, 1991. The first meeting involved a review of the problem and development of a provisional outline for a report to PCOM. The second meeting involved further review and discussion, following which participants divided into 4 groups to consider the following topics: 1) synchroneity/timing, 2) geological response to sea-level change, 3) magnitudes and rates, and 4) mechanisms. These *ad hoc* subcommittees drafted reports which included: 1) problem definition, 2) strategies, 3) special technical issues, and 4) criteria for proposals (guidelines for thematic panels). Subcommittee reports were largely completed at that meeting. The draft final report would be circulated and reviewed prior to the final meeting, which would finalize the report, review the worldwide potential of sites, and address unresolved issues.

Discussion

Shackleton felt that that it was taking a long time to get SL-WG's advice. Watkins replied that the SL-WG chair would be out of the country during the first part of 1992 and that the final meeting could not be sooner. Austin added that oil industry personnel tended to have difficult schedules. Taylor asked whether SL-WG would address pieces of the timescale to be studied and ensure overlap in age between different regions to be drilled. Watkins confirmed that time slices for study had been clearly defined and Austin noted that these were "ice house", "doubt house" and "greenhouse".

931. Status of Engineering and Technical Developments

ODP-TAMU

Storms stated that the ODP-TAMU engineering department was very dedicated. He stressed that the Drilling Operations department was equally dedicated, but did not always get as much exposure as the engineers. He recalled Dick's appreciation, expressed during his report on Leg 140. Storms highlighted the efforts of G. Foss, E. Pollard and R. Grout of Drilling Operations.

Storms showed PCOM's prioritized list of engineering developments (Appendix 13). First on this list was the DCS. DCS tasks that had been completed, and those that remained, are listed in Appendix 13. In response to questions from Larson, Storms said that 4500 m was the total string length limitation for DCS IIB. Concerning the A&G recovery problem, core-catcher options for conventional coring systems had been investigated.

Austin commented that the DCS review meeting outcome was: endorsement of Leg 142, a philosophical commitment to a second deployment of DCS IIB, and endorsement of conceptual development of DCS III (actual construction was still ~2 yrs away). Storms stated that DCS III sea trials might occur ~October, 1994. This was later than previously envisaged and, therefore, further deployments of DCS IIB should be considered. Austin added that TEDCOM had recommended DCS IIB deployment in a different environment from that of EPR (Leg 142). Responding to a question from Duncan, Storms said that it would be difficult to convert from DCS IIB to conventional coring within a single leg. It could be done, but would result in a less-efficient leg. Such flexibility was a goal for DCS III. Natland asked whether 2 new HRBs would be available on Leg 142; Storms confirmed that they would be. He added that all aspects of the HRB had been tested and that it worked well. In addition, the DI-BHA had been fully tested on land.

Storms went on to discuss PCOM's second engineering priority: XCB flow control (XCB-FC). The flow control, "anti-clog" valve had been designed, analytically modelled, fabricated and shore-tested. It was on Leg 141 for sea trials. The goal of XCB-FC was to prevent plugging of the flow ports on the XCB cutting shoes, which had affected recovery in some lithologies.

Noting that Leg 139 had already been discussed, Storms addressed Leg 141 preparations for hard rock orientation, SCM and electronic multishot (Appendix 13). All hardware was aboard. The system was now designed for use with either XCB or RCB coring systems. Storms noted that BP had ordered an SCM like ODP's.

Storms stated that progress on VPC was not as great as he would have wished (Appendix 13). Novatek planned to test their 7" VPC in late November/December, 1991. Results of the test would dictate changes to ODP's 3.5" VPC. Testing was tentatively scheduled for Leg 145. Responding to questioning from McKenzie, Storms said that the last sea trial of VPC had been on Leg 133. The next test would use the same tool. He was not sure how the rust problem, encountered on Leg 133, had occurred. It might have been the result of improper maintenance. ODT-TAMU wants to test VPC further, while meanwhile modifying it. It would be land-tested before the next sea trial.

MDCB had been redesigned and tested onshore (Appendix 13). It was available for testing on Leg 141, but might not be run on Leg 141. Austin noted that PCOM discussed that in August and that MDCB must be tested on Leg 141. It was not up to the co-chiefs. Francis confirmed that it would be tested, but that suitable geology needed to be found first.

Storms explained that B. Carson had assumed the role of Principal Investigator on GEOPROPS and had applied for funding (Appendix 13). When funds were received, ODP-TAMU would initiate changes required. GEOPROPS could be ready for Leg 146 if the money was received. Malfait stated that the money had been allocated. Francis said that the modified GEOPROPS could only go to sea for the first time on Leg 146; it was too late to test it on earlier legs.

Storms moved on to deep drilling. He explained that ODP-TAMU defined deep drilling as any hole requiring >1 leg to drill. This translated to depths of ~1200-1800 m, depending on lithology. ODP-TAMU in-house, deep-drilling draft studies and final reports in progress are listed in Appendix 13, as are the deep-drilling tasks which remain.

Discussion

Austin noted that ODP-TAMU had some new orders with reference to deep drilling as of this PCOM meeting, i.e, to involve the PCOM chair in the process and to proceed with the RFP for a consultant even if there was no OPCOM money (see earlier motion). He stressed the need to get going before TEDCOM's next meeting. Francis encouraged international partners to send in names of potential consultants in addition to TEDCOM's recommendations. Sparks stated that he also intended asking TEDCOM members to bring lists of consultants.

Cowan recalled that TEDCOM had recommended that DCS IIB be tested repeatedly, if possible, on Leg 142. He asked whether there would be a switch to secondary objectives if 100 m penetration was achieved early in the leg. Storms answered that Leg 142 would have the ability to penetrate 300 m. It was proposed to drill to at least 100-150 m. If that was achieved, it would be a shipboard decision as to whether to drill deeper in the same hole, or switch to slimhole logging and reaming tests, or to move the HRB and drill a second 100 m hole. Storms felt that the preference of PCOM and TEDCOM was to continue with DCS drilling and defer secondary objectives. Lyle felt that at least slimhole logging tools should be deployed. On Leg 132, the logging tool could not be lowered beyond the DCS. There was a need to evaluate this problem. Reaming was also important because of the concerns about DCS logging. Sparks stated that TEDCOM felt that a penetration of 100 m might be achieved, but that recovery rate and bit life would probably be low. TEDCOM recommended repeating the process to improve both. Storms thought it might be best to stay in the same hole. Taylor agreed, since it allowed deeper penetration. However, Becker cautioned that a deep hole might disturb the hydrothermal system, as on Leg 139. That might spoil the area for future work and several shallow sites might be preferable. Austin countered that it would take additional time to set up for a new hole. He added that R. Batiza (Leg 142 co-chief) understood these issues. The minutes could reflect PCOM's wish that coring time should be maximized. Larson asked how far from the main scientific site exploratory holes should be to avoid disturbance to the hydrothermal system. Becker felt that the lava flow at the proposed site might act as a cap rock and that shallow holes would be preferable. Austin responded that, on the other hand, a goal is to reach the deep (AMC) reflector. Rubble was also a problem; it might be better to pursue depth rather than face penetrating rubble again at a second site. Storms said that, if rubble turned out to be a problem, it would be isolated with the DI-BHA. PCOM reached the following consensus.

PCOM Consensus

PCOM supports TEDCOM's recommendation that coring time with DCS IIB be paramount during Leg 142.

Natland expressed confusion about deep-drilling capabilities. He had heard that *JOIDES Resolution* was capable of penetrating 3 km, but he had also heard that Hole 504B was now reaching the limit in basement because of the difficulty of removing cuttings. Storms agreed that cuttings removal could be a real problem, but that ODP-TAMU thought that Hole 504B could be deepened, perhaps by as much as 1000 m, but perhaps by only 100 m. There was already 1000 m of open hole at Hole 504B; the oil industry would view this as increasing the likelihood of problems. Francis added that much mud had been pumped on Leg 140 for cuttings removal. *JOIDES Resolution* had the capacity to use even more mud and he felt that cuttings could be lifted from greater depths. In response to a question from Austin, Grout said that the cost of mud on Leg 140 was ~$15,000.

Moran noted that GEOPROPS required a high-quality hole and asked whether the MDCB test would evaluate hole quality. Storms replied that it would not; the goal would be to keep the motor from stalling and drill a hole.

Ice Cover Study for NAAG Sites

Francis presented results of an ODP-TAMU study of ice cover to be expected at NAAG sites (Appendix 14). Position of the ice edge was controlled by wind. Ice thicknesses were of the order of 3-5 m. *JOIDES Resolution* required <5% ice cover. In response to a question from Taylor, Francis confirmed that an ice-support vessel would be required for NAAG drilling to scout the ice edge and possibly to push small ice floes. It would not need to tow ice floes, since the ice in the region was not amenable to towing.

Underway geophysics was easier in these latitudes than drilling, since *JOIDES Resolution* must remain on site for several days at a time. The northern sites, subject to wind-driven ice cover, might not remain open for long.

P. Wadhams of Cambridge Polar Consultants (UK) reported on ice conditions at Fram Strait sites (extracts from this report are presented in Appendix 14). The report was based on ice charts from 1966 to 1991. Since 1973, ice charts had been predominantly based on satellite data. The Yermak sites tended to be heavily covered; Fram sites were better, with some longer periods of open water. During the late 1960's, the ice situation was unfavorable. It then improved and had remained more favorable since. Therefore, extrapolation of data from the 1970's, when ice charts were made daily, to the present was acceptable. Shackleton asked whether planning could increase the chances of ice-free water. Francis replied that it was difficult to predict. Histograms showing the likelihood of 4 consecutive ice-free days (Appendix 14) showed that Yerm 1 and 5 were very unfavorable; Yerm 3 and 4 were unfavorable, but chances of success increased in middle August; Fram 1A, 1B, 2, and to a lesser extent Yerm 2, were quite favorable.

Discussion

Duncan noted that if no logging was conducted, time on site could be reduced. Lyle commented that if ice was closing during drilling, there could certainly be no logging. Francis pointed out that the ice front could move quickly (a couple of knots). Larsen asked whether icing of *JOIDES Resolution* might be a problem. Francis replied that ODP-TAMU had not yet looked into that. Larsen felt that ODP-TAMU had been realistic in its evaluations. He added that 1991 had been an excellent year, with very low ice cover. This was encouraging and suggested that it was possible that many sites might be drilled. Moran agreed, noting that she had been on a cruise in that area in August, 1991, when most sites had been clear. She felt that there would be no problem with ship icing at that time of year. However, Francis cautioned against basing plans on a single year's observations.

ODP-LDGO

Lyle reported that the thrust at ODP-LDGO has been toward slimhole and high-temperature tools. He began with a discussion of tools in hand (Appendix 15). The low-temperature version of the BHTV was slimhole, but the entire DCS tubing string would have to be pulled to run it. The high-temperature version was rated to 300°C. The Gable high-temperature temperature tool would transit the DCS, but with little clearance. The Lamont temperature tool was run as a standard tool. The high-temperature logging cable (by PLASTELEC), involving new fibre glass insulation, had yet to be tested; a land test was scheduled for February, 1992.

Lyle moved on to tools on order or in development (Appendix 15). The high-temperature resistivity tool was scheduled to be available in September, 1992. The first version would be analog and rated to 350°C. It would have an upgrade path to a digital tool, if it was successful. It will be slimhole and should fit through the DCS. The wireline packer required a major redesign.

Tools to be ordered or acquired were: high-resolution geochemical tool (possibly to be dewared in the future); slimhole, high-temperature memory tool; slimhole annulus fluid sampler.

Specialty tools (third party) were listed in Appendix 15. The LETI magnetometer/susceptibility tool was for use in core-log integration. It was currently a low-resolution tool (~1.5 m), but LETI was planning to develop a high-resolution (2.5 cm) magnetometer/susceptibility tool. The Japanese magnetometer would be tested on legs 143 and 144.

If personnel were available, core/log integration was trivial, but time consuming, when recovery was >90%. It became extremely difficult when recovery was <10%. The problems were: 1) correlations are based on physical properties, but disturbance correlated with poor recovery, and 2) non-random sampling in poor-recovery holes. Of correlation tools, only bulk density, and possibly FMS, were presently available.

Correlation Tools	Resolution	
	Core	Log
Bulk Density	2-4 cm	50-70 cm
Magnetic Susceptibility	~10 cm	150 cm (45 cm, 1993; 2.5 cm, 1994?)
Natural Gamma	10 cm (?)	50-100 cm
Resistivity	~0.5 cm (?)	0.25 cm

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932. Short Term Planning (FY92 / Pacific)

SUPPLEMENTAL SCIENCE

Austin explained that the concept of supplemental science was developed and instituted at the 1990 Annual Meeting of PCOM with Panel Chairs. Advertisements for submission of supplemental science proposals were placed in early 1991. At its August, 1991, meeting, PCOM decided to consider 2 supplemental science proposals, but to ask thematic panels to provide guidance on what scheduled science should be dropped in the event of these supplemental science proposals being scheduled.

S-2: Logging Hole 801C

Austin ruled that Larson, a proponent of S-2, could remain in the room during discussion, in line with PANCHM recommendations, but could not lobby for his proposal. Austin would decide what constituted lobbying. Thematic panel recommendations were summarized in the Agenda Book (blue pages 17-20). At its August, 1991 meeting, PCOM decided to make S-2 an alternate during A&G drilling (Agenda Book, blue page 17). There had since been a number of changes to legs 143 and 144. Austin called on Meyer to describe these.

Meyer explained that, following A&G-DPG, Leg 144 comprised 8 sites with 36.7 days drilling time, 8.4 days logging and 11.9 days transit, for a total of 57 days. At the end of October, these time estimates were revised and were now much longer. Leg 144, as originally planned, would last 78.8 days, or 82.3 if S-2 was incorporated. The co-chiefs had, therefore, prepared a draft prospectus, pending PCOM discussion, in which sites Harrie-2, Syl-2 and Seiko-2 had been dropped. In addition, penetration at MIT had been reduced. The co-chiefs had added a site, Syl-4, on the reef crest (only 200 m penetration, rather than the usual 400 m). This would require PCOM discussion. The leg length, with these changes, was now 56.7 days. The co-chiefs were concerned about the deleted holes, but their philosophy was to ensure some drilling on every guyot, with 2 sites on each if possible, rather than to drop a guyot to permit larger numbers of sites on each of the remaining guyots.

The reasons for underestimated drilling times were the need for extra HRBs and re-evaluation of uncertain basement depths, which meant that required penetrations had increased. Logging of Hole 801C, if scheduled, would take place after leaving Wodejebato (Sylvania) and before MIT-1. It would require 3.5 days on site, a great deal of pipe trip time being necessary because of the 5000 m water depth. Logging would involve standard Schlumberger logs of the basement section, plus BHTV, drill stem packer, and Japanese magnetometer. The HRB would be moved from Syl-4 to MIT. Storms added that that HRB would not be ballasted and, if necessary, could be taken apart on the transit.

Meyer drew PCOM's attention to an additional, arithmetic error in drilling time estimates discovered only the previous day. Harrie-1 would require only 4.8 days of drilling instead of 7.9, i.e., 3 days less. She apologized for the error.

Discussion

In response to a question from Taylor, Austin stated that, if S-2 is scheduled, Seiko would drop out, and that is the high latitude site. Tucholke felt that, by dropping 3 sites, sea-level objectives were being compromised, especially in view of poor recovery to be expected in shallow-water carbonates. Austin noted that paired sites (back-reef and flank) had almost completely disappeared, though Syl-4 helped a little. He characterized Leg 144 as a "bare-bones leg". Responding to a question from Tucholke, Meyer said that, of the dropped sites, Harrie-2 and Syl-2A were both back-reef; Seiko-2 involved a HRB on the reef crest (note: this conflicts with the A&G-DPG report, *JOIDES Journal*, June, 1991).

Becker, while acknowledging that he had missed the previous 2 PCOMs, recalled that, at the 1991 Annual Meeting, some on PCOM had wanted only one leg of A&G drilling based on a statement that top priorities could be achieved by a single leg. Austin responded that PCOM had decided to incorporate top-priority components of 2 proposals into 2 legs. Taira asked what the present level of confidence about basement picks was. Meyer replied that PPSP had the same doubts as SSP about basement picks. Limestones might have higher velocities and, therefore, basement might be deeper. Austin added that there was very limited velocity control; limestone velocities varied due to porosity. Meyer noted that, in addition, flat-lying reflectors underlay the basement picks. Kidd commented that SSP had become uneasy about basement picks when it saw the excellent Enewetak data, where reflectors appeared similar to those on A&G guyots, but where basement was drilled at 900 m. Natland felt that there were different ways of judging basement.

Cowan asked whether petrologists present could comment on the scientific urgency of logging Hole 801C. Duncan replied that Hole 801C was a unique case and comprised an end-member of oceanic crust. However, penetration was shallow. Lancelot commented that he had been impressed by what he had heard the previous day about the potential for physical properties and magnetic properties work, more so than by the potential returns of geochemical studies. Site 534 was also available as a slow-spreading end member. Lancelot would prefer to deepen Hole 801C before logging. He felt that, since PCOM did not have the data before it to enable it to question the A&G basement picks that had been made, PCOM should simply decide on Hole 801C, i.e., was logging 801C important enough to justify dropping one of the A&G sites? Natland also preferred to log a deepened hole. He was also concerned about overprinting by alkali basalts from nearby seamounts. Nevertheless, there were no logs in old ocean crust. The advance provided by logging Hole 801C was incremental. In response to a question from Austin, Humphris said that there was a proposal to deepen Hole 801C, which had received some LITHP interest, but not the highest. LITHP was most interested in physical properties (permeability, porosity and stress). The geochemical tool should be given the lowest priority, since expected variation was probably not within the resolution of the tool. McKenzie stated that SGPP had supported LITHP's position. Responding to Lancelot, Humphris confirmed that LITHP had examined the coring record from Hole 801C and was particularly interested in stress measurements. Malpas agreed that physical properties of old crust were the most important objectives. He preferred to see reconsideration of deepening Hole 801C. However, he added that he was interested in the extra 3 days found by Meyer. Austin cautioned against micromanaging an arithmetic error, which might just as easily be reversed later. Malpas countered that the co-chiefs were not averse to logging Hole 801C, if time was available. Cowan stated that the co-chiefs would have to consider the advisability of continuing to try to reach basement on a guyot versus logging Hole 801C. He suggested leaving S-2 as an alternate. Taylor added that the co-chiefs would probably also prefer use the extra 3 days to replace one of the sites that has been dropped.

Shackleton explained that OHP ranked A&G highly because of pelagic cap sites. PCOM should not allow those to be dropped. He was aware of a scientist who was participating in Leg 144 purely to work on such sites. Austin agreed. Lyle pointed out that many DPGs are operating without checking their time estimates with ODP-LDGO and ODP-TAMU. Austin commented that R. Jarrard had wanted a liaison to A&G-DPG. It was incumbent on ODP-LDGO and ODP-TAMU to contact DPGs about representation.

Von Rad observed that PCOM had received advice from thematic panels supporting S-2. Cita-Sironi recalled that she had been in a minority at the August PCOM meeting in supporting S-2. Now that the thematic panels had supported it, it should go ahead. However, Jenkyns felt that Leg 144 had taken a battering and that S-2 should remain an alternate. Taira supported logging 801C. Watkins was concerned about the loss of sea-level elements. He felt that the A&G program was changing character, with basement penetration dominating, and that a back-reef site should be reinserted.

Austin conducted a straw vote, which revealed that a majority of PCOM favored logging Hole 801C as an alternate. He asked whether, if it remained an alternate, PCOM should give further instruction to the co-chiefs. Mutter felt that PCOM must indeed instruct the co-chiefs on how to use the alternate. Austin agreed. Tucholke expressed concern about what was happening to the A&G program. Reef recovery would be poor and any changes that diluted the stratigraphic record must be avoided. He did not agree with the co-chiefs' choice of sites to be dropped. Austin pointed out that the prospectus was only a draft and that the co-chiefs were awaiting instruction from PCOM. Taylor shared Tucholke's concern. The co-chiefs had exchanged Syl-2A and Harrie-2 for Syl-4. Wodejebato (Sylvania) originally had 2 pelagic cap sites (Agenda Book, white page 594). It had retained 1 plus a reef site and was, therefore, fairly complete. However, Harrie-2 had been sacrificed. The extra 3 days that Meyer had found would enable Harrie-2 to be reinstated. Then, only Seiko-2 would be lost. Austin stated that MIT and at least 1 site on Seiko (Seiko-1) must be retained and paired sites included on Wodejebato (Sylvania) and Limalok (Harrie). Therefore, he agreed that Harrie-2 should be reinstated and that logging Hole 801C must remain an alternate.

Austin noted that PCOM must also consider Syl-4. Since it was a new site, PCOM must endorse it. Jenkyns expressed concern that aiming for the reef at Syl-4 would yield the lowest recovery. Lancelot suggested evaluating the relative merits of logging some A&G sites versus logging Hole 801C. He proposed dropping some A&G logging (one of the basement sites) to permit logging of Hole 801C. Austin asked Humphris for her opinion and she said that logging Hole 801C would probably be more useful than logging guyot basement. Natland agreed, adding that the magnetic signature at MIT would be established from samples and the Japanese magnetometer. However, Lyle cautioned that this would not free up enough time for logging Hole 801C, because logging at each site only took a day. Austin felt that PCOM would be "compounding a felony" if it told co-chiefs not to log some A&G sites.

A motion was written and read to PCOM (see below for final version). Responding to a question from Lancelot, Austin pointed out that, since it made no mention of logging, logging of Leg 144 sites would proceed and not be dropped in favor of S-2. Taylor suggested including approval of Syl-4 and reinstatement of Harrie-2. Austin noted that recovery at reef site Syl-4 would be poor and recalled that the original intention of A&G-DPG was to focus on back-reef sites. McKenzie reminded PCOM that, at several sites on Leg 133 in shallow-water limestone, core after core had no recovery. Meyer said that the co-chiefs would have had the experience of Leg 143 before they got to Syl-4. If the prospects appeared very poor, they would not attempt Syl-4. Tucholke proposed retaining Syl-2A and making Syl-4 an alternate to that site. Austin explained that the rationale for Syl-4 had involved sea level objectives, but that he did not understand that choice. Tucholke agreed that paired lagoonal sites were required for a sea-level record. Lancelot recalled that S. Schlanger, a proponent of A&G drilling, had originally wanted to drill the reef, but later decided that the pelagic cap offered the best chance of success. He would have been reluctant to drop the pelagic sites, unless it could be proved that core recovery in the reef would be good. Meyer noted that, since the prospectus was only a draft, Harrie-2 was never fully discarded and did not, therefore, technically need to be reinstated. Taylor observed that the motion did not prevent logging of Hole 801C. Mutter agreed, adding that the motion simply spelled out what cannot be dropped in order to log Hole 801C. Francis asked about the priority of Syl-4 versus logging Hole 801C; Lancelot felt that a list of priorities to be accomplished before getting to MIT was needed. Malpas stated that the motion covered that. Austin agreed, and added that, since Syl-4 is an alternate, there would be no need to drill it if Syl-2A was drilled. Von Rad pointed out that there was no requirement to log the 3 sites with penetrations <400 m, but Austin and Meyer stressed that logging would be essential, since recovery would be low. In response to a question from Becker, Malpas confirmed that the motion stated that Syl-4 would only be drilled if Syl-2A was not drilled. Austin pointed out that Syl-4 would take longer than Syl-2A, so that it was not a simple trade-off in time. However, he felt that the sentiment on PCOM was that the pelagic cap was more important than the reef as a drilling target. Cita-Sironi felt that PCOM was over-planning, but Austin felt that was not the case in light of previous under-planning. The co-chiefs had wanted input form PCOM. PCOM finally passed the following motion.

PCOM Motion

With respect to the program for drilling Atolls and Guyots II, Leg 144:

Logging at Hole 801C will remain as an alternate activity if time is available after the following conditions are met (or attempted) as part of the prospectus program (in order of precedence):

1) that MIT-1 is maintained as a basement penetration site;

2) that Seiko-1, basement site, be retained to provide required latitudinal spread in basement sites;

3) that Harrie-2 be included to provide paired sites on Limalok (Harrie) to accomplish sea level/paleoceanographic (dipstick) objectives.

4) that site Syl-4 be an alternate to Syl-2A to maintain paired pelagic cap site philosophy and to optimize recovery for those objectives.

Motion Malpas, second Watkins Vote: for 13; against 1; abstain 2; absent 1

S-3: OSN-2 Cased Re-entry Hole

Austin recalled that OSN-2 would be the second of a proposed series of OSN holes. S-3 was originally submitted as a 4-day effort. It was subsequently feared that it would require as much as 10 days, but the latest ODP-TAMU estimate was 5.7 days, including a contingency allowance of 1 pipe trip. Thematic panels were fairly negative about the scheduling of S-3 (Agenda Book, blue pages 17-20). Austin also recommended against scheduling S-3.

Mutter pointed out that thematic panel advice was based on a time estimate of 10 days. He asked whether reduction to 5.7 days made a difference to the panels. Moores replied that TECP supported S-3 and listed the science it would be prepared to drop. The reduced time estimate increased TECP's support. Humphris stated that LITHP also supported S-3 and was prepared to give up basement penetration, but that would only yield 4 days. Lancelot recalled that much of PCOM's support was based on the idea of involving a new community in ODP. He suggested that JOIDES might even need a geophysics panel some day. In August, Lancelot had suggested spreading the load among legs, but Francis said that was impossible. In response to a question from Lancelot, Francis said that it remained impossible, since Leg 145 was already 59 days in length. Shackleton stated that the time released by OHP, based on its discussions of how to cut science to accommodate S-3, was <10 days. Austin commented that OHP was closest to this issue and its advice on cuts was perhaps the most relevant.

Taylor felt that even 6 days was too much; he did not think that OSN-2 warranted it. Austin stated that FDSN had a number of objectives over the next several years, involving OSN-1 and developing a global plan. They were faced with many unknowns before they could make optimal use of holes. Taylor added that some individuals he had spoken to were not even sure that holes were needed for seismometers. It might be sufficient to bury them in sediment. One group even questioned the necessity of placing a seismometer in OSN-1. However, Natland responded that that objection referred only to OSN-1 and not to OSN holes in general. Austin stressed that ODP has created goodwill among the OSN community. Scheduling of OSN-1 had been primarily renewal-based. A proposal to fund a seismometer for OSN-1 was under consideration by NSF. PCOM could help FDSN by expressing interest, but requesting a global plan. Taira agreed that a global plan was necessary. He felt that scheduling S-3 would involve an unacceptably great loss of time from Leg 145. Mutter noted that OSN-2 would be important for Japanese earthquake monitoring and highlighted the need for some Japanese effort. Taira responded that there was interest in Japan, but that there were also other plans. OSN-2 was not the only choice and it was important to coordinate global thinking. Lancelot noted that 3 broad-band seismometers were under development by French, Japanese and US groups. The French seismometer would be tested using NADIA in the Atlantic, but there was also interest in testing it in OSN-1.

Natland observed that the original plan for supplemental science involved up to 4 days/leg. PCOM, therefore, took on the consequences of impacting legs by up to 10% of their drilling time. Of the supplemental science proposals, PCOM ranked OSN-2 most highly because of its long-term, potentially major, impact and involvement of a new community. He felt that supplemental science proposals that occupy <4 days would be rare.

A motion on OSN-2 was read. Malpas asked whether PCOM could request future proposals, rather than simply "look forward" to receiving a global plan, but Lancelot recalled that Taylor had characterized the OSN community as lukewarm about OSN-2. However, Taylor stressed that only *part* of the OSN community was specifically against OSN-2, but that they were in favor of the general concept. PCOM passed the following motion.

PCOM Motion

Because of its impact on Leg 145 drilling, PCOM declines the request to include OSN-2 in the FY92 program plan. PCOM continues, however, to endorse the concept of dedicated holes for ocean floor seismic observatories and looks forward to receiving from FDSN a global plan for prioritized testing and implementation.

Motion Duncan, second Lancelot   Vote: for 14; against 2; abstain 0; absent 1

PACE OF GEOPROPS TESTING

Austin referred to the motion passed by PCOM at its August meeting (Agenda Book, blue page 22). Since then (correspondence in Agenda Book, white pages 606-614), B. Carson had assumed the third-party role. NSF provided funds on November 1, 1991. The original plan had been to test GEOPROPS on Leg 143, but this was now felt to be too optimistic. GEOPROPS would have to be tested on Leg 146 (CA). Francis interjected that it was a question of lack of time on legs 143 and 144 for testing. Taylor noted that PCOM could make time. Austin stated that GEOPROPS required MDCB, which was to be tested on Leg 141. Several deployments of MDCB would be requested prior to a GEOPROPS test. It was felt that that would take more time than could be afforded on A&G legs. In addition, there was a shortage of personnel. S. McGrath, a new ODP-TAMU engineer with responsibility for GEOPROPS, was at sea on Leg 141 so that there would be no progress on GEOPROPS until his return. In August, PCOM did not commit to a test of GEOPROPS before Leg 146. Carson was disappointed, but the test schedule may now be locked in.

Taylor described the reaction of the accretionary prism community. They had wanted to test GEOPROPS before Leg 146 because it is important that it work on Leg 146. Carson and that community did all they could as quickly as possible to bring the schedule forward. They were, therefore, dismayed that their intense effort has not been rewarded by a positive result. Austin agreed, but added that rapid planning had been needed even for a test on Leg 146. The problem was lack of personnel. Taylor felt that should be communicated to Carson. Austin stated that he had received a letter from Carson saying that CA objectives could be accomplished without GEOPROPS. He did not feel that there was as much bad feeling in the accretionary prism community as Taylor had suggested. Moores agreed, noting that C. Moore had informed him that there were other methods. Austin expressed the view that perhaps tools should be tested on legs whose co-chiefs had a strong interest in those tools. For that reason, he was not sure that a viable test could be achieved on Leg 143 even if GEOPROPS were aboard on that leg. However, he was concerned that ODP-TAMU had offered a test on Leg 143, which now seemed out of the question. Francis stated that a test of GEOPROPS could have been carried out on Leg 143 if PCOM had insisted, but that time available on that leg was severely restricted. Meyer said that one reason that GEOPROPS testing could not take place on Leg 143 was that there might be no time for APC coring of pelagic caps, so that a special hole would have to be started to test GEOPROPS. Austin stated that no motion was required in this case. GEOPROPS would be aboard on Leg 146 and the minutes would reflect PCOM's intention that it be tested on that leg. Storms explained that McGrath was being trained on MDCB on Leg 141, but he was not working on MDCB. ODP-TAMU had had to move ahead on decisions before knowing the outcome of Carson's efforts. Austin added that, when a tool is changed from third-party to internal-ODP, PCOM must be prepared for problems relating to personnel shortages. Storms recalled that, furthermore, PCOM had made MDCB and GEOPROPS the lowest priorities on their engineering prioritization list. However, Austin stressed that at that time (PCOM's April, 1991, meeting) the assumption had still been that some of the load would be carried by a third party.

LEG 147

Austin stated that Leg 147, originally scheduled as either engineering/EPR or HD, would now be HD, since Leg 140 had been Hole 504B. However, there was some enthusiasm for a quick return to Hole 504B and a proposal to do that had been submitted. Leg 147 was technically in FY93, so PCOM could ask EXCOM to change it to 504B. HD could then be deferred until after FY93 Atlantic drilling. Malpas suggested deferring the transit to the Atlantic so that both 504B and HD might be accomplished. Austin responded that EXCOM might have more difficulty with that. Lancelot felt that the new 504B proposal should go through the system and be ranked.

Austin called on Mutter to describe some late geophysical results regarding 504B. Mutter began by noting that he was not a proponent. In 1985, MCS and sonobuoy data were collected around Hole 504B. All data had now been re-analyzed with new processing to improve the image of structures. All indications suggested that the bottom of Hole 504B was now very close to Layer 3, or at least to a layer with Layer 3 seismic velocity. Velocity was well constrained, though some error in depth to the layer was possible. Watkins asked whether the sonobuoy surveys had been reversed. Mutter replied that they had not, but that it was felt that there were no structural problems and the sonobuoy surveys were shot in several different directions. Seismic data indicated that Hole 504B was within a leg of Layer 3, barring a catastrophe.

Moores felt that, notwithstanding the OD-WG strategy of drilling the layer 2/3 and 3/4 boundaries and a mantle section, there was always uncertainty with the offset approach. He felt that Hole 504B provided a good opportunity. Malpas agreed, adding that Hole 504B might have reached the top of Layer 3 already. Penetration of more dikes might indicate that the ophiolite model is wrong. Furthermore, the layer 2/3 boundary is not smooth; in some places dikes extended deeper, in others gabbro was shallow. The boundary should be tested. Becker stated that the proponents' intent was not to replace HD, but to go through normal procedures. (Austin pointed out that Becker and Dick were proponents of the return to 504B). Humphris explained that LITHP ranked HD second, below EPR II (engineering). Since the latter was undrillable, HD was now effectively at the top of LITHP's list. LITHP would be interested in the 504B proposal, but she felt that HD should not be replaced now, adding that 504B was close to the Panama Canal. However, referring to PCOM's 4-year plan, Austin pointed out that if Leg 147 was not 504B, it would not happen until at least spring, 1994. Malpas stressed that 504B provided an opportunity; EXCOM wanted deep drilling. Furthermore, the TAG hydrothermal (Atlantic) program might benefit from being delayed. Larson said that he resented EXCOM setting science, but Austin responded that they would not. Austin felt that it would be dangerous to schedule a leg before the relevant proposal had passed through the system. However, TAG did face some difficulties and 504B could substitute for TAG. Malpas agreed that the proposal had not been reviewed, but pointed out that 504B was not a new site. This was a chance to be opportunistic. Austin agreed and stated that PCOM should take action if it felt strongly. In response to a question from Natland, Austin said that the 4-year plan specified that *JOIDES Resolution* would transit to the North Atlantic, following Leg 147, and remain there until April, 1994. April, 1994 to April 1995 involved drilling in the Atlantic and adjacent seas (including the eastern Pacific). Malpas stated that he did not mind going back on motions so long as it did not involve substitution. In this case, an extra leg might be inserted, avoiding the need for substitution.

Von Rad suggested that, since SSP had concerns about HD site survey data, 504B could be a back-up leg for HD. Kidd stated that SSP's concerns were not with a first approach to HD. However, he added, SSP also felt that TAG could not be the first leg of the Atlantic program. Von Rad stated that he would have no objection to a 1-leg delay of the entry of *JOIDES Resolution* into the Atlantic. Cita-Sironi was, in contrast, strongly opposed to such a delay, noting that ESF had already waited for 5 years for Atlantic drilling. Austin countered that, on the other hand, PCOM had a responsibility to schedule the best science. Cita-Sironi preferred that 504B be substituted for HD, rather than scheduled in addition to HD. Taira had no objections to drilling 504B, but asked to hear LITHP's choice between 504B and HD. Humphris responded that time would first be needed to interpret results of Leg 140. Jenkyns was concerned that PCOM was responding to post-leg euphoria. The UK was anxious to see *JOIDES Resolution* in the North Atlantic. He added that he would like to hear debate on the choice between 504B and HD. Lancelot stated that France was not worried about a delay in the approach to the Atlantic, but that he was not totally convinced that Hole 504B was almost at the layer 2/3 boundary. He asked what PCOM would do if, following A&G drilling, it was felt that the sea level problem was almost solved and an immediate return was proposed. To change the schedule now might be to open a "can of worms". Malpas said such an eventuality could be discussed if and when it arose. He suggested that TAG should be delayed, and that Cita-Sironi should consider whether ESF would prefer 504B or TAG. PCOM must consider HD, 504B and TAG. Austin agreed that TAG might not be drillable in FY93, though it might be better to defer further discussion of TAG until PCOM discussed the FY93 schedule. He said that he was prepared to approach EXCOM with 504B as an addition to the schedule, but that he preferred not to substitute 504B for HD, because that would defer HD until 1994 and the offset drilling program would be set back. Von Rad stressed that a success at Hole 504B would help all of the international partners in their renewal efforts. Taylor proposed deferring further discussion until FY93 scheduling. Austin agreed.

HOLE 857D (LEG 139) THERMISTOR STRING

Becker described his proposal to use 1.5 days on Leg 146 (CA) to replace the thermistor string left in CORK Hole 857D on Leg 139. Hole 857D had been drilled deeper than planned and the existing thermistor string only extended ~half-way down the hole. That configuration would reveal little about basement hydrology and a proposal had been submitted to NSF to pay for a new thermistor string. The Leg 146 co-chiefs were willing to incorporate thermistor string replacement within Leg 146. Leg 146 would install 2 CORKs, so that the personnel would be on board. CORK emplacement on Leg 139 had gone very well and the estimate of 1.5 days to complete the replacement seemed to be a good one. It would be necessary to run a sinker bar into Hole 857D to test for obstructions.

In response to a question from Taira, Becker said that the existing thermistor string was recording temperatures >200°C at present. Lancelot stated that he would support the plan, if the proposal had no impact on Leg 146 and the co-chiefs were happy. He asked for information on the impact on Leg 146 operations. Von Rad reported that SGPP had discussed the proposal and was in favor of it. McKenzie confirmed SGPP's support of taking time from Leg 146 to replace the thermistor string. Becker said that Hole 857D lay between the Vancouver and Oregon sites of Leg 146. PCOM passed the following motion.

PCOM Motion

PCOM endorses the plan to dedicate no more than 1.5 days during Leg 146 to replace the sensor string in Hole 857D. PCOM requests the co-chiefs of Leg 146 to provide information on the impact of this on the scientific plan for Leg 146, for PCOM to evaluate at its April, 1992 meeting.

Motion: Natland, second Lancelot Vote: for 15; against 0; abstain 1; absent 1

933. Detailed Planning Information for North Atlantic Drilling

Austin stated that PCOM must consider scheduling ~5 legs for the period January, 1993, to ~October, 1993. Some flexibility was provided by PCOM's decision to schedule part of FY93 at its 1990 Annual Meeting, but Austin recommended against going too far into FY94. One of the FY93 legs might be an engineering leg for a second deployment of DCS IIB. Also up for discussion was the possibility of including 504B before beginning the Atlantic program. Austin called on PCOM watchdogs to give summaries of programs in the NAP. He asked watchdogs to stress thematic impact of proposed drilling and its reliance on technology.

ALBORAN BASIN / GATEWAY AND MEDITERRANEAN RIDGE (AB)

Cowan noted that this program comprised 3 proposals. He reviewed them separately.

Alboran Basin

Cowan noted that Kidd was a proponent. Objective of Alboran Basin drilling was to determine origin and history of extensional basins in a collisional setting. Drilling would establish: 1) timing of extension, 2) subsidence history, and 3) geodynamic mechanism, though with probably less success than 1) and 2). The proposal involved ~1 leg of drilling. Site-survey data were in hand or in progress and no operational and technological difficulties were envisaged.

Proponents needed to justify that the Alboran Basin was the best place in the world to study this problem. In addition, there were preexisting deep holes on the shelf that could provide subsidence information. Finally, there was another proposal (proposal 399) to do similar work. Proponents of both should combine their efforts.

Mediterranean Gateway

This proposal would study late Neogene to Quaternary paleocean history. Drilling would determine history of water exchange and pre- and post-Messinian environments and occupy ~1 leg. Site-survey data were not yet in the Data Bank, but were probably adequate. No operational and technological difficulties were envisaged.

Presence of sandy contourites might mean that this was not the best location for this work. The proposal could be developed further, rather than included as an add-on to the Alboran Basin proposal. McKenzie added that SGPP had encouraged proponents to develop the contourite theme and that the proposal was added on to the Alboran Basin program because SGPP had suggested that.

Mediterranean Ridge

Cowan noted that Cita-Sironi was a proponent. This was a proposal to study accretionary wedge tectonics in a collisional setting and also pre- and post-Messinian paleoceanography. Drilling would comprise conventional transects to investigate fluids, stress and structural questions. Mud diapirism was also an objective, and there was an opportunity to drill the sub-Messinian section. The work would require ~1 leg. More survey data were needed, including MCS and perhaps side-scan. There were plans to collect the former, but not the latter. SCS and piston cores were collected in 1991. The usual convergent margin technological concerns existed; salt was also likely.

The collision rationale appeared weak. Stronger elements were mud diapirism and the role of evaporites in accretionary prisms with regard to fluid pressure and stress.

Discussion

Taylor stressed that the presence of evaporites mandated good MCS data before a hole was drilled through the evaporite seal. Austin responded that Kidd would assess drillability from SSP's perspective later. Cita-Sironi stated that 1 MCS cruise had been cancelled, but another was scheduled for January-February, 1992, of which Cita-Sironi was a proponent. Another funded MCS proposal was scheduled for October, 1992. Kidd reported that SSP saw no problems with shallow penetration at Mediterranean Ridge, only with penetration below the Messinian. The data for Alboran Basin and Mediterranean Gateways appeared adequate. Shackleton felt that it was unsatisfactory to have these 3 proposals in a single package, because their objectives were different. Natland asked what PCOM should be considering for scheduling. Moores agreed with Shackleton, as did Lancelot, who suggested a DPG. Austin responded that proponents had been asked to work together and PCOM should endorse their efforts to do so. The program probably could not yet be packaged as a single leg.

CEARA RISE (CR)

Watkins stated that this proposal had been requested by OHP as the last of a series of legs to reconstruct Cenozoic deep water circulation, chemistry and climate. Specific objectives were: carbonate production/dissolution (calcium carbonate production, deep circulation and climate linkages), surface water and tropical climate, and variations in surface water carbon isotopic values. Site-survey data were inadequate for Paleogene objectives, but a *R/V Ewing* cruise had been scheduled for August, 1992, involving Hydrosweep, 3.5 kHz, MCS, sonobuoy refraction and long piston cores. Kidd added that SSP agreed that the present site-survey package was inadequate, but would become acceptable if the planned cruise sailed as scheduled.

Discussion

Von Rad suggested combining the Amazon Fan (AF) and CR programs. Shackleton, noting that he was a CR proponent, commented that OHP did not think that the AF can address the same objectives as CR, contrary to claims of AF proponents. Natland stated that again there was no 1-leg package before PCOM for scheduling purposes.

EQUATORIAL ATLANTIC TRANSFORM (EAT)

Mutter stated that EAT focussed on the Ivory Coast - Ghana transform and was one of only 5 programs under consideration that were ranked in the top 5 by >1 thematic panel. EAT comprised a very basic investigation of a major transform margin and was philosophically similar to NARM-DPG proposals. EAT would test no real model and the work was limited to kinematic description. A great deal of data were available, mostly French and UK. Drilling would yield information on lithology, timing of sedimentary events, and vertical motion histories (using subsidence curves and thermal models). A relatively simple, 2-transect approach was proposed across the boundary between continental and oceanic lithosphere. Pre-transform, syn-transform and post-transform (Romanche Fracture Zone) sites were proposed.

Discussion

Austin observed that, once again, this program was not in the form of a single leg. Mutter added that it exceeded 6000 m of drilling in total. However, proponents could make a leg out of it and had been asked to do so. Larson felt that EAT was reminiscent of the Broken Ridge leg, with the goal of dating unconformities. Mutter agreed that there were similarities. Austin recalled that the Atlantic Panel had always acknowledged EAT as an excellent place to study transform margins. Kidd stated that the data are not yet in the Data Bank, but he knew that data existed and were of high quality. Processing was well underway. Austin asked whether SSP would like to have an alternate for EAT if it was scheduled, in order to encourage data submission. Kidd replied that that would not be necessary, but an alternate would be desirable for CR. Watkins noted that EAT was in an area of hydrocarbon exploration and was concerned that the seismic grid might not be sufficiently detailed for safety evaluation. However, Mutter responded that all sites were on, or near, crossing lines. Lancelot suggested that PPSP preview the data so that they could direct proponents to process lines in the best order. Austin said that there seemed to be less concern about packaging 1 leg of drilling at EAT. Mutter added that EAT provided good examples of some common features observed on transform margins. Shackleton commented that support from OHP depended on Mesozoic objectives. If those were pruned, OHP would feel differently. Mutter doubted that would happen.

MAR OFFSET DRILLING (MAR)

Taylor reported that the goals of offset drilling were to core the layer 2/3 boundary, recover long gabbro cores, core the layer 3/4 (Moho) boundary, and recover long ultramafic cores. Proposals existed in 2 areas: MARK and Vema. Each would fill ~1 leg.

The MARK area had an extensive database and had already been drilled. Proposed sites were: MARK-1, just south of the transform ridge in gabbro, and MARK-2 in serpentinized ultramafics. Dick (a proponent) informed PCOM that there were two possible origins of the serpentinized ultramafics: 1) a detachment fault surface exposing mantle due to what he called nested half-grabens, or 2) a migration of a serpentine diapir originating in the mantle, (where water had flowed down a fault and hydrated the mantle, creating a low-density serpentinite). Taylor characterized the program as reconnaissance exploration, since processes in axial valleys were poorly understood.

At the Vema Fracture Zone, Vema-1 was located on the south wall of the transform near the layer 2/3 boundary and Vema-2 was located on a limestone cap on the transform ridge to record evolution of the transform ridge, which was thought to have been uplifted and then subsided.

Discussion

Kidd stated that site-survey data suffered from the same problems as those of HD, principally a lack of seismic data, though there were some MCS data at MARK. It would depend how far PCOM wished to go with the test-drilling approach. SSP felt that data from the MARK area could be adequate. The Vema area was awaiting a side-scan cruise in 1993. Humphris reported that LITHP believed that the MARK data were sufficient to allow immediate drilling, but that interpretations of existing data were insufficient to enable testing of hypotheses. LITHP had more concerns about Vema. Moores stated that TECP would rank MAR highly if the data were together. Austin, noting that LITHP would like to see OD-WG become a DPG, expressed concern that the strategy for offset drilling was not yet ready and that a DPG was premature. Humphris responded that, when ranking MAR, LITHP had wished to avoid second-guessing OD-WG. LITHP felt that MARK was ready for drilling, but that Vema was not. LITHP felt that the JOI/USSAC Workshop Report, *Drilling the Oceanic Lower Crust and Mantle* (1989, WHOI, Organizing Committee H. Dick, H. Hoskins, J. Johnson), had provided the general strategy and that an Atlantic offset-drilling strategy with specific sites was needed. Moores added that TECP had supported LITHP. A revised MARK proposal might be submitted that would provide models for testing.

Taylor explained that MARK and Vema were among the top 5 locations, globally, considered by OD-WG. The petrological community did not have samples of gabbro and ultramafics from these environments and, therefore, did not know what to expect. Austin added that the OD-WG plan was to fill in a matrix of crustal depths versus spreading rate (fast and slow). Moores stressed that the ophiolite analogy remained uncertain. Dick felt that the origin of the serpentinite exposures should be understood in order to plan a strategy. Mutter reminded PCOM that the volcanic rifted margin proposals did not define a strategy; that came from NARM-DPG. Taylor emphasized that deep drilling, or offset drilling, occupied about one third of LITHP's 10-year plan and they wanted to get started. Moores felt that, in the case of offset drilling, the difference between a WG and DPG was not great. Austin asked which program LITHP felt was most ready: MAR or TAG. Humphris noted that she was a proponent of TAG and replied that both could be drilled. A site-survey proposal for TAG had been submitted and it would be best to complete survey work before TAG was drilled. She added that, with data in hand, testing of models at MARK was difficult.

MEDITERRANEAN SAPROPELS (MS)

Cita-Sironi characterized MS as a conceptual proposal. It had been highly ranked by SGPP. Sapropels (pelagic sediment containing ≥2% organic carbon by weight) occurred all over the eastern Mediterranean and were generally 1-2 m thick. They had been primarily studied in the youngest part of the stratigraphic column. At present, water entered the Mediterranean from the Atlantic at the surface and flowed out to the Atlantic at depth. The classical model for sapropel origin involved discharge of meltwater from the Black Sea, which formed an upper layer of low-density water, beneath which anoxic conditions developed. More recently, a model involving upwelling in the eastern Mediterranean, reversal of currents and nutrient import from the Atlantic had been proposed. MS would involve only APC drilling.

The proposal lacked a geological perspective in time and space. In time: the entire, 100-600 m, Plio-Pleistocene succession should be drilled. In space, a full transect of the Mediterranean, from east to west and including the Black Sea, was required: there were 3 sills in the Mediterranean (Gibraltar, Sicily and the Bosporus) and a strong west-to-east salinity gradient

(Appendix 16). The eastern Mediterranean was highly saline and its bottom temperature was much higher than that of the Atlantic. If current reversals in the Straits of Gibraltar had occurred, sapropels should occur in the western Mediterranean, where they had not been recorded (but see McKenzie's comment below). There should also be a deep Atlantic isotopic record, which had not been seen. Furthermore, upwelling in the eastern Mediterranean should produce high sedimentation rates, but sedimentation rates were low. The observed disappearance of benthic fauna also did not fit the upwelling model. Proponents intended to use multi-purpose holes (i.e., sites of the Mediterranean Ridge program and reoccupation of DSDP sites). Cita-Sironi concurred with Shackleton's earlier general comments on the inadvisability of using other than optimal sites. Specific problems in this case were that some Mediterranean Ridge sites targeted diapirs and the deformational front, while MS required undisturbed pelagic sediment. DSDP sites also had disadvantages, e.g., presence of turbidites. However, MS had great potential and should be developed (Cita-Sironi was ready to help reshape it after she left PCOM). MS was technically straightforward and could be made a backup for FY93.

Discussion

McKenzie seconded Cita-Sironi's support of MS scientific potential. SGPP had ranked it highly. MS covered an exciting geochemical process with global implications. She pointed out that sapropels had been recovered in the western Mediterranean (by ODP) that were somewhat different from those in the east. McKenzie agreed that a transect was required. Kidd stated that no site-survey data had been submitted, but that sufficient data existed for what the proponents wished to do. However, proponents must choose sites. Natland saw MS as a potentially elegant exercise, while agreeing with the site location problem. It had global ramifications, but the Mediterranean provided a simplified example which would be a good place to drill. Austin said that PCOM must send a signal to the proponents that it was interested, but that they must do more. McKenzie reported that Kidd had proposed that SGPP become proactive in this instance. Shackleton stated that, as written, *JOIDES Resolution* was not required for MS, though it could be rewritten to require the drillship. Cita-Sironi stressed the importance of reaching the Messinian. Austin responded that that message must reach the proponents. Kidd noted that there were also sapropels in the Japan Sea. Austin agreed, adding that the proponents should also think globally.

NAAG-DPG

Austin explained that the NAAG-DPG chair, W. Ruddiman, had been unable to attend and that PCOM watchdog, Leinen, had moved to EXCOM. Larson would supplement Shackleton's earlier report.

While stressing that he was not opposed to NAAG drilling, Larson noted potential problems associated with the 2-leg NAAG program. 1) Cost: an ice support vessel would be required at a cost of $1.3M/leg. 2) Arctic ice comprised large, flat slabs, 3-5 m thick and was not amenable to towing or fire-hosing out of the way. 3) Scheduling, in the most favorable ice window, would be absolutely inflexible. (Larson recalled that CTJ had been originally dropped by DSDP so that the drillship could reach the Wedell Sea in the right weather window. *Glomar Challenger* actually passed over the CTJ sites *en route*. Larson warned that the same sort of decision might be required in scheduling NAAG.) 4) However, there was inherent flexibility in the NAAG drilling strategy, with fall-back sites to the south and the option of drilling on the east or west side of the Atlantic. Data for all sites would be needed. 5) Highest-priority sites were the furthest north and, therefore, the most difficult. A single leg would concentrate almost totally above 70°N. (In addition, Larson recalled that Leg 105 drilling (Baffin Bay) encountered many glacial erratics.) 6) No site-survey data had been received by the Data Bank.

Discussion

Austin stated that site-survey data were on their way to the Data Bank. Kidd said that SSP expected that data would be available. There was also potential for more site-survey work. Baldauf confirmed that a cruise was scheduled, but Kidd pointed out that that would also be weather-dependent. Natland asked about options if the northern sites could not be reached by *JOIDES Resolution*. Shackleton replied that NAAG has been planned as a 2-leg program; he hoped that the second leg would reach northern sites if the first leg did not. There was certainly 1 leg of exciting science in the southern sites. Information on Fram Strait gateway paleoceanography and tectonics would be lost if northern sites were unreachable. He acknowledged that PCOM might have difficulty scheduling a second leg if only difficult sites remained. Larsen noted that there had been no interaction between NAAG-DPG and NARM-DPG. Austin replied that NAAG-DPG no longer existed, but that co-chiefs could interact. Shackleton felt that deep holes would subtract from NAAG objectives and that the strategy of combining sites was not useful.

NARM-DPG

Austin noted that both he and Tucholke were proponents.

Volcanic Rifted Margins

Duncan explained that volcanic rifted margin drilling was envisaged as a 4-leg program, with 1 leg/year. The first leg would comprise only 2 sites (EG63-1 and EG63-2). This program constituted a new campaign to understand these large, probably catastrophic, features, which could not be studied in terms of steady-state, present-day events. They related to oceanic plateaus and other large igneous provinces (LIPS).

LITHP and TECP had questioned age resolution. However, Duncan felt that age resolution of ~0.3 m.y. would be available using radiometric methods. This would be sufficient to distinguish spreading-rate changes. The 500 m of basement penetration, for a total of 940 m at EG63-1, seemed somewhat arbitrary. High-resolution, deep sections were needed for comparison with on-land sections. The 500 m was flexible and could be varied to produce a 1-leg program. Larsen noted that there had been pessimism about basement penetration rates. Duncan pointed out that the required 68 days on site for the first leg could be reduced at the expense of basement penetration, though EG63-2 was a re-entry site, which could be deepened in the future. Site-survey data were not yet in the Data Bank, but data distribution was dense and complete. Kidd reported that SSP's prognosis was good. SSP would like further data processing; additional cruises were planned.

Discussion

Malpas asked whether an ice picket boat would be required. Francis said he could not answer that, but Mutter felt that ice would not be a problem. Larsen added that there were icebergs in the region, but that they would only be a problem for the most landward site. Taylor stressed the budgetary implications of an ice-support vessel and the need to resolve the question. Larsen replied that a fixed-wing aircraft would survey the area, but it might be useful to have a helicopter. These would provide days of warning of any iceberg threat. Kidd added that the experience of Leg 105 suggested that icebergs could be tracked. Taylor asked whether the leg would sail without an ice-support vessel, but Francis replied that he would have to reserve judgement. Natland stated that if the leg was reduced to 50 days, basement penetration would suffer. He felt that the schedule was optimistic. However, both sites were listed as re-entry sites. Taylor recalled that Leg 104 penetrated almost 1000 m of basement. The first volcanic margin leg might, therefore, accomplish all its goals.

Non-Volcanic Rifted Margins

Von Rad highlighted the NARM-DPG decision to focus on the Newfoundland Basin (NB) and Iberia Abyssal Plain (IAP) / Galicia Bank conjugate margins. The major constraints governing this choice were: 1) record of the complete history (syn-rift - breakup - post-rift evolution); 2) conjugate pair of asymmetric margins of the same segment; 3) plate tectonic history well established; 4) intermediate age (mid-Cretaceous), yielding a reasonably long subsidence history; 5) moderately thick sediment cover (but < 3 km) with fossiliferous and continuous sections; 6) wide (100-350? km) transitional crust between undisputed oceanic and continental sections; 7) minimal post-rift disturbance; 8) extensive geophysical and drilling data for definition of degree of symmetry; 9) well-defined intracrustal detachment fault (S-reflector, Galicia); 10) mantle exposures (serpentinized peridotite); 11) connections to land geology (Lusitanian, Jean d'Arc/Carson basins); and 12) logistically convenient for follow-up studies.

Objectives of non-volcanic rifted margin drilling were covered by Larsen in his report. NARM-DPG requested 4 legs of drilling. The first leg would comprise IAP-4 (peridotite ridge), IAP-2 (continental basement, pilot hole for IAP-1), and IAP-3B (oldest oceanic crust), for a total of 53 days. The second leg would be NB-4A, a single site to 2450 mbsf. IAP-1, to 2550 mbsf, would also require a full leg. GAL-1 on the Galicia Bank would study the enigmatic terrane overlying and landward of the peridotite ridge. The ultimate goal was to penetrate the S-reflector (4-5 km penetration). NARM non-volcanic drilling would test the simple shear model.

Von Rad went on to discuss problems and deficiencies of NARM non-volcanic drilling. 1) State of site surveys: identification of reflectors and basement was not yet satisfactory, especially for NB sites. However, MCS and refraction work was planned for 1992. 2) Most NB and IAP sites, except IAP-1 and NB-4A, were on basement highs and might not be representative crust. Furthermore, overlying sedimentary sections were incomplete, with the oldest post-rift sediment missing. Von Rad asked how subsidence rates for the pre-breakup and early post-rift evolution would be determined and how paleobathymetry (important for subsidence history) would be constrained. 3) Von Rad questioned whether all important tectonic and crustal questions could be solved by drilling. Could the crustal rocks be dated and did they contain enough clear signals from geochemistry, petrology and microdeformation to permit determination of their origin and deformation history? 4) Tracing of important sequence boundaries from inner to outer margin was difficult or impossible because seismic stratigraphy was not clear or because of intervening high blocks. 5) NARM-DPG report should still be filtered by thematic panels, especially OHP, SGPP and LITHP, for coverage of, e.g., Mesozoic paleoceanography, sea-level history, complete Jurassic/Early Cretaceous sections for Tethyan connections, mid-Cretaceous anoxia, etc. 6) Von Rad questioned whether the total depth and drilling time estimates might be over-optimistic.

Discussion

Because Austin was a proponent, Duncan chaired discussion. In response to a question from Natland, von Rad said that objectives of the first leg would be the peridotite ridge, continental crust and the oldest oceanic crust. However, IAP-3B (oldest oceanic crust) could yet be dropped in favor of the Galicia site, GAL-1. Natland asked who would make that decision. Taylor assumed it would be PCOM's decision and Austin noted that PCOM would return to that point. Von Rad felt that proponents, or a subgroup of NARM-DPG, should be asked to refine the first leg. Austin reminded PCOM that NARM-DPG had not yet been disbanded. Larsen reported that there had been mixed opinions among NARM-DPG members as to whether GAL-1 should be drilled early or late. It was decided to keep it open as an option that could be drilled at any time. PCOM should consider S-reflector drilling (4-5 km penetration). Though not realistic at present, a minority group within NARM-DPG (including Larsen) favored it. It would affect future planning. In view of the concerns expressed by von Rad, Mutter felt disappointed that an approach to the S-reflector had received low priority. He felt that it might be accomplished with <4-5 km penetration and asked why the S-reflector was not the priority of the first leg. Larsen stated that 4-5 km was a realistic estimate of the requirement. Depth and geometry were not absolutely controlled, but it seemed impossible to drill the unequivocal S-reflector with <4 km penetration. In response to a question from Watkins, Larsen explained that the S-reflector became non-unique where it was shallower.

TAG HYDROTHERMAL (TAG)

Becker pointed out that PCOM would be considering the first leg of a multi-leg program at the TAG hydrothermal field. He noted that Humphris was a proponent. TAG was LITHP's top-ranked program and had been a high global priority of LITHP's for a couple of years. SGPP also ranked TAG highly.

The objective of TAG was to investigate hydrothermal processes at a large, mature sulfide deposit in an unsedimented, slow-spreading setting. There were 4 priorities of sites in a 3-leg program: 1) nature and distribution of deposits in near-surface discharge zone, dynamics and physics of flow (3 holes, each 200 m penetration); 2) sub-seafloor mineralization in stockwork/root zone (deepen one hole to 500-600 m); 3) nature of reaction zone (deepen to 1.2-2 km); and 4) nature of recharge zone (500-1000 m hole). The first leg would address priorities 1) and 2) by drilling at a 50 m-high, active mound with hot (360°C) vents at the top. Leg 139 successes with high-temperature drilling and measurements had generated optimism about TAG.

Discussion

Duncan discussed issues and concerns related to TAG drilling. 1) Would DCS be required, or could the first leg be drilled with RCB? (Leg 139 only penetrated 100 m with rotary drilling). 2) TAG was not a suitable location for an engineering leg since that would disrupt the flow regime. 3) Long-term monitoring of the system before, during and after drilling would be required. 4) LITHP had requested a TAG-DPG to discuss strategy, hole locations and downhole measurements. 5) Inadequacy of site-survey data data, which had already been discussed; Becker questioned whether TAG would be ready for drilling early in FY93. The location had been well-covered by *Alvin*, Seabeam, OBS studies of natural seismicity, and some heatflow measurements. A proposal for an additional survey existed, to take place in late 1992 or early 1993, and include 3.5 kHz, multibeam, high-resolution imagery, gravity and deep-tow magnetics, dredging and cores, but no seismics. SSP had highlighted the need for seismic data, especially for deeper goals. Kidd stated that some on SSP would like to see a data package of the quality of that for Sedimented Ridges, but such a package did not exist for TAG. SSP felt that it would be best not to schedule TAG early in FY93.

Taylor commented that the difference between Middle Valley (Sedimented Ridges) and TAG was the absence of sediment at TAG. Heat-flow measurements could not be conducted on bare rock. Taylor asked what other site-survey work could be done, and Mutter asked what type of seismic data SSP felt was needed. Kidd agreed with Taylor's comments, but stressed that no data at all had yet been received. As for seismics, some members of SSP thought deep tow seismic data were required. Natland noted that TAG fulfilled a long-felt wish, but that it had always been assumed that DCS would be used. To predicate TAG on 200 m rotary holes assumed that basement rocks had been sufficiently altered to allow rotary coring. Natland doubted that this would be the case and felt that TAG needed DCS. He asked what would be the difference between disturbing the hydrothermal system with DCS on an engineering leg and disturbing it with rotary drilling on a scientific leg. Becker replied that, on a scientific leg, instruments could be installed. Natland reiterated that he did not think TAG drilling would be successful without DCS.

NEW JERSEY SEA LEVEL / MIDDLE ATLANTIC TRANSECT (NJ/MAT)

McKenzie stated that the NJ/MAT program strategy was based on the results of a JOI/USSAC workshop, *Role of ODP Drilling in the Investigation of Global Changes in Sea Level* (1988, El Paso, J. Watkins and G. Mountain, conveners). NJ/MAT also followed the strategy expected to emerge from the ongoing SL-WG and comprised part of a global sea level strategy, which included A&G drilling. NJ/MAT focused on the "ice house" part of the geological record, specifically late Oligocene - Miocene.

There was a need to drill sequences to determine their lithologies and ages in order to test the revolutionary technique of sequence stratigraphy. Drilling of transects may yield sea level amplitudes. NJ/MAT drilling results would be tied into the deep-sea oxygen isotope record and onland outcrops and boreholes. NJ/MAT comprised 12 sites. *JOIDES Resolution* could drill the deeper-water part of the transect and a supplemental platform would be required for shallow-water drilling. In total, it was more than a 1-leg drilling project. Kidd commented that NJ/MAT had been one of the few programs for which SSP saw data. The data were of high quality and included new MCS. A structural high existed that might cause safety concerns. When the new data had been fully processed there would be more than enough data. McKenzie stressed the need for drilling to occur within a May - August weather window. Sands and silts were likely to be encountered and their recovery may present problems. The VPC would be useful.

Discussion

Lancelot asked how results were expected to compare to those of DSDP legs 93 and 95 and whether SL-WG had looked at NJ/MAT. Watkins answered that SL-WG was not considering proposals, but that it was aware of NJ/MAT. The proponents were members of SL-WG. McKenzie added that NJ/MAT formed the shallow-water part of the transect begun on legs 93 and 95. In response to a question from Mutter, Francis said that the May - August weather window was required because it was planned that *JOIDES Resolution* would drill in as little as 51 m water depth in DP mode. Austin added that weather of NJ was generally better in the spring than in the fall. In response to questions from Taylor, Austin said that the decision to use *JOIDES Resolution* for such shallow sites would only be partially influenced by the outcome of the upcoming test of the drillship's shallow-water drilling capability at Enewetak. Even if that test was successful, there would be no guarantee for NJ/MAT. The sister ship of *JOIDES Resolution* had drilled in 50 m water depth using a taut wire. A taut wire would also be used off NJ. Von Rad recalled that Leg 93 encountered problems with coarse Miocene sand. In response to a question from Watkins, Francis reported that the VPC was on the priority list, but that it was not yet ready. Mutter asked whether NJ/MAT could stand alone if no supplemental platform drilling or onland drilling occurred. McKenzie's opinion was that much could be done from onshore outcrops. Austin added that OPCOM specifically mentioned NJ/MAT as a target for funds for a supplemental platform. Taylor stated that NJ/MAT could stand alone, but that it would simply not drill all of the targeted sequence boundaries. Responding to a question from Natland, Austin said that NJ/MAT was not a candidate for DCS. Tucholke asked whether the structural high predated the sequence boundaries. Kidd and Austin identified the high as the Great Stone Dome and confirmed that it was older than the sequences.

VICAP Gran Canaria (VICAP)

Malpas described the intent of VICAP, to drill through a clastic apron to study early evolution of an intraplate volcanic island. He listed the objectives of the VICAP program as: 1) total and partial volumes of clastic contributions; 2) unroofing and erosion rates of a volcanic island; 3) high-resolution biostratigraphy and paleomagnetic stratigraphy in the volcanic apron and interfingering non-volcanics; 4) chemical flux between components, especially volcanic glass - seawater, maturation of organic matter in proximal facies close to the hot interior and low-temperature diagenesis at a distance; 5) volcanic episodicity and cyclicity; 6) life and differentiation of magma chambers; 7) evolution of submarine building phase; 8) lithosphere loading; and 9) local geologic problems.

VICAP proposed 5 holes with penetrations of 1-1.5 km and 3100-3600 m water depth and constituted >1 leg of drilling. Some site-survey work had been carried out; more was planned. Malpas listed the strengths of VICAP as: 1) sedimentology and mass balance questions were interesting (SGPP interest); 2) pore-water chemistry in contrasting horizons (SGPP interest); 3) evolution of submarine building phase (LITHP interest); 4) lithosphere loading (TECP/TECP interest); and 5) well-written and presented. Malpas summarized VICAP's weaknesses as: 1) Canaries were too close to the continental margin and might not be the best place for such work; 2) sediment input was derived from a number of island sources, not just Gran Canaria; 3) slumps might cause problems with biostratigraphic evolution; 4) improved site-survey data were required, e.g., deeper seismics for the lithosphere-loading question; 5) recovery of sands; and 6) the work might be possible with onland drilling alone.

Discussion

Kidd had little to add. SSP had questioned adequacy of available MCS data for lithosphere-loading problems. An upcoming GLORIA survey would not help to identify older slumps. In response to a question from Natland, Malpas said that there had not been any attempt to link strategy to models. Von Rad stated that the VICAP proposal was not mature, but that Site 397 had been drilled nearby and recovered hyaloclastites and air-fall ash; drillability and biostratigraphy there were very good. Austin expressed concern about interaction with the nearby continental margin. In response to a question from Natland, Malpas said that the sediment aprons were several km thick. Tucholke commented that similar work on the New England Seamounts had obtained poor biostratigraphy. McKenzie stated that interbedded continental material would contain pelagic microfossils for biostratigraphy. Lancelot felt that drilling off-island would yield better biostratigraphic control and that a transect was needed. Austin reiterated the problem of sediment instability, but McKenzie thought that the frequency of sediment redeposition was high enough so that biostratigraphic control would be unimpaired. Kidd confirmed that biostratigraphic control did exist near the VICAP area.

AMAZON FAN (AF)

Austin noted that AF (proposal 405) was one of 2 new proposals, not in the NAP, ranked by thematic panels, the other being the K/T impact proposal (proposal 403).

McKenzie explained that SGPP had felt that AF was mature and decided to rank it. AF would study the Amazon deep-sea fan growth pattern, its relationship to equatorial climate change, continental denudation and sea-level fluctuations. McKenzie listed the thematic objectives of AF as: 1) fan morphology and growth patterns; 2) testing the validity of the Vail/EXXON conceptual deep-water sequence stratigraphic model; 3) continental climatic record in fan sediments; 4) equatorial oceanic dynamics and paleocirculation patterns. Kidd added that, though SSP had not seen the site-survey data, a large amount of data was available.

Discussion

Shackleton stated that OHP also reviewed AF. AF was probably the most interesting fan to OHP and the proposal was well-written. McKenzie pointed out that there was the potential for drilling gas hydrates derived from organic carbon supplied by the Amazon. Tucholke asked in what ways AF was different from the Mississippi Fan. McKenzie stressed the importance of the continental climate record. Austin commented that the data for AF were originally brought to the JOI/USSAC South Atlantic workshop in 1987. Seismic facies there could be studied with ~100 m holes because the facies were smeared, rather than stacked as in the Mississippi Fan. McKenzie added that 19 sites were proposed with penetrations of 50 m - 625 m. Lancelot felt that AF should be part of an experiment involving the Mississippi Fan as a temperate example, AF as a low-latitude example, and the Indus Fan as a monsoonal example. He thought that the framework should be global. However, Austin noted that that was not a deficiency of the AF proposal. Moores stated that AF was not of interest to TECP. Kidd commented that, since Mississippi Fan drilling (DSDP Leg 96), there had been a revolution in understanding how fans build. AF was a very important example and all of the proposed objectives could be accomplished by APC.

K/T IMPACT

Moores reported that K/T impact (proposal 403) proposed to drill an impact structure off the Yucatan Peninsula, large enough to have produced the K/T extinction. No core data existed, though there were impact deposits on Haiti. TECP had rated K/T impact highly because of the debate over impact versus plume models for triggering Indian Ocean plate motions, though the theme was not in TECP's white paper. In addition, there was great general interest in extinctions and the proposed drilling would give ODP a high profile. K/T impact comes with much supporting data from UTIG.

Discussion

Larson asked about the option of drilling on land. Moores replied that the marine section was more complete. Austin added that PEMEX had drilled and recovered some shocked quartz, but that cuttings had been lost. However, the Haiti ejecta blanket did not map to this crater, but to one further south. Humphris stated that LITHP reviewed K/T impact because of its high visibility. LITHP's concerns were: 1) possibility of land drilling, 2) adequacy of biostratigraphic resolution for determining timing, and 3) assumption that APC and XCB will yield better recovery than was obtained at nearby DSDP sites. Larson asked what more would be learned, even with good biostratigraphic resolution, than could be learned with a shovel on Haiti. Austin explained that onland drilling in Mexico would involve regulatory problems since the area was a petroleum province. It might be possible eventually to have a paired onshore and offshore approach. Moores remarked that studies of melts indicated multiple sources, suggesting an impact origin. McKenzie noted that SGPP had felt that insufficient care had been taken in choosing sites. Austin confirmed that K/T impact had been generated rapidly, adding that it would probably benefit from another review cycle. Watkins stated that the data needed reprocessing. Duncan asked whether any of the sites were located inside the crater. Moores replied that none of the 6 sites were within the crater, since it lay in Mexican waters and the water depth was very shallow. Austin commented that the proponents wished to use the leverage of ODP to enable them to drill in Mexico. The inboard sites were in Mexican waters.

THEMATIC PANEL RANKINGS

Austin referred to the blank schedule showing critical time windows for NAAG and NJ/MAT (Agenda Book, blue page 25) and to summaries of thematic panel rankings (Agenda Book, blue pages 26-27). He called on thematic Panel Chairs to summarize their NAP rankings.

LITHP

Humphris explained that LITHP had to allow proponents to remain in the room for voting because there were so many of them; they were not allowed to vote for their own proposals. They were present during discussion, but were not present during presentation of their proposals, and were not allowed to comment on comments of other panel members concerning their proposals. Humphris (a TAG proponent) had handed over the chair during discussion of TAG. LITHP's ranking yielded 3 proposals clumped at the top and distinct from the rest. LITHP judged AB, MS and NJ/MAT outside their mandate and did not rank them. LITHP designated 1 leg for ranking for each multi-leg program. LITHP did not want to rank MAR proposals and risk second-guessing OD-WG, but LITHP had felt that MARK was more drillable.

The LITHP ranking (top 3) was: 1) TAG, which was also LITHP's top program in its 1991 global ranking; 2) NARM volcanic (LITHP accepted NARM-DPG's suggested first leg); and 3) MAR (offset drilling was a high LITHP priority and LITHP felt that MARK was drillable).

TECP

Moores reported that TECP had fewer proponents than LITHP. DPG chairs were absent during discussion and did not vote. One other proponent was absent from both discussion and voting and another was absent from discussion, but was present for voting (but did not vote on his own proposal). The TECP ranking (top 6) was: 1) NARM non-volcanic, 2) NARM volcanic, 3) EAT, 4) AB, 5) K/T Impact, and 6) MAR.

TECP accepted conclusions of NARM-DPG. Moores justified TECP's ranking by noting that rifted margins was the top TECP theme. Furthermore, North Atlantic conjugate margins were the best examples globally; South Atlantic margins were good, but less well-documented, Indian Ocean margins were complex (plate motion changes), and the conjugate to the south Australian margin was in Antarctica. This was a good example of how to address tectonic themes with the drill. The TECP white paper identified the following major problems associated with non-volcanic rifted margins: distribution of strain during rifting, quantitative distribution of volcanism and intrusion, distribution of flexural strength, and mechanisms of deformation. The end members to be studied were: 1) volcanic and non-volcanic, and 2) pure shear and simple shear. Volcanic rifted margins comprised a new and exciting theme, hypothesis-based, involving plumes and the transition to non-volcanic types. EAT was a major plate boundary. Of MAR proposals, Vema was felt to in the best condition for drilling from a tectonic standpoint. It had the potential, with further work, to become highly ranked. TECP felt that MARK was immature. Taylor commented that TECP had repackaged NARM non-volcanic, leg 1. Moores responded that TECP would leave GAL-1 open to retain flexibility.

OHP

Shackleton explained that OHP divided proposals into 2 groups. OHP voted with 2 proponents absent on the 3 proposals of primary interest to the panel. OHP voted one place at a time and produced the following ranking (top 3): 1) NAAG, 2) NJ/MAT, 3) CR. All OHP members were present for voting on remaining proposals.

Neogene vertical and horizontal transects for paleoceanographic reconstruction were a goal of OHP. Subsequently, the same approach was envisaged for the Paleogene. Most components were laid out in COSOD II and OHP's white paper. For the Neogene, high northern latitudes were lacking. Leg 145 (NPT) and NAAG would address this deficiency and both also had major Paleogene components. Low latitudes had been covered by legs 108, 115, 130 and 138, with perhaps CR to come. Until new site-survey data were obtained, OHP would not know how well Paleogene objectives at CR would be achieved. Sea level was within the mandates of both OHP and SGPP. Shackleton had feared that it might slip between them and not receive adequate coverage. However, NJ/MAT was an excellent proposal and would match SL-WG's recommendations.

Shackleton announced that new NAAG proposals would be coming into the system before 1993. In addition, NAAG I would have implications for NAAG II. OHP would like to have a planned NAAG II leg ready for evaluation by PCOM at its 1993 Annual Meeting. However, OHP's single expert might be a co-chief of NAAG I. OHP would be poorly qualified for the serious and rapid work that must be done. Therefore, a NAAG II DPG would be desirable. Since OHP wanted 2 years between NAAG legs, the DPG need not meet until 1993.

SGPP

McKenzie stated that SGPP ranked all NAP proposals and added AF. SGPP ranked the Mediterranean Ridge and Alboran Basin proposals separately. The single proponent left for discussion and returned for voting, though he did not vote on his own proposal. The total score for each proposal was divided by the number voting to produce the ranking. SGPP was very enthusiastic about its highest-ranked proposal, NJ/MAT. SGPP's ranking (top 5) was: 1) NJ/MAT, 2) MS, 3) AF, 4) Mediterranean Ridge, and 5) TAG. SGPP discussed maturity and decided that should be a PCOM decision, with advice from SGPP. SGPP, therefore, ranked on the basis of scientific interest. SGPP considered that its number 1 (NJ/MAT) and number 3 (AF) ranks were ready for drilling. MS had already been discussed, but a drilling leg could be put together quickly if necessary. Mediterranean Ridge was not mature; a revised proposal was expected. TAG had already been discussed.

Discussion

Taylor asked whether thematic panel input would be provided on the issue of an additional test of DCS IIB. Austin recalled that the recommendation for at least one more deployment of DCS IIB had come from the DCS review meeting. The deployment should preferably be in a different environment from that at EPR. Storms explained that the DCS hardware would have to be modified in the US beyond Leg 150 to produce DCS III. Therefore, the DCS IIB test should be as early as possible. Taylor asked whether LITHP preferred an engineering test of DCS to a high-priority science leg. Austin responded that it had been the view of PCOM in the past that DCS should be tested at sites of high scientific interest. He added that he preferred not to schedule too far into FY94 because funding for that period was uncertain. He suggested waiting for the results of DCS engineering Leg 142 before scheduling another DCS test (i.e., at the April, 1992, PCOM meeting). Taylor stated that that might not be possible, given the need to schedule the engineering leg prior to Leg 150.

Kidd emphasized SSP's recommendation that alternate legs be included in the FY93 schedule when the site-survey data in hand for the primary leg are inadequate. Austin pointed out that that was also a PANCHM suggestion. The alternate would act as a spur to proponents. The final decision on which legs to drill could then be made at the April, 1992, PCOM meeting.

Francis suggested that if a science leg suitable for an engineering test of DCS IIB was scheduled, PCOM need not yet decide on whether to make it an engineering leg. Taylor strongly disagreed, noting the big difference between a science leg and an engineering test. However, Austin remarked that PCOM would have to decide whether all deployments of DCS II would always be considered tests, or whether to consider it an interim tool. Larsen stated that it had been suggested for use on one of the NARM legs and asked about the effect of such a plan. Austin replied that penetration would be reduced because DCS IIB was very slow. In addition, it would permit only a limited logging array. Duncan suggested postponing the decision until after Leg 142, but Austin acknowledged the need to deploy DCS on Leg 147, 148 or 149. Taylor stressed that EPR needed DCS, but that other high-priority legs could be drilled with other tools. Austin said that PCOM might choose not to schedule a DCS test, but that TEDCOM and ODP-TAMU wanted one. Malpas suggested HD, but Storms replied that the maximum DCS IIB drill string was only 4500 m, unsuitable for HD.

DETAILED PLANNING FOR NORTH ATLANTIC DRILLING

Austin explained that PCOM should develop a ~5-leg program for FY93. An engineering leg could be included and scheduling could extend into FY94. PCOM might choose to drill each panel's highest priority, to drill multidisciplinary objectives, or to drill something new (Agenda Book, blue pages 30-31). Austin had provided a suggested schedule for discussion (Agenda Book, blue page 31). Mutter stressed that votes for LITHP's top 3 programs were statistically inseparable. Austin added that might also apply to OHP's ranking. In general, below rank 4-5 there was little statistical significance to thematic panel rankings and that should be borne in mind. Discussion would be restricted to PCOM, with Panel Chairs present for information only.

Discussion

Natland stated that the level of planning appeared to have deteriorated; not many programs were ready for drilling. NARM volcanic and non-volcanic, NJ/MAT and NAAG were ready, but there were reservations about TAG. MAR and AF could be drilled. Mutter felt that EAT was mature and Austin acknowledged that site-survey data were extensive. Natland felt that TAG either needed DCS or required reconstruction. Austin agreed that TAG was not ready. Taylor disagreed, noting that the shallow component was ready for drilling and did not need DCS. He added that TAG was a very high LITHP priority and 1 leg was drillable. Becker asked the opinion of ODP-TAMU engineers. Storms responded that prospects for TAG were good if drilling conditions were like those of Leg 139. Lancelot felt that MARK was more suitable than TAG, based on data availability. Austin noted that in neither case were the data in the Data Bank. In response to a question from Austin, Humphris said that MARK and TAG were very close in LITHP's ranking. Malpas added that LITHP would prefer to include TAG later in FY93, rather than sooner. Austin suggested placing a TAG place holder in FY94, as was done with HD (actually in FY93) in FY92 scheduling. Alternatively, MARK and TAG could be scheduled as alternates. Natland maintained that TAG needed DCS or reconstitution, along the lines of Taylor's comments, as a shallow sulfide leg. The existing TAG proposal was not like that. PCOM could schedule MARK and TAG as Leg 153 and have the proponents compete. Humphris asked when the final decision would be made on which alternative to drill. Austin replied that the situation would be reviewed continuously, but that PCOM would have to decide no later than August, 1992. Humphris pointed out that the TAG site survey proposal was under review and the results could not be ready until early 1993.

Mutter proposed excluding some proposals from consideration. Austin suggested MS. Cita-Sironi stressed that MS was technically straightforward. However, Austin stated that *JOIDES Resolution* would still be in the area in FY94. He preferred not to schedule immature programs above mature programs because that would send a bad signal to proponents. Austin felt that excluded MS, AB, VICAP, CR, MAR (Vema) and K/T Impact. Taylor noted that Vema was the best place for an engineering test because the water depth was <1000 m in places, but deep water test sites were also available. Austin stated that, if the engineering test was not to be in a region of scientific interest, then he would prefer to have it in a different geological environment, e.g., chert/chalk, in order to interest another community, besides the lithosphere community, in DCS. Storms agreed, but stressed that one objective was coring experience. Deploying once in fractured volcanics at EPR and the second time in a different lithology meant starting again at the bottom of the learning curve. Austin felt strongly that, in order to justify the cost of DCS III, there was a need to appeal to a broad community. Storms expressed the belief that a water depth of 1000-2000 m would be adequate to test DCS IIB heave compensation, while minimizing trip times. Austin acknowledged that Vema was a possibility for an engineering leg, but that MARK was the only MAR proposal ready for a scientific drilling leg.

Austin stated that both TAG and MARK would probably be drilled, since *JOIDES Resolution* was committed to the Atlantic until April, 1994. He favored MARK being first because its data were better. Malpas agreed that TAG and MARK could be scheduled together in FY94, "up front". Shackleton recalled that at the 1990 PCOM Annual Meeting, Pacific drilling was being finished off, so scheduling beyond FY92 into FY93 had been reasonable. However, in this instance there was no need to lock in time in FY94. Austin explained that any programs scheduled for FY94 would be place holders to encourage proponents. Malpas agreed, noting that TAG and MARK represented top global priorities. Austin said he would rather not schedule MARK early to allow more work on site-survey data. Mutter and Lancelot felt that MARK was ready for drilling. Moores proposed asking the proponents to include tectonic objectives. Duncan thought that it would also be better to await OD-WG's report.

Cowan argued in favor of giving 3 legs, and perhaps 4 legs, to NARM in order to do it properly. Now was the time to devote more than the bare minimum to it, rather than scheduling every panel's top priority. Austin pointed out that NARM-DPG had requested 1 leg/yr in each category (i.e., volcanic and non-volcanic) for a phased approach. Von Rad expressed agreement. Cowan asked why three relatively shallow holes had been proposed for the first leg of NARM non-volcanic drilling instead of a deep hole. Larsen replied that the idea had been to learn from the first leg before tackling a deep site. He noted that the NB deep site (NB-4A) might be easier than the IAP deep site (IAP-1). Cowan asked why IAP-1 deep drilling had been deemed too difficult. Von Rad explained that shallower IAP sites would act as pilot holes where hole stability and basement drillability could be evaluated. Austin added that there were hydrocarbon concerns on the NB side. New data were required before attempting a deep site there. He reiterated that deep drilling was also an issue of community will. Taylor supported Cowan's idea to proceed with deep drilling. Cowan explained that if technology was the problem, he would postpone deep drilling; otherwise, he had the will. Mutter felt that it was not clear how drilling 600 m in post-rift sediment would enable assessment of hole stability in syn-rift sediment. Storms responded that IAP-1 was also in deep water. It would involve long casing and drill-pipe strings. That was risky and ODP-TAMU was not comfortable starting out there. Mutter stated that if ODP does not drill these deep holes it will be "dancing around" fundamental problems. Von Rad noted that the water depth at NB-4A was shallower and that the site would be ready for drilling in FY94. Larsen explained that NARM-DPG preferred to drill the NB deep site before the IAP deep site since this approach would provide information on asymmetry. Mutter felt it would be necessary to drill on both sides of the Atlantic. Tucholke pointed out that there was a horizontal unconformity on the NB side, but not on the IAP side, suggesting asymmetry. It was important to drill the unconformity to determine whether it was subaerial. In response to a question from Austin, Larsen said that even without ODP-TAMU's engineering warnings, NARM-DPG would not have chosen deep sites for non-volcanic leg 1 because it wanted to be sure to reach basement.

Austin asked whether any PCOM members were against NARM non-volcanic. Mutter replied that it would depend what it comprised. Austin highlighted the NB data problem. Taylor suggested that, in that case, all NARM non-volcanic should be deferred until FY94 so that a deep hole could be the first drilled. Mutter asked whether the discussion implied that, if there was to be any NARM non-volcanic drilling in FY93, it would be shallow-penetration. Austin replied that IAP-1 could be attempted in FY93. Larsen stressed that NARM-DPG preferred to begin with shallow holes, but could accept the NB deep site if PCOM wanted it. NB-4A was NARM-DPG's choice for the first deep site. Austin asked whether PCOM accepted NARM-DPG's rationale. Von Rad agreed that ocean/continent transition problems were an important objective. Austin noted that a great deal of sediment would be drilled on a NARM non-volcanic leg and asked for SGPP's thoughts. McKenzie stated that NARM non-volcanic fell at the bottom of SGPP's fall ranking because SGPP's liaison to NARM-DPG (N. Christie-Blick) had expressed concerns, though he had felt that the continent/ocean transition was an achievable objective. McKenzie acknowledged that she was unfamiliar with the stratigraphy. However, she added that the sediment story had never been developed by the proponents. Kidd stated that he was a proponent of an upcoming proposal to study abyssal plains and sediment budgets; this would be one of the targets of NARM non-volcanic drilling.

Austin asked whether there were any "golden spikes" that everyone agreed should be in the schedule. There was general agreement on NJ/MAT and NAAG. Weather constraints required these to be legs 150 and 151, respectively. Taylor felt that NARM volcanic should also be a definite. Larsen felt that the September-November time slot suggested by Austin was reasonable. Cowan asked whether limiting NARM volcanic to 1 leg was providing enough time to achieve basement penetration. Austin responded that the initial approach already involved too many days for a single leg. He wondered whether there might be any flexibility in leg length for NARM volcanic. Natland said that was not a problem, since re-entry sites were proposed for NARM volcanic, leg 1. Malpas expressed reservations about NARM volcanic because he was not convinced that 1 leg would yield any new information. Larsen agreed with Natland that re-entry cones meant that sites could be revisited. He cautioned against extending the leg further into the winter. Concerning Malpas' reservations, Larsen explained that only 10% of the whole volcanic phase was exposed on land and that had been contaminated by reaction with continental lithosphere. There was a need to sample away from that contamination. The inshore site would check for contamination and the offshore site should be in uncontaminated volcanics. In response to a comment from Natland concerning LITHP objectives, Humphris stated that LITHP had focused on young crust, but that it did have interest in thick, volcanic margin volcanics. In relation to LITHP's other objectives, this had ranked highly on 2 occasions: the spring (global) and fall (NAP), 1991, rankings. The high ranks were partly due to the existence of a mature proposal. Interest in younger crust remained stronger on LITHP, but it was important to study early rifting processes, too.

Austin, noting that the re-entry sites represented an attempt to get a volcanic margins program started, asked whether there were any objections to an initial 2-site approach. Malpas favored dropping NARM non-volcanic. Cita-Sironi favored NARM non-volcanic, but preferred to begin with a deep site. Von Rad supported NARM non-volcanic at IAP and NARM volcanic. He also suggested a return to Hole 504B after HD. Larson, noting the broad thematic panel support for NARM volcanic, said that PCOM had better have a good reason if it dropped it. Lancelot felt that it would not be a good approach to put 504B in the schedule at the present time, though he was sympathetic to 504B drilling. A balanced program would involve one of the lithosphere objectives (MARK was more ready than TAG), one non-volcanic and one volcanic NARM leg, NAAG and NJ/MAT. Taira felt that both NARM volcanic and non-volcanic were necessary in FY93 and preferred NARM-DPG's approach to NARM non-volcanic, rather than a deep hole. Jenkyns endorsed Taira's statement. Austin asked whether or not PCOM wished to follow NARM-DPG's recommendations. PCOM needed to make a commitment. Natland endorsed Lancelot's suggestion, including drilling at MARK, rather than TAG. He did not mind when 504B was drilled.

Austin suggested making a philosophical commitment to HD as Leg 147 and NARM volcanic as Leg 152. A straw vote showed a clear majority favored adherence to NARM volcanic, leg 1 as put forward by NARM-DPG. Austin then asked whether a return to Hole 504B should be included as Leg 148. Malpas suggested asking LITHP to decide between 504B and MARK. Humphris was not sure that it was fair for her to make such a choice on behalf of LITHP. Tucholke was reluctant to schedule MARK before OD-WG had reported. Malpas agreed and suggested a return to 504B. Francis commented that MARK would be an expensive leg and would involve budgetary considerations. Austin stressed that PCOM must decide at this meeting. He suggested a straw vote on Hole 504B as Leg 148. However, Taylor said that PCOM should consider balance involving Hole 504B, TAG and MARK. LITHP ranked TAG above MARK; Taylor thought, therefore, that TAG should be drilled. Malpas asked when the next opportunity to drill 504B would arise if it was not made Leg 148. Austin replied April, 1994. Austin was not comfortable with scheduling TAG because of data deficiency. Furthermore, LITHP had wanted a TAG-DPG. Taylor stated that he objected to MARK because PCOM had no drilling package before it. Austin responded that OD-WG would provide that. Humphris stated that she was now prepared to speak for LITHP since it was impossible to contact the rest of that panel and PCOM was determined to make its decisions immediately. She suggested placing 504B into the schedule now, with the idea that MARK would be ready when OD-WG reported and could be scheduled in FY94. TAG, following further site survey work and perhaps a DPG, would also be ready for FY94. Humphris added that scheduling TAG as Leg 153 would send a positive signal to LITHP. Austin responded that he preferred to have LITHP work with proponents on TAG, rather than set up a TAG-DPG. However, he was in favor of scheduling TAG as Leg 153. Mutter recalled Tucholke's comment that MARK needed more work, pointing out that a great deal of data already existed for MARK. Tucholke explained that he felt that site locations and drilling objectives should be better defined. He added that OD-WG was supposed to be setting up testable hypotheses. Austin said that OD-WG was awaiting instruction from PCOM. PCOM could instruct OD-WG to examine MARK. Lancelot felt that, because OD-WG started late, its philosophy was lagging behind proposals. The sites were there; MARK was ready and stood by itself. Austin stated that PCOM had delayed on setting up OD-WG partly for financial reasons, but also because PCOM had asked LITHP to develop an offset drilling strategy. LITHP had declined. Moores added that one of the MARK proponents felt that the proposal needed work. Moores stressed that MARK had tectonic, as well as lithosphere, objectives. Tucholke agreed that OD-WG must address tectonic development of MAR. HD was not a tectonic proposal, but had purely lithosphere objectives. There was more uncertainty concerning MAR. However, Mutter recalled that SSP had recommended against drilling HD without clarifying its tectonic development. Austin favored allowing OD-WG time to work. Moores stated that the objective of the existing program for HD was to drill lower Layer 3. The offset drilling element of HD was premature. However, MARK did have tectonic objectives. He agreed with Tucholke's viewpoint. Francis suggested making Leg 148 an engineering leg at MARK. Taylor noted that MARK proposed 2 sites: MARK-1 to drill gabbro through a proposed detachment; MARK-2 to drill serpentinized peridotite. Therefore, while there were potential tectonic objectives, MARK as it stands was an exploratory drilling proposal. OD-WG did not see MARK as one of the best places for offset drilling. Tucholke agreed, but recommended against committing to an exploratory phase when tectonics can be incorporated by OD-WG.

A majority of PCOM agreed and favored delaying MARK drilling. Austin was prepared to schedule MARK as Leg 153 provisionally and was sympathetic to scheduling TAG similarly, i.e., making Leg 153 MARK/TAG, not as alternates, but as a signal to proponents that both would very likely be drilled and to get their data ready. Cowan was against scheduling as far ahead as Leg 153. Malpas suggested making a statement that PCOM considered both MARK and TAG to be of high priority, as an alternative to pencilling them into the schedule. Austin replied that, in that case, other programs should be included in the statement, e.g., CR and EAT. Kidd stated that the concept of scheduling MARK and TAG as Leg 153 was exactly the idea SSP had proposed, that was to encourage proponents to action by scheduling alternates. Lancelot felt that the main reason PCOM was considering adding TAG/MARK was because PCOM was pushing high-priority LITHP objectives back. Watkins thought that to include only TAG and MARK would be to discourage other proponents. Austin suggested including other programs of high priority in the minutes. Watkins agreed that proponents could read the PCOM minutes and learn the status of their proposals. Austin proposed a slightly more formal listing of high-priority programs for inclusion in the minutes. Malpas pointed out that thematic Panel Chairs would take this information and would act on it quickly.

Francis emphasized that if a DCS IIB test was not inserted into FY93, the next test would not take place until 2 years after Leg 142. He again suggested that Leg 148 be a DCS IIB test at MARK. Austin was sympathetic to scheduling an engineering leg as Leg 148 or Leg 149. Mutter agreed that the engineering test program must be pursued effectively. Malpas expressed concern that an engineering leg was being played off against a high-priority lithosphere leg. He felt the engineering leg should be evaluated against all other legs. Austin accepted that as a valid point. He asked whether a DCS IIB test in FY93 was important. In response to a question from Tucholke, Francis said that DCS III would not be available in FY93. DCS IIB needed another deployment, a recommendation endorsed by TEDCOM. MARK was attractive because it was of the right water depth and involved a different geological environment from EPR. Cowan stated that support for a DCS IIB test would depend on what it replaced. Austin reminded PCOM that ODP was spending millions on DCS. Lancelot supported a DCS test if ODP-TAMU engineers felt they needed one. Natland agreed that it was important to test DCS soon. Austin cautioned that money might not be forthcoming from funding agencies for further DCS development if PCOM did not commit to further testing. Taylor preferred to review results of Leg 142 and consider displaced science before deciding on another engineering leg. Austin warned that failure to continue with DCS tests might lead to DCS being cancelled. It was currently under review. The issue was the need for experience with DCS coring. Storms added that the drillers needed to learn how to use DCS; they could be trained on DCS IIB. The other point was hardware development. Lancelot reiterated that TEDCOM and ODP-TAMU had recommended a DCS IIB test and he would not question that. He recalled that OPCOM had considered an alternate platform for DCS testing, but that they had decided that testing must be carried out on *JOIDES Resolution*. Francis stressed the need to take a long-term view and be prepared to sacrifice near-term science for long-term science. Taira and Mutter favored a DCS IIB test. Von Rad, Tucholke, Cita-Sironi, Jenkyns, Watkins and Duncan favored a DCS IIB test on Leg 148. Natland and Malpas supported a return to Hole 504B and an engineering leg. Cowan also favored an engineering leg, but with re-examination of the entire FY93 schedule.

Malpas suggested substituting an engineering test of DCS IIB for NARM volcanic. Becker asked how soon after Leg 142 ODP-TAMU could conduct a second DCS IIB test. Austin replied that it must be on one of legs 148-150. He added that PCOM could begin consideration of the FY93 schedule again from scratch if the group felt that was warranted. However, Natland felt that NJ/MAT and NAAG were fixed. Von Rad suggested a straw vote on the importance of NARM non-volcanic. Watkins suggested a straw vote on a Leg 148 engineering test.

Malpas reiterated the importance of Hole 504B. Austin asked for PCOM input on Hole 504B. Storms stressed the importance of an early engineering test. However, if Leg 142 encountered major problems ODP-TAMU would need more time before the test. He suggested scheduling an alternate science leg as a back-up to the engineering leg. Tucholke proposed that Leg 148 be DCS IIB engineering or Hole 504B. Kidd asked whether HD was too deep for a DCS test and Francis confirmed that it was. Cowan suggested scheduling only 504B on Leg 148. In response to a question from Austin, Storms said that he did not expect a failure on Leg 142 that would be serious enough to prevent there being an engineering leg in FY93, but some time would be needed if there was a failure. Cowan revised his opinion and agreed to Leg 148 being DCS IIB engineering or Hole 504B. Taira and Jenkyns expressed their support of that plan.

Malpas and Natland voiced the concern that no high-priority LITHP objectives were being scheduled. Austin pointed out that HD was in FY93. He added that there was a wide perception of DCS as a lithosphere community tool, but he would like it to be viewed more broadly. Malpas stated that everyone agreed to deepening Hole 504B. However, he highlighted the importance of drilling the Layer 2/3 boundary, adding his concern that if it was not scheduled as Leg 148, it would not be done for some time. Other programs under discussion were Atlantic programs which could be drilled later in FY93 and FY94. In reply to a question from Von Rad, Malpas said that his personal opinion was that an early return to Hole 504B was more important than HD. Von Rad, therefore, suggested opening up Leg 147 for discussion. Austin asked for PCOM discussion of the relative merits of 504B and HD.

Lancelot preferred to keep 504B as an alternate to a Leg 148 DCS engineering test. Austin reiterated that the engineering test should be Leg 148 or Leg 149. Cita-Sironi favored postponing 504B and conducting an engineering test at MARK on Leg 148. Tucholke pointed out that the top TECP objective, NARM non-volcanic, would be omitted if Leg 149 was made an engineering leg. Taylor said that he would defer NARM non-volcanic to FY94, because NB data could then be incorporated. However, Austin cautioned that the NB survey data might not materialize if NARM non-volcanic was not scheduled. Cita-Sironi felt that it would be a terrible mistake not to schedule NARM non-volcanic. Lancelot and Austin both expressed concern about post-leg euphoria about Hole 504B unduly influencing the FY93 schedule.

Malpas agreed to Leg 148 being an engineering leg (at a location to be decided by ODP-TAMU engineers, perhaps MARK), and Leg 149 being NARM non-volcanic. A straw vote revealed a majority in favor of a Leg 148 engineering leg and a NARM non-volcanic Leg 149. Austin noted that PCOM must also decide on the composition of NARM non-volcanic, leg 1. Malpas said that he would like 504B to be a back-up to the engineering test on Leg 148 and also asked that a note be included in the minutes stating that Leg 153 would be MARK/TAG, though PCOM would not specifically schedule that leg. Austin did not object to that, but added that there were other high-priority programs (CR, etc.). Panel Chairs would encourage relevant proponents following PCOM. Lancelot supported Malpas' suggestion. Humphris added that LITHP would appreciate some indication from PCOM that Leg 153 would be either MARK or TAG.

Cowan did not favor scheduling Leg 153 just to placate the lithosphere community; Austin noted that it would limit PCOM's freedom in scheduling FY94 operations. Taira suggested leaving it as a note in the minutes and not placing it on the schedule. Austin stated that EXCOM would want to know exactly how PCOM intended to treat Leg 153 in that case. Tucholke suggested the following course of action: if Leg 148 was an engineering leg, Leg 153 would be MARK/TAG, but if Hole 504B was drilled on Leg 148, FY94 would be open (no MARK/TAG commitment). Austin restated Tucholke's suggestion: Hole 504B would be a back-up for the Leg 148 engineering test; if Leg 148 was 504B, then no FY94 leg was presently scheduled; if Leg 148 was an engineering leg, Leg 153 would be either TAG or MARK for science. Watkins was strongly opposed to formalizing Leg 153. Austin noted that the major unknown was the outcome of Leg 142 (Engineering/EPR). Kidd point out that, if Leg 153 was formalized, the outside community would be confronted with 4 lithosphere legs out of a total of 6 legs.

Austin said that he would rather leave Leg 153 more open. EAT and CR should also be in the running for Leg 153. Malpas asked whether the issue of Leg 153 could be revisited after the results of Leg 142 were known, at PCOM's April, 1992, meeting. However, Austin said that would also set a precedent. He preferred not to commit PCOM to actions it would have to take in April, 1992. The important point was to signal proponents. Mutter commented that AF should be included in any list of programs to be encouraged. In response to a question from Moores, Austin acknowledged that EAT was not packaged well for a 1-leg initial approach. Taira supported leaving FY94 open. Austin reiterated that the minutes would reflect the programs that PCOM favored.

Malpas stressed the importance of sending a message to LITHP, as TAG was its top priority program. Austin responded that PCOM could state that the top 2 priorities of each thematic panel would continue to be actively considered. Tucholke emphasized that MARK/TAG (as Leg 153) would not be in FY93 in any case. PCOM finally passed the following motion.

PCOM Motion

PCOM approves the following drilling schedule for Fiscal Year 1993 (assuming 56 day legs, 5 day port calls):

147	**Hess Deep**	**26 Nov. 1992**	**-**	**21 Jan. 1993**
148	**Engineering - DCS Phase IIB Back-up: Hole 504B**	**26 Jan. 1993**	**-**	**23 Mar. 1993**
149	**NARM non-volcanic, Leg 1**	**28 Mar. 1993**	**-**	**23 May 1993**
150	**New Jersey / Middle Atlantic Transect**	**28 May 1993**	**-**	**23 July 1993**
151	**NAAG, Leg 1**	**28 July 1993**	**-**	**22 Sept.1993**
152	**NARM volcanic, Leg 1**	**27 Sept. 1993**	**-**	**22 Nov.1993**

Motion Larson, second Watkins Vote: for 12; against 0; abstain 4; absent 1

Austin noted that PCOM still needed to decide on the strategy for NARM non-volcanic, leg 1, i.e., whether to adopt the NARM-DPG approach, or focus on a single deep hole. Lancelot and Taira proposed adopting the NARM-DPG recommendations. Cowan asked for more information on the engineering problems related to the water depth at the IAP-1 deep hole, relative to the NB-4A deep hole. Storms replied that long, multiple casing strings were needed when drilling long sediment columns. ODP did not have experience in their use and needed to learn. The problem was exacerbated in deeper water. ODP-TAMU needed to study both deep sites. Larsen reiterated that, if PCOM chose to drill a deep site on NARM non-volcanic, leg 1, NARM-DPG would prefer that NB-4A be chosen. In response to a question from Tucholke, Storms said that ODP-TAMU would ideally like to drill a minimum sediment column and maximize basement penetration, but that was not an option. Tucholke stated that ODP had drilled 2000 m at Hole 504B and a 2500 m hole was proposed at NB-4A; he asked what ODP-TAMU would like to see as an intermediate step to NB-4A. Von Rad suggested asking a subset of NARM-DPG to combine the basement objectives of IAP and GAL sites. Austin felt that had been done, but von Rad answered that a new site-survey was available. Austin responded that such a task would be done by the co-chiefs. Taylor asked whether, if NB-4A was drilled in FY94, ODP-TAMU would want to go to 504B in FY93. Storms agreed that would be the case ideally. Austin stated that one day PCOM was going to order a deep site. Storms responded that ODP-TAMU had begun a summary of NARM sites, but that there had been insufficient time to refine it. ODP-TAMU had identified 2 sites which would form a learning curve: NB-7A (4200 m water depth, 1600 m sediment, 100 m basement) and EG63-2 (1875 m water depth, 1220 m sediment, 500 m basement). This study had only just begun. ODP-TAMU was not as far along with planning for deep drilling as Storms would have liked. Austin recalled that ODP-TAMU defined deep drilling as any hole requiring ≥leg. PCOM instead defined it in terms of maximizing the capabilities of *JOIDES Resolution*. Storms said that he would examine IAP-1 and NB-4A, noting that NARM-DPG preferred to drill NB-4A first. Von Rad pointed out that 1800 m had already been drilled on a continental margin in only half a leg ~15 years ago. Austin commented that ODP-TAMU engineers had asked for time to maximize the capabilities of *JOIDES Resolution*. Storms agreed, but stressed the need to examine sites in detail before informing PCOM whether or not they could be drilled. ODP-TAMU did not have personnel available and deep drilling had not been prioritized by PCOM.

Austin felt that PCOM was constrained to follow NARM-DPG's recommendations. Deep drilling would be deferred for 1 year. The minutes would include PCOM's advice that ODP-TAMU proceed with deep drilling studies, with the realization that this involved financial issues. Mutter remarked that the whole NARM program would be thrown into question if studies showed that deep holes could not be drilled. However, Francis responded that IAP-1 was probably drillable in fine weather. The limits of the system had not been sufficiently explored. Larsen noted that NARM-DPG had considered these issues and had based its recommendations on engineering input. It was for that reason that NARM-DPG preferred drilling NB-4A before IAP-1. Taylor explained that his concern with scheduling NARM non-volcanic was that something like 504B should be done to practice deep drilling in preparation for the highest-priority NARM non-volcanic science in FY94. He felt that the highest-priority deep site should come first. Lancelot asked whether NARM-DPG felt that focusing on the 2 deep sites would be better than transects. Larsen replied that it did not, that transects would enable determination of the most important relationships. Jenkyns endorsed following NARM-DPG's recommendations. Cita-Sironi favored drilling a deep hole first, but since NB-4A was not ready, and water depth at IAP-1 was too great, she would go along with the NARM-DPG's recommendations. Duncan agreed. PCOM passed the following motion.

PCOM Motion

PCOM moves that the NARM-DPG strategy for drilling the first non-volcanic leg be adopted.

Motion Lancelot, second Taira — Vote: for 13; against 2; abstain 1; absent 1

Annual Meeting JOIDES PCOM
Saturday, December 7 1991

934. Detailed Planning Requirements - 1992 PCOM Meetings

Austin referred to the Agenda Book (blue pages 30-34) for a summary of the primary purposes of the 3 PCOM meetings in 1992.

Austin began with discussion of the April, 1992, PCOM meeting. In 1992, in contrast to previous years, thematic panels would also asses drillability. They would try to meet a little earlier than usual (probably in late February - early March). Becker asked whether an assessment of Leg 142 would be discussed in April. Austin answered that it would and that he would follow up with ODP-TAMU on engineering leg sites for FY93. Becker stressed the need to involve panels in that decision. However, Austin said that it was his understanding that it was ODP-TAMU's decision, that the DCS IIB engineering test (Leg 148) might be at MARK, or even EPR. PCOM could choose a science co-chief today and that would determine the science aspect. Natland disagreed with that approach. Taylor asked whether the guidebase used for drilling at MARK on legs 106 and 109 was still usable. Francis said that it was not. He added that ODP-TAMU could postpone appointment of a co-chief for Leg 148 until April, 1992, after results of Leg 142 were known. PCOM could provide a range of co-chiefs for different scientific objectives. Austin stated that he would like to see DCS IIB tested in an area of high scientific interest, though he acknowledged that others felt differently. Taylor pointed out that Leg 148 co-chief requirements were highly dependent on the success or failure of Leg 142. He favored waiting until April before assigning co-chief(s) for Leg 148. Lancelot asked what would happen if Leg 142 was a real failure. Francis replied that Hole 504B would be the back-up Leg 148. Lancelot asked what would be done if Leg 142 demonstrated that ridge crests cannot be drilled with DCS. Austin replied that there was no plan for that catastrophic failure. Natland said that there were 2 possible outcomes: 1) DCS IIB will not work at all, or 2) DCS will not drill those particular rocks. Austin stated that the latter would mean a push to drill other lithologies with DCS, e.g., shallow-water carbonates. He added that ODP was developing DCS because it was a proven tool in the mining industry. Lancelot asked what the plan would be for ridge crest drilling if DCS could not drill ridge crests. Austin replied that there were currently no alternatives to DCS for ridge crest drilling.

Austin went on to discuss the summer meeting, scheduled for 11-13 August, 1992, moved because of a conflict with IGC. The 1992 summer PCOM meeting would be held in Newfoundland. Its purpose would be to prepare for the 1992 annual meeting. Reports of liaison groups would also be heard: FDSN might present a global plan. There would be a field trip to the Bay of Islands ophiolite, perhaps by helicopter.

The 1992 PCOM Annual Meeting might be in Bermuda. The JOIDES Office would try to send out the FY94 prospectus early. Thematic panels would play an integrative role in trying to present programs in leg form. In response to a question from von Rad, Austin said that the FY94 prospectus would include items from the FY93 prospectus. Mutter remarked that FY93 programs would only be included if thematic panels ranked them highly. Austin agreed, adding that the FY94 prospectus would be an "Atlantic" prospectus, including the Caribbean, Mediterranean and Gulf of Mexico. Blum asked whether, because results of global ranking would be available at the April PCOM meeting, PCOM could decide on the "Atlantic" prospectus in April. In view of the large volume of paper involved, that would give the JOIDES Office the time necessary to get it to panels early. Austin replied that the problem was that time was needed to inform proponents and get their revisions, and also to include potential new programs. However, Taylor pointed out that the Agenda Book (blue page 33) stated that the FY94 prospectus would be prepared during the spring/summer of 1992. Austin said that the panels were to try something new, i.e., PCOM will know something about proposal maturity at its April meeting.

Cita-Sironi stated that it was very important to proponents and funding agencies whether a proposal was in the prospectus or not. Von Rad suggested limiting the number of pages in the prospectus. Taylor proposed asking thematic panels to write true abstracts to be used in the prospectus instead of reproducing complete proposals. He recalled that regional panels used to do that. However, Austin replied that panels were already complaining about their workload. Larson suggested that proponents could do it. Austin responded that the JOIDES Office encouraged proponents to write abstracts, but that he did not want to discourage proponents from including data. Mutter commented that PCOM did not need the data. Cowan pointed out that thematic panels received all proposals individually and asked whether they needed to receive a duplicate set bound in a prospectus. Blum replied that panels were glad to have prospectuses, even though they already have proposals. Austin added that, as a single document, the prospectus clarified panels' tasks. The prospectus was also important for proponents. The FY93 prospectus gave proponents a deadline and encouraged many of them to submit new data. Von Rad still felt that proponents should be asked to submit a shortened version of their proposals. Austin said that the JOIDES Office would ask, but doubted that many would be received. Taylor suggested encouraging thematic panels to work with proponents to produce true prospectus versions of their proposals. Austin noted that the NAP was the result of a great effort by Blum to get information from proponents. They were given a great deal of extra time to comply, which was why the NAP was late. Austin favored paring down the size of the prospectus based on drillability assessments. Mutter felt that only the top 3 or 4 of the thematic panels' global rankings need be included in the prospectus. He noted that some NAP proposals had been crossed off immediately and unanimously by PCOM. Austin responded that PCOM had to include panel rankings fairly. He added that Panel Chairs now knew their roles better than ever.

Natland recalled that PCOM had made a commitment to return to 2 areas in the eastern Pacific (SR and EPR) as soon as those programs were technically feasible (both required the DCS). He asked when those programs would be reinserted in the prospectus. Natland also asked whether multi-leg programs from the NAP would remain in the FY94 prospectus. Austin replied that *JOIDES Resolution* would not re-enter the Pacific before April, 1994. PCOM could consider those matters at its April, 1992 meeting.

935. Membership on JOIDES Panels

PCOM reviewed membership on various JOIDES panels and took the following actions. (CVs of most newly-nominated panel members are available at the JOIDES Office.)

LITHP

Phipps-Morgan was rotating off the panel and G. Smith was due to rotate off after the next meeting. LITHP would like to retain him for an additional meeting. LITHP wanted the replacement for Phipps-Morgan to be a modeler and nominated M. Parmentier, R. Buck and D. Wilson, though none have been contacted.

Duncan recommended M. Richards (UC Berkeley) to replace Phipps-Morgan. Austin stated that he was inclined to go with the panel's choices. Richards should contact Humphris and indicate his willingness to serve. He might join LITHP later. Becker questioned the balance between JOI and non-JOI institutions. Austin replied that such balance was not necessary on each panel.

Taylor asked whether there was any LIPS (Large Igneous Provinces) expertise on LITHP. Taylor said that Mahoney (Hawaii) was interested in joining. Austin said he should also contact Humphris. He added that increasing the size of LITHP was an option. Von Rad announced that P. Herzig (Germany) would join at the end of 1992. Austin stated that, if it felt LIPS needed attention, PCOM could inform Humphris that LITHP should consider nominating a LIPS specialist. Larson feared that LITHP was simply an extension of the RIDGE initiative. Crawford pointed out that a C-A meeting in March would re-evaluate all C-A panel members. Franklin might rotate off the panel. Austin asked Crawford to take the message back that a LIPS person from C-A was desirable.

TECP

Klitgord wished to be replaced. G.M. Purdy and D. Sawyer had 1 more meeting before rotating off TECP. TECP provided nominees (with rifted margins expertise) to replace Klitgord (C. Keen, C. Beaumont, M. Steckler and G. Bond). Austin pointed out that if a nominee was non-US, the relevant international partner must be prepared to pay for that person. Crawford responded that he had been informed by Malpas that C-A was prepared to pay for C. Keen. PCOM supported that choice. Nominees were also provided by TECP in 2 additional areas in which TECP sought to augment its expertise: 1) "physical mechanisms of deformation," and 2) "collision—small ocean basins". Austin noted that TECP was already a large panel and he was reluctant to increase its size. He stated that PCOM could delay action until after the spring meeting, when Purdy and Sawyer would have rotated off the panel, but that would mean TECP would not have the desired expertise at their spring meeting.

Mutter and Taylor thought that TECP should be made to replace an additional member before getting the additional expertise. Mutter felt that TECP already had sufficient expertise in collision—small ocean basins. Austin noted that Sawyer's rotation would be less of a problem if Keen were to join. However, Blum noted that neither Purdy nor Sawyer had had their full term and should not be forced off the panel. Taylor, therefore, proposed delaying the provision of new expertise. Austin stated that PCOM would not take immediate action, but was sympathetic to a physical mechanisms of deformation person being added after the next TECP meeting. TECP did not seem to need additional expertise in collision—small ocean basins. Austin noted that 14-16 was a natural limit to panel size.

OHP

N. Shackleton (chairperson) was rotating off OHP and would not attend its next meeting. M. Delaney would replace Shackleton as chairperson; Austin considered her an excellent choice. Shackleton would be replaced as UK member by P. Weaver. W. Berggren and A. Mix were also rotating off OHP. Raymo (UC Berkeley) was nominated to replace Mix. For Berggren's replacement, 3 nominees were provided: D. Hodell (U. Florida), J. Kennett (UC Santa Barbara), Zachos (Michigan).

Austin favored young replacements, but Duncan recalled Shackleton's concern about OHP losing its older and more experienced members. Becker noted that if Hodell were to join, OHP would have 2 members from U. Florida. Therefore, PCOM accepted Raymo as Mix's replacement, and Zachos for Berggren. PCOM also reached the following consensus.

<u>PCOM Consensus</u>

PCOM thanks Nick Shackleton, who is leaving the chairmanship of the prestigious Ocean History thematic panel of ODP, for his long-lasting, inspiring, perseverant leadership.

SGPP

E. Suess (at-large), F. Prahl and S. Dreiss had rotated off SGPP. SGPP requested that Christie-Blick remain on the panel until the end of 1992. SGPP had dropped its original request for organic geochemistry nominees, because this expertise would be provided by new German and UK replacements (K. Emeis and P. Farrimond, respectively). SGPP favored C. Paull (UNC) or P. Vrolijk (EXXON) as replacements for Prahl. A hydrogeologist was essential as replacement for Dreiss. SGPP nominated J.M. Bahr (Wisconsin/Madison), C. Forster (Utah) and S. Rojstaczer (Duke). PCOM accepted Paull, for his gas hydrates expertise, and Bahr.

Von Rad suggested that a sedimentologist replacement be found for the Japanese member, M. Ito, who could rotate in 1992 to augment sedimentological membership of SGPP. Jenkyns noted that H. Elderfield (at-large) had been on SGPP for a long time, but that the UK was prepared to support him for a further year. McKenzie wanted that.

DMP

D. Karig had rotated off DMP. R. Wilkens would rotate off after the January, 1992, meeting. PCOM accepted DMP's nomination of S. Hickman (USGS) to replace Karig (*in-situ* stress expertise). DMP was seeking a replacement for Wilkens, someone with sea-going experience as logging scientist on *JOIDES Resolution*.

IHP

No action required.

PPSP

No action required.

SMP

A. Richards (ESF) and R. Whitmarsh (UK) were due to rotate off following the spring, 1992, meeting. SMP requested an additional member with sedimentological expertise. Von Rad noted that SMP had no German member. He could try to find a German sedimentologist. Larson asked about the availability of physical properties expertise. Austin replied that Moran and the new UK representative, who was likely to be Lovell, covered that area. However, Mutter felt that a better UK replacement for Whitmarsh would be L. Parsons, who had underway geophysics expertise. Francis commented that Lovell would bring expertise useful for core-log integration. Larson agreed with Mutter on the need to improve underway geophysics on *JOIDES Resolution*. Austin stated that PCOM would recommend that Parsons be the UK replacement for Whitmarsh. Jenkyns responded that he could not guarantee that. Duncan pointed out that 2 paleomagnetists would be rotating shortly; 1 of them could be replaced with an underway geophysics person, if necessary. Austin stated that he could ask Moran to consider the expertise of Whitmarsh's replacement.

SSP

S. Lewis and H. Meyer (Germany—replaced by K. Hinz) had rotated off SSP. R. Kidd would retire as Panel Chair after the fall, 1992, meeting. Discussion of his replacement has been deferred to the spring, 1992, meeting. SSP nominations for Lewis' replacement were G. Mountain (LDGO) and M. Coffin (UTIG). Becker noted that Mountain's appointment would result in 2 members from LDGO. However, Austin pointed that Kastens (LDGO) would rotate off SSP at the end of 1992. Mountain and Kastens would overlap by only 1 or 2 meetings. PCOM accepted Mountain. Mutter suggested Coffin as an underway geophysics person for SMP.

Austin stated that SSP wanted to institute a 4-year membership rotation, rather than a 3-year rotation. He added that the 3-year rotation requirement had always been firmer for thematic panels than for service panels. Taylor agreed, but said that it should not apply to Kastens to avoid extending the overlap with Mountain. PCOM had no argument with that perspective.

TEDCOM

TEDCOM was planning to seek 1 or 2 new US members. Austin reported a growing sentiment within TEDCOM to do more work between meetings and that Sparks had been sympathetic.

936. Other Personnel Actions

Co-Chief Scientist Nominations

PCOM recommended co-chief scientists for the following drilling legs. All recommendations are listed in alphabetical order. No order of preference is implied.

Leg 147, Hess Deep

US: S. Bloomer (Boston U.), H. Dick (WHOI), K. Gillis (WHOI)

International: L. Demetriev (USSR), J. Francheteau (F), J. Malpas (C-A), S. Maruyama (J), C. Mevel (F)

Austin stressed that, though Malpas would have rotated off PCOM before Leg 147, PCOM must be aware of possible conflict of interest. Lancelot recommended against considering too wide a list. Selecting proponents was of utmost importance. He felt that there was flexibility in the MOUs concerning international balance. Austin, Natland and Larson stressed the importance of including a proponent as co-chief, Larson citing the meagre site-survey data.

Leg 148, Engineering or Hole 504B

Co-chief nomination deferred until results of Leg 142 (Engineering, EPR) are known. Becker noted that nominations would be required for several cases, e.g., MARK or TAG (depending on the location chosen for the engineering leg), or Hole 504B.

Leg 149, NARM non-volcanic

US: D. Sawyer (Rice)

International: G. Boillot (F), C. Keen (C-A), B. Whitmarsh (UK)

Lancelot felt that a combination of a geophysicist and a tectonics specialist would be ideal.

Leg 150, New Jersey / Middle Atlantic Transect

US: T. Loutit (EXXON), K. Miller (Rutgers), T. Moore (Michigan), G. Mountain (LDGO)

International: M.-P. Aubry (F), C. Ravenne (F), J. van Hinte (ESF)

Austin emphasized the need for geophysical and sedimentological expertise among the co-chiefs. Von Rad suggested waiting for thematic panel nominees, but Francis responded that ODP-TAMU would have to move immediately on co-chief selection for legs up to, and including, Leg 150. Austin stated that PCOM could defer co-chief nominations on subsequent legs until thematic panels had a chance to consider the issue.

PANEL LIAISONS

Austin stressed the need for PCOM liaisons, adding that there had been problems recently.

B. Lewis was replacing Cowan and would assume Cowan's liaison duties with DMP. Lewis would attend the January, 1992, DMP meeting in Hawaii.

Cita-Sironi would attend the next SGPP meeting, but that would be her last.

Duncan would continue as US liaison to OHP. Jenkyns would be liaison to the fall, 1992, OHP meeting in Europe, but the 1992 PCOM Annual Meeting would be Jenkyns' last.

Lancelot requested a US co-liaison to IHP. Austin stated that W. Berger, the SIO PCOM replacement for Natland, would serve in that capacity.

Leinen was being replaced on PCOM by J. Fox, with Larson as alternate. Fox would replace Leinen as liaison to SMP, with Larson to attend SMP meetings if Fox was unable to attend.

Malpas would remain on PCOM for 2 more meetings; he could remain as liaison to LITHP.

Taylor (OD-WG liaison) noted that OD-WG would meet twice in spring, 1992, and he did not, therefore, wish to commit yet to further liaison duties. However, he added that he would like to be liaison to TECP when Tucholke rotated off PCOM.

Austin stated that he would attend TEDCOM's next meeting to replace Natland, who was leaving PCOM. Becker said that he could also attend if necessary.

Taira said that he would be unable to attend TECP's March, 1992, meeting. Tucholke responded that he could attend.

Von Rad would attend the September, 1992, SGPP meeting in Kiel.

Watkins would continue as SSP liaison. Austin noted that SSP would be taking an active role in upcoming programs.

DPG/WG liaisons remained unchanged (Taylor to OD-WG; Watkins to SL-WG).

<u>PCOM Motion</u>

PCOM endorses all personnel actions taken at the 1991 Annual Meeting.
Motion Tucholke, second Natland Vote: for 15; against 0; abstain 0; absent 2

937. Status of Detailed Planning Groups and Working Groups

NARM-DPG

Natland thought that there would be a need to reconsider the long-term drilling plan after the first 2 NARM legs. However, Mutter felt that NARM-DPG had done its job. Austin pointed out that financial constraints mitigated against keeping DPGs standing. PCOM would consider future options as needs arose. Von Rad pointed out that it was easier for international scientists to get funding while a DPG was in existence; Jenkyns echoed that. Austin remained reluctant to empower a regional DPG as a panel. Von Rad suggested getting only 4-5 DPG members together to refine plans. However, Mutter said that the co-chiefs could do that. PCOM reached the following consensus.

<u>PCOM Consensus</u>

PCOM thanks the North Atlantic Rifted Margins Detailed Planning Group (NARM-DPG) for its expeditious and informative report. PCOM considers NARM-DPG to have fulfilled its charge and accordingly disbands NARM-DPG.

SL-WG

SL-WG would meet again in June, 1992, for the third and last time. No further action required.

OD-WG

Austin reported that OD-WG had met once. LITHP and TECP would like OD-WG to prioritize sites and become a DPG. F. Vine, OD-WG chairperson, had asked PCOM for input. Austin recalled the original mandate of OD-WG.

> "PCOM establishes an Offset Drilling Working Group (OD-WG) to be charged with:
> a) establishing and setting into priority scientific objectives and a drilling strategy of a program for drilling offset sections of oceanic crust and upper mantle;
> b) identifying target areas where specific objectives can be addressed;
> c) identifying other survey information necessary to establish the geologic context of an offset drilling program; and
> d) identifying the technological requirements to implement the strategy."
>
> *PCOM Motion, April, 1991*

Natland felt that there was no immediate urgency to have OD-WG prioritize sites, since offset drilling programs had not been scheduled in FY93. Austin stressed the importance of OD-WG producing a white paper involving strategy. He did not wish to make changes which might mitigate against that. However, Mutter thought that the existence of a group of North Atlantic offset drilling proposals required a DPG. Natland disagreed, noting that there were global alternatives. Austin did not wish OD-WG to limit its discussion to the Atlantic.

Taylor felt that the issue was only one of terminology and Lancelot supported modifying OD-WG's mandate to allow discussion of North Atlantic sites. Taylor suggested that OD-WG maintain a global perspective, but that it might consider spending time in addition on Atlantic proposals. He added that OD-WG would need the membership to accomplish that task. Austin was reluctant to make OD-WG a proponent group. Tucholke suggested keeping the membership of OD-WG unchanged and changing its charge to that of a DPG after its next meeting. Austin said that he did not mind changing OD-WG's membership, but did not want to slant it toward the North Atlantic. Natland agreed, adding that that would subvert OD-WG's global objectives. Blum pointed out that a new proposal had been received, but not yet ranked. The setting up of a DPG was premature, since that proposal would not be sent to such a DPG. Austin added that PCOM would have to decide which proposals to forward to a DPG. Taylor responded that there were several Atlantic proposals, but only 2 from elsewhere (HD and Hole 735B) and these had already been identified.

Natland pointed out that E. Bonatti would represent ESF at OD-WG's next meeting. He was a Vema proponent; allowing OD-WG to become a DPG would mean entitling proponents. Austin agreed, reiterating that OD-WG's thrust should remain global, at least for one more meeting. Mutter felt that the situation was similar to that before NARM-DPG was set up, but Austin disagreed. Austin explained that a large number of very highly-ranked NARM proposals existed when NARM-DPG was established. He added that LITHP and TECP had originally wanted a WG on offset drilling because they felt that a strategy was lacking. They later wanted a DPG when some offset drilling proposals were included in the NAP. However, those proposals were placed in the NAP by PCOM; the proposals were hastily-written in response to OD-WG's existence. Taylor concurred that it might be best to leave OD-WG's mandate unchanged. He added that many members did not attend the first meeting, so that there would be a need to review with them global matters discussed at the first OD-WG meeting. Austin stated that Humphris and Moores now felt less strongly about the need for a DPG.

Becker stressed that OD-WG or the thematic panels should discuss the location of Leg 148 engineering operations before the April, 1992, PCOM meeting. Taylor stated that E. Pollard was an excellent ODP-TAMU liaison to OD-WG and he hoped that Pollard could continue to attend. Francis responded that Pollard would attend if possible. Austin agreed with Becker's statement and stated that PCOM should ask thematic panels and OD-WG what might be done at candidate sites for engineering Leg 148.

Taylor suggested that J. Karson be made a member of OD-WG. Austin responded that Karson would attend both upcoming meetings as TECP's liaison and that Moores would also attend.

Austin said that PCOM would address OHP's recommendation for a NAAG II -DPG at a later date.

Austin noted that Natland was leaving SIO for Miami and would become Becker's alternate on PCOM. Cowan was also leaving PCOM to be replaced by B. Lewis. PCOM thanked both Natland and Cowan for their work on PCOM. Leinen had already rotated off PCOM. As Dean of the Graduate School of Oceanography, she would be joining EXCOM. Austin had already thanked Leinen.

938. Future Meetings

The 1992 Spring PCOM meeting will be hosted by R. Duncan at Oregon State University, College of Oceanography, from 21-23 April 1992. A one-day field trip by bus will be held on Monday 20 April, preceding the meeting, in the Coast Ranges (in all weathers). Attendees can fly to either Eugene or Portland and arrangements will be made through Allison Burns at JOI, Inc. to collect people at airports.

The 1992 Summer PCOM meeting will be hosted by J. Malpas in Cornerbrook, Newfoundland, Canada, on 11-13 August, 1992. A 2-day field trip will follow the meeting on August 14-15, 1992. The cost of the field trip may be $75-$100/participant, if a helicopter is used.

The 1992 PCOM Annual Meeting could be held at the Bermuda Biological Station (BBS). A cost of $120/day would include accommodation and meals. Austin (the JOIDES Office) would host the meeting if PCOM was agreeable. The University of Miami, Rosenstiel School of Marine and Atmospheric Sciences, which was to have hosted the Annual Meeting, would host a subsequent meeting in Miami. Austin pointed out that PCOM usually met during the week preceding AGU (AGU will be held on 7-11 December, 1992). Therefore PANCHM could meet on Tuesday, 1 December, 1992, with PCOM meeting on 2-5 December 1992. A field trip was to be arranged. A deposit of $100 each would be required by BBS 4 months in advance of the meeting. In response to a question from Austin, Pyle said that JOI, Inc. had no problem with BBS as a venue. Austin noted that it set a precedent of having PCOM meet at a non-JOI institution and in a country that was not an international partner. Becker said the the University of Miami could still host the Annual Meeting, if the BBS option did not work out.

The 1993 Spring PCOM meeting will be hosted by J. Mutter at Columbia University, Lamont-Doherty Geological Observatory on 26-28 April, 1993.

The 1993 Summer PCOM meeting will probably meet in Australia in the second or third week of August, 1993. Crawford explained that the ODP Secretariat at the University of Tasmania would be moving within a couple of months either to Sydney or to the University of New England. Either would probably be glad to host the meeting. Austin asked Crawford to firm up the arrangements.

939. Other Business

FORMATION OF A "STEERING GROUP" ON *IN-SITU* FLUID SAMPLING

Austin noted that DMP had recommended formation of a "steering group" to monitor implementation of the "Report of the JOIDES Working Group on *In-Situ* Pore Fluid Sampling". Austin recalled the Worthington had stated that the steering group could possibly meet in association with regular DMP meetings, but did not wish to be held to that schedule. The steering group would meet 3 times: meeting 1, generation of RFP; meeting 2, review proposals; meeting 3, recommend course of action. SGPP had endorsed the plan. OPCOM funds (if available) would be used for the steering group.

Austin stated that he was in favor of the steering group, but would prefer it to be linked to DMP, rather than be a separate entity. DMP had listed 7 appropriate members. Worthington would chair the meeting and there would be additional liaisons. Austin proposed letting the first meeting go ahead in association with the January, 1992, DMP meeting and evaluating progress following that. Becker noted that most of the proposed members would be at that meeting already, but that an ODP-TAMU engineer was essential. Austin agreed. Francis also felt that an engineer was required and said that ODP-TAMU would do its best to comply. He asked whether the steering group required OPCOM funds. Austin responded that if the steering group was tacked onto the DMP meeting, the cost would be small. However, the expense of disseminating the RFP and further action would require additional funds. If OPCOM funds failed to materialize, progress might be stalled. Pyle commented that some SOE money was available and, depending on its cost, the steering group might be able to function without OPCOM funds. PCOM passed the following motion.

PCOM Motion

PCOM authorizes the formation of a steering group for *in-situ* fluid sampling, to be constituted as a subset of DMP effective at its January, 1992, meeting. PCOM approves the mandate and membership of the group as described in DMP recommendation 91/17, and urges that it meet in conjunction with normally-scheduled DMP meetings.

Motion Becker, second Lancelot — Vote: for 16; against 0; abstain 0; absent 1

FORMATION OF A WG TO REVIEW ALL ODP HARDWARE / SOFTWARE SYSTEMS

Austin stated that IHP had suggested holding a workshop to review all ODP hardware and software systems. He informed PCOM that Gibson, IHP chair, had proposed a 1.5-day meeting to be held in early March, 1992, in eastern North America. The workshop would advise on: 1) a new database structure for ODP to cope with the its rapidly-expanding needs, and particularly to facilitate core/log integration, and 2) an appropriate hardware and software computing environment for ODP in the 1990's, compatible with 1). (For further notes about the meeting and suggested participants, see Appendix 17 [Appendix 17 includes a suggested PCOM motion written by IHP]).

Austin explained that funding was the issue: no funds in support of workshops were available from commingled funds. Funds could be found if it was set up as a WG instead, especially since it would only meet once. However, in that case, PCOM would have to define its mandate. Larson felt that the meeting was necessary. Lancelot noted that a large group was proposed and that it was more like a workshop. Larson suggested reducing the list. Austin said that PCOM could review results of the internal ODP-TAMU meeting on the status of computing within ODP (scheduled for January 24, 1992, at ODP-TAMU) before proceeding. However, Larson felt it important to proceed immediately. Lancelot stated that IHP wanted the group to review data handling on board *JOIDES Resolution* and also how data were disseminated to the community for use. The system should be rebuilt so that the whole was a single system. Participation of experts would be required.

In response to a question from Larson, Francis said that the internal ODP-TAMU study was in response to Leg 138-related criticisms of the computer system. Larson encouraged ODP-TAMU to include the management structure in addition to computer systems. Austin stated that the WG would include management issues. Crawford reported that Gibson had suggested the appointment of a computer manager at ODP-TAMU at the same level as the manager of science operations. Based on suggestions from PCOM Austin named the WG the Data-Handling Working Group (DH-WG). PCOM wrote the following mandate for DH-WG.

PCOM Consensus

Data-Handling Working Group Mandate

PCOM endorses a 1.5-day Data-Handling Working group to meet in eastern North America in early March, 1992, and advise PCOM on:
1) a new database structure for ODP to cope with the rapidly-expanding needs of the project, and particularly to facilitate core/log data integration;
2) an appropriate hardware/software environment for ODP in the 1990's, compatible with 1).
A written report will be prepared and ready for PCOM review at its April, 1992, meeting.

Austin went on to discuss DH-WG membership. He noted that WG membership was usually limited to 16-20 persons. Based on IHP's requested participation (Appendix 17), PCOM drew up the following list of categories of participants. Numbers in parentheses are the approximate number of persons that might attend from each category.

1) Data-handling specialists from each JOI institution, including those with recent shipboard experience. (10)
2) Representatives from international partners, including those with recent shipboard experience. (7)
3) Chairpersons of SMP and DMP or their representatives. (2)
4) ODP-LDGO representative. (1)
5) PCOM representative (probably Lancelot). (1)
6) Invited representatives from ODP-TAMU. (2)

This would yield a total participation of 23. Austin suggested limiting the number to 20. Lancelot stressed the need to make sure that the DH-WG obtained the best possible people in categories 1) and 2). Francis highlighted the need to include people with recent experience aboard *JOIDES Resolution.* Taylor felt that there should be representatives from NGDC. Austin pointed out that Gibson was aware of that, since IHP included NGDC representatives. Francis felt that >2 people from ODP-TAMU would be needed and that ~half of the participants must have had recent experience of the system. In response to a question from Mutter, Austin said that Gibson would submit a list of names of DH-WG members. In addition, PCOM members could recommend individuals directly to Gibson. Austin must receive a list of attendees from Gibson before authorizing the meeting. DH-WG will report by the April, 1992, PCOM meeting.

ADVICE ON EQUIPMENT PURCHASES

Austin reported that Pyle had requested PCOM advice on equipment purchases. Pyle stated that: 1) equipment purchases should be endorsed by PCOM, and 2) if the list of items was long, it should be in order of priority. Pyle explained that prioritization was required, because extra money was sometimes left at the end of the FY and a decision about what to buy must be made.

Austin stated that panels would provide a joint short-list of prioritized equipment for purchase. Francis suggested that the subject also be discussed at the co-chiefs' meeting. Austin had no objection.

FOUR-YEAR SCIENCE PLAN

Austin informed PCOM that he would be writing a 4-year (FY93-96) science plan. This would comprise a detailed plan for FY93, with less-firm plans for three years beyond that. He did not intend to consider programs ranked below 5 in the April, 1991, thematic panel rankings. He would also address OPCOM issues, even though status of OPCOM funds remained uncertain. The 4-year science plan was a proposal that would be reviewed by NSB. Austin asked for input from PCOM, noting that he would either like someone to volunteer to write the 4-year plan, or alternatively have it left entirely to him. There were no objections to Austin writing the 4-year plan.

UPDATE ON LEG 141 (CTJ)

Francis reported that the the latest news from *JOIDES Resolution* was that logging was underway at Site SC-3. The hole had been stopped at 476 mbsf, as there had not been time to reach basement. No hydrates had been recovered, though a BSR was present. However, there was chemical evidence of hydrates and it should be possible to log that zone. There had been some anxiety about hydrocarbons. Very stiff clays had resulted in slow penetration. A temperature inversion was encountered.

WEST PACIFIC REVIEW SYMPOSIUM

Taylor stated that he had been asked by PCOM to consider organizing a West Pacific review symposium. This would be discussed at AGU during the week following PCOM. The tentative plan was that the symposium would take place in October, 1992, in the San Francisco area. Taylor said that he would try to write a letter in January and also write a proposal to JOI/USSAC. In response to a question from von Rad, Taylor said that he would invite co-chiefs and former WPAC members.

940. Adjournment

Von Rad thanked Austin and UTIG for hosting the 1991 PCOM Annual Meeting.

The meeting was adjourned at 12:10 PM.

APPENDICES ATTACHED TO THE 4-7 DECEMBER, 1991 PCOM ANNUAL MEETING

1. JOI, Inc. report, supplemental information
2. Science Operator report, supplemental information
3. Wireline Logging report, supplemental information
4. DMP report, supplemental information
5. SMP report, supplemental information
6. SSP report, supplemental information
7. TEDCOM report, supplemental information
8. Leg 140 scientific report, supplemental information
9. PANCHM minutes
10. LITHP annual report

11. TECP report, supplemental information
12. NARM-DPG, supplemental information
13. Science Operator engineering report, supplemental information
14. Science Operator report on sea-ice conditions for NAAG drilling, supplemental information
15. Wireline Logging engineering report, supplemental information
16. MS watchdog report, supplemental information
17. IHP proposal for Data Handling Working Group

HANDOUTS DISTRIBUTED AT THE 4-7 DECEMBER, 1991 PCOM ANNUAL MEETING

1. NSF report, supplemental information
2. PANCHM minutes
3. SGPP minutes
4. Draft SMP Special Core Disturbance Meeting Report, 18 October, 1991
5. Telex from A. Sharaskin to J. Austin re: input to PCOM Annual Meeting *in absentia*
6. Letter from B. Carson and G. Westbrook to J. Austin re: fluid sampling on Leg 146
7. Letter from B. Larsen to R. Kidd re: site survey assessment of Leg 145
8. Letter from E. Jansen to J. Austin re: site surveys for NAAG drilling
9. Program of IGC-ODP Symposium (August, 1992), conveners J. Austin and A. Taira
10. I. Dalziel, 1992, Antarctica; a tale of two supercontinents? *Ann. Rev. Earth & Planet. Sci.* (preprint)
11. Rolling over the Ocean, *The Economist*, November 16, 1991.

Report of the EXCOM *ad hoc* Committee on Long-Term Organization and Management of ODP

a:ltodp

J. Briden

FUTURE ORGANISATION AND MANAGEMENT OF THE OCEAN DRILLING PROGRAM:
a discussion paper with recommendations

SUMMARY

ODP should be the unifying and over-arching organisation for international scientific drilling in which programmes are fully integrated, funds are comingled, and truly international scientific parties carry out the work. Already ODP is an outstanding example of international cooperation in science, and in general it operates efficiently, fairly and in the best interests of advancement of science and technology. Nevertheless improvements are possible and are necessary*

- to further integrate ocean drilling with cognate science (i) (ii)
- to ensure that ODP pursues the most important scientific challenges in the best possible ways. This requires a single planning command with strong proactive Thematic Committees (x - xii).
- to improve international sharing of the governance of the programme (iv, v) and its operations (vi - ix). This requires creation of opportunity to devolve operations among partner members.
- to undertake pilot experiments with alternative ships (xiv) and to prepare for their incorporation on a more regular basis (xiii, xv).
- to ensure that ODP continues to have state-of-the-art ships and technologies at its disposal (xv).

*(i) (ii) etc refer to recommendations in paragraph 33.

INTRODUCTION AND TERMS OF REFERENCE

1. The structure and management of ODP are designed for single vessel operation. The need to consider other situations arises from a variety of causes:
   - Ocean drilling is uniquely able to address fundamental issues in marine and solid earth research and observation. Some of these issues are relevant to natural resources or environmental change, and innovative technological spin-off from drilling is likely to be important. All are agreed that we should address these issues in terms of scientific and technological challenges, and not primarily in terms of the capabilities of the one ship currently under contract to ODP.
   - There is a view that more work needs to be done than a single vessel can do in an acceptable time. Different vessels will have different advantages.
   - There is a range of views on whether the balance of work proposed in the Long Range Plan is right for addressing the most important and fundamental scientific problems that can be tackled with the aid of ocean drilling. Most notably there is a widely held view that much greater sampling of the oceanic sedimentary record (mostly but not exclusively the Neogene) is a crucial element of studies of Global Environmental Change. Others believe that deep crustal drilling merits more effort.
   - Even though JOIDES Resolution is the most capable ocean drilling vessel afloat, the global scientific community still has legitimate ambitions and strong scientific needs for much enhanced core recovery and deeper crustal penetration compared with that achieved up to now, and riser drilling in areas where gas and oil overpressures might be present.
   - If other ships were added and if logistics allowed, JOIDES Resolution could be concentrated where its capabilities are most needed ie where penetration and recovery in 'difficult' sequences are most critical. The engineering and technical efforts in ODP are already concentrated on these problems.
   - The need to integrate drilling into multidisciplinary and multi-technique research programmes, including simultaneous sea floor and borehole observation is a further factor demanding more ships.
   - USS, France and Japan have already made moves toward securing additional vessels (see paragraphs 18 - 20) and this is in itself a reason for considering the structure of programmes of these vessels and ODP.
   - France in particular believes that a less centralised operation would be better for the partners.

2. I therefore decided to adopt the Terms of Reference proposed by Dr Falvey in San Diego, adding the italicised words myself to allow me to comment on the status quo:

   To recommend changes in the present organisation and management of ODP to increase its effectiveness and to make provision for new and/or additional drilling platforms through the mid- to late-1990s.

This formulation is sufficiently general to cover various specifics in the alternative drafts attempted at the EXCOM meeting by Dennis Hayes and myself.

PRINCIPLES OF INTERNATIONAL SCIENTIFIC OPERATIONS

3. Large international science is commonly categorised under two headings: big facilities and cooperative programmes. The big facilities are usually the central focus of research programmes that are designed to extend the limits of knowledge in a relatively narrow field. The cooperative programmes on the other hand call for large scale cooperative, multidisciplinary research directed at wide ranging problems and issues. They usually require the use of tools from a variety of scientific fields, relying as much on small and medium sized instruments as they do on large items of equipment. CERN is an example of the first type; WCRP an example of the second type. The Ocean Drilling Program is unusual in that although it is first and foremost a programme of cooperative multidisciplinary research of the second category it is focused nevertheless on a single central facility that takes up about 50% of the total funds annually.

4. It is axiomatic that ODP must primarily be SCIENCE DRIVEN. The scientific scope of a further decade of ocean drilling was addressed by COSOD II; within that, the outstanding issue is the balance and sequence of work, guided by strategic scientific debate moderated by shorter term operational planning. The rate of achievement will then be determined by the rate at which funds and facilities become available. The amount of science that can be done in the decade, then, will be determined essentially by the number of vessels and total funding over the period.

5. International programmes should address objectives which are not achievable (at all or as well) by national, bilateral or multilateral efforts. For example, by

- harnessing otherwise unattainable facilities
- enabling more ideal coverage of the objective
- bringing in more countries and more good scientists

Although the capacity of some country-groups such as the EC to pool their efforts is likely to increase, some important countries will, as now, be able to put their money into only a few international programmes at any one time. Truly international programmes, therefore, will continue to be difficult to mount. To ensure maximum participation, they must be clearly focused on important objectives, and the financial demands that they make must be realistic.

6. Because drilling is not an end in itself, but rather a means towards diverse scientific goals, it is essential that ocean drilling be better coordinated with the pursuit of those goals by other organisations such as IGBP and FDSN. It is not realistic to set up an Executive to enforce coordination. Two actions are needed:

- to further develop the bilateral co-ordinations that have already been begun, by Liaison Committees with FDSN and with IGBP programmes such as JGOFS and PAGES;

- to establish a regular open scientific conference on the Scientific Contributions of Ocean Drilling. This may best be arranged as part of the IUGG General Assembly. Ways should be devised of ensuring feedback from the conference into the conference into the JOIDES Advisory Structure eg special sessions on future challenges, and summary reports from session conveners. Obviously attendance of PCOM members and others others involved in ODP decision-making is highly desirable. Incidentally, such a series of conferences might contribute to solving problems of 'visibility' of ODP by creating publicity and promoting publications.

  The Terms of Reference of the advisory and executive bodies of ODP might need to be adjusted to require them to take consider the issues raised in the Conferences.

7. ODP does not have, and in my view should not seek, a monopoly in ocean coring or drilling. Scientific and industrial drilling, from various kinds of platforms on the continental shelves and margins, will continue independently of ODP. Piston coring will certainly continue to be part of other research programmes; coring capability is likely to improve and the number of vessels capable of high performance coring is likely to increase. International drilling operations should be unified in ODP. Separate single-national or bilateral programmes are likely to develop and should be encouraged. Formal and informal coordination between them and ODP should be established (cf paragraph 6). The criterion for deciding whether a programme should be planned within or outside ODP should be maximising the effectiveness of the programmes in toto.

FINANCIAL CONSTRAINTS ON ODP

8. EXCOM members have judged that a large step-increase in co-mingled funding for international ocean drilling will not be achievable via normal sources in national science budgets in the foreseeable future. Later in this paper (paragraphs 22 - 28) I will consider the following scenarios:
   (i) Essentially steady state budget: opportunities for individual contracts for additional ad hoc projects by alternate vessels
   (ii) Small expansion: subscription increase ≤15%. I believe increases in comingled funds of this magnitude may be achievable if the case for the additional science is strong.
   This might buy ~ 3 months shiptime on a less expensive vessel than JOIDES Resolution, which might be either a commercial vessel of limited but adequate capability for the chosen task or a highly capable research vessel of a member nation provided to the programme on the terms indicated in paragraph 9.
   (iii) Major expansion into a truly multiplatform programme. I believe this could only happen as a result of the success of an exceptional scientific case for stepping up work on a particular theme. This would almost certainly have to be one with high sociopolitical impact e.g. global change; or international stewardship of the Arctic, which might bring in extra funds from many or all members.

9. I do not believe that ODP collectively will buy or pay conversion costs of any ship. ODP is not attempting to recapitalise JOIDES Resolution. ODP will rely in the future, as in the past, on a nation or nations buying or equipping such a ship independently of ODP and offering it to the Program via a lease or other contractual arrangement. The current practice whereby the nation taking this responsibility also becomes host to support-facilities and pays a higher contribution to comingled funds than the others, is in line with established convention in science and in other realms of international collaboration e.g. International Seismological Centre and the United Nations Organisation respectively. Ideally JOIDES would lay down a priori the specification for any vessel it hoped to use in this fashion. In reality (and particularly for a vessel that is likely to be only devoted part-time to the Program) ODP would be one partner in this process together with the owner and other interested parties. Clearly JOIDES is under no obligation to accept any proposal from a member country to add a facility to the International Program. If this is to happen it must proceed by negotiation in tandem with agreement by JOIDES to the relevant science programme, and in concert with the search for necessary funding. ODP will have to be satisfied on the new vessel's capability and the financial commitment of the owner-government before incorporating it into the programme. TEDCOM or another specialist group would be needed to evaluate each facility on offer.

PRINCIPLES OF ORGANISATION

10. The present organisation of ODP has three main parts: an arrangement for funding; a scientific and management oversight, planning and advisory process; and an operating mechanism. The program is funded by the US National Science Foundation and 7 non-US partners, with the US providing slightly more than half the total operating funds. Each of the non-US partners provides an annual payment according to terms set out in a bilateral Memorandum of Understanding between the partner and NSF. A formal body, the Ocean Drilling Program Council, meets annually to discuss issues related to intergovernmental co-ordination and funding.

Overall program oversight is provided by representatives from the institutions involved, ten in the US and seven from the partner countries. The collective set of institutions is known as JOIDES: Joint Oceanographic Institutions for Deep Earth Sampling. The JOIDES Executive Committee provides oversight and guidance to the program and is made up of the directors or their representatives of the JOIDES institutions. Scientific planning and co-ordination, and specific implementation plans are provided by a Planning Committee made up of scientists from each of the member institutions. Various Panels and Working Groups whose mebership is drawn broadly from academic, government, and industrial laboratories advise the Planning Committee in its deliberations. The Planning Committee reports to the Executive Committee; the advisory process guides operations through the prime contractor.

The operations of the program are handled by a prime contractor, Joint Oceanographic Institutions Incorporated (JOI), a US non-profit consortium of the ten US JOIDES institutions. JOI is responsible to NSF and the partner countries for ensuring that the program is managed in accordance with the scientific advice provided by the JOIDES advisory committees and within the budget constraints. JOI subcontracts the ship and science operations to Texas A&M University, the wireline services operations to Lamont-Doherty Geological Observatory (LDGO) of Columbia University, and the Data Bank Operations to LDGO.

The questions to be addressed are
i. are changes needed to improve the present single-ship ODP?
ii. what devolution of responsibilities is possible or desirable (especially with regard to additional vessels)?
Written evidence submitted to me by members overwhelmingly endorsed the present overall structural approach to the management and implementation of ODP. This evidence reinforces the views expressed in EXCOM. Incidentally a UK Cabinet Office study two or three years ago of international scientific programmes compared ODP very favourably in many respects with other programmes to which UK belongs. All this evidence persuades me that my Terms of Reference are adequate and that a more radical approach, considering a new structure ab initio, is not necessary.

11. The option of separate planning for separate vessels with distinct programmes did not find much favour among EXCOM members in discussion at San Diego. I believe there are several reasons why ODP planning and management should be organised as a single international scientific programme:
A scientific reason is that the planning structure must be matched to the science to be addressed, which cannot be compartmentalised except at working level i.e. there must be Executive and not merely Coordinating structure above the Thematic Committees. Hence the latter must be Advisory Panels and not EXCOMs.
A political/financial reason is that members have indicated strongly that the unity and uniqueness of ODP are essential for them to justify their membership.
A managerial reason is that to have parallel Executives for (sub) programmes which interact strongly both scientifically and operationally, is bound to be inefficient and is likely to lead to conflict.

12. The operational structure, however, must match the optimum distribution of facilities i.e. Ship-support for each participating ship could be separate, and the responsibilities of the present Science Operator could be analysed and divided to prepare for such an eventuality. The Logging Operation is a precedent for treating specialist or central services by means of separate contracts. The demarcation line between devolved and central ODP facilities will have to be carefully drawn. e.g.

Publications and Engineering Development might best remain centralised functions for all ODP, whereas the Staff Scientist functions, up to and including the Initial Results volume, might be better with each ship-support unit. This rearrangement would have two advantages
(i) it would give partner members the opportunity to participate in shore-based operations in the near future and
(ii) it prepares the way for incorporating new vessels.

I make several recommendations for implementation of this more distributed operational mode (paragraph 33, items (vi)-(ix)), but the situation is complicated by shortage of time, and by the fact that the sub-contract for the ODP ship is held by the Science Operator. Perhaps in future it should be with the prime Contractor or even with NSF to allow more flexibility in selection of sub-contractors.

13. The international character of the Program is already evident at almost every level and in almost every aspect - but not quite. One exception is that JOI Inc. is exclusively a US corporation, and the other is that the JOIDES office and the related responsibilities of Chairmanship of EXCOM and PCOM have been confined to USA insitutions. I am aware that NSF and JOI are sensitive to this and I have framed my recommendations accordingly (paragraph 33 items (iv) and (v)).

France in particular has queried whether there are de facto defects in the international functioning of ODP in respect of decision making, operational participation and technological benefits. Although I do not make judgements on the reality or extent of such concerns my proposals nevertheless address them.

Subscriptions Structure

14. At present there are two categories of member

- ordinary member, paying \$2.75M p.a. which entitles them to a unit of participation in the planning structure, the programme and the results (two members of the shipboard scientific party and a member of each JOIDES Committee or Panel).
- host member, which spent \$19.4M for conversion of the ship, and annually pays a much larger annual subscription, \$24.2M in FY '92, in exchange for which it receives about 6 units of participation in the planning and advisory structure, and the privileges and responsibilities of providing the prime contractor and major subcontractors. The value of these contracts (excluding only the in-out money to Underseas Drilling Inc. for the ship and Schlumberger for the standard logging operations) is ~\$18.5M p.a. The host contribution could thus be thought of as comprising 6 units (7 x \$2.75M = \$16.5M) for participation, plus a further \$7.75M. The rationale for this extra \$7.75M has not been articulated, but it is the basis of USA's 751% share of the budget, and could be interpreted as reflecting the historical lead-role of USA and the intangible benefits that leadership brings. It is hard to evaluate whether this 'leadership premium' could justify the additional USA membership of EXCOM etc (10 rather than 6) which is a consequence of the history of the programme.

15. Although it will naturally be a matter for negotiation, this analysis points to a formula basis for incorporation of future vessels and shore-based operators: A host member must
    1. Equip a ship for use by ODP at no cost to the program
    2. Reach contractual agreement with JOI/JOIDES for any shore-based operator contracts that it will host.
    3. Pay a standard subscription for the number of units of shipboard participation it proposes to buy. The costs for a part-time vessel will naturally depend on the fraction of the year involved. An example is given in paragraph 25.
    4. Whether a new host member should also pay a "leadership" premium (see paragraph 14) would need to be negotiated on a case by case basis. I certainly do not believe that such a premium should 'buy' further seats at the table at EXCOM etc.

16. I suggest that the basis of paying for use of any ship should be the same whether the ship is owned by an independent commercial operator or by a member organisation of ODP or otherwise i.e. ODP to negotiate a contract which it will expect to be at a highly advantageous commercial rate (as it has now with Underseas Drilling Inc.).

SOME POSSIBLE ADDITIONAL FACILITIES

17. EXCOM is aware of three proposals for drilling vessels by scientific research organisations, in USS, France and Japan, that would impact totally or partially upon ODP. The current status of each of these is briefly described in paragraphs 18 - 20. It is also relevant that there is a growing number of research vessels with dynamic positioning capability, and hydraulic piston coring is advancing in penetration and core recovery, so that the amount of the sediment record that will be recoverable without a drillship will increase. Commercial drilling vessels might also be useful, and upgrading JOIDES Resolution might also be a possibility.

18. USS is building a ship with capabilities broadly on the lines of JOIDES Resolution to be completed sometime between 1993 and 1995. It would operate in the Black Sea and Mediterranean for its first two years. Dr Bogdanov has already invited other nations to become co-owners of the ship, contributing to its completion and equipping. This is a matter for member countries and not for ODP. He has proposed that the vessel and its research programme be incorporated into ODP, on a partial basis during the first 2 years, and then fully thereafter.
    The way to carry this proposal forward is outlined in paragraphs 9 and 15. USS should inform PCOM the full specification and capability of the ship, and make an outline offer. For the initial period this offer should include
    - specified participation in Programme Planning
    - specified participation ship-board
    - a proposal on charges to ODP for this involvement

    Alternatively USS should offer the ship to operate to a programme defined by PCOM at a specified daily all-in-rate based on a defined number of USS/non-USS scientists and technicians.
    As I have indicated in para 8, I believe the capacity of ODP collectively to respond to such a proposal is limited to about 15% of the current subscription level.

19. France has proposed a 'lightweight' drillship for sediment coring to ~300m (50m in hard rocks) that would also be used for instrumenting deeper holes, emplacing and operating sea-floor experimentation packages, and to host and control submersibles. Some features of the initial specification were:-
Dynamic Positioning to work (including drilling) in 6000m water in winds of 35-40 knots
Aluminium drillpipe; heave compensation for various coring modes
Length ~ 100m, Beam 20 - 22m, Displacement ~ 8,000 tonnes, Deadweight ~ 3,300 tonnes
Range: 70 days and high latitude capability
Crew: 25 + drilling (15) plus scientific and technical (25)
Funding partnerships have been sought with other EC countries and the EC itself but with no firm commitment to date. Possibilities for using a 'secondhand' ship are being investigated and M. Cailliau informs me that it is now recognised that unless this is successful, realisation of this 'NEREIS' concept is likely to be towards the late 1990s at best.

20. Japan is considering a vessel bigger and with the capability to outperform JOIDES Resolution. The aim is to drill 3500m beneath the sea floor with a 4000m riser (a total drill string of 7500m). A final decision on construction will be made in August, 1992. If the present plan is approved, the ship would be ready for scientific use in about 1999.

21. Each of these developments is to be greatly welcomed in principle. I have different questions to raise about each:

- In what ways will the capabilities of the USS ship be different from or superior to JOIDES Resolution; hence what new dimensions will it bring to ocean drilling, as distinct from simply increasing overall capacity? Funding prospects are impossible to assess in the present state of USS economy.
- The main strength of the NEREIS proposal lies in its commitment to, and integration with, global change studies. My uncertainty is how big will the technical niche for a lightweight drilling vessel be, if piston coring improves but if more difficult sedimentary sequences still require a heavyweight stable platform like JOIDES Resolution or better?
- I am particularly attracted by the emphasis on earth resources in the Japanese proposal, and by its intended riser capability. My uncertainty relates to the extent to which its programme may be integrated with ODP, and its likely availability to address ODP goals in and beyond its mother region.

In none of these cases is the ship built, the capability yet proven, or a firm readiness date known (hence EXCOM's very proper reluctance to commit itself last July). Each would pose its own problems for ODP in terms of funding, and challenges in terms of programme coordination. For these reasons I do not attempt to draw a firm scenario for any of them though, for the sake of lending substance to my analysis I do build hypothetical scenarious around them.

Ships with the required technical capability might be available for lease from industry by any of the partners. In this case the operating modes as noted below would not be substantially different, although additional subcontracts would be required. It would be useful for PCOM to continue its watching brief on industry capabilities so that they could be integrated as and when appropriate.

OPERATING MODES AND MANAGEMENT STRUCTURES

Changes not involving increase in the budget baseline

22. There is considerable support in EXCOM for the Thematic Panels to take a much more proactive role in promoting their themes. ODP could and, I believe, should immediately address:

(i) the case for redefinition of Thematic Panels to align more closely with COSOD themes, and the need to re-emphasise that Panels should take account of all research on their theme and not just the aspects to be tackled by drilling, and advise PCOM accordingly. PCOM could then carry the project forward in partnership with other scientific research outside the programme.

(ii) fundamental change in membership of PCOM into

full members who decide long term strategy and determine the Cruise Schedule: a group of eminent geoscientists and engineers, including the chairs of Service Panels, who are not members of thematic panels.

advisory members: panel chairmen who act as proponents for their themes but do not participate in decision-making.

I believe there is a need to distinguish between long range scientific and technological planning on one hand, and short term programme planning and ship-scheduling on the other. However, I believe that these two functions could and should be carried out by the same authoritative body (the Planning Committee). One possibility is for one meeting each year to be devoted exclusively to long term considerations.

23. There is virtually unanimous support from the ODP community, and its science advisory structure and Executive, for continuation of the present scientifically broadly-based programme for the next few years which points certainly to JOIDES Resolution as the only available vessel-capable of addressing the more 'difficult' targets in the near-term.

As this uses up virtually the entire budget, commissioning of additional platforms would require input of extra SOE by a member or members (not necessarily USA) to drill a particular target that has been prioritised by the Scientific Advisory Structure for a defined cost.

One may ask why such a one-off exercise need be undertaken within ODP rather than as an individual research project like any other, particularly as it would certainly be very different operationally from JOIDES Resolution Leg. The prime reasons for choosing to operate this way would be

- that international participation and support had been found essential to mount the operation; ODP being the best mechanism for attracting the necessary funds;
- the advantages of using existing ODP structure to define the work, and using ODP operators to implement the task.

- a pilot operation on these lines would give ODP valuable experience of incorporating work on alternate platforms in the programme.

It would be helpful if an experiment on these lines were to be conducted in the near future e.g. using part of the additional funding recently input by NSF for a short dedicated leg (atoll or guyot, perhaps?). The initiative for such an 'add-on' to the current programme should, in principle, come from PCOM. But PCOM is unlikely to press its case unless it is given an indication that there is a good chance of funds being made available. Hence in practice either EXCOM would have to resolve that money from the planned budget for a particular year should be diverted to the special operation (with corresponding economies in normal operations) or a member or members must offer additional funds on terms acceptable to PCOM. An interactive relationship between the key players will be essential to the success of such development.

Changes requiring small increase in subscription (≤15%)

24. As indicated in paragraph 8 I believe modest expansion of the programme to take on an additional platform part-time for highly rated projects is feasible.

25. A 'NEREIS'-like scenario. A very simple example would be provision of a ship costing $35,000 per day for 1/4 year; with a scientific party of 20 divided as follows: host country 6, seven other members 2 each.
The increment to the ODP budget might then be:

Ship contract	$3.15M	
Shore-based operator	$0.85M	(an arbitrary figure, but see below)
TOTAL	$4.00M	

Using the formula in paragraph 15 this could be met as follows:

Unit subscription 7 x $0.4M =	$2.8M
Host country 3 units x $0.4M =	$1.2M
TOTALLING	$4.00M

The new host country would therefore pay $1.20M in addition to its single-unit membership of the present ODP ($2.75M) i.e. $3.95M; which would be almost exactly offset by the income from the ship and operator contracts.
If, as I have suggested, $400k (or 14%) is as big a rise as subscribers could afford, then a bigger initiative than this would only be possible if the new Host bought more Units of Participation or paid a Host Premium.
The difference between having a commercial ship and one owned by an ODP member and Research Vessel operator, is that the latter would seek both the ship contract and the shore-based operator contracts and would aim to provide an integrated service. Nevertheless I advise that the two elements be the subject of separate contracts.

26. I recommend that subscription to the additional facility should be mandatory for all members. In other words this is simply an expansion of the present funding system. The present two-tier subscription structure would be adapted as described in paragraphs 14 and 25.
This model is also consistent with the 'Joint Venture' concept described by Dr Falvey (see EXCOM July 1991 report). Notice of change of subscriptions would be made according to the conditions in the MOU: the current conditions and NSF practice are satisfactory.

27. However EXCOM may wish to consider whether countries that do not presently belong to ODP should be allowed to join the add-on program as Associate Members without joining ODP proper. This might have the attraction of bringing extra small countries into the fold but it carries with it the seeds of instability and fragmentation. It might be difficult to demarcate which countries should be allowed to join as Associates. It might also be difficult in the event, to prevent an existing ODP member dropping to Associate status. For these reasons, I advise extreme caution. If the balance of a programme is to change, it must be decided collectively and not forced on the bulk of members by unilateral action of one. If allowed, the 'Associate Member' subscription would have to take account of the fact that these members would be 'buying in' to the benefits of the whole ODP infrastructure: it might therefore be 3 or more times the add-on unit subscription in the example in paragraph 25.

Major expansion of programme and budget 'The COSOD-II Scenario'.

28. Major expansion of the programme is predicated on an influx of new money, most likely on the basis of sociopolitical as well as scientific support for a single theme. It is not possible to anticipate all possible eventualities, but the procedure indicated in paragraph 9 is likely to apply, with some modification of timetable depending on the amount of program-development that has been done outside ODP on the theme(s) to be addressed and on the rate of influx of new funds. If the expansion were in the field of global change and hence sediment drilling, I believe the Thematic Panels would need to be restructured in two groups, A (Evolution of the Earth Surface and Environment) and B (Evolution of the Earth Interior) respectively. One can imagine a scenario in which PCOM might allocate 90% of the light ship, plus 15% of the heavy ship to Panel A to deal with mud/chert sequences, and 85% of the heavy ship to Panel B, plus 10% of the light ship for intensive sampling of neovolcanic sediments. Further speculation is fruitless at this time, but my example illustrates why I believe planning structures should not be split, even for a 2-theme/2-ship programme.

TIMESCALE OF CHANGE

29. I believe these three scenarios cover the full range of possibilities for 1993-98 for the following reasons:

1. Members have indicated strong support for a broad-based programme (and hence JOIDES Resolution) for several years beyond 1993.
2. Member organisations will insist on a stable set of arrangements for a period of several years to be specified in the new MOU.
3. Ship and shore contractors will want similarly secure contracts. This is also in the interests of JOIDES as it will secure the best and most economic contract terms.
4. Members can only cope with variations with a considerable period of notice, as is allowed by current MOU conditions and practice for changing the subscription etc.

30. A new era of ocean drilling (NEOD) will dawn on the day an addition or replacement to JOIDES Resolution begins to address a JOIDES-defined priority objective. Whether that day is 1 October 1998 or earlier (or later if the post-1998 program were simply 'more of the same') remains to be seen. EXCOM should resolve to relaunch the programme with major publicity with the advent of NEOD.

31. For 1998 onwards it is possible that a quite different scenario may apply. It is highly debateable whether JOIDES Resolution will still be state-of-the-art. Whether or not this is so I believe the whole provision of platforms should be put to international tender. To do this, the scientific and technical requirements must have been set as much as 3 years prior to start date, i.e. by 1 October 1995. I believe EXCOM has to take a lead on this; either to endorse continued pursuit of COSOD II goals on a broad front of research or to define a narrower span of research. This must be a collective decision of member funding agencies; I do not believe an academically-dominated COSOD would entertain anything but the first option.

32. For NEOD it might be appropriate to consider further changes in member representation on Panels, Planning and Executive committees to take account of the scientific and managerial needs of the new programme, and the new balance of contributions, both financial and in kind. It might even be wise to break away from the current basis of representation, with its linkage to members financial contribution to comingled funds.

33. RECOMMENDATIONS

Relation of ODP to international science

(i) The sciences that are served by ODP would benefit from regular open scientific conferences on the Scientific Contributions of Ocean Drilling. EXCOM should explore the advantages of holding them during IUGG General Assemblies, and ways of achieving feedback into the JOIDES advisory structure (paragraph 6).

(ii) Bilateral liaison and co-ordination with relevant international scientific programmes should continue to be developed on the lines of existing coordinations with FDSN and JGOFS. This mechanism should also be used to link with national drilling or coring programmes (paragraph 6).

(iii) Consideration could be given to renaming ODP the International Ocean Drilling Programme (paragraph 7).

Governance of the Programme

(iv) NSF/JOI should investigate the internationalisation of JOI Inc. to include non-US institutions as full members (paragraph 13).

(v) EXCOM should be consulted on the question of the JOIDES office being located in non-USA institutions and JOI should be asked to ascertain the financial implications (paragraph 13).

Role of Subcontractors

(vi) The split of the Science Operator contract should be carefully considered to see how central functions can be separated from specific ship support functions. If this is feasible, then the Science Operator contract should be sub-divided with effect 1 October 1993 into a contract for ship-support functions plus one or more contracts for Central or Specialised Services (paragraph 12).

Tendering for Subcontracts

(vii) The Wireline Logging Operation for October 1993 onwards should be put to international open tender for a five year contract (paragraph 12).

(viii) The Science Operation is too big and too complex for fair open international tender to be mounted for the Contract(s) from October 1993 onwards. However, all members should be offered the opportunity to tender for (at least) the Central Services sub-contract(s) from 1995 (see (v) above). Expressions of interest should be invited by 31 December 1992 or shortly thereafter. In the event that no competition is notified, the sub-contract(s) from 1993 should be offered to TAMU for 5 years. If notice of competitition is given, interim contracts for 2 years should be offered to TAMU (paragraph 12).

(ix) EXCOM should consider whether to treat the part of the Science Operator sub-contract that relates to support of JOIDES Resolution in the same way as in (viii), taking account of the factor that the SEDCO (Underseas Drilling Inc) contract for JOIDES Resolution is with Texas A&M and may therefore not be transferrable to another ODP Operator on the current favourable terms (paragraph 12).

JOIDES Advisory Structure

(x) PCOM should be reconstituted with membership of eminent non-proponent gioscientists (including the Chairs of Service Panels) and with its Terms of Reference changed to promote stronger pursuit of paramount themes, and to encourage proactive invitation, combination or variation of proposals (paragraph 22).

(xi) The structure and Terms of Reference of Thematic Panels should be examined with the aim of better reflecting the major themes of future science (paragraph 22).

(xii) EXCOM should discuss whether changing the basis of membership of all components of the Advisory Structure would strengthen the Program. (There are various issues (arising, for example, from paragraphs 6 and 15) such as representation on the basis of expertise rather than institution; USA/non-USA balance; but I have not been able to assess how important or urgent they are. Incidentally, I regard the question of USA non-JOIDES institutions to be a matter for USA).

Incorporation of new vessels

(xiii) ODP should announce terms and procedures under which ODP will consider proposals for changing the balance of the program and incorporation of new vessels (paragraphs 9, 15, 26, 27).

(xiv) PCOM should be encouraged to propose ad hoc legs using platforms other than JOIDES Resolution, interactively with the search for funds for such ventures (paragraph 23).

(xv) EXCOM (with advice from Advisory Structure) must determine the scientific and technical requirements for vessel(s) from 1998 onwards (Deadline September 1994) to enable JOI to draw up an invitation to tender to be announced 1 October 1995. EXCOM should decide whether invitations are to be confined to member countries of ODP (Deadline Summer EXCOM 1995) (paragraph 31).

(xvi) EXCOM should record that it recognises that achievement of a multi-vessel programme will mark a new era in ocean drilling that may require further modification of the advisory and operational structure (paragraphs 30 - 32).

CONCLUSIONS

34. If implemented these proposals will:-

- make possible a better programme as soon as the effects of reform of the Planning process become felt;
- promote further improvement by timely incorporation of new vessels;
- enable wider distribution of shore-based subcontracts after October 1995, if members so wish;
- establish a mechanism for dealing with any definitive proposal for incorporation of new vessels, as soon as possible, and hence, in principle....
- make possible incorporation of additional vessels, as soon as any known vessel is likely to be available and its capability proven;
- enable ab initio specification of ODP ship requirements with effect from October 1998;
- enable full and open competition to provide for all of these ship requirements for ODP from October 1998;
- promote enhanced vitality of the programme by creating a New Era of Ocean Drilling to carry us into the 21st century.

J C BRIDEN
4 December 1991

BUDGET COMMITTEE REPORT

17 AND 18 JANUARY 1992

BONN, GERMANY

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1. The Budget Committee met in Bonn, Germany on 17 and 18 January 1992. Members present were James Briden as Chair, Hans Durbaum, Arthur Nowell, Brian Lewis and James Austin. Tom Pyle and James Baker (JOI) attended; Philip Rabinowitz and Jack Baldauf (TAMU) and Roger Anderson (LDGO) were present for part of the time.

2. BACKGROUND

2.1 The Budget Committee (BCOM) was called to meet earlier than usual in the annual financial cycle because of deadlines imposed by NSF for receipt of a 4-year plan for renewal in USA. Its ability to address the years beyond FY 1993 was limited because the Science Plan for those years had not been completed due to the tight schedule. Uncertainty was compounded by doubt about the number of non-US members.

On NSF advice, BCOM operated using two alternative sets of Planning Figures:

(a) from the Long Range Plan (LRP), except that the figure for FY 96 was uprated by 4% on FY 95.
(b) a lower profile corresponding to six non-US members.

Both scenarios were based on an international subscription of approximately $2.9M per non-US partner from FY 94.

	FY93	FY94	FY95	FY96
LRP profile	45.3	48.3	50.9	52.9
Lower profile	43.2	45.4	48.0	50.0

2.2 Last year BCOM envisaged having also to consider a 'rundown' scenario of non-renewal of ODP beyond September 1993. In the event BCOM was advised by NSF that this was sufficiently unlikely that planning for operational rundown was not necessary. NSF has a contingency to handle the contractual consequences of shutdown, over a 12 month period. In this emergency situation, ODP Council and EXCOM would be reconvened. BCOM did not consider this scenario further in its meeting.

2.3 BCOM pays particular attention to efforts to advance drilling capability, core recovery and logging. The JOIDES Advisory Structure has indicated in recent years that to accelerate such developments at the rate necessary to address important problems requires allocations substantially greater than the 4% minimum Special Operating Expenses (SOE) set by EXCOM.

2.4 The addition of Russia as a member, together with enhancement of the US contribution, should have raised the ODP budget to LRP level in FY 92 for the first time, enabling important and exciting developments such as accelerated work on the Diamond Coring System (DCS), feasibility studies on deep drilling and additional platforms, and high-temperature slimhole tool developments. At the time of the BCOM meeting, the Russian subscription from 1 January 1993 had not been received and opportunities such as these were 'on hold', to the frustration of PCOM and the ODP science community. The lower income profile for FY 93 and 94 is close to the minimum acceptable level calculated by BCOM in 1991, but will not allow substantial technical development.

3. PROPOSALS TO BCOM

3.1 The draft budgets proposed to BCOM (after withdrawal of an additional proposal from LDGO that was deemed to fall outside current guidelines) were (with FY 92 Program Plan for comparison):-

	FY93 proposal	FY92 Program Plan	
TAMU	$39,384,447	$35,805,000	+10.0%
LDGO	$ 4,996,593	$ 3,950,000*	+26.5%
JOI/JOIDES	$ 1,573,164	$ 1,450,000	+ 8.5%
MRC	nil	$ 70,000	-
Unallocated SOE	nil	$ 125,000*	-
NSF enhancement (held in reserve)	N/A	$ 2,100,000	-
Total	$45,954,204	$43,500,000	+ 5.6%

*most of the unallocated SOE is likely to be allocated to LDGO.

The bids were thus $654k above the higher (LRP) projected income. BCOM therefore had to determine reductions of that amount and also prepare contingency plans to reduce expenditure by a further $2.1M to the lower income level.

3.2 Following preparatory Private Session, presentations were made by TAMU, LDGO, JOI and the University of Washington JOIDES Office. TAMU and LDGO representatives attended only for presentation and initial discussion of their item; Nowell and Lewis withdrew for determination of the JOIDES Office allocation.

4. RECOMMENDATIONS

4.1 BCOMs summary recommendation is as follows (details and rationale are given in subsequent paragraphs):-

	PROPOSED	RECOMMENDED	
		LRP Budget	Lower Budget
	$k	$k	$k
TAMU: Base	35,671	35,521 [1]	
SOE	3,713	2,413 [2]	-1700 [4]
LDGO: Base	4,341	4,320 [1]	
SOE	656	301	
JOI/JOIDES	1,573	1,560 [1]	
Held back for further consideration		1,185 [3]	- 400 [4]
Total	45,954	45,300	43,200

[1] Cuts of $150k, $21k and $13k in TAMU, LDGO and JOI/JOIDES base budgets are arbitrary, to 'balance the budget'

[2] $1300k bid for iceboat is treated separately, see note [3] below

[3] Slightly reduced provision for iceboat: held by JOI pending best contract. In the event of savings, surplus to be allocated to deep drilling, or Lamont processing backlog, subject to advice to JOI.

[4] See section 4.5

4.2 TAMU

The representatives from TAMU are to be congratulated for their well-organised presentation to BCOM, and for their realistic budget requests following JOI's direction. The FY 93 request of $39.4M included $3.71M of SOEs.

SCIENCE OPERATOR FY 93 PROPOSED BUDGET OUTLINE

	Base	SOE
Headquarters Administration	$1,979,722	
Science Services	$3,596,854	$ 388,000
Drilling & Engineering	$3,894,316	$1,600,000
Technical & Logistics	$4,398,273	$ 172,400
Science Operations	$1,251,882	$ 253,000
Ship Operations	$20,550,000	$1,300,000
TOTAL	$35,671,047	$3,713,400
GRAND TOTAL	$39,384,447	

Base Budget

During cursory review of the Base Budget outlines for FY 93 for each TAMU cost centre, BCOM noted that TAMU had only partially acted on PCOM's directive concerning increased computer and technical personnel on the ship. Moreover this had been achieved at the cost of ending some shipboard job-sharing with LDGO for FMS processing. TAMU and LDGO must solve this problem (see section 4.3). TAMU's achievement in bringing publications fully up to schedule is commended: relevant budgets are maintained in order that this achievement be continued. However, due to overall budgetary constraints, BCOM calls upon TAMU to make $150k savings from its proposed base-budget.

Special Operating Expenses

The SOEs presented to BCOM were logically arranged into two groups - those deemed absolutely necessary to fulfil the FY 93 science plan, and those suggested as beneficial for the continued success of ODP. Only a single $ number was presented for each of the SOEs and BCOM suggested that in future some detail be made available. BCOM recommends that, if the LRP budget level for ODP is maintained at $45.3M, funding for all TAMUs SOEs be provided at the requested level except for the Ice Patrol Boat, for which special arrangement is made below. The requests and recommendations, together with conditions attached to them, are as follows:-

	PROPOSED	RECOMMENDED (LRP budget)	RECOMMENDED (Lower budget)
DCS Phase II B	$500.0k	$500.0k	$500.0k
DCS Shipping	$172.4k	$172.4k	$172.4k
East Coast Repository	$ 38.0k	$ 38.0k	$ 38.0k
Computer Services	$350.0k)	603.0k, subject to further advice from PCOM	NIL
Shipboard Science Equipment	$253.0k)		
DCS Phase III	$1100.0k	$1100.0k NB. TAMU has to receive sanction from JOI before incurring expenditure on fabrication	NIL, unless savings can be made elsewhere, see para 4.5
Ice Boat	$1300.0k	$1185k provision, to be held by JOI pending best contract. In the	

event of savings, surplus to be allocated to deep drilling or Lamont-processing backlog subject to advice to JOI from JOIDES.

While an ice boat is certainly required, BCOM insists that TAMU look most carefully at costs from different potential operators, including European academic and commercial operators, and also the possibility of Russian ice vessels. BCOM views this as an area where significant savings might be made. It therefore makes provision of $1185k (somewhat less than requested) and recommends that JOI holds this allocation pending negotiation by TAMU of the best possible contract. Should savings occur, BCOM recommends that the savings be used for other TAMU and/or LDGO SOEs. BCOM regarded the requested amount for Computer Services and Shipboard Science Equipment as provisional, pending further advice from PCOM.
In the event that a lower budget for the program of $43.2M is imposed, BCOM recommends that only the four top-rated SOE items (DCS II B, DCS shipping, East Coast repository and ice boat) be funded. Further, all base budgets, including engineering development on all tools and systems, should be evaluated and prioritized to ensure that the FY 93 program is not jeopardised.

FY 94 - 96
TAMU presented budgets roughly in line with projected increases in the higher (LRP) budget profile. BCOM comments on these in Section 5.
Demands on truly special operating expenses are likely to increase, so phased replacement of ageing drillpipe should henceforth be dealt with as far as possible within base budget.
An impending major issue concerns core repositories. It is clear that within approximately one year, both Gulf Coast and East Coast repositories will be approaching capacity and there will be a need for additional storage buildings. Capital costs should be a matter for host institutions, but EXCOM will need to press the case for new construction to be undertaken and should make increased provision for running costs.

4.3 LDGO
BCOM heard a report from Roger Anderson (LDGO), concentrating primarily on the FY 93 program and proposing the budget summarised below. In consultation with Anderson, BCOM defined the FY 93 base budget as $4,340,868 based on a negotiated 1-year extension of a previously applied Columbia University overhead rate of 42%; BCOM recommended $4320k (see para 4.1, footnote 1).

WIRELINE SERVICES OPERATOR FY 93 PROPOSED BUDGET OUTLINE

	Base	SOE
LDGO personnel and operations	$2,037,491	
Schlumberger contract	$1,851,384	$470,705
Televiewer lease	$ 105,000	
Tool insurance through JOI	$ 148,665	
FMS etc	$ 117,208	
Rockworks subcontract	$ 81,130	
Camborne subcontract	-	$185,020
Total	**$4,340,868**	**$655,725**

Base Budget

BCOM notes that the LDGO base budget increased by 9.9% from FY 92, a reflection primarily of increased personnel and material costs (notably an increase of 10 man-months for putting LDGO log data onto a digital data base at LDGO and related software on CD-ROM).

Anderson informed BCOM that he was considering a number of options for FMS processing. BCOM concluded that shipboard processing is highly desirable; recognising that new personnel will need to be recruited and/or trained, this budget-line request was recommended in full and LDGO should negotiate with TAMU to achieve the requirement.

Special Operating Expenses

	PROPOSED		RECOMMENDED
LDGO			
1. Schlumberger contract			
- MAXIS:	$ 155k		----
- processing nodes (LDGO, France, UK):	$ 200k		----
- new logging winch:	$ 116k		$ 116k
2. Camborne School of Mines (UK)/resistivity tool:	$ 185k		$ 185k
	Total	SOE	$ 301k

While rejecting the SOE bid for three processing nodes, BCOM noted that the case was based partly on the accrual of a backlog in processing various types of logging data. LDGO is called upon to address this issue as far as possible within its allocated base budget. The possibility of bidding for some enhancement of this SOE, if savings are made elsewhere in ODP, is noted in this report (see TAMU - SOEs).

FY 94 - FY 96

Subsequent BCOM discussions with Anderson established that a 4% inflation rider on the FY 93 total was a reasonable basis for planning the continuation of the logging operation on its current lines.

Nonetheless, BCOM notes with great concern the impending overhead increase at Columbia University for FY 94 - FY 96, and the fact that both permanent equipment acquisition and data base expansion are inevitable during this interval if LDGO is to maintain an acceptable level of service to the scientific community. These facts will make increases to Wireline Services necessary, well in excess of the totals listed above.

4.4 JOI/JOIDES

	PROPOSED	RECOMMENDED
JOI	$561,739)	
G + A	$281,967)	$840k
JOIDES Office	$457,569	$450k
ODP Data Bank	$271,889	$270k
Total	**$1,573,164**	**$1560k**

The JOI and JOIDES budgets were approved subject to rounding-down for balancing purposes.

In the JOI presentation, it was noted that there will be a reduction of one half FTE in the JOI Office beginning 1 October 1992, thus the subtotal for this office could be kept nearly constant. The PEC III travelling activities and costs were much higher than those of former PECs; costs of future PECs should be constrained to a level similar to PEC II.

For JOIDES the Committee acknowledged that the workload of the Chairperson of PCOM exceeds 9 months per year and, therefore, the 9-month proposal for Brian Lewis should be accepted.

BCOM noted that EXCOMs agreement to pay travelling costs for the ad hoc Committee on sub contracts chaired by Craig Dorman from comingled funds should not be taken as a precedent.

4.5 LOWER FUNDING LEVEL FOR FY 93

At the risk of repetition we should emphasise that BCOM's recommendation in the event of cutback to $43.2M in FY 93 is to maintain the scientific program Plan for that year. Hence BCOM calls for a scrutiny of all Base Budgets, particularly Engineering Development and other 'forward planning' tasks, to achieve economies in excess of $400k. BCOM recommends that shipboard scientific equipment and computing upgrades, and DCS Phase III be halted, but that DCS be carried forward at a lower level should savings permit. The 'short-term'ism of this approach is emphasised at the end of this report.

5. LONG TERM BUDGET ISSUES: 1994 AND BEYOND

In the Long Range Plan, which served as the justification for ODP from 1993 onwards, costs were estimated on the basis of 1989 costs, plus an inflation factor. These estimated costs are now the target budget and it is appropriate to ask to what extent these estimates are still valid. In the 1993 program, it appears that the target of $45.3M is just adequate to meet the science and engineering goals. This highlights the importance of maintaining the recent increment in US funding. Any reduction in funding implies a reduction in science and engineering. BCOM urges all partners, US and non-US, to consider their ability to augment their subscription to ODP, to offset the effect that loss of a seventh non-US member would have on the Program.

For 1994 and beyond, there are a number of factors which seem to suggest that the target figures (which assume 7 international partners) are on the low side. Some of these variables are:

1. Knowledge of a detailed drilling program. The JOIDES planning process will only produce a detailed 1994 plan at the end of 1992 and will follow a similar pattern in succeeding years. As the detailed drilling plans mature there is the possibility that science requirements may stress the system e.g. ice boats, guidebases and, particularly, additional platforms.

2. The role of the DCS in the 1994 - 96 time period, and the engineering development costs needed to make it an operational system, are not firmly founded.

3. The costs of engineering developments related to the DCS (such as slimhole logging) and of other engineering costs are not well known.

4. Core repositories: by the end of 1992 the TAMU core repository will be full, and by the end of 1993 the LDGO facility will be in a similar situation. Costs related to expansion of the repositories (or building new ones) have not been identified.

5. Computing: the computer system on the Resolution was state-of-the-art when it was acquired in the mid-80's. It is now inadequate and no longer compatible with much user software. An upgrade will be necessary in the near future and this upgrade may well include bi-directional data telemetry to land. This conversion will be costly in hardware, manpower and time.

6. The user base: ODP to date has been remarkably successful. One yardstick of this success has been the increase in users of data from logs and cores. This has placed unforeseen demands on the suppliers of these data and an increasing manpower stress on LDGO and TAMU. Yet this is an area where expansion is necessary. Modern day computer communications, data analysis and data access offer a way of improving user access but there is, of course, a cost implication of uncertain size.

7. Although the program for 1994 and beyond, as well as the 1993 program, is based on an assumption about renewal by the members of the ODP, the level of renewal is not assured. This is another variable with a potentially devastating impact.

In summary, the issue is the minimum funding level for maintaining a viable and justifiable science program. Items such as DCS, computers, core repositories, data distribution and access, and engineering development are the subject of discussion by the JOIDES advisory structure. As JOIDES advice is received in these areas, the budget implications must be analyzed in a timely fashion so that appropriate actions and recommendations can be invoked by EXCOM.
It is important to realise that the cutbacks recommended by BCOM in this report, in the event of a reduction from $45.3M to $43.2M in FY 93, represent a short term solution which will not address the long term problem: indeed, they would aggravate it.

6. <u>ACTION</u>

BCOM requests JOI to initiate further discussions with the subcontractors and JOIDES advisory structure to develop the 1993 program plan and budget, compatible with the recommendations in this report.

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FEB 24 1992
Ans'd...........

MEETING OF JOIDES DOWNHOLE MEASUREMENTS PANEL

King Kamehameha Hotel
Kailua-Kona
Hawaii

28-30 January 1992

EXECUTIVE SUMMARY

1. Key thrusts of this meeting were the question of third party tools and how the guidelines are to be enforced, the public information brochure for ODP downhole measurements, and the issue of log data processing, acquisition and distribution.

2. The enforcement of the guidelines for the development of third-party tools requires a redrafting of these guidelines into a format that is suitable for stand-alone distribution within the ODP community. It is envisaged that this format will be that of a public information brochure. The redraft should retain the essence of the existing guidelines but should make, inter alia, the following additional points.

   (i) A distinction should be drawn between tools that are developed specifically for ODP and those that are being developed for other purposes but that ODP might wish to use.

   (ii) ODP development tools must be deployed in test mode, i.e. by their very definition they are not ODP mature tools and the scientific success of a leg should not be contingent upon the proper functioning of such a tool.

   (iii) There should be a cut-off date (perhaps 6 months before a tool is scheduled for deployment) by which time the tool must have satisfied all the relevant development criteria, as contained in the guidelines. Otherwise the tool should be withdrawn.

   (iv) The public information literature should include a pro-forma letter of accedence for completion, signing, and submission to ODP by the Principal Investigator before a development tool is accepted for test scheduling.

   (v) The public information brochure must include the names of key contacts within the permanent ODP structure.

   (vi) Funding should be adequate to allow the appropriate ODP contractor to carry out necessary day-to-day monitoring of tool development.

   In view of the urgency of this matter, the brochure should be targeted for completion no later than August 1992.

[DMP Recommendation 92/1 : to PCOM]

3. Panel agreed a detailed breakdown of the proposed publicity booklet on ODP downhole measurements. This breakdown encompasses a discussion of the rationale for and principles of downhole measurements, illustrations of the application of downhole measurements to eleven recognized branches of earth science, and an overview of the relationship of downhole-measurement data to core and geophysical information. Target date for publication is May 1992.

4. A Publications Subcommittee has been formed to progress the public information documents on third party tools and ODP downhole measurements. This subcommittee comprises DMP Chairman, LDGO and TAMU Liaisons to DMP, and the ODP Public Information Coordinator. The subcommittee will meet in College Station on 12 February 1992.

5. Panel considered that the PCOM decision to relegate the logging objectives of Leg 142 to alternative status was made at too late a stage. If JOIDES Committees/Panels feel it necessary to alter drilling and/or logging priorities after a leg has been fully staffed, it is imperative that shipboard scientists be informed of these changes prior to their departure for the leg.

[DMP Recommendation 92/2 : to PCOM]

6. Panel endorses the long-term scientific vision of the logging contractor in terms of an on-line data archive for logs, onshore processing where not possible on board ship, and greater involvement in ODP logging science by the scientific community at large.

7. In view of the growth in demand on LDGO for log data, it is important that appropriate manpower be dedicated to data dissemination. In the longer term, computer access to a central archive of log data would facilitate the acquisition of these data by the community at large. Steps should be taken to explore this possibility with a view to its potential adoption in the future. Panel views the greater dissemination of log data as an important ongoing responsibility of the logging contractor.

[DMP Recommendation 92/3 : to PCOM]

8. Excellent progress is being made in developing all three of the top priorities identified by DMP and LITHP for high-temperature downhole tools. They are temperature and resistivity tools, and a borehole fluid sampler.

9. The logging contractor is encouraged to pursue the acquisition of a high-spatial-resolution magnetic susceptibility tool, especially in view of the strong implications for studies of palaeoclimate.

10. The steering group for in-situ pore-fluid sampling, approved by PCOM in December 1991, could not be activated in time for this DMP meeting. In any case, this meeting is being held away from the centre of gravity of members and the funding situation is unclear. If the funding position becomes positive, the group should meet in College Station in March. This would be the only time that the group would meet outside DMP meetings.

11. Panel encourages the proposal to drill closely spaced boreholes in the ocean lithosphere to investigate the scaling of heterogeneity. Appropriate technological input should be sought at an early stage of the planning process.

12. Roy Wilkens is rotating off DMP : replacement nomination(s) are being collated.

13. The next DMP meeting is scheduled to take place in Windischeschenbach, FRG, during the period 2-4 June 1992.

PAUL F WORTHINGTON
17 February 1992

000116

MEETING OF JOIDES DOWNHOLE MEASUREMENTS PANEL

King Kamehameha Hotel
Kailua-Kona
Hawaii

28-30 January 1992

MINUTES

Present

Chairman:	P.F. Worthington (UK)
Members:	R. Desbrandes (USA) J. Gieskes (USA) S. Hickman (USA) M. Hutchinson (USA) P. Lysne (USA) M. Williams (USA) R. Wilkens (USA) H. Crocker (Canada/Australia) H. Draxler (FRG) J.-P. Foucher (France) M. Yamano (Japan)
Liaisons:	A. Fisher (TAMU) X. Golovchenko (LDGO) B. Lewis (PCOM) J. McClain (LITHP) J. Mienert (SGPP)
Guests:	P. Dauphin (NSF) J. Karsten (Univ. of Hawaii)* J. Ladd (LDGO) T. Lautzenhiser (Amoco) K. Riedel (TAMU)
Apologies:	O. Kuznetzov (Soviet Union) R. Morin (USA) C. Sondergeld (USA)
Absent:	N. Balling (ESF) E. Winterer (Scripps)

* Present for Agenda Items 17-22 only.

000118

1. Welcome and Introductions

The meeting was called to order at 0840 hours on Tuesday 28 January 1992. The Chairman welcomed attendees to the first DMP meeting of 1992. A special welcome was extended to those attending for the first time: Steve Hickman (replacing Dan Karig on DMP), Brian Lewis (PCOM Liaison), and guests Paul Dauphin (NSF), John Ladd (LDGO), Ted Lautzenhiser (Amoco) and Karen Riedel (TAMU). Another guest, Jill Karsten (University of Hawaii), would be attending for the latter part of the meeting.

Key thrusts of the meeting were the question of third party tools and how the guidelines are to be enforced, the public information brochure for ODP downhole measurements, and the issue of log data processing, acquisition and distribution.

Review of Agenda

The precirculated agenda was adopted as a working document for the meeting.

2. Minutes of Previous DMP Meeting, AGC, Halifax, NS, 15-17 October 1991

The following modifications were proposed.

(i) Page 5, Paragraph 2, Line 2.

This should read

"Bottom-hole-temperature was 116°C at the beginning of the logging operation, ..."

(ii) Page 5, Paragraph 5, Line 3.

This should read

"...rate was 5-7 litres/minute at the beginning and stabilized at 3 litres/minute."

With these modifications the minutes were adopted as a fair record.

Matter Arising

McClain reported that there had been no TECP meeting since DMP last met, so he was unable to report any progress on the question of a TECP liaison to DMP. The Chairman noted that any such initiative would have to be driven by TECP, because DMP's earlier recommendation for such a liaison had not been accepted by PCOM.

3. Chairman's Annual Report

The Chairman presented, for the information of the Panel, his annual report to PCOM given on 4 December 1991.

Three DMP meetings had been held during 1991: at ODP-TAMU, College Station (February), LDGO, New York (June), and AGC, Halifax, Nova Scotia (October). The February meeting had encompassed a working group meeting on logging in tectonically active areas, the June meeting had included a joint meeting with JOIDES SGPP, and the October meeting had incorporated a joint meeting with JOIDES SMP.

Three meetings are planned for 1992: Kailua-Kona, Hawaii (28-30 January), Windischeschenbach, FRG (2-4 June), Santa Fe, New Mexico (September). The June meeting will encompass a joint session with the German KTB programme.

Current panel membership is 16 (9 from USA, 7 from international partners), of whom 6 are from universities (2 from JOIDES institutions), 5 are from government laboratories and research institutions, and 5 are from the oil industry. During 1991 four panel members rotated off or resigned. They were Carson (replaced by Desbrandes), Villinger (Draxler), Stephansson (Balling) and Karig (Hickman). Wilkens is due to rotate off in January 1992.

Highlights of the DMP year were as follows.

(i) Shipboard computer-based integration of core and log data.
(ii) In-situ pore-fluid sampling working group.
(iii) High-temperature downhole measurements.
(iv) Downhole measurement contribution to Leg 139.
(v) Working group on logging in tectonically active areas.
(vi) Joint meeting with SGPP.
(vii) Promotional presentations by Chairman on ODP Technology in London (May) and Victoria, BC (September).
(viii) Publications (in press) on ODP logging in Encyclopaedia of Earth System Science (Academic Press, 1992) and Yearbook of Science and Technology (McGraw-Hill, 1993).
(ix) Presentation of (Bill Meyer's) paper on log-core integration at SPE Asia Pacific Conference, Perth (November).

DMP directions for 1992 include the following.

(i) Establishing options for in-situ pore-fluid sampling.
(ii) Continuing the integration of core and log data.
(iii) Production of a public information brochure on ODP downhole measurements.
(iv) Specification of an enforcement mechanism for third-party tools.
(v) Speeding up the shipboard acquisition, processing and distribution of log data.
(vi) Progressive evaluation of technologies identified in the COSOD II white paper.
(vii) Lithosphere characterization by multiscale measurements.

Two causes for concern were identified.

(a) There is some evidence for a reversion to a pre-1987 mentality concerning the role of logs in ocean science. This mentality is manifested by a reluctance to log because logging impacts on core acquisition. The manifestation is confined to local pockets of ignorance but these should not be allowed to detract from the programme as a whole.

(b) There is still an inadequate general awareness of the scientific legacy of ODP holes in terms of integrated databases. Narrowness of vision and antiquated views are two prime causative factors.

Remedies that are being pursued include better education, more readily digestible information, and clearly demonstrating the benefits of the logging programme.

4. **PCOM Report**

Lewis reported on the most recent PCOM meeting held in Austin, Texas, during the period 4-7 December 1991. The primary objectives had been to hear from the panel chairs and to formulate the drilling plan for FY 93.

The FY 93 plan is as follows:

Leg 147	Hess Deep
Leg 148	Engineering, DCS
Leg 149	Iberian Abyssal Plain
Leg 150	New Jersey Sea Level
Leg 151	Atlantic Arctic Gateways
Leg 152	East Greenland Margin

PCOM responses to specific DMP recommendations were as follows:

Rec. No.	Description	PCOM Response
91/17	Steering group for in-situ pore fluid sampling	Accepted, but try to hold meetings in conjunction with DMP meetings.
91/19	Logging at 801C	Not accepted
91/21	Through-casing natural gamma logs	Not discussed
91/22	Logging at multi-hole sites	Not discussed
91/23	Core-log integration	General support, but will require consistent attention.

It was noted that a meeting of a working group in Toronto, Canada, on 5-6 March 1992 will examine how the shipboard computing system can be upgraded/modernized. This is an important prerequisite for addressing core-log integration goals.

5. **Liaison Reports**

(i) Sedimentary and Geochemical Processes Panel

Mienert reported that SGPP has a new panel chair (Judith McKenzie). The last meeting took place in Zurich in November 1991: the next is scheduled for Miami in March 1992.

A principal concern is in-situ pore-fluid sampling: the available technology is inadequate. SGPP endorses the development of new technology. The "top hat" approach to tool deployment should be investigated and, if feasible, should be tested on Leg 146. This would provide a back-up to Geoprops. OPCOM had recommended $350 000 for technology development over two years: Mienert enquired as to the current position.

Dauphin replied that NSF does not have before it a true OPCOM proposal with properly researched costs, etc. It is believed that some funds might be made available for high priority items.

Mienert referred to the proposed deployment of an alternative platform during Leg 150 (New Jersey Sea Level). It is important that logging should be feasible from an alternative platform. Lewis commented that all FY 93 drilling will be from the JOIDES Resolution: there are no funds for an alternative in FY 93. Lysne noted that the U.S. Continental Drilling Programme might provide onshore drilling that is tied to ODP: there is a possible area of collaboration that needs to be explored.

SGPP agreed to the discontinuing of supplemental science proposals and supported the DMP proposal to log Hole 801C.

(ii) KTB

Draxler reported that the KTB main hole had reached 5595 m on 15 January 1992. Current diameter is 14.75 inches: there is a 16-inch casing shoe at 3000.5 m. The estimated formation temperature at 6000 m, the next logging depth, is 175°C: cooling while drilling is likely to reduce this figure by about 50°C.

Coring has been undertaken only below 4000 m, the depth of the pilot hole. Total length cored (on 7 January 1992) was 134.7 m with a core recovery of 52.54 m (39%). Wireline sidewall coring has been undertaken over intervals where there are no cores: this has had a 95% success rate. However, the temperature limit for this system is 175°C which means that it cannot be used below 6000 m.

Some problems have been encountered with the Formation Micro Imager (FMI): a failure developed which could not be seen on the monitor. This was traced to a multiplexer fault that caused results to be duplicated so that the pad data were a mirror image of the flap data.

The Dipole Sonic Imager (DSI) has provided excellent results, especially in detecting fractures.

The DMT BHTV could not be run in the 14.75-inch hole on a long cable because the tool could not be adjusted for the cable characteristics on location. The circumferential borehole imaging tool of Atlas Wireline is being considered as an alternative to the DMT BHTV.

The development of high-temperature tools has been delayed because of the financial situation. This work would be undertaken by Schlumberger. A possible approach might be to commission development work now through a letter of intent and to schedule payment for 1993-94 when the financial situation has eased. The aims are to upgrade several tools to 260°C (e.g. AMS, 4-arm caliper, FMS, fluid sampler) and to further upgrade the AMS and 4-arm caliper to 300°C. KTB is also developing a cablehead for mineral-insulated cable rated to 300°C.

The tight financial situation is bringing pressure to drill faster. This would involve less coring and logging. The next logging depth is 6000 m. It is proposed to log for 21.5 days in two stages. The first, with the borehole full of mud, will include measurements of temperature build-up over 233 hours. The second will involve lowering the mud level, inducing inflow, and logging to detect the inflow zones: this stage will include the borehole gravimeter and zero offset VSP.

6. National Reports

Representatives of International Partners informed the Panel of developments in their respective countries that are relevant to the downhole measurements thrusts of ODP.

(i) Japan

Yamano reported that an ODP logging school is to be held in Tokyo during the period 20-24 July 1992. This coincides with a port call of the JOIDES Resolution. The plan is that the logging school will be followed by a symposium, a ship tour and possibly a tour of JAPEX.

There is a proposal to place a broadband downhole seismometer in Hole 843B (OSN 1) in 1994 or shortly thereafter. The systems to be developed include the seismometer itself, a large-capacity digital recorder, an acoustic link with a submersible, and a wireline re-entry system. An application has been submitted for a grant to fund the first stage of this development.

(ii) FRG

Draxler reported that the German annual ODP meeting would be held in Hamburg on 4-6 March 1992. This will include reports from different working groups and contributions on special topics.

FRG is looking at a 10-year renewal of ODP. There is concern over intellectual rights, e.g. patents. There is a need for specific technical public information that is professionally presented and translated. This would help to sell ODP within the community.

There is interest in the integration of ODP and KTB expertise for the development of a new European drillship. The research vessel SONNE has been restructured: it has dynamic controls and is ideal for ODP operations.

Aachen University recently asked for log data from ODP wells and were served very efficiently by LDGO whom they complimented. This represents the first push by German universities to use ODP logs.

Miernert reported that GEOMAR (Kiel) have acquired a multisensor core logger comprising P-wave velocity (similar to the ODP P-wave logger), density (similar to GRAPE), magnetic susceptibility and natural gamma spectral sensors. One aim is to create synthetic seismograms based on velocity and density measurements on piston cores. The sensors move over the core rather than the core being moved through the sensors. The time required to measure 1 m of core is approximately one hour. The idea is to use this system in conjunction with pre-site surveys, not on the JOIDES Resolution. The APC often smears the uppermost sediments and it is hoped that these piston-core measurements might complement and enhance ODP data.

(iii) France

Foucher reported that an ODP day had been organized in June 1991 to promote ODP. A new committee has been formed to consider the future of scientific ocean drilling in France. The committee saw ocean drilling as a high priority and wished to see a high-quality French involvement. In particular, they recommended that petrophysics should be developed in relation to the drilling programme. This would be achieved through targeted initiatives, e.g. the possible involvement of French groups in ODP log data processing.

A broadband seismometer experiment is scheduled for Hole 396B in 1992. Two seismometers are to be deployed, one in the hole, the other on the sea floor. The system is expected to be operational by June.

A new project (NATHALIE) is directed at high-resolution borehole magnetic imaging. This could possibly result in a third-party tool two years from now.

(iv) United Kingdom

The Chairman reported that a national technical meeting took place in London in May 1991. It was attended by about 200 scientists and industrialists. ODP logging technology was featured. There were also several thematic overviews of ODP science. These might be suitable topics for a series of specific technical publications, as mentioned in Item 6(ii).

An advisory committee was formed during 1991 to advise NERC on renewal. After carrying out a thorough review, including extended interviews of key personnel, the committee recommended renewal. This recommendation was accepted by NERC and the UK has now confirmed its intention to participate in ODP Phase II.

The ODP high-temperature resistivity tool is being built at the Camborne School of Mines (see Item 15(ii)). The Borehole Research Group at the University of Leicester is seeking a greater role in the processing and distribution of ODP log data.

(v) Canada/Australia

Crocker reported that the Australian ODP Secretariat is to move to the University of Sydney with Peter Davies taking over as Head. No definite decision has been made concerning Australian renewal but pre-Christmas indications were very promising. No feedback was available from Canada.

Crocker commented that Woodside Petroleum of Perth was planning long-term temperature and pressure observations to monitor production from five wells in the Cossack field. The system comprises a suspended downhole cable with sensors and an acoustic transponder on the sea floor. The sensors are opposite the producing zones. Certain North Sea fields already have such a system in place: in Norway it is mandatory for all new fields. In Australia, it is planned to install the system in two further fields. DMP should keep an eye on these developments because ODP might be able to use the technology. A UK company (Wood Petroleum (Services)?) was promoting downhole sensors. The Chairman undertook to investigate.

[ACTION: WORTHINGTON]

(vi) ESF

For the second meeting in succession, DMP had no ESF representative. No report was tabled.

(viii) Soviet Union

No Soviet representative was present. No report was tabled.

7. Tool Monitor Reports

(i) Geoprops Probe

Fisher reported that the Motor-driven Core Barrel (MDCB), essential for the deployment of Geoprops, had been satisfactorily tested on Leg 141 and was now declared to be operational. This means that Geoprops can be pursued realistically for deployment on Leg 146. Following the withdrawal of the proponent (Dan Karig), one of the Leg 146 Co-chiefs, Bobb Carson, had secured funding for the development of Geoprops to the status of an ODP Development Tool. The tool would undergo its first test at sea during Leg 146. Its development is to be overseen by the ODP tools engineer, Scott McGrath, formerly of Schlumberger.

(ii) LAST

Crocker had received no report from Kate Moran at this time.

(iii) BGR Borehole Magnetometer

Draxler reported that this three-component magnetometer was planned for gradient measurements in environments up to 160°C. A new sensor system had been satisfactorily tested with sensitivity in the range 0.1 nT. Heat sink tests were also satisfactory. Software needs to be upgraded to accommodate the new sensor system. BGR is looking for an orientation system. The tool could be deployed in ODP from March 1992 following its use in the KTB 6000 m logging programme, which would be regarded as the land test.

(iv) French Sediment Magnetometer

Foucher confirmed that the tool is scheduled for Leg 145 but the logistics have not been worked out. Previously the tool was run by the Schlumberger engineer with a French scientist in support. The French have received no formal confirmation that the tool is required. This needs to be rectified urgently as a first step.

[ACTION: GOLOVCHENKO]

(v) Japanese Borehole Magnetometer

Yamano reported that the tool is virtually complete. Final land tests are scheduled for mid-February. The tool is not designed for high-temperature holes and its strength ratings require that it be run separately for safety reasons.

(vi) Flowmeter

Both Becker and Morin had been unable to attend this meeting. No report was tabled.

8. Third Party Tools

The Chairman reported concern in the ODP community that the previously formulated guidelines for the development of third-party tools are not being enforced. The guidelines do not need to be changed but they might require redrafting in the form of an enforcement code. DMP is not an enforcement agency but the Panel has been asked to advise on this key issue. An important aspect of this initiative concerns enhancing public awareness that the guidelines and an enforcement mechanism actually do exist. Panel were asked to provide input.

It was noted that difficulties were being encountered because the scientific community wanted data from tools prematurely. For example, at Nankai 18 out of the 23 days scheduled for downhole measurements involved tools that had not been tested and, in some cases, not even built. Even if an enforcement mechanism was formulated, it might be difficult to implement from a cultural standpoint. For example, although ODP would like to schedule only fully tested tools, it is difficult to secure time during scientific legs for tool testing. This difficulty has now extended to engineering legs: an example is the relegation to low priority of the logging objectives for Leg 142. ODP cannot have their cake and eat it: if fully tested tools are required, time must be made available for their shipboard testing. It was emphasized that tools must be tested in the manner in which they are to be deployed. For example, the DMT BHTV worked well in the KTB pilot hole but failed in the main hole where the tool telemetry was not compatible with the characteristics of the new cable. No system is foolproof.

After much discussion the following recommendation was formulated.

DMP Recommendation 92/1

"The enforcement of the guidelines for the development of third-party tools requires a redrafting of these guidelines into a format that is suitable for stand-alone distribution within the ODP community. It is envisaged that this format will be that of a public information brochure. The redraft should retain the essence of the existing guidelines but should make, inter alia, the following additional points.

(i) A distinction should be drawn between tools that are developed specifically for ODP and those that are being developed for other purposes but that ODP might wish to use.

(ii) ODP development tools must be deployed in test mode, i.e. by their very definition they are not ODP mature tools and the scientific success of a leg should not be contingent upon the proper functioning of such a tool.

(iii) There should be a cut-off date (perhaps 6 months before a tool is scheduled for deployment) by which time the tool must have satisfied all the relevant development criteria, as contained in the guidelines. Otherwise the tool should be withdrawn.

(iv) **The public information literature should include a pro-forma letter of accedence for completion, signing, and submission to ODP by the Principal Investigator before a development tool is accepted for test scheduling.**

(v) **The public information brochure must include the names of key contacts within the permanent ODP structure.**

(vi) **Funding should be adequate to allow the appropriate ODP contractor to carry out necessary day-to-day monitoring of tool development.**

In view of the urgency of this matter, the brochure should be targeted for completion no later than August 1992."

Some further points were made concerning the development plan to be submitted by the Principal Investigator. The plan should include a brief description of the tool, a schematic, the operational procedure, and technical specifications such as dimensions, weight, temperature and pressure ratings, cable length restrictions, cable type, etc. It should also include time-related milestones. Provision should be made for transporting tools for shipboard testing, in terms of both cost and time.

The Chairman undertook to redraft the guidelines into a format that might satisfy the above requirements. The draft would be sent to panel members for comment.

[ACTION: WORTHINGTON]

The Chairman proposed forming a publications subcommittee comprising Fisher, Golovchenko, Riedel and himself. This subcommittee would review the revised draft and decide on further action.

[ACTION: FISHER, GOLOVCHENKO, RIEDEL, WORTHINGTON]

9. Operations Report, Legs 140-141

(i) Leg 140: 504B

Fisher reported that the junk left in Hole 504B during Leg 137 was fished out at the final attempt before it had been planned to abandon the site. Once the hole was cleared, it was deepened to 2000.6 mbsf. Core recovery was 12.7%. Petrological studies did not indicate that the Layer 2/3 boundary had been encountered. However, this boundary is based on seismic stratigraphy and some physical changes to high velocity and density were noted at depth. It is possible, therefore, that the hole did penetrate the Layer 2/3 boundary as defined seismically.

Golovchenko reported that two logs were run prior to drilling, temperature and FMS. The temperature recorded was equilibrium temperature because no circulation had taken place. Bottom hole temperature was about 170°C, close to the operating limit of the FMS, whose tool electronics failed during the logging run. Most caliper-type tools will fail open and therefore there is a risk of arms being broken off on forced recovery. The FMS was minus two pads when the tool was recovered. However, some data were obtained over the uncased hole. The rationale for running the FMS was that it had never been run in 504B, the most logged of all holes. Questions were raised about monitoring the internal tool temperature during logging. The GPIT provides this information in real time. Was this, in fact, monitored by the Schlumberger engineer?

The geophysical (sonic, resistivity, density, etc) and geochemical tool strings were run after drilling. The flowmeter was deployed over the top portion of the hole and the DMT high-temperature digital BHTV at the bottom.

Time lapse temperature logs spanning several legs have indicated changes in sea-water circulation downhole. It was pointed out that these variations might be (partly) an artefact due to the performance of the temperature tool on entering the casing.

(ii) Leg 141: Chile Triple Junction

Golovchenko, who was on Leg 141, reported that a full suite of logs was obtained from Hole 859B, which was enlarged and rugose. The WST was difficult to clamp. The FMS could be run because of the speeded up delivery of spare parts. A bottom simulating reflector (BSR) had been indicated at 85-100m bsf. This was not seen from drilling. However, logs indicated that hydrates had been penetrated and that the BSR was attributable to the boundary between the hydrates and the underlying free gas zone. Gas hydrate concentration was only about 10% of recovered matter over this interval. This is why it was not seen from drilling.

A bridging problem was encountered at Site 860 and the side-entry-sub (SES) was deployed. The cable broke at the cablehead during deployment of the geophysical tool string. The problem was due to the use of a mechanical caliper to centralize the sonic. When run in pipe, the caliper did not allow the tool string to rotate. Consequently, the cable wrapped around the tool string and subsequently snapped. The toolstring was stuck in pipe and was subsequently recovered when the pipe was pulled. The message is that the mechanical caliper should not be used during SES deployment. Only 100 m of logs were obtained from the upper portion of Hole 860.

When Hole 861 was near total depth, a medical emergency required that the site be abandoned before logging. Because of rough seas, it was not possible to deploy a minicone. At Site 862, a further medical emergency, when the hole was at an intermediate depth, again necessitated hole abandonment.

A full suite of logs was run at Site 863 in a 740 m hole. During hole conditioning the pipe was pulled towards its target logging position of 50 m bsf. However, it stuck at 230 m bsf allowing logging only over 510 m of open hole. Earlier predictions of temperature gradient (200°C/km) had suggested a possible high-temperature environment. In fact, the gradient varied from 150°C/km at the top of the hole to 85°C/km at the bottom. Core recovery was a function of lithology so that petrophysical zonation of the succession guided the sedimentological zonation. In general, however, reports describing sedimentological units are written while the logs are being run, and therefore they do not draw upon petrophysical input. This highlights the importance of core-log integration in real time. The rapid availability of hard-copy logs should mitigate in the short term.

10. Logging Contractor's Report

Golovchenko reported that the FY92 budget for LDGO BRG made provision for recruiting two new staff, a log analyst (who started in November 1991) and an assistant computer systems manager (not yet appointed). The electronics technician who was scheduled to go out on Leg 142 has resigned. There is provision for only one full-time technician and this position is vital for third-party-tool monitoring, care of tools, etc. Interviews for a replacement are being held this week.

There is a need to expand training in FMS processing. TAMU sail two systems managers per leg and they are trained in FMS processing. However, TAMU have indicated a need to train additional personnel in order to free the systems managers for general duties. This is currently on hold.

The FY93 budget for LDGO BRG has been fixed at $4.32 million, compared to $3.95 million for FY92. Over 50% of this increase will be taken up by increases in Schlumberger's prices. The MAXIS has not been included for FY93 so it cannot be acquired until October 1993 at the earliest. Extra money may be made available if the Soviets firm up their position. This will be used to purchase a new winch unit and to convert the CSM high-temperature resistivity tool to digital operation. If this extra money is not forthcoming, it will be necessary to repair the existing winch at a cost of $40-50k, which is not budgeted.

A high-temperature field test is planned of the Gable high-T logging cable. This will take place at China Lake, California. No date has been set.

11. Logging Programme: Legs 142-147

(i) Leg 142: Engineering

It was perceived that the PCOM decision to relegate the logging objectives of Leg 142 to alternative status was made at too late a stage. The JOIDES logging scientist was not made aware of this decision. Panel felt that this behaviour was unacceptable.

DMP Recommendation 92/2

"If JOIDES Committees/Panels feel it necessary to alter drilling and/or logging priorities after a leg has been fully staffed, it is imperative that shipboard scientists be informed of these changes prior to their departure for the leg."

(ii) Legs 143-144: Atolls and Guyots I and II

Scientific Aims:

By coring and logging selected guyot and flanking sites, explore the fundamental problems of:

- timing and causes of platform drowning;
- timing and amplitude of changes in sea level and relationship to regional tectonics;
- seamount latitude changes;
- ages of volcanic edifices;
- longevity of mantle plumes;
- bioprovinciality of reefal organisms and post-reefal palaeoceanographic reconstruction.

Downhole Measurement Plans:

- Schlumberger geophysical, geochemical and FMS logs at all sites;

- BHTV and Japanese magnetometer in basement at HUE-A (Leg 142 - 200 m basement planned) and all basement sites ≥ 50 m on Leg 144 (HAR-1, PEL-3, SYL-1, MIT-1 [200m], SEI-1);
- Logging/packer in Hole 801C is alternative during Leg 144.

Also of interest:

- Anewetak test drilling in 30 m water during Leg 143, 1.3 days.

WSTP is not scheduled for specific holes at this stage but will be deployed in holes to be identified later (cf. DMP Recommendation 91/5).

(iii) Leg 145: North Pacific Neogene Transect

Palaeoenvironmental and tectonic objectives include:

- history of surface ocean and atmospheric circulation;
- variations in deep water circulation;
- timing and nature of shift from calcareous to siliceous sedimentation;
- history of continental climate from aeolian deposits.
- age and palaeolatitude of Detroit seamount;
- age and origin of Chinook palaeoplate.

Also of interest to DMP:

- next big leg for first phase of "data integration"; Janecek is staff scientist;
- pre-cruise meeting: 30-31 January 1992.

No change in logging plans to date.

(iv) Leg 146: Cascadia Accretionary Margin

Transects off Vancouver and Oregon to:

- assess fluid and chemical budgets;
- install long-term observatories (CORK);
- determine roles of fractures and layers in directing fluid flow;
- test model for formation of gas hydrates;
- evaluate tectonic histories, influences.

Pre-cruise meeting to be held in the spring.

Likely tools include:

- standard logs (including FMS)
- WSTP/ADARA tools
- Geoprops
- LAST? (I,II?)
- packer (in casing)
- pressure core sampler
- CORK (2)

(v) Leg 147: Hess Deep

Middle and lower crust is exposed by propagating rift in the eastern Pacific. Initial visit plans to:

- obtain the first continuous core of gabbroic layer 3 formed at a fast-spreading ridge;
- test feasibility of drilling tectonic blocks;
- drill through layer 3/mantle boundary.

Logging plans:

- if hole deeper than 200 m is achieved, "standard" suite of logs is planned.
- DMP recommended a fuller suite of measurements, including DLL, high-T temperature tool, magnetometer and susceptibility, packer and flowmeter, VSP, BHTV.
- Co-chiefs seem to support at least standard suite plus BHTV, check-shot VSP, packer.

12. North Atlantic Prospectus

(i) Leg 148: Engineering DCS IIB

This leg assumes that the engineering Leg 142 will be successful. Otherwise the back-up is 504B.

- tests to be conducted on the MAR;
- may include wider range of hardware, including:
  - medium diameter DCB
  - alternative guide-bases with or without BHAs
  - mini-piston corer? spoon sampler?

Of interest to DMP:

- this will be the next opportunity for slimhole logging, possibly high temperature.

(ii) Leg 149: N. Atlantic, Non-volcanic Rifted Margins: Iberian Abyssal Plain

This is the first of a proposed 8-leg programme to study conjugate margins. Goals for this leg will include:

- identification and characterization of the ocean-continent transition (OCT):
- subsidence history of westernmost continental block;
- determine lithostratigraphy of basement ridge;
- document the effects of continental stretching;
- sample basement and pre-rift sediments;
- determine nature and age of earliest oceanic crust.

Little more than DPG report is available now:

- proposed logging for IAP sites is "standard";
- BHTV, VSP and possibly LAST should be deployed at selected sites;
- all IAP sites include about 100 m basement;
- mostly RCB; no re-entries proposed, but some may be needed.

(iii) Leg 150: New Jersey Sea Level

Intended to study late Oligocene-Miocene relative sea level changes. Drilling is aimed at:

- estimating ages of sequence boundaries and amplitude of sea level changes;
- determine age and geometry of individual sequences;
- establish role of lithospheric flexure;
- evaluate role of ice-volume record, as inferred from deep-sea isotopes.

Water depths vary from 29 m to 1298 m; nine sites have water depth ≥ 60 m, which should allow dynamic positioning in appropriate weather.

Of interest to DMP:

All site sheets request "quad combo, geochemical, and FMS strings". If the main goal is seismic stratigraphy, we should separate the sonic log from the quad combo or carry out check-shot VSP?

(iv) Leg 151: Arctic Gateways I

Palaeoceanography of polar seas in terms of:

- temporal and spatial variability of oceanic heat budget, chemical composition, and evolution of marine organisms;
- circulation patterns of a warm ocean;
- mechanisms of climate change in ice-free world.

The plan includes a series of N-S and E-W transects, and sites are planned to investigate the time opening of critical passages and downstream sedimentology.

Specific points are:

- sediment drilling, mainly APC/XCB;
- standard logs requested;
- will need many alternative sites due to possible ice problems; a second ship will be needed.

Bad hole conditions can be expected in poorly sorted glacial sediments. It may be necessary to abandon sites quickly because of ice movements. Therefore the logging programme should be confined to easily deployable tools.

(v) Leg 152: N. Atlantic, Volcanic Rifted Margins: East Greenland Margin

This programme will address:

- lithospheric flexure;
- mechanisms of magma emplacement;
- subsidence of seaward-dipping reflectors;
- timing of rifting and "drifting";
- role of mantle plumes.

Two (re-entry) sites are proposed:

Site	Water Depth (m)	Sediment Thickness (m)	Basement Penetration (m)	Total Time (days)
EG 63-1	520	440	500	20
EG 63-2	1875	1220	500*	48

* later deepening to 1000 m into basement is proposed

Proponents request: standard logs, FMS, core orientation.

13. Log Data Acquisition, Processing and Distribution

The Chairman introduced this general issue, which was initially rooted in problems of shipboard geochemical processing and has subsequently expanded into the need for a long-term scientific vision of how log data can best be processed and disseminated within ODP. At the last DMP meeting, an action was placed upon the Chairman and Roger Anderson (LDGO) to generate jointly a white paper on the subject for the perusal of the Panel. This action was not followed and the white paper that is now to be presented has had no input from the Chairman and has not been precirculated to the Panel. Furthermore, Anderson has been unable to attend this meeting of DMP and is represented by Ladd.

Ladd reported that the number of logs run has been increasing greatly over the past few years. Key questions concern how we handle these data and how we process them. ODP cannot avoid these issues because LDGO's mandate requires them to acquire, process and disseminate data, to improve existing instrumentation, and to advance new technologies.

To handle this increase, an on-line database is needed permitting transmission of data from ship to shore (for service processing) and subsequently to members of the ODP community as part of the data dissemination remit. This would require that certain processing centres be established, each with special responsibilities. These would effectively act as subcontractors when handling embargoed data but could also serve as centres of excellence for interpretation of released data.

The benefits include better science, increased international participation, and ready access to data. The plan, therefore, is to put ODP log data on line. This would avoid repetitious use of LDGO manpower and render data processing and dissemination more efficient. In any case, tapes are rapidly becoming obsolete. Ladd concluded with a system demonstration.

Wilkens commented that scientists at the University of Hawaii who use the on-line Internet system reap considerable benefits. Logs can be transferred from LDGO to Hawaii by initially loading the tapes on Masscomp. The system is wonderful: we should endorse its use.

Draxler pointed out that such a system works well for released data. Other data would require password protection. This is standard practice.

Panel felt that a vision of this kind has several stages of natural evolution. Initially one could consider an on-line data archive for logs, then perhaps for all ODP data. A further stage would be onshore processing and finally there would be the possibility of an enlarged scientific party with some members onshore. The last two would be password protected. Panel regarded this natural evolution as inevitable. It is, however, a long-term process which will advance gradually.

DMP Consensus

Panel endorses the long-term scientific vision of the logging contractor in terms of an on-line data archive for logs, onshore processing where not possible on board ship, and greater involvement in ODP logging science by the scientific community at large.

In the light of this consensus, Panel formulated the following recommendation.

DMP Recommendation 92/3

"In view of the growth in demand on LDGO for log data, it is important that appropriate manpower be dedicated to data dissemination. In the longer term, computer access to a central archive of log data would facilitate the acquisition of these data by the community at large. Steps should be taken to explore this possibility with a view to its potential adoption in the future. Panel views the greater dissemination of log data as an important ongoing responsibility of the logging contractor."

14. Publicity Brochure

The Chairman reviewed progress on the production of a publicity brochure on ODP downhole measurements. At its last meeting Panel decided that this should be organisationally seamless, i.e. it should be structured solely according to scientific considerations. Further, it should be targeted at the technical community and, as such, should be written at an appropriate technical level. The Chairman presented a draft structure based upon those earlier deliberations and examples he had gathered at LDGO during a visit in mid-January. Panel debated this structure and proposed the following detailed breakdown.

Target length:	20 pages plus covers
Page 1:	Table of contents
Page 2-5:	Rationale for and principles of downhole measurements: logging, packers/samplers, observatories.
Pages 6-17:	General description of applications of downhole measurements to each of several recognized branches of earth science together with one example of each application. Branches of earth science to be included are: economic geology, geochemistry, geothermics, hydrogeology, palaeoclimatology, petrology, sedimentology, seismology, stratigraphy, structural geology, tectonics. Each subject area should be assigned one page except for palaeoclimatology, which would comprise a two-page centre display.
Pages 18-20:	Relationship of log data to data measured at different scales, e.g. core data and geophysical data.

The inside-front-cover could contain a brief description of ODP and its aims. The inside-back-cover could contain some information on how to get tools run, especially third party tools.

The Chairman proposed that this initiative should be progressed by the same publications subcommittee that is looking at publicity for third party tools. He proposed that the subcommittee should meet on 12 February 1992 to agree the initial draft. Some time thereafter, the draft would be sent out for technical review. Five reviewers were nominated. They are: Joris Gieskes, Steve Hickman, Peter Lysne, Mike Williams and (in absentia) Tom Pyle. Following an accelerated review process, a final draft would be prepared for production. The ODP Public Information Coordinator (Karen Riedel) would manage the production stage. Target date for distribution of the final product would be May 1992. This timetable might allow the initiative to have some bearing on renewal. Recipients would be the ODP community at large.

15. High Temperature Technology

(i) Temperature

The Gable tool used on Leg 137 and given to LDGO is rated to 500°C but is currently limited to 350°C, the temperature rating of the Plastelec (MgO-insulated) cable purchased by LDGO and due to be tested at China Lake, California. There are no plans to acquire a second tool. A surface panel is being built to run the tool: the existing panel has had to be returned.

(ii) Resistivity

The contract to build a high-temperature (350°C) formation resistivity tool, with a capability for borehole-fluid resistivity, was initiated with Camborne School of Mines (UK) on 1 January 1992, although the work began earlier. This is an analogue slimhole (1.75 inches) tool. Two tools will be developed, one of which will be financed by the UK DoE and will be loaned by them to ODP. Target data for completion is June 1992.

(iii) Fluid Sampling

Lysne reported that bridges were being built between different scientific programmes. A proposal has been submitted to the US DoE entitled "Development of a fluid sampling data logging tool". The aims are to monitor, inter alia, the temperature and pressure of the borehole fluid (sea water) with a view to taking a sample as close as possible to the critical point. The tool itself decides through its downhole computers when to take the sample: it is therefore an intelligent memory tool. It is hoped to apportion development costs with DoE funding the tool construction at Sandia and ODP funding the cost of the uphole facilities. A proposal is needed for the latter: it is not clear how things stand.

The initiative requires input from geochemists. For example, what materials should be used to minimize the risk of contamination? What volume of sample is needed? To provide some of these answers, a proposal was made to JOI (by John Edmond of MIT) to form a borehole sampler support group. The group met for the first time in December 1991. At the same time, JOI and DoE began a dialogue. They decided that the tool proposal needs greater scientific justification. The support group now has the charge to write a science support document. The draft science plan should be available in February 1992.

Once the tool proposal has been accepted by JOI and DoE, it will take two years to build a tool and carry out limited testing. The tool would be developed from basics: it would not be a modification of existing tools except for a transfer of, for example, dewar and computer technology. It would be compatible with the DCS. After testing, a further 2-3 years would be required to bring the tool to fruition.

(iv) Miscellaneous

The Chairman noted that excellent progress is being made on all three of the top priorities identified by DMP and LITHP at their joint meeting in Windischeschenbach in 1989. However, there were other tools on that original wish-list: one of these was a high-temperature natural gamma spectral tool. Lysne commented that Sandia are looking at this development under a different programme. Fisher noted that there is a possibility of ODP acquiring a rapid-deployment high-temperature memory tool such as the GRC tool run on Leg 139. Desbrandes informed the Panel of his research into logging with coiled tubing: this would allow the cable, cablehead and tool to be cooled while logging so that the operating range of existing tools might be extended.

16. Technology Review - Borehole Gravimetry

The Chairman introduced this review as part of the DMP strategy of keeping abreast of those technologies described in the COSOD II white paper on downhole measurements. The aim was to hear about the state-of-the-art and to assess how far away we are from being able to deploy this technology with confidence in ODP.

Lautzenhiser described the principles of the borehole gravimeter (BHGM). The tool is used to measure gravity in stationary mode at different depths in a borehole. Formation density can be determined from the change in gravity, Δg, over a selected interval, Δz. This selection determines tool resolution. In an ocean environment, it can be more difficult to determine g and z, and thence Δg and Δz, with sufficient accuracy. The BHGM is especially useful where the drilling process has caused the formation to change in the vicinity of the borehole so that the density log no longer reflects true in-situ conditions, e.g. in gas hydrates. Depth of investigation is related to formation geometry: for example, a bed of thickness 10 ft can be detected 40-50 ft away from the borehole.

There are two principal tool suppliers, La Coste-Romberg and Edcon-Schlumberger. Tools are typically 4.25 inches O.D. rated to 125°C and 5.25 inches O.D. dewared to operate at 200°C for 24 hours. The tools can operate in boreholes deviated up to 14 degrees.

Edcon is developing a shuttle sonde, funded by the Gas Research Institute. The gravity meter is positioned on an elevator within the (stationary) tool so that Δz can be determined accurately. This leads, in turn, to a better density determination over small intervals, e.g. ±0.01 gm/cc over 8 ft if there is no borehole noise (flowing fluids or percolating formation) or cable motion. Edcon propose a sidewall clamp to minimize wireline or borehole noise from BHGM readings. This makes Edcon-Schlumberger the best option for shipboard deployment.

There are two other future trends that are noteworthy. One of these is a quartz gravimeter developed by Delta-G. This is at the testing and repackaging stage. A prototype is being evaluated by Schlumberger for a possible future service role. Tool is 3.5 inches O.D. and it can operate in holes deviated to 40 degrees. The other is a borehole gravity gradiometer with a high noise immunity, the possibility of a continuous log, and high spatial resolution. The spatial resolution is dependent upon hole rugosity: measurements at the microgal level must be grossed up over a sufficient vertical distance to overcome borehole rugosity effects. Achievable vertical resolution is a few centimetres.

The Chairman noted that the existing BHGM tools are too large for conventional deployment in ODP. However, the proposal for the "top-hat" deployment of commercial pore-fluid samplers (Item 18) might have some bearing. If the top-hat system should be developed, it might open the door to BHGM and other large-diameter tools. At that time, there would be strong interest in running the tool, not just to evaluate gas hydrates but also to investigate in conjunction with the density log the scale of lateral inhomogeneities (Item 19).

17. Magnetic Susceptibility Logging

The Chairman reminded Panel members that PCOM had identified routine magnetic susceptibility logging as a high-priority target for technology development. Panel should be aware of candidate tools.

Golovchenko reported that two tools are being evaluated. The first is the French susceptibility tool that is run with the high-parametric-resolution sediment magnetometer. This tool was the subject of a presentation to the last DMP meeting by Jacques Pocachard of the French CEA. At present, this tool has a spatial resolution of about 1 m. This is too coarse for some scientific applications, e.g. Milankovitch. Pocachard has offered to rewrite the software to improve this resolution to about 40 cm. In principle, a 1 cm vertical resolution is achievable. Pocachard has proposed the development of a new tool with tripartite funding (CEA, ODP, and a further French institution) to achieve a vertical resolution of the order of centimetres. Cost to ODP would be $ 200 000. Golovchenko noted that there is no provision for this technology in the budgets for FY92 and FY93, although she believed that it had been proposed. It would take two years to build the tool after the money had become available.

The second tool, which might be available to ODP as an interim measure, is a German susceptibility tool developed by the University of Munich. This tool is operational, rated to 125°C, and should be rated to 260°C by mid-1992 when dewaring will be available. Spatial resolution is around 60 cm. Tool O.D. is 3.375 inches (125°C operation) or 3.785 inches (260°C operation).

DMP Consensus

The logging contractor is encouraged to pursue the acquisition of a high-spatial-resolution magnetic susceptibility tool, especially in view of the strong implications for studies of palaeoclimate.

The Chairman undertook to solicit the views of OHP and SGPP as regards optimal spatial resolution for scientific purposes.

[ACTION: WORTHINGTON, MIENERT]

18. Working Group on Pore Fluid Sampling

The steering group approved by PCOM in December 1991 could not be activated in time for this meeting, which, in any case, was being held away from the centre of gravity of members. The Chairman was reluctant to convene this steering group, whose first task was to formulate a request for proposals for a feasibility study of the options identified within the 1991 Working Group report, until it was clear that funds were available for the study to be carried out. The Chairman undertook to establish the funding position. If favourable, he proposed that the steering group be convened during the second half of March at College Station. This would probably be the only time that the steering group would meet outside the framework of DMP meetings.

[ACTION: WORTHINGTON]

19. Lithosphere Characterization

The Chairman noted that this issue, originally flagged by DMP a few years ago, had remained dormant for some time. The issue had its roots in three key questions. To what extent does an ODP hole characterize the subsurface around it? Is it merely a sample of a wide statistical range? How is the form of characterization related to the scale of measurement? To answer these questions, Panel had suggested three closely spaced sub-ocean boreholes at a scientifically appropriate location. These holes would be subject to detailed coring and core analysis, borehole logging, and VSP and interwell geophysics, all of which would be linked to surface geophysics in the form of detailed site surveys. However, initial soundings within the scientific community had indicated that technology was not yet ready for such an initiative. Recent indications are that this situation has progressed and that a proposal targeted for 1995-6 would have a good chance of success. A not-unrelated proposal is being developed by a scientific group with interests in crustal evolution. A member of this group (Jill Karsten, University of Hawaii) would now report.

Karsten reported that a group of 20 investigators, including three with DMP connections, were proposing a Crustal Evolution Drilling Programme. The aim was to drill a pair of holes, about 1 km apart and 500 m deep, in 20-30 Ma basaltic crust north of the Clipperton Fracture Zone in the eastern Pacific (12-13°N, 115-116°W). Seismic indications are that crustal evolution is dramatic in the first 10-15 Ma, after which it reaches a plateau. This seismic manifestation is thought to be related to changes in the porosity and pore geometry of the uppermost crust, but the processes that control these porosity changes are not well understood.

The scales of these processes probably vary significantly. An important aim is therefore to investigate the degree and scale of heterogeneity within the uppermost crust, in terms of: timescales and nature of alteration, how these are related to physical properties, correlations between physical properties and geological architecture, and the dependence on tectonic processes.

The key information for determining the evolution of a porosity and permeability distribution will come from downhole measurements. Important questions are:

(i) how accurate are single vertical sections in characterizing physical properties?
(ii) are porosity measurements accurate?

Essential technical needs are:

(i) accurate shear wave logging (for porosity structure);
(ii) fracture orientation and extent;
(iii) permeability evaluations using

  (a) packer flowmeter;
  (b) Stoneley waves;
  (c) integrated analysis of logs and packer data for secondary flow;
  (d) hole-to-hole experiments.

Current status is that a drilling proposal is to be submitted to ODP in mid-1992. ODP does not have a basement hole in the target age range. The Office of Naval Research (ONR) is interested in cost sharing, perhaps by funding post-cruise science.

Panel members raised several points in responsive discussion. First, an approach to ODP would bring about thematic-panel imprints on the proposal. For example, the holes might be considered too shallow or too far apart. Second, there should be three holes ideally colinear so that interwell projections between two outer holes might be verified at a third interposed hole. Third, considerable technical advice should be sought on the status and capability of cross-hole (electrical and seismic) geophysics, especially as regards sub-ocean deployment. Fourth, a proposal to ODP would almost certainly involve more than one leg.

In summing up, the Chairman complimented the initiative of Karsten and her co-workers. There would be two levels of achievement. The first is a functioning system of geophysical measurements, processing and interpretation, spatially distributed over five orders of magnitude. The second is the scientific evaluation of these and related data. The first of these achievements, in itself, would put ODP at the forefront of scientific application. The second would benefit enormously from shared funding to provide a structured programme of post-cruise science.

DMP Consensus

Panel encourages the proposal to drill closely spaced boreholes in the ocean lithosphere to investigate the scaling of heterogeneity. Appropriate technological input should be sought at an early stage of the planning process.

DMP should pave the way for this initiative by taking a critical look at cross-hole geophysics. This should be the featured technology of the next two DMP meetings. Panel members are asked to identify potential speakers for both the June and the September meetings.

[ACTION: PANEL]

20. Shipboard Integration of Core and Log Data

Fisher reported on the status as of 26 January 1992.

The shipboard core laboratory is being redesigned to render core flow more linear. The eventual aim is to have both a whole-core and a split-core Multi-sensor Track (MST).

ODP is moving ahead with plans to purchase a stand-alone or MST-associated natural gamma-ray system.

A request for funds has been made to procure a stand-alone workstation for data merging. Use of this station will require:

1. acquisition of appropriate software for development of data-merging tools;
2. assignment of programmer and Science Operations staff to develop software tools;
3. training of individual "data integrators" as members of each scientific party.

The first phase of this development will concentrate on the merging and shifting of core data; linear compression/expansion to match log data will come later. Full shipboard deployment will require purchase of at least 3-4 complete systems, plus assignment of appropriate personnel.

Sonic-core monitor and electronic multishot are operational after Leg 141. Standardized and duplicatable "core-shifting" awaits additional computer hardware and software developments, plus assignment of dedicated shipboard scientists.

Scratch-server and thin-wire Ethernet added to the shipboard system should facilitate data access.

ODP re-organization should improve computer support and development projects.

21. Panel Membership

Nominations are sought for a replacement for Roy Wilkens. The ideal person would have sailed as a JOIDES logging scientist, be seismically numerate, and be based at a JOIDES institution in the USA. One name had been put forward at the previous DMP meeting and this person had informally agreed to serve. Panel were not able to propose any other candidates. The Chairman undertook to progress the matter. In accordance with PCOM policy, the names discussed are not being minuted.

[ACTION: WORTHINGTON]

22. Next DMP Meetings

The next meeting of the JOIDES Downhole Measurements Panel is scheduled to take place at the KTB facility, Windischeschenbach, Germany, during the period 4-6 June 1992. Hans Draxler will host. The third day of this meeting will comprise a joint session with KTB to further the collaborative contacts between ODP and KTB. The Chairman will collate presentations on suggested topics that can be offered for joint session. Suggestions are:

- high-temperature logging (CSM speaker?)
- high-temperature fluid sampling (Lysne)
- performance of new tools (LDGO)
- ODP datanet vision (LDGO)
- five-year vision of petrophysics (Worthington, P)
- interwell acoustic tomography (Worthington, M, Imperial College London: or alternative)

A one-day geological field excursion is planned for Friday 5 June.

The following meeting of DMP is confirmed for Sante Fe, New Mexico, during the period 21-23 September 1992. Peter Lysne will host. There may be a joint session with LITHP on 23 September.

The subsequent meeting of DMP is tentatively scheduled for College Station in the second half of January 1993. Andy Fisher will host.

23. Other Business

TAMU Engineering Report

Fisher reported on the FY 93 engineering development programme, listed as follows.

Motor-driven Core Barrel	$ 115 k
Sonic Core Monitor	55 k
XCB Flow Control Concept	25 k

Pressure Core Sampler	85 k
Hard Rock Orientation	70 k
Vibra-Percussive Corer	90 k
Visiting Engineer	30 k
3rd Party Development	20 k
Other	50 k
Total	$ 540 k

The Chairman would include a Science Operator's Report on the agenda of all future DMP meetings.

24. <u>Close of Meeting</u>

The Chairman thanked Panel Members, Liaisons and Guests for their contribution to the meeting and Roy Wilkens for his gracious hosting. In reminding the Panel that Wilkens would now be rotating off DMP, the Chairman thanked him for his contribution over the past four years and wished him well for the future. The meeting closed at 1450 hours on Thursday 30 January 1992.

PAUL F WORTHINGTON
17 February 1992

JOI/ODP

Executive Summary of the second meeting of the

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Ans'd............

OFFSET DRILLING WORKING GROUP

held at the Rosenstiel School of Marine and Atmospheric Sciences, Miami, 3-6 February 1992

Offset-section drilling is a strategy to understand the processes of ocean lithosphere formation by drilling key partial sections of crustal and upper mantle rocks in tectonic windows. Such windows are provided by propagating rifts, fracture zone walls and transverse ridges, and median valley master faults. Offset-sections are ready to drill now, using proven technologies and in temperature conditions that allow the deployment of the full suite of downhole measurements.

Less than half of an oceanic crustal section has been drilled to date. The first priority is to complete a global composite section of oceanic crust and upper mantle, to investigate the igneous, structural, metamorphic and hydrothermal processes operative at all levels. The primary targets and processes relate to (1) the diabase dike - gabbro transition, (2) long sections of gabbro, (3) the gabbro - peridotite transition, and (4) long sections of peridotites.

First order variations in these processes occur between slow vs. fast spreading ridges. The second priority is to complete a global composite section in each environment. As faulting is integral to the formation of slow spread crust, investigating median valley master fault processes forms part of this second priority.

Second order variations occur *between* geochemically enriched vs. depleted areas of the mid ocean ridge and *within* magmatic segments of spreading systems. Establishing the effects of these variations are third priority objectives.

The OD-WG proposes a phased approach to offset-section drilling in order to make successive major advances by addressing the highest priority achievable objectives in order. Recovering a long section of upper mantle peridotites is of the highest priority. Most dike-gabbro and gabbro-peridotite transitions require further site surveys to characterise them in the third dimension before they can be primary drilling targets. Therefore advancing Hole 504B from dikes into gabbros is a high priority objective as are additional (to Hole 735B) long sections of gabbros. Successful long crustal section holes where the 3-D geometry and depth of transitions can be determined will become high priority transition drilling targets.

OD-WG proposes the following SSP site survey matrix for areas of offset-section drilling:

Required: Swath bathymetry, magnetics, precise geological sampling and analyses, near bottom visual observations.

Recommended: MCS, and OBS reflection and refraction, gravity, regional and near bottom sidescan.

(Beneficial: Bottom gravity/magnetics/seismics, conjugate site geophysics, microseismicity data).

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In priority order, OD-WG recommends the following targets for DCS IIb Engineering Leg 148:

1) Vema transverse ridge limestones, 600-1000m water depth, (vertical motion history).

2) Vema Fracture Zone wall diabase dikes, 2000-2500m water depth.

3) MARK master fault and long gabbro section, 2500-4000m water depth.

Minutes of the second meeting of the OFFSET DRILLING WORKING GROUP

held at the Rosenstiel School of Marine and Atmospheric Sciences, Miami, Florida 3-6 February 1992

Present: Members and Liaisons: Sherman Bloomer (LITHP), Enrico Bonatti, John Casey, Henry Dick, Jeffrey Fox, Karl Hinz, Kim Kastens (SSP), Catherine Mével, James Natland, Paul Robinson, Dale Sawyer (TECP), Earl Shanks (TEDCOM), Brian Taylor (PCOM), Fred Vine (Chair), Guests/observers: James Austin (Chair,PCOM), Gene Pollard (TAMU/ODP).

Apologies for absence were received from: Joe Cann, Eldridge Moores (TECP), Robert Varga, and Lev Zonenshain.

(With regard to the Working Group membership the Chairman noted that Enrico Bonatti had replaced Ernesto Abbate, in effect as the ESF representative, and that Nikita Bogdanov had notified the JOIDES office that Lev Zonenshain is very seriously ill).

1.0 Reports from Liaisons

1.1 LITHP - Sherman Bloomer

LITHP had some difficulty with the offset drilling proposals under consideration and could not agree upon an offset drilling priority.

In view of this, and together with TECP, the Panel recommended to PCOM that the ODWG be reconstituted as a Detailed Planning Group.

1.2 TECP - Dale Sawyer

The Panel regarded the MARK proposal as being the most mature. However TECP has two major concerns regarding offset drilling as proposed thus far:

1. Not enough is known about the stratigraphic and tectonic setting of the proposed sites and the tectonic reconstructions are unclear.
2. None of the proposals submitted thus far really addresses tectonic objectives, such as the processes by which the tectonic windows are formed.

The Panel was also disappointed to note that a high proportion of the areas under consideration were associated with transform fault zones or transverse ridges which TECP regarded as disrupting atypical ocean crust.

1.3 PCOM - Brian Taylor

PCOM has accepted in principle a global plan from 1993-2000 which involves twelve legs of basement drilling with the following objectives:

Fast and slow spreading ridges
Layer 2/3 transition
Long Gabbro section
Layer 3/mantle transition
Upper mantle section
Median Valley master fault

000144 In general, these objectives require holes of 1000 ± 500m depth. It is believed that no area is sufficiently well-surveyed at this time for a 4 leg programme of drilling to achieve total penetration of the section by offset drilling.

PCOM specifically recommended that the objective of drilling through an active transform fault zone be dropped.

No leg has been assigned for offset drilling in Financial Year 1993.

It seems probable that the ship will be in the Atlantic Ocean (and adjacent areas) for at least the next four years.

Any proposals submitted before 1989 are considered inactive and should be resubmitted if the proponents wish them to be reconsidered.

Leg 142 (the current leg) is an engineering leg designed to test the diamond-coring system. Leg 148 is an upcoming engineering leg.

2.0 Report on Leg 140: Hole 504B - Henry Dick

This hole is open and is believed to have penetrated almost the entire sheeted dike sequence and to be near the layer 2/3 boundary. It was pointed out that although Hole 504B has involved 7 legs there have only been 84.9 operational days on site.

Gene Pollard suggested that Hole 504B might conceivably be deepened by a further 1000m.

3.0 Working Group Mandate

At its last meeting PCOM rejected the request that the Offset Drilling Working Group be reconstituted as a Detailed Planning Group because a Detailed Planning Group is charged with planning of a leg or group of legs based on proposals that have already been approved by PCOM. The Offset Drilling Working Group is charged with developing a long-range plan to achieve crustal drilling objectives; not reviewing individual proposals or engaging in detailed planning.

4.0 Review of Definition and Objectives of Offset Drilling

4.1 Definition of Offset Drilling

The Working Group felt that some of the confusion regarding its mandate and goals could be cleared up by producing a clearer definition of Offset Drilling. First, it was suggested that the name be changed from "Offset Drilling" to "Offset-Section Drilling". This having been done, the Group then agreed upon the following definition:

> "Offset-Section Drilling is a strategy to investigate the complex, laterally heterogeneous ocean crust and shallow mantle by drilling key partial sections of crustal and mantle rocks in tectonic windows".

Such windows are provided by propagating rifts, fracture zone walls and transverse ridges, and median valley master faults.

4.2 The objectives of Offset-Section Drilling

Primary objectives; involve constructing composite sections of in-situ oceanic lithosphere. To drill:-

1. the sheeted dike/gabbro transition
2. long sections of oceanic gabbro
3. the gabbro/ultramafic transition
4. long sections of oceanic ultramafic rocks

Objectives requiring a range of locations: To sample:-

5. gabbro and mantle sections formed at fast- and slow-spreading ridges
6. gabbro and mantle sections formed in "plume" and "non-plume" environment (or high and low magma production environment)
7. gabbro and mantle sections formed far from and close to the mid-point of a ridge magmatic cell

Objectives relating to tectonic, magmatic or metamorphic processes: To study:-

8. a current median valley master fault in order to understand a fundamental process controlling the fabric of oceanic crust
9. the origin and evolution of transverse ridges
10. normal off-axis evolution of oceanic crust in areas where over-printing is absent
11. the types of deformation in the crust and mantle
12. hydrothermal alteration in the crust and mantle
13. the nature of parent magmas
14. shallow mantle melt formation and migration and the processes of magma emplacement, evolution and transport through the crust

4.3 It was noted that the purpose of offset-section drilling is not specifically to test geophysical models of ocean lithosphere. However, the samples recovered during offset-section drilling will provide opportunities to define the physical properties and the igneous, metamorphic, and structural characteristics of the lower crust and upper mantle that will have direct implications for our interpretation of seismic and other geophysical data.

5.0 **Review of Potential Areas for Offset-Section Drilling**

5.1 Pito and Endeavour Deeps

Formed by rift propagation into young, fast-spreading crust. Pito is about 6km deep with 25 degree slopes on walls. Gabbros have been recovered from 5500m level on wall. Expect to find significant crustal thinning associated with the Deep. There will be a dive programme in January 1993 (Francheteau) and detailed sampling will be undertaken at that time. Both deeps are currently viewed as viable alternatives to Hess Deep but they need additional study.

5.2 Garrett Fracture Zone

Located at 13 degrees south on the EPR. Fastest slipping transform known with about 130 km offset in 1.6 Ma. Transform is divided into 4 segments by relay zones with basalt extrusion. This may be a true leaky transform. Nineteen dives were carried out in the Garrett last year and gabbros were dredged from the flank of the median ridge. The gabbros appear to be screens in a zone of serpentinite.

5.3 Sequeiros Fracture Zone

This feature has short ridge segments in a leaky transform. There is about 1100m of relief on the floor. Young basalts have been recovered from the floor on several dives. Diabases, microgabbros and gabbros were recovered from the walls of the fracture zone. Also considered a true leaky transform because of pillow basalts along the axis of the transform.

5.4 Oceanographer Transform Fault

The Oceanographer offsets the MAR by about 100km and is adjacent to the Azores hotspot so it has a relatively high magma supply rate. Relief is on the order of 2500m, and the crust appears to thin to about 2km in the axis of the transform. There are mostly breccias exposed on the walls with some sheeted dikes and peridotite exposed on the inner wall of the spreading ridge. Harzburgite and lherzolite have been recovered from the north wall of the transform. Ultramafic rocks and gabbros occur on the south wall where they are overlain by pillow lavas.

5.5 Hess Deep

The Hess Deep is at the tip of a propagating rift in the Nazca-Cocos plate and exposes relatively young crust generated at the EPR. Topography is very rugged and geology is complex. Area has been surveyed and sampled during a dive programme. Gabbros recovered include cumulate types, gabbros of basalt composition, and oxide-rich ferrogabbros. There is some difficulty in distinguishing what is old EPR crust and what is new Cocos-Nazca crust. There are also some problems involved with overprinting by hydrothermal activity. Two different structural models exist for the floor of the Hess Deep: 1) Lonsdale proposes that the structure reflects detachment faulting and 2) Francheteau proposes a horst structure. The Hess Deep is on the schedule as Leg 147 and will be drilled in December 1992. Co-Chief Scientists will be Kathyrn Gillis and Catherine Mével.

5.6 Vema Fracture Zone

The Vema is located at 11 degrees north on the MAR and has 320km of offset. At this point the MAR has a half-spreading rate of 1.2-1.6 cm/yr. It has a transverse ridge which is a continuous high ie. unlike the Atlantis II. Submersible surveys have recovered peridotite -gabbro-dikes-lavas from floor up the wall. Ferrogabbros apparently occur directly above mantle peridotities. The Vema appears to be a good target for offset-section drilling, although he kinematic and tectonic settings of potential drill sites are not well constrained.

5.7 15 20 Fracture Zone

The Fifteen Twenty Fracture Zone is located north of the Vema on the MAR. It is similar in many ways to the Vema but its attraction is its proximity to the end of a magmatic cell. Dunite and harzburgite are present, apparently unroofed by detachment faulting. Dredged rocks show some effects of low-temperature hydrothermal alteration. The rocks in the area have the geochemical signature of a hotspot although no known hotspots occur in the vicinity.

5.8 MARK Area

The MARK area is one of the best studied and best known targets available at the present time. It has been very well surveyed and sampled and the geology is well known. Ultramafic rocks are exposed on the west wall of the ridge segment where they are overlain by basalt. The gabbro section here must be very thin or absent. Apparently, the ultramafic rocks were exposed by detachment faulting during a period of low magmatic activity and were then overlain by basalts deposited directly on the unroofed section. Alternatively, the ultramafic rocks could be diapiric. Gabbros are well exposed on the south wall of the transform itself and this is the thickest gabbro section identified on the sea floor. No sheeted dikes are known to be present but the transition from gabbro below to basalt above is obscured. Slickensides on the entire gabbro face suggest that the wall is a fault scarp.

5.9 Kings Trough

Kings Trough is a failed rift that exposes old oceanic crust formed at approximately anomaly 25 time in the North Atlantic. The spreading rate at anomaly 25 was about 6cm/year and the area lies within the influence of a plume. The rift is part of the system that separated Iberia from Europe. The trough has steep walls and a sedimented floor. Good exposures of sheeted dikes occur along the base of the walls and are up to 1km thick. Two dives in the area recovered gabbro overlain by diabase overlain by basalt. Very few survey data exist for the area and multibeam coverage is needed as well as more dives before this becomes a mature target.

5.10 Blanco Transform Fault

The Blanco offsets the Juan de Fuca Ridge in the Pacific and has been proposed as a location where the dike-gabbro transition could be sampled in intermediate spreading rate crust. Detailed surveys and dives show steep walls along which there has been a great deal of mass movement. Thus far, only diabase and microgabbro have been recovered from the transform and it appears that the dike-gabbro boundary is not actually exposed.

5.11 Atlantis II Fracture Zone

A wide and high-standing transverse ridge is developed against this slow slipping (0.8 cm/yr half rate) transform fault, on the S W Indian Ocean Ridge, and exposes gabbro and ultramafics. Linear magnetic anomalies are traceable across both rock types, and Hole 735B was drilled on a shallow, wave-cut platform beneath anomaly 5 (ie. approximately 10 Ma). On the non-transform side of the ridge-transform intersection volcanics appear to overlie unextended crust. The transverse ridge provides ideal sites for further long gabbro sections, ultramafic sections, and, hopefully, the gabbro/ultramafic transition.

6.0 Site Survey Requirements for Offset-Section Drilling

6.1 It was generally agreed that the current site survey requirements for offset-section drilling are too stringent and that some of the information requested by the Site Survey and Tectonics Panels simply could not be obtained without drilling. Discussions with the Site Survey Panel liaison clarified the aims of the panel. Basically, the Site Survey Panel wants any hole to be placed in its broad geologic context and wants deep holes justified in terms of available data. Drilling can be used as a site survey technique when other methods will not produce the necessary data. The panel also wants to ensure that the site is drillable - ie. information is needed on water depth, seafloor topography for guidebase deployment, weather, nature of contacts, etc.

6.2 The Working Group defined a list of required, recommended and desirable site survey data for offset-section drilling:-

Required

a) A high resolution bathymetric map for morphology and hence structural setting
b) High quality surface magnetic data to determine the age and kinematic setting
c) Near bottom visual observations to obtain location of contacts on an outcrop scale
d) Geologic sampling, both regional and local, with detailed location and analysis of the rocks sampled.

Recommended

e) Regional side-looking sonar to help define the volcanic-tectonic setting
f) Multichannel seismic-reflection profiling to determine regional structure and local internal structure to the extent possible. The multichannel seismics are useful more for regional structure than for local site characterisation. They should be coordinated with refraction to improve the local velocity structure.
g) Surface gravity to constrain crustal structure
h) Crustal seismic refraction data to obtain the crustal structure and thickness
i) Near bottom side-looking sonar.

Desirable

j) Near bottom magnetics if available
k) Regional refraction surveys, ideally including conjugate crust, to understand the nature of the crust before dismemberment
l) A summary of any drilling information available
m) A geologic map based on the best information available. Specifically, transitions such as the dike/gabbro or crust/mantle should be well characterised before drilling
n) studies of microseismicity where applicable
o) Once drilled, we envision that vertical seismic profiling should be used to better place the drilled section in its regional context.

Note: The Working Group recognises that other techniques are under development, such as near bottom gravity and near bottom seismics, which would provide useful information. Future requirements may reflect development of these new techniques.

7.0 Technological Requirements to Implement the Strategy

7.1 One of the great attractions of an offset-section drilling strategy is that it does not require technological capabilities and developments beyond those which currently exist. However, having said this, the routine provision of some of the hardware development currently in hand could greatly enhance the degree of success achieved by an offset-section drilling programme.

7.2 The following technological capabilities are considered to be particularly relevant to offset-section drilling:

a) The 'Hard-rock' Guidebase, ideally modified to cope with slopes up to thirty degrees
b) The 'Hard-rock' Drill-in Casing, which might be invaluable, for example, on benches covered with up to 10 or 20m of talus
c) The 'Hard-rock' Spud-in with Downhole Mud Motor
d) A commandable on-off beacon with long-life batteries (eg. 5 years) and deployable by ROV
e) The Electronic Multishot Orientation Tool
f) In principle the Diamond Coring System could be useful for offset-section drilling but the group was concerned that core orientation and certain crucial down-hole measurements, such as the Formation Micro Scanner, might not be available because of the narrower hole. If this were to be the case, then the downhole Mud Motor, producing a full-size hole, would be preferred, the group attaching great importance to obtaining oriented core and a full suite of downhole measurements.

7.3 Gene Pollard suggested that on the basis of operating experience to date, and with current capabilities, one would hope to achieve approximately 1 Km of offset-section drilling per Leg; less if the water depth is greater than 2000m.

8.0 Summary of Target Areas

8.1 As a result of the review of potential areas for offset-section drilling (Section 5), three areas were eliminated from the short-list. These were the Garrett and Sequeiros fracture zone sites, which clearly sample atypical crust resulting from fracture zone processes, and the Blanco trough which now looked unpromising because of the extensive mass wasting on the flanking scarp.

8.2 The Working Group then evaluated the remaining short-listed areas in terms of the objectives listed above.

	Objectives	Rate	Comp	Segment
Rifted Crust				
Hess Deep	1, 2, <u>3</u>, 4	F	N	N/A
Pito	2	F	N	N/A
Endeavour	?	F	N	N/A
Kings Trough	1, 2, <u>4</u>	I	E	T
Transverse Ridge and Fracture Zone				
Atlantis II	2, <u>3</u>, 4	S	N	T, S
Vema	1, <u>2</u>, 3, 4	S	N	T
Oceanographer	2, 4	S	E	T, S (?)

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Median Valley				
MARK	2, 4	S	N	T, S
15-20	3, 4	S	E (?)	T, S

Key to Table:

Objectives 1) To sample the sheeted/dike/gabbro transition
2) To sample long sections of oceanic gabbro
3) To sample the gabbro/ultramafic transition
4) To sample long sections of oceanic ultramafic rocks

Note: Underlined number means that objective could perhaps be achieved at this location.

Rate: F = fast, S = slow, I = intermediate
Comp: N = normal MORB composition, E = enriched MORB composition
Segment: T = temporal variability in magmatic cell, S = spatial variability in magmatic cell, N/A not applicable.

9.0 **Natural Laboratories**

A discussion of natural laboratories as applied to offset-section drilling concluded that this term would be used for drilling composite sections at a given location.

10.0 **Offset-Section Drilling Priorities**

10.1 Given the limited time available for basement drilling the Working Group defined a phased approach to offset-section drilling with the following, prioritised, objectives:

1) to develop a global composite section of the oceanic crust and upper mantle

2) to obtain composite sections of crust formed at fast - and slow-spreading ridges.

3) to establish the variations in the crust and upper mantle that occur between geochemically enriched and depleted areas; and the lateral (spatial and temporal) variations that occur within magmatic segments of spreading systems.

10.2 Only two DSDP/ODP drill-holes to date contribute significantly to priority 1):- 504B and 735B. Deepening of 504B would, hopefully, penetrate the dike/gabbro transition, and drilling at Hess Deep (Leg 147), or extension of 735B, will provide further long gabbro sections and conceivably penetrate the gabbro/ultramafic transition. The siting of offset-section holes intended to drill through a transition is currently not considered possible without further site surveys to characterise the nature and structural attitude of the transition.

10.3 The Working Group recommends therefore that the highest priority, achievable, objective at the present time should be a long section within ultramafic rocks. This would begin to fill the largest gap within the global composite section and potentially lead to the greatest advance in our understanding of ocean lithosphere processes for the resources, eg. one drilling leg, invested. Beyond this, and given additional site survey data, the gabbro/ultramafic transition should be the next highest priority. Clearly with time it would be preferable to build up composite sections in single areas or 'natural laboratories'.

11.0 Draft Report

11.1 The chairman offered to produce a draft report for the next meeting under the following headings: mandate; definition; objectives; strategy; assessment of possible target areas; short-listed areas; site survey requirements; engineering aspects, and an appendix giving details of the short-listed areas. This offer was accepted.

11.2 It was agreed that, although the chairman would draft the text of the body of the report, members should forward to him, by the end of February, copies of diagrams identified for incorporation into the report during the course of the meeting, and the details to be included in the appendix, as follows:

Atlantis II and 15 20:	Henry Dick
MARK and Kings Trough:	Jack Casey
Vema FZ:	Enrico Bonatti
Hess Deep:	Jim Natland
Oceanographer FZ:	Jeff Fox

These details should not exceed two sides of paper and should essentially cover the following: basic description of the area, including a map and the regional setting; the objectives attainable; extent of existing data; further data required; status of proposals for the area.

12.0 Leg 148

In priority order, the Working Group recommends the following targets for this DCS Engineering Leg:

1) Vema transverse ridge limestones, perhaps 200m thick and at approximately 600m water depth.
2) Vema Fracture Zone wall diabase dikes, at 2500m water depth.
3) MARK master fault and long gabbro section, at 2500m + water depth.

It was thought that the Vema area might be attractive from an engineering point of view because it offers a range of (uniform) lithologies and water depths. It is also very attractive from a scientific point of view in that 1) might elucidate the vertical motion history of the transverse ridge and 2) might penetrate the dike/gabbro transition.

13.0 Working Group Membership

The Working Group had found it particularly helpful to have Kim Kastens present, as a member of the SSP, and hoped that she would also be invited to attend the final meeting of the Working Group in Paris in May.

14.0 Next Meeting

The Working Group re-affirmed its request to hold a third and final meeting at the Université Pierre et Marie Curie, Paris from 18-20 May 1992 inclusive.

PAUL ROBINSON/FRED VINE
FEBRUARY/MARCH 1992.

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Data Handling Working Group, Toronto, March 5th & 6th, 1992

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REPORT

Membership

Ian L. Gibson, University of Waterloo, (Chairman).
Jan Backman, Stockholm University.
Bob Bookbinder, Lamont-Doherty Geological Observatory.
Wilfred Bryan, Woods Hole Oceanographic Institution.
John Coyne, ODP/Texas A&M University.
Joseph P. Dauphin, National Science Foundation.
Andrew Fisher, ODP/Texas A&M University.
Jack Foster, ODP/Texas A&M University.
Mike Hobart, Lamont-Doherty Geological Observatory.
Peter Jackson, United Kingdom Geological Survey.
Ellen Kappel, Joint Oceanographic Institutions Incorporated.
Yves Lancelot, CNRS, Laboratoire de Geologie du Quaternaire,
Brian Lewis, University of Washington.
Matt Mefferd, ODP/Texas A&M University.
Greg Moore, University of Hawaii.
Kate Moran, Atlantic Geoscience Centre.
Philippe Pezard, Institut Mediterranean de Technologie.
Paul Worthington, BP Research Centre.

Introduction

Changes are urgently required to the shipboard computer system on the JOIDES Resolution. The changes are needed because the work of the ship-board scientist during legs is being seriously hampered by the difficulty of retrieving data relating to the current leg, and by a lack of sophisticated computing resources to manipulate that data. The integration of the increasing amount of logging results with core data is also essentially impossible within the confines of the present shipboard computing environment. Ship to shore data communications are poor, making 'real-time' shore-based interaction with ongoing drilling difficult. Changes are also needed to allow the storage and organisation of the greatly increased amount of numerical data being generated on legs. The presently installed VMS-based S1032 database system is totally inadequate for this task and unless changes are made there is a grave danger of ODP being unable to rationally archive shipboard data for post-cruise and subsequent study. Current methods for disseminating ODP data to the wider shore-based community also need improvement.

The working group recognises the seriousness of the situation, and outlines below a series of recommendations for changes in the ODP computing environment. The changes should be viewed as a package and represent the first major overhaul of the shipboard computing environment since the start of the Ocean Drilling Program some eight years ago — an eight-year period of unprecedented growth and change in the computing world.

Recommendations

1. That a new on-board centralized data-repository be installed on the JOIDES Resolution to allow the accumulation, organisation, and accessibility of data collected on each Leg in 'real-time'.

2. The data repository should take the form of a standard (SQL) relational database, which should be large and sophisticated enough to accommodate all of the digital and text data-sets presently acquired during a leg, including the larger MST and logging data-sets, and pointers to larger data-structures (e.g. seismic data, digitized photographs, etc..).

3. The new relational database should be installed on a specially purchased new computer system which would be dedicated to the task of acting as a database server. Thus the new system would represent an addition to the present computer structure and initially, the new and old would run in parallel.

4. The new database server should run under the UNIX operating system, given the increasing use of this operating environment in the user community.

5. The new database server should be placed on the existing Ethernet network. Preliminary information suggests that it will co-exist happily with existing hardware and software elements.

6. New commercial database software for the server, along with the appropriate networking protocols, should be purchased, together with matching software for the existing 386-PC and MAC micro-computers and a group of new UNIX work-stations. All three types of devices would at times act as 'client' machines to the database server. The new database system must at a minimum accommodate:

    - Database sizes in excess of 1G
    - Versioning, including journaling and a transaction log.
    - SQL
    - A data dictionary
    - Multi-vendor support for at least MAC, PC-386, SUN, HP, and DEC client systems
    - Backup and recovery

7. In addition to the commercial database software noted above, it will be necessary to obtain ODP-specific data capture application software to reside on the client machines. It is essential that data capture software enhance the existing shipboard measurement environment and not hinder data acquisition. The following data-collection procedures need to be supported by new software:

   - Data acquired directly from instruments
     - MST
     - Magnetometer
     - Discrete DSV
     - Thermal Conductivity
     - ADARA
     - WSTP
     - Slimhole Temperature tool
     - Electronic multi-shot
     - SCM
     - Totco
     - XRD
     - XRF
     - Natural Gamma (May be part of MST)
     - Shear Vane
     - Resistivity
     - Colour reflectance
   - Data entered into forms/spreadsheets
     - Discrete Index Properties
     - SAM
     - Corelog
     - VCD
     - Smear Slides
     - VCD
     - Grain Size
     - Carbonate
     - Pore Water chemistry
     - Organic Geochemistry
     - HARVI
     - HR Thin section descriptions
     - Micro-paleo
     - Reference Depth (from core/log integration)

Additional data-sets will need to be added from time to time and facilities must exist to allow this incremental expansion.

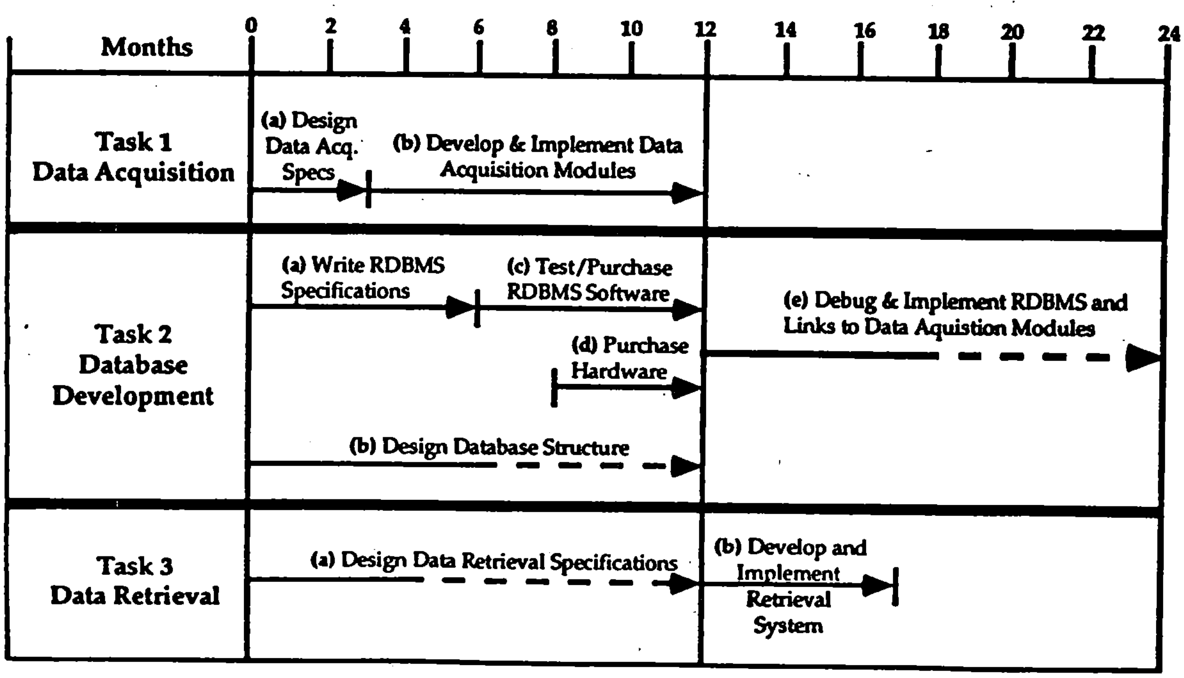
8. The working group considers it important that the new data-base software incorporates data verification which should not hinder data-acquisition.

9. New ODP-specific application software will have to be acquired to allow users to easily retrieve information from the new database system. This software should automatically query the database via standard software packages (e.g. Excel)

10. We recommend that shipboard technical staff support data curation with the same level of effort as is now applied to sample curation, in recognition of the increasing importance of the orderly collection of numerical information during a leg.

11. We recommend that following the deployment of the new database system described above that on any one leg, one of the two shipboard computer systems managers should be responsible for the new major Unix/Database environment described above.

12. An approximate time table for the development of a new database system is shown below. The intention is to have the new database structure fully operational and on-board the JOIDES Resolution approximately two years from the start of the design phase. It should be noted that work on the database design and specification, data-acquisition modules, and data retrieval modules should proceed in parallel.



Notes:
- Task 1a should be prepared by TAMU with SMP and IHP input
- Task 1b is urgently needed; to speed up implemenation this task could be completed by a number of groups simultaneously
- Task 2a should be prepared by a group of: TAMU computing/database services with database experts from member institutions and countries
- Task 2b should be prepared with input from all panels
- Task 3a should be prepared by TAMU science services with input from panels, specifically IHP

13. It is envisaged that the development of the new shipboard database system will be accompanied by the implementation of a very similar shorebased system. In order to accommodate periodic updating of the shore-based system, communications with the ship should be improved to allow periodic 9600/1.92Kb data links and routine EMAIL. The shore-based database should be accessible over the internet by the international community, and house data from both the current and previous ODP legs.

14. DHWG recommends that the existing computing hardware environment be supplemented by additional workstations for specific data handling requirements. These should be UNIX workstations with capability of handling large data sets. Workstations for the following laboratories are required in priority order:

    - Core-log data and image correlation stations (previous SMP/DMP recommendation)
    - Age-depth correlation station (previous SMP recommendation)
    - Downhole measurements laboratory
    - Underway geophysics laboratory
    - Physical properties laboratory

15. DHWG recommends that the implementation of the database system outlined above should be monitored by a Data-handling Steering Group. This small group might contain members drawn from the ODP Service Panels with additional invited expertise.

Summary

The data handling working group envisions a new fully-integrated shipboard ODP data handling system which includes the following elements:

- A large UNIX-based online database in a client-server configuration.
- A network of client PC-386 and MAC data-acquisition modules feeding data into the online database.
- Powerful IBM-PC, MAC and UNIX workstations for data retrieval and interpretation.
- A parallel shore-based system, accessible over the internet, to house the ODP multi-leg database, and linked to the ship by improved satellite communications.

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OCEAN HISTORY PANEL 5-7 MARCH 1992 ST. PETERSBURG, FL

EXECUTIVE SUMMARY

Meeting description. The Ocean History Panel held its spring 1992 meeting at the Department of Marine Sciences, University of South Florida, St. Petersburg, FL, hosted by Dr. Al Hine. OHP again strongly urges international representatives who will be absent to notify their alternates in sufficient time for them to be able to attend. OHP enthusiastically welcomed the presence and participation of Tom Janecek, the TAMU-ODP liaison. (Minutes, Table of Contents, item 1)

Diamond coring system. OHP is extremely concerned that continuing problems with the development of the Diamond Coring System will prohibit progress on several major thematic areas of interest requiring the continuous recovery of alternating soft/hard sediment lithologies, and in particular, of chalk/black shale/chert sequences in Paleogene and Cretaceous sediments. We have highly ranked proposals of significant thematic interest which require this technology; these will be more highly ranked when this recovery capability is achieved. Therefore, we strongly recommend that high priority be given to providing both adequate shorebased resources and adequate ship time for the development of the DCS to ensure a fully operable system as rapidly as possible, ideally within the next several years as originally indicated in the long-range plan. (Minutes 2d)

Sediment recovery with the APC/XCB. Based on high-priority objectives involving high-resolution studies of sediments, OHP strongly advises:

(a) The JOIDES Resolution be equipped with computer capability to allow real time hole-to-hole and core-to-log correlations, with the capabilities at least those demonstrated useful on Leg 138.

(b) TAMU engineers should evaluate the problem of sediment stretching/distortion with the APC and provide improvements of the system to minimize this problem. Leg 138 provided very complete documentation of these problems, which may be of use in these evaluations.

(c) TAMU engineers should evaluate the issues involved in obtaining complete XCB-sections, and provide needed improvements to minimize these problems.

These capabilities and improvements will be particularly useful in achieving the scientific objectives on upcoming legs including Leg 145 (North Pacific Transect), Leg 150 (New Jersey margin/Mid Atlantic Transect) and Leg 151 (North Atlantic/Arctic Gateways, Leg I). (Minutes 2d)

Santa Barbara Basin Drilling. While recognizing the scientific importance of further drilling in the oceanic crustal section at 504B and of drilling at the Hess Deep (Leg 147), OHP unanimously recommends that a single site in the Santa Barbara Basin with multiple APC sampling, as discussed in proposal 409 (received 10/4/91 at the JOIDES office) and in proposal 386 as site CA-10, be scheduled on Leg 147 or 148 as well. This site is ideally suited to ultra-high resolution studies of marine records with regard to issues of importance in global change and understanding the global carbon cycle; this sediment record will allow detailed resolution of climatic fluctuations over a substantial portion of the Quaternary record in this important upwelling system. The small investment of time required, while not substantially affecting the progress possible at Hess Deep or Hole 504B, will result in multiple scientific yields important in understanding global change.

We note also as further support for this recommendation that the drilling of a Santa Barbara site was strongly endorsed by OHP at both its Fall 1990 and Fall 1991 meetings (see those minutes). (Minutes 4c)

GLOBAL PRIORITY LIST OF HIGHLY RANKED PROGRAMS. (Minutes 5e)

Ranking	Proposal number and abbreviated title	Fraction awarded/ available points	Ready for FY94 drilling?
1	388+388-Add Ceara Rise	0.98	yes
2	NAAGII + possible additions	0.84	yes (FY95)
3	415+403-Rev Caribbean K/T	0.77	yes?
4	354-Rev Angola/Namibia/Benguela	0.74	yes
5	253-Rev Ancestral Pacific	0.71	no (DCS needed)
6	386-Rev CA current	0.68	yes?
7	404/406 L Neogene N Atlantic	0.54	yes?
8	412 Bahamas Transect	0.50	no?
9	Bering Sea (CEPAC)+390	0.43	yes
10	337 EXXON SL test, N Zealand	0.40	no
11	347 Cenozoic S-equat Atlantic	0.38	no?
12	363-ADD NR1-3 paleo record	0.28	yes
13	345+345-Add W. Florida margin	0.23	no
14	338 NE Aust, Marion Plateau	0.10	no

See minutes (5f) for a more complete statement of drilling readiness for each proposal to justify the yes/maybe/no indications given above.

Two recommendations (minutes 5f) regarding priorities 2 and 3 were made:

RECOMMENDATION: Given the scheduling of NAAG-I as Leg 151 (summer 1993), OHP again recommends that PCOM set up a DPG to meet early in 1993 and again almost immediately after this leg ends to finalize a program for a second leg that can be considered at the fall 1993 OHP and PCOM meetings for drilling in summer 1995. This gives more scientists the opportunity to have input into the planning process and will result in even higher scientific returns than the already highly regarded plans.

RECOMMENDATION: Given the strong interest in drilling in the Caribbean region in several highly ranked proposals, we recommend that PCOM establish a DPG to synthesize objectives for drilling legs, resulting in definition of common sites of interest and drilling strategy to achieve these objectives. The DPG should have members with expertise in Neogene, Paleogene, and Cretaceous paleoceanography, as well as members with expertise in tectonic reconstructions of the circum-Caribbean region and in seismic stratigraphy. The DPG should include scientists from countries bordering the Caribbean in this planning stage for scientific drilling.

Non-engineering needs. The prioritized list for non-engineering needs, with references to the more complete descriptions given in the minutes (6), is:

1. Computing improvements to facilitate core-to-core and core-to-log correlation (OHP item IVa).

2. Core barrel magnetometer (OHP item IIIa).

3. High resolution magnetic susceptibility logging tool (OHP item IIa).

4. Micropaleontological reference collections, with strong emphasis on collection maintenance and completeness (OHP item Va).

5. MST upgrade for natural gamma and possibly spectral gamma core logging (OHP item IIIb).

6. Resistivity equipment for discrete core measurements (OHP item IIIc).

7. Carbonate autosampler and replacement coulometer (OHP item IIId).

8. MST color scanning capabilities, in incremental progression as described (OHP item IIIe).

Of equal priority:
9.5 Software for synthetic seismograms (OHP item IVb).
9.5 High-resolution geochemical logging tool (OHP item IIb).

11. Sidewall sampling capabilities (OHP item IIc).

12. Stratal geometry seismic software packages (OHP item IVc).

Leg 151 planning. (Minutes 7a) OHP endorsed the following motion with regard to North Atlantic-Arctic Gateway, Leg I (Leg 151) drilling:

1. OHP strongly advises that a teamed Oden (or similar icebreaker)-JOIDES Resolution operation be scheduled for Leg 151; this operation may only be necessary for part of Leg 151 drilling.

2. This operation should be allowed to penetrate into partially ice-covered areas, as described in the Liljeström report to NAD. We foresee that this will imply the capability to reach all the Yermak Plateau Sites mentioned in the NAAG-DPG report.

3. OHP advises that Sites YERM 1 and ARC 2A be included as chief objectives of Yermak Plateau drilling.

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Co-chief nominations for Leg 151. These are Eystein Jansen, William Ruddiman, and Jorn Thiede. (Minutes 7b)

Deep drilling. OHP formulated a target description for TEDCOM of an OHP deep drilling objective. (Minutes 8)

OHP business. We reviewed the status of OHP White Paper, panel membership and panel expertise. (Minutes 9 and 10)

Next meeting. The next meeting is tentatively scheduled for 30 September-2 October 1991 in Marseilles with Edith Vincent as host. (Minutes 11)

OHP MINUTES--TABLE OF CONTENTS

OCEAN HISTORY PANEL 5-7 MARCH 1992 DETAILED MINUTES

1. INTRODUCTIONS AND MEETING LOGISTICS

The Ocean History Panel held its spring 1992 meeting at the Department of Marine Sciences, University of South Florida, St. Petersburg, FL, hosted by Dr. Al Hine. The meeting opened with introductions of all present, and with gracious welcomes from Al Hine, host, and Prof. Peter Betzer, Chair of the USF Department of Marine Sciences. In attendance were the following panel members:

John Barron, Timothy Bralower, James Channell, Margaret Delaney (chair), Timothy Herbert, Albert Hine, Eystein Jansen (ESF), Tom Loutit, Hisatake Okada (Japan), Lisa Pratt, Maureen Raymo, Edith Vincent (France), Philip Weaver (United Kingdom), Gerold Wefer (Germany), and James Zachos,

with the following liaisons:

Robert Duncan (PCOM), Tom Janecek (TAMU-ODP), Guy Smith (LITHP), and Peter Swart (SGPP; attended day 1 only because of overlapping OHP/SGPP meeting dates).

Regrets had been received from Ivan Basov, Russia (in response to meeting invitation to Leonid Dmitriev, Russia). No response had been received from Peter Davies (C-A), and he was absent for a third meeting in sequence.

The expertise of panel members is sorely missed in their absence. OHP again strongly urges international representatives who will be absent to notify their alternates in sufficient time for them to be able to attend. Continuing representation at these meetings is seen as significant. The participation of alternates, when the designated member is unable to attend, is welcomed as a means to ensure this.

OHP enthusiastically welcomed the presence and participation of Tom Janecek, the TAMU-ODP liaison, and conveys our strong hope that this representation will continue. Close communication between TAMU-ODP and the panel, as facilitated by this liaison, greatly aids our progress.

2. PRIOR MINUTES

No comments or changes were required.

3. REPORTS FROM LIAISONS

a. PCOM Report Bob Duncan

In response to questions from the panel, Duncan discussed PCOM views on the role of proponents of drilling proposals in panel consideration of these proposals. Panel discussion and voting should be structured so that proponents do not unfairly influence the process by their presence, and, in particular, should not be allowed to lobby for their proposals. However, with suitable safeguards, proponents may remain in the room during discussion and voting, and can respond to questions and requests for clarification about their proposals. Given the long process from proposal to drilling leg, the valuable expertise of each panel member in our deliberations, the likelihood that panel members may be motivated to be proponents during their term of service, either by panel request or by their own science, and the numerous safeguards in place throughout the system, OHP commends this healthy balance in proponent participation in proposal review.

Duncan reviewed the 1991 PCOM annual meeting, presenting the FY 93 schedule through leg 152. He reviewed the major actions taken, including: the recommendation to increase the number of technical support staff on board, the investigation of deep drilling capabilities, the progress of the sea level working group, the decisions about the various S-proposals reviewed, and the discontinuation of S proposals in general. Proposals for less-than-a-leg should be integrated into appropriate thematic packages early on in the process. PCOM urges foreign members to use similar rotation schedules as U.S. members for advisory panels. Proponents should be reminded to send site survey data to the ODP databank promptly, ensuring that the SSP has adequate time for review. The status of ODP renewal was reviewed as well.

In response, OHP notes our thanks for the OSN-2 decline, given the major impact it would have had on the scientific objectives of that leg. We also note that, given the impact of a larger technical crew and an additional international member on the size of the scientific party, that support for shore-based scientists becomes more important.

b. SGPP report Peter Swart, liaison from SGPP

Swart reviewed results from the recent fluid sampling workshop and the current status of various sampling techniques. He commented on SGPP panel meetings during the past year and reviewed the SGPP ranking of proposals from the North Atlantic prospectus.

c. LITHP report Guy Smith, liaison from LITHP. See their minutes.

d. TAMU-ODP report Tom Janecek, TAMU-ODP liaison.

Janecek reported on the current news from Leg 142 on DCS testing; this discouraging progress, with a probable minimum of 1 year until further DCS testing can take place, means that Leg 148 will <u>not</u> be an engineering leg to further test DCS.

The following statement was reached by panel consensus:

OHP is extremely concerned that continuing problems with the development of the Diamond Coring System will prohibit progress on several major thematic areas of interest requiring the continuous recovery of alternating soft/hard sediment lithologies, and in particular, of chalk/black shale/chert sequences in Paleogene and Cretaceous sediments. We have highly ranked proposals of significant thematic interest which require this technology; these will be more highly ranked when this recovery capability is achieved. Therefore, we strongly recommend that high priority be given to providing both adequate shorebased resources and adequate ship time for the development of the DCS to ensure a fully operable system as rapidly as possible, ideally within the next several years as originally indicated in the long-range plan.

Janecek reviewed the status of staffing, both shipboard and shorebased. Shipboard scientist staffing is complete through Leg 144; suggestions are needed for Leg 145 for a geophysicist and a physical properties specialist and for Leg 146 for paleomagnetists and paleontologists. Janecek reviewed ODP staffing changes, with current recruitments for a Science Operations Manager (to replace Meyer) and for the new position of Manager of Information Services (ideally a scientist with strong computer background). There is a staff scientist opening, with expertise desired in either geochemistry or physical properties. Janecek reviewed the shipboard reorganization of the technical staff, the existence of sea-going only technical positions, and the addition of systems managers so that there will now be 2 per leg.

A long-standing OHP request has been that some technicians should be trained in and have primary shipboard responsibility for assisting in the micropaleontology lab. Although TAMU-ODP is aware of this, co-chief scientists of legs for which this is a high priority should make specific note of this during the pre-cruise meeting.

Janecek reviewed the status of publications, and, in response to questions about problems in the past, described the current improvements in producing range charts.

In response to questions, Janecek reviewed the planned test of shallow water drilling using the JOIDES Resolution on the atolls and guyots leg, and the current status of investigations into the use of alternate platforms.

A key item of discussion was the issue of APC (and XCB) coring distortions especially with regard to depth in core. In particular, careful attention to hole-to-hole correlations producing a composite depth scale (in mcd or meters composite depth) for Leg 138 sites demonstrated substantial offsets from total drilling depth (mbsf or meters below sea floor) in both APC and XCB sections. Offsets are apparently larger than those which would be estimated solely from the pressure overburden and physical properties of the lithologies sampled.

The following statement was approved by panel consensus:

One of the highest ranking OHP objectives is high-resolution coring of Neogene sedimentary sequences to reconstruct in detail environmental gradients, climate evolution, and ocean circulation in different ocean basins. This effort depends heavily on double (and triple) APC coring to ensure complete recovery of the whole stratigraphic column without loss of sediment at core breaks. In addition, high priority objectives involve high-resolution work on similar oceanographic problems in older sediments, with this work in the near future increasingly relying on multiple coring to obtain complete records.

Recent experiences from Leg 130 and particularly from Leg 138 point to several issues relevant to this topic:

(1) The presence of a shipboard stratigraphic coordinator with rapid, efficient computer access to core and logging records enables real-time evaluation of hole-to-hole correlations for stratigraphic completeness with good overlap between holes, and can be used to guide drilling strategy to

ensure the completeness of the drilled record.

(2) There are problems with the APC which lead to stretching or expansion of the sediments; this typically leads to apparent over-recovery, with a greater length of sediment recovered than was actually drilled. This causes problems when producing depth scales, correlating records hole-to-hole, and comparing core and downhole logging records.

(3) Similar problems apparently occur with the XCB in more indurated sediments. This affects the possibilities for high-resolution studies on stratigraphically complete records in older sediments.

By panel consensus, OHP therefore strongly advises:

(a) The JOIDES Resolution be equipped with computer capability to allow real time hole-to-hole and core-to-log correlations, with the capabilities at least those demonstrated useful on Leg 138.

(b) TAMU engineers should evaluate the problem of sediment stretching/distortion with the APC and provide improvements of the system to minimize this problem. Leg 138 provided very complete documentation of these problems, which may be of use in these evaluations.

(c) TAMU engineers should evaluate the issues involved in obtaining complete XCB-sections, and provide needed improvements to minimize these problems.

These capabilities and improvements will be particularly useful in achieving the scientific objectives on upcoming legs including Leg 145 (North Pacific Transect), Leg 150 (New Jersey margin/Mid Atlantic Transect) and Leg 151 (North Atlantic/Arctic Gateways, Leg I).

4. REVIEWS OF NEW PROPOSALS

a. Procedures. Discussion centered on several points relevant to proposal reviewing. Since proposals are the documents from which the drilling program is constructed, it is important to emphasize that reviews are not judgements on proponents. Panel members are selected and valued for their expertise, but care is taken to ensure that proponents do not influence the reviewing or ranking process. Reviews reflect the collective opinion of the panel. Contact with proponents by panel watchdogs is encouraged, with the sample letter used by TECP as a guide; this was handed out at the meeting. Attention was called to the revised review form, and to the proposal submission deadlines of 1 August and 1 January.

b. Summary of reviews. Discussion then proceeded on the thirteen new proposals, with panel views summarized in the written reviews (to be circulated to all panel members, as well as submitted to the JOIDES office). These proposals are listed below by ranking, with OHP watchdogs listed for ones within our thematic interests. Proponents who were present for the discussion of a proposal are also noted in this list. Consistent with PCOM advice, proponents were allowed to remain in the room for discussion of a proposal, and were allowed to respond to questions and requests for clarification, but were not allowed to lobby for a proposal.

No.	Title	OHP Watchdogs	Proponents present
Ranking -- Addresses high priority objectives of this panel			
409	High Resolution Late Quaternary Paleoclimatic and Sedimentary Record, Santa Barbara Basin, CA	Herbert Raymo Wefer	
Ranking -- Addresses high-priority objectives, but with deficiencies, as noted			
412	The Bahamas Transect: Neogene/ Quaternary Sea-Level Fluctuations and Fluid Flow...	Hine Loutit Vincent	Swart
354-Rev	Neogene history of Bengueala Current and Angola/Namibia Upwelling System	Barron Bralower Vincent	Wefer
415	Proposal for Drilling the Cretaceous-Tertiary Boundary in the Caribbean Sea	Bralower Herbert Zachos	
403-Rev	Revised Proposal to Drill the KT Boundary, Gulf of Mexico	Bralower Herbert Zachos	
Ranking--Is of secondary interest to this panel if it is of high priority to some other panel			
411	Proposal for drilling the Caribbean Basalt Province	Bralower	Duncan
059-Rev3	Continental Margin Sediment Instability: ...Drilling Abyssal Plains	Hine Loutit Vincent	Weaver
Ranking -- Proposal objectives are not within panel mandate			
361-Add	Site Survey, TAG Hydrothermal Field, MAR		
410	A Proposal for Deepening Hole 504B...		
413	Magmatic and Tectonic Evolution of Oceanic Crust: the Reykjanes Ridge		
414	Rates, Effects, and Episodicity... Northern Barbados Ridge Accretionary Prism		
332-Rev3	Florida Escarpment Drilling Transect		
333-Add	Update to: ...Drilling Transect across the Cayman...		

c. Recommendation for Santa Barbara Basin Drilling

It is apparent from the DCS test results from engineering Leg 142 that the DCS system will not be ready for further testing on Leg 148, currently an engineering leg scheduled from 25 January-23 March 1993 (Panama-Panama). The back-up for this leg is listed as a return to Hole 504B, presumably based on proposal 410 (received 12/2/91 at JOIDES office).

While recognizing the scientific importance of further drilling in the oceanic crustal section at 504B and of drilling at the Hess Deep (Leg 147), OHP unanimously recommends that a single site in the Santa Barbara Basin with multiple APC sampling, as discussed in proposal 409 (received 10/4/91 at the JOIDES office) and in proposal 386 as site CA-10, be scheduled on Leg 147 or 148 as well. This site is ideally suited to ultra-high resolution studies of marine records with regard to issues of importance in global change and understanding the global carbon cycle; this sediment record will allow detailed resolution of climatic fluctuations over a substantial portion of the Quaternary record in this important upwelling system. The small investment of time required, while not substantially affecting the progress possible at Hess Deep or Hole 504B, will result in multiple scientific yields important in understanding global change.

We note also as further support for this recommendation that the drilling of a Santa Barbara site was strongly endorsed by OHP at both its Fall 1990 and Fall 1991 meetings (see those minutes).

Barron and Pratt are contacting the proponents to address the issues of available site surveys and refinement of site selection in accord with the written review.

5. GLOBAL RANKING

a. Strategy for global ranking, voting procedures, and limits on proponent participation

The approach agreed upon was as follows. Existing proposals which had previously been ranked and/or which had been reviewed at the fall meeting as addressing high priority thematic objectives are given an overview by their watchdogs for the benefit of the panel, with panel discussion and an assessment of drillability. Existing proposals of secondary interest to the panel are also reviewed to see if their status had changed since original review. During these presentations, proponents are allowed to remain in the room, with their presence noted for the panel. They are allowed to respond to questions and give clarifications, but are not allowed to lobby for a proposal. Some proposals may be eliminated from consideration at this stage; no proponent on any proposal is allowed to suggest the elimination of any other proposal from final ranking.

From the existing proposals addressing high priority objectives and from highly ranked proposals reviewed at this meeting, thematic groupings of proposals are constructed. Proposals may be included within more than one thematic group. When appropriate, proposals with common thematic interests are packaged into drilling legs. This categorization by thematic areas is viewed as a tool for ensuring the broad objectives of our mandate are addressed, and as a guide for evaluating where additional proposals are needed. Within these thematic groups, proposals are ranked based on a combination of scientific importance relative to our thematic objectives, scientific maturity, and drilling readiness. These rankings are only guides to final voting and are not binding in later voting by individual panel members (i.e., an individual panel member can vote a different priority order on his/her final list for proposals in a thematic group).

From these thematic lists, each panel member then produces a final list of proposals ranked from highest to lowest priority; if 14 proposals are under consideration, the highest ranked proposal is given 14 points and so forth to the lowest ranked being given 1 point. Proponents are not allowed to vote for their own proposals. If an individual is a proponent on one proposal of 14 being ranked, his/her final list ranks the other proposals from highest to lowest priority by awarding 13 points to 1 point. If an individual is a proponent on two proposals, the ranked list awards points from 12 to 1, etc. Voting sheets are submitted in writing, with signatures, and retained by the panel chair. The points awarded for each proposal on the individual lists are totaled and divided by the total number of points potentially available for that proposal if every voter eligible to rank that proposal gave it highest priority. This produces the final list, with proposals ranked by the fraction of available points awarded. After voting (and ideally after an overnight break), the list is reviewed to reiterate the scientific objectives and importance and drilling readiness of each proposal.

b. Sea level working group progress report

To help frame the issues relevant to OHP in our global ranking, Loutit, an OHP liaison to the SL-WG, reviewed its progress to date. This includes definition of the major questions with regard to sea level to be addressed, the general strategy to follow in addressing these questions, and the studies for which the drill ship is the appropriate tool. Of particular interest to OHP are issues relevant to determining the timing, magnitude, and rate of the eustatic sea level signal as it is recorded in sediments and sedimentary rocks; also of potential interest is determining the mechanisms of eustatic change, when these mechanisms have relevance to OHP objectives. Loutit presented, in more detail, the general criteria developed for proposals targeted at determining the timing of stratigraphic events, and the technical issues involved. Discussion ensued on the age intervals of interest, and of the importance of the use of multiple stratigraphic techniques for the definition of synchroneity.

c. Re-review of existing proposals

In preparation for our global ranking of existing and new proposals ranked as addressing high-priority thematic objectives of this panel, all panel members had been sent the global listing of active proposals, and encouraged to review these. The new "statute of limitations" on proposal lifetime was noted. Two proposals ranked by OHP in the past (296 Ross Sea and 313 Equatorial Atlantic) fall in this category; no action on these was deemed necessary at this time.

The panel listed the existing proposals be to discussed; proponents present are noted in parentheses following the proposal number: 388+388-Add, NAAG-II (Jansen), 406 (Raymo), 372, 345+345-Add, 404, 347 (Wefer), 386-Rev (Barron), Bering Sea+390, 253-Rev, 337, 338, 363-Add, 356-Rev. For these existing highly ranked proposals, watchdogs presented the objectives and sites, reiterated the points made in our formal reviews done in previous panels, noted any current activities on these proposals, and gave a brief assessment of the proposal's drilling readiness. During these discussions, we also considered appropriate programmatic packages. These comments, as well as the justifications for packaging of some proposals together, are summarized in the detailed final ranking list.

Proposals 391+391-Add and 408 (Hine, proponent) which had been ranked as "of secondary interest to this panel if of high priority to another panel" were also discussed to see if a change in ranking was now viewed as suitable to include them in our global listing; no such change was deemed necessary. We do anticipate further activity on both these proposals, and await future developments. The Mediterranean outflow site from 372 was not included in the final ranking, while the North Atlantic intermediate water site from this proposal was grouped with a similar site from proposal 406. Proposal 356-Rev, which proposes some sites already included in the NAAG-DPG, was not ranked and was referred to the planning for NAAG, Leg II.

d. Thematic groupings

The thematic groupings, with proposals listed by priority order within each group, were as follows:

HIGH-RESOLUTION OCEANOGRAPHIC/CLIMATOLOGICAL STUDIES, PRIMARILY NEOGENE

388+388-Add Neogene deep water circulation and chemistry, Ceara Rise
NAAG, Leg II (possibly including the higher latitude North Atlantic sites on the Feni drift and the Hatton Bank/Rockall Plateau 406 and 372, new proposals for this region, etc., dependent on outcome of Leg 151)
404/406 Bermuda Rise, Blake-Bahama outer ridge, NW Atlantic sites (and, if not incorporated in NAAG-II, the Feni drift and Hatton Bank/Rockall Plateau sites from 406/372)
347 Late Cenozoic Paleoceanography, South-equatorial Atlantic

INVESTIGATIONS IN ANCIENT OCEANS

NOTE: Within this general group, proposals were ranked by their relative strengths on Cretaceous objectives, K/T boundary objectives, and Paleogene objectives. 1 is highest rank, 5 lowest rank in these lists.

	Cretaceous	K/T boundary	Paleogene
253-Rev Ancestral Pacific	1.5	2.5	1.0
415, 403-Rev Caribbean	1.5	1.0	4.0
Bering Sea/390	3.0	?	3.0
363-Add NR1-3, Paleo record	4.0	2.5	5.0
388+388-Add Ceara Rise		?	2.0?

UPWELLING SYSTEMS

Of equal priority:
354-Rev Angola/Namibia, Benguela Current and 386-Rev CA Current (409)

Note: If our strong recommendation to drill the single site from proposal 409 on an upcoming leg is not endorsed, 409 is grouped with 386-Rev for ranking purposes; 386-Rev proposes a similar site (CA-10).

SEA LEVEL

412 Bahamas Transect
337 Tests of EXXON Sea Level Curve, New Zealand
345+345-Add Sea Level and Paleoclimate, West Florida Margin
338 Sea-level fluctuations, Marion carbonate plateau, NE Australia

e. Global ranking

There were 14 proposal packages under consideration. Fifteen panel members were present for voting. Two panel members were proponents on one of the proposals: Barron on 386-Rev and Jansen on NAAG-II. Two panel members were proponents on two: Raymo on package of NAAG-II (with 406) and on package of 404/406 and Wefer on 347 and on 354-Rev. The eleven panel members who were <u>not</u> proponents ranked proposals from 14 points for highest priority to 1 point for lowest priority. The two panel members who were proponents on one proposal each ranked all other proposals from 13 points for highest priority to 1 point for lowest priority; the two panel members who were proponents on two proposals ranked all other proposals from 12 points for highest priority to 1 point for lowest priority. Proponents could not vote for their own proposals.

Listed below for each proposal/package, given in final ranked order, are the number of eligible voters, the maximum points available if all eligible voters ranked that proposal highest, the total number of points awarded in voting, and, for two different views of final ranking, the mean score (total points awarded/number of eligible voters) and the fraction of total available points awarded (total points awarded/total points possible). Recall that the highest priority endorsement of a proposal by a proponent of any other proposal(s) has slightly less weight (in this vote by 1 or 2 points) than the highest priority endorsement of a non-proponent. The highest possible mean is therefore 13.6 for a proposal with no proponents present (and 0.1-0.2 higher for proposals with one and two proponents present respectively); the lowest possible mean is 1. The highest possible fraction of total available points awarded is 1, and the lowest is 0.07. The fraction of total points awarded is the more accurate indicator of ranking than mean points.

#	Proposal number and abbreviated title	No. voting	Total points possible	Total points awarded	Mean score	Fraction awarded/ available points
1	388+388-Add Ceara Rise	15	204	199	13.3	0.98
2	NAAGII + possible additions	13	179	150	11.5	0.84
3	415+403-Rev Caribbean K/T	15	204	157	10.5	0.77
4	354-Rev Angola/Namibia/Benguela	14	192	143	10.2	0.74
5	253-Rev Ancestral Pacific	15	204	145	9.7	0.71
6	386-Rev CA current	14	191	129	9.2	0.68
7	404/406 L Neogene N Atlantic	14	192	104	7.4	0.54
8	412 Bahamas Transect	15	204	101	6.7	0.50
9	Bering Sea (CEPAC)+390	15	204	88	5.9	0.43
10	337 EXXON SL test, N Zealand	15	204	81	5.4	0.40
11	347 Cenozoic S-equat Atlantic	14	192	72	5.1	0.38
12	363-ADD NR1-3 paleo record	15	204	58	3.9	0.28
13	345+345-Add W. Florida margin	15	204	46	3.1	0.23
14	338 NE Aust, Marion Plateau	15	204	20	1.3	0.10

f. Ranked proposals: assessment of drilling readiness, brief statement of scientific importance

1. Neogene deep water circulation and chemistry, Ceara Rise, from proposals 388 and 388-Add.

DRILLING READINESS: Site survey cruise scheduled for August-September 1992, with complete data set and site selection expected.

JUSTIFICATION: This proposal centers on high resolution Neogene climatic and oceanographic variability on a depth transect in a critical area for ocean circulation, and will produce important tropical isotopic and biostratigraphic records. These objectives are of high priority in COSOD-II and the OHP White Paper. The upcoming site survey cruise will define the potential for Paleogene (and Late Cretaceous?) objectives at these sites.

2. North Atlantic and Arctic Gateways (NAAG), Leg II, from NAAG-DPG and new proposals.

DRILLING READINESS: Sites identified in the NAAG-DPG report are generally ready to be drilled, with needed additional data collection/processing underway. Sites from other proposals which may be incorporated need site survey data (e.g., Feni Drift sites from proposal 406).

JUSTIFICATION: The second leg of this highly ranked program is justified based on the scientific importance of understanding both the northern and southern gateway aspects of the circulation system in this critical oceanographic region, as well as maximizing the potential for reaching sites for which ice conditions may prove difficult in a given year. Other sites from highly ranked existing proposals (and any new proposals) can be incorporated in this planning as well. Assuming Leg 151 is successful in reaching its high priority targets, the Feni Drift and Hatton Bank/Rockall Plateau sites from proposal 406, North Atlantic climate variability, could be incorporated in NAAG-II; the Hatton Bank/Rockall Plateau site could be more profitably sited as the one described in proposal 372, Cenozoic circulation and chemical gradients in the North Atlantic, for the reoccupation of DSDP 116. These southern gateway sites will be important in developing the history of intermediate water circulation and in addressing millennial-scale change critical for correlation with other high-resolution records, such as ice cores.

RECOMMENDATION: Given the scheduling of NAAG-I as Leg 151 (summer 1993), OHP again recommends that PCOM set up a DPG to meet early in 1993 and again almost immediately after this leg ends to finalize a program for a second leg that can be considered at the fall 1993 OHP and PCOM meetings for drilling in summer 1995. This gives more scientists the opportunity to have input into the planning process and will result in even higher scientific returns than the already highly regarded plans.

3. Drilling the Cretaceous-Tertiary boundary in the Caribbean Sea from proposals 415 and 403-Rev.

DRILLING READINESS: Site selection needs to be revised, with more site survey work possibly needed, especially to accommodate other objectives of potentially high ranking.

JUSTIFICATION: The main focus of this program is to drill the Cretaceous/Tertiary boundary in the Caribbean, near the site of the presumed impact crater. There is also strong promise of obtaining important tropical, primarily intermediate water records, through the Paleogene and Cenozoic. There are other proposals for drilling in this region with various thematic objectives.

In addition to this highly ranked program (based on 415 and secondarily on 403-Rev), proposal 408, on Testing two interpretations, N. Nicaragua Rise, is of strong secondary interest to OHP and is currently in revision. Proposal 411, for drilling the Cretaceous Caribbean Basalt Province, has some sites in common with proposal 415. Several major paleoceanographic enigmas, including thematic interests of OHP, would be strongly addressed by a drilling program in the Caribbean Sea. This area has not been the target of drilling since DSDP Leg 15 (1971). Ocean History objectives include: (1) extinctions at the Cretaceous-Tertiary boundary, with the probability of the Chicxulub Crater as the site of impact; (2) the origin of Cretaceous organic carbon-rich sediments in an area of economically important accumulations which are also being investigated in land sections from Mexico, Costa Rica, Cuba, Columbia, Venezuela, and Trinidad; (3) Paleogene paleoceanography and evolution; and (4) implications of the formation of the Isthmus of Panama for deep- and surface-water circulation, faunal/floral exchange and high-resolution variability of intermediate water chemistry in the Atlantic Ocean. These scientific objectives have high visibility and a drilling program in the Caribbean Sea may prove a critical component of ODP.

RECOMMENDATION: We therefore recommend that PCOM establish a DPG to synthesize objectives for drilling legs, resulting in definition of common sites of interest and drilling strategy to achieve these objectives. The DPG

should have members with expertise in Neogene, Paleogene, and Cretaceous paleoceanography, as well as members with expertise in tectonic reconstructions of the circum-Caribbean region and in seismic stratigraphy. The DPG should include scientists from countries bordering the Caribbean in this planning stage for scientific drilling.

4. Neogene history of the Benguela Current and the Angola/Namibia Upwelling System from proposal 354-Rev.

DRILLING READINESS: Site survey cruises are complete or scheduled. Site selection should be refined, along with realistic time estimates for drilling, etc.

JUSTIFICATION: This proposal focuses on the evolution of this upwelling system and on heat transport in the Neogene. The transects are well-designed, and high sedimentation rates in some areas may mean that resolution of high-frequency changes in this region are possible.

5. Deposition of organic carbon-rich strata, ancestral Pacific from proposal 253-Rev.

DRILLING READINESS: The sites are well-located, with information basically complete. These objectives ideally require the use of the DIAMOND CORING SYSTEM. This proposal would potentially rank higher if the tests of this system were producing more optimism.

JUSTIFICATION: The program designed here focuses on answering questions about the paleo-depth and paleo-latitudinal distribution of organic carbon-rich strata in the mid-Cretaceous, ancestral Pacific. This drilling will fill critical gaps in knowledge of the Paleogene and Cretaceous history of the Pacific Ocean.

6. Paleoceanography of the California current from proposal 386-Rev.

DRILLING READINESS: More site survey data is needed, although information may result from upcoming USGS cruises (by Gardner) and other cruises to the region.

JUSTIFICATION: This proposal focuses on the history and development of an important upwelling/current system, with implications for the history of carbon storage and climate change. There will be important links of the drilled records to on-land records, and there are objectives of tectonic interest in this proposal. A revision will be available for review at the next round of panel meetings.

7. High-resolution Neogene paleoceanography and climatic variability from proposals 406 and 404.

DRILLING READINESS: The Bermuda Rise site (404) and the Hatton Bank/Rockall Plateau site (from 406, but resited according to 372) are ready to drill. The Blake-Bahama Outer Ridge transect needs better site location and justification, possibly from existing seismic data, and the Northwest Atlantic and Feni Drift sites need site surveys.

JUSTIFICATION: These proposals focus on resolving North Atlantic climatic history, deep- and intermediate-water circulation changes, and changes in the heat and carbon budgets on millennial-scale resolution. They include important intermediate water sites and the resolution of characteristics along both depth transects and north-south gradients.

8. The Bahamas Transect: Neogene/Quaternary Sea-Level Fluctuations from proposal 412.

DRILLING READINESS: More information from the shallow sites already drilled is anticipated. A more complete seismic grid would be useful in separating regional and local signals in sediment distribution.

JUSTIFICATION: This proposal will address the issues of sea level with respect to synchroneity, if stratigraphy issues are resolved, and potentially with respect to amplitude, both strong OHP interests. The carbonate bank setting, with drilling already completed on two shallow water holes, provides an important complement to the New Jersey Margin/Mid-Atlantic Transect drilling scheduled for Leg 150. Similar time intervals are considered in parts of this proposal, providing a test of synchroneity of sea level change and its stratigraphic expression in a different geological and climatic setting.

9. Bering Sea from CEPAC prospectus and Drilling in the Shirshov Ridge region from proposal 390.

DRILLING READINESS: Site survey data is complete for sites from the CEPAC prospectus; drilling in the Shirshov Ridge region would require site surveys.

JUSTIFICATION: This program of drilling is potentially high-yield, filling an enormous gap in knowledge about North Pacific biota and climate; this is an important oceanographic region, with little known. Site selection may need to be modified to accommodate Paleogene/Cretaceous objectives.

10. Tests of Exxon Sea-Level Curve, New Zealand from proposal 337.

DRILLING READINESS: No particular sites are yet proposed, and existing site survey data for this region needs to be integrated.

JUSTIFICATION: This proposal could represent an important component of a global strategy for assessing the synchroneity of high-frequency Miocene sea level changes. The proponents could benefit from contact with the sea level working group's results.

11. Late Cenozoic Paleoceanography, South-Equatorial Atlantic from proposal 347.

DRILLING READINESS: Although no particular sites have been selected yet, there have been recent site surveys with the Meteor (December 1991), specifically evaluating depth transects focusing on the two most easterly transect regions. We anticipate a proposal addendum with this information, and that this proposal will be more highly ranked at that time.

JUSTIFICATION: This focuses on high-resolution Neogene objectives on east-west transects in this important upwelling system, and is viewed as a program highly complementary to the objectives of the highly ranked Ceara Rise drilling.

12. Paleoceanographic record at sites NR1-3 from proposal 363-Add.

DRILLING READINESS: This is basically ready to be drilled.

JUSTIFICATION: There is the potential for obtaining Late Cretaceous to Paleogene calcium carbonate-containing records in this critical region. These objectives were secondary to the purposes of the rifted margin proposal 363, which was not incorporated into the drilling plans of the NARM-DPG.

13. West Florida Margin Sea Level and Paleoceanography from proposals 345 and 345-Add.

DRILLING READINESS: More site survey data, ideally with a seismic grid for sites to be chosen, are needed; some may already exist in industry data.

JUSTIFICATION: This proposal will address issues of sea level changes with respect to synchroneity and magnitude for the Middle Miocene and Paleogene; the sea-level objectives are more thoroughly justified than the secondary objectives with respect to paleocirculation of the region.

14. Sea level fluctuations, Marion Carbonate Plateau, NE Australia from proposal 337.

DRILLING READINESS: This needs site survey data, and will require the recovery capabilities of the DCS.

JUSTIFICATION: This has the potential of contributing valuable information about Neogene sea level changes. Results from Leg 133 need to be integrated, and the proponents would benefit from incorporating the results produced by the sea level working group.

6. PRIORITIZED LIST OF NON-ENGINEERING NEEDS

a. Ranking within categories. In response to PCOM's request for the panels to give a priority order to the non-engineering needs relevant to their thematic interest, OHP undertook a ranking of these needs. We first reviewed the items listed on the unprioritized 3/3/92 list circulated by Humphris to the panel chairs. We added several items as a result of discussion (see list below). We also chose to eliminate some items from our consideration. We first ordered items within the identified categories as given below; this ordering was done by general panel consensus. We also give a brief statement about the item, and examples of high-priority legs with OHP objectives for which it will be useful.

I. Items prioritized by PCOM 4/91...

None of OHP interest listed; none prioritized.

II. Items for downhole measurements and sampling

a. High resolution downhole logging tool for magnetic susceptibility, with resolution of the order of 2.5 cm or better.

Useful in core-log integration, definition of depths, understanding of sedimentological variations. Useful for Leg 145, important for Legs 150 and 151.

b. High resolution downhole logging tool for geochemistry, with resolution of the order of 5 cm or better. Elements of particular interest, depending on lithology, include Ca, Al, Si, Fe, and U, among others.

Increasingly useful in poorly recovered lithologies and for core-log integration. Would be useful on Atolls and Guyots legs, important for later legs such as Leg 150.

c. Sidewall sampling capabilities, with discussion indicating that such tools are available from industry sources.

This would allow some sample to be recovered from critical intervals missed by drilling, but obvious on the logs (e.g., black shale intervals, important geologic boundaries).

III. Items for shipboard lab

a. Core barrel magnetometer for measuring/monitoring the field in core barrel, to ensure successful demagnetization.

Leg 138 had consistent problems with at least one core barrel; such a device would have been useful then, and should certainly be available on upcoming legs (145, 150, 151).

b. MST (multi-sensor track system) upgrade for natural gamma core logging device (and possibly spectral gamma as well, depending on incremental cost).

c. Resistivity equipment for discrete core measurements.

d. Carbonate autosampler and replacement coulometer for calcium carbonate measurements.

Shipboard measurements of percent calcium carbonate are increasingly important in calibration/documentation of the results from other continuous measurements (e.g., GRAPE data); high-resolution data, relying on substantial numbers of measurements, are important in paleoceanographic interpretation as demonstrated on Legs 130 and 138. An autosampler is a more cost-efficient means to achieve this than the expenditure of substantial amounts of time by shipboard scientists and technicians to achieve high sample throughput.

e. Additional MST core color scanning capabilities in the following priority order: i. sediment color scanner and necessary hardware and software for efficient shipboard data handling, with the capabilities of spectral analysis from color reflectance and digital color imaging and fluorescence. ii. Infrared scanning system, which could distinguish carbonate, quartz, clays, opal, etc., based on IR reflectance spectrum. iii. Major element XRF scanning system, for correlation and lithologic characterization. iv. Digital X-ray system.

It is recognized that these core scanning capabilities will be developed in an incremental fashion, and we suggest the above order as a guide based both on the maturity of the system and its documented and potential scientific return. These capabilities are significant both in core-to-core correlation and in more sophisticated lithologic and sedimentary structure interpretations at high resolution. A color scanning system prototype was used on Leg 138, and demonstrated useful in core-to-core correlation; the greater scientific potential of these data are currently being more thoroughly investigated and documented by the scientists involved. The IR scanning system works on powdered samples, and T. Herbert is currently talking to Perkin-Elmer about designing a system. A prototype of the major element XRF system functioned in the past at SIO, and one is now in existence in the Netherlands.

IV. Computing improvements

a. Hardware and software capabilities to facilitate rapid core-to-core correlations, shipboard construction of composite sections, and rapid core-to-log data integration. Important characteristics include: user-friendly, real-time response, flexibility, incorporation of all shipboard data (including micropaleontology and chemistry lab results), widespread access shipboard, capability of constructing composite sections (mbsf and mcd), and ease of expansion.

The presence of a shipboard scientist dedicated to stratigraphic coordination, and the real-time synthesis of all available data, was important on Leg 138 in guiding drilling strategy to ensure complete recovery and in guiding shipboard micropaleontological and sediment lithology sampling. The first priorities is the capability for core-to-core correlation and the construction of composite sections, allowing the adjustment of drilling strategy to ensure complete stratigraphic sections. This capability will be important as early as Leg 145, as well as for Legs 150 and 151. The second priority is core-to-log integration, which becomes increasingly important as recoveries decrease, and will be important by Leg 150.

b. PC-based software for producing synthetic seismograms from lithologies, requiring also the acquisition of the source signal for the gun.

c. Forward modeling packages for stratal geometry predictions on margins and in basins.

Both items (b) and (c) will be important for the objectives of Leg 150 and subsequent legs with sea-level objectives.

V. Other items

a. Micropaleontology reference slide collections, both high and low latitudes (foraminifers, nannofossils, diatoms, and radiolarians). Critical factor, after consultation with experts to develop collection, is the MAINTENANCE of these collections, which should continue to be accessible in complete form to shipboard scientists. Important on all legs requiring sediment age determinations.

b. Ranked global list of non-engineering needs

This list was produced by sequential run-off voting among the top-ranked item in each category; i.e., panel members voted for their first choice between items IIa, IIIa, IVa, and Va. The top-ranked item in this comparison was then placed on the global list, and the next vote then compared the newly top-ranked item in that category with the top-ranked items in all other categories. The prioritized list, with references to the more complete descriptions given above, is:

1. Computing improvements to facilitate core-to-core and core-to-log correlation (item IVa).

2. Core barrel magnetometer (item IIIa).

3. High resolution magnetic susceptibility logging tool (item IIa).

4. Micropaleontological reference collections, with strong emphasis on collection maintenance and completeness (item Va).

5. MST upgrade for natural gamma and possibly spectral gamma core logging (item IIIb).

6. Resistivity equipment for discrete core measurements (item IIIc).

7. Carbonate autosampler and replacement coulometer (item IIId).

8. MST color scanning capabilities, in incremental progression as described (item IIIe).

Of equal priority:

9.5 Software for synthetic seismograms (item IVb).
9.5 High-resolution geochemical logging tool (item IIb).

11. Sidewall sampling capabilities (item IIc).

12. Stratal geometry seismic software packages (item IVc).

7. NORTH ATLANTIC AND ARCTIC GATEWAYS LEG I (NAAG-I) DRILLING, LEG 151

a. Drilling plans.

Jansen, an OHP representative to the Nansen Arctic Drilling Program, reviewed for the panel the main conclusions of the recent feasibility study on drilling in the Arctic Ocean. This study (the Liljeström report), commissioned by the Nansen Arctic Drilling (NAD) initiative, clearly shows the advantages of teaming the JOIDES Resolution with an icebreaker of the capabilities of the Oden, i.e., with a Polar Class ice-breaker with a towing notch, for the success of the program. This will enable penetration of the Resolution into the marginal ice zone, and ensure that the top priority drill sites for the NAAG drilling can be reached and drilled. This configuration also allows penetration to the sites on the northern flank of the Yermak Plateau, where the NAAG-DPG identified highly interesting sites (e.g., Site ARC-2A) deemed inaccessible at the time the DPG wrote its recommendations. The new feasibility study clearly indicates that this may now be within reach.

The ice probability study of Wadhams (reported to ODP-TAMU) shows that all the Yermak Plateau sites may be inaccessible in bad ice years. Sites YERM 1, 3, and 5, which based on the new high resolution seismic survey undertaken by Polarstern in 1991, should be the highest priority targets, also are the most unfavorable from a sea ice point of view. This puts additional weight on the desirability of the JOIDES Resolution-icebreaker solution.

Due to the pioneer nature of these areas for scientific drilling, and the lack of quality seismic data for the northernmost site (Site ARC 2A), a viable option could be to use the Oden or alternate icebreaker to survey in detail during the period immediately before the drilling, so as to optimally position the site.

OHP also notes that this combination opens possibilities for drilling in the Chukchi Sea in conjunction with a potential Bering Sea leg.

OHP endorsed the following motion:

1. OHP strongly advises that a teamed Oden (or similar icebreaker)-JOIDES Resolution operation be scheduled for Leg 151; this operation may only be necessary for part of Leg 151 drilling.

2. This operation should be allowed to penetrate into partially ice-covered areas, as described in the Liljeström report to NAD. We foresee that this will imply the capability to reach all the Yermak Plateau Sites mentioned in the NAAG-DPG report.

3. OHP advises that Sites YERM 1 and ARC 2A be included as chief objectives of Yermak Plateau drilling.

b. Co-chief nominations.

We then addressed the issue of co-chief nominations for Leg 151; Jansen was asked to leave the room for this discussion. The following nominations were agreed to by panel consensus:

1. Eystein Jansen. Jansen is the highest priority of the panel as co-chief. He was a proponent of proposal 320 on Paleoceanography and Paleoclimatology in the Nordic Seas; many of the high-priority sites selected by the NAAG-DPG for Leg I are from this proposal. He was an active and valued participant in the NAAG-DPG, and has expended consistent effort in bringing these drilling targets to maturity. He has the skills and outlook suitable for leadership on a high-latitude drilling leg.

2. William Ruddiman. Ruddiman was the leader of the NAAG-DPG, skillfully guiding the crafting of two high-priority legs from three proposals for drilling in this region. He is a scientific leader in these areas of investigation, and has the suitable skills and outlook for leadership on

such a leg.

3. Jorn Thiede. He was the lead proponent of proposal 336 on Arctic to North Atlantic Gateways; sites from this proposal were selected by the NAAG-DPG as high-priority targets for NAAG-II and as alternates (based on weather conditions) for NAAG-I. He has served in this capacity in the past.

8. DEEP DRILLING--ADVICE TO TEDCOM

In response to a PCOM request about the panel requirements envisioned for scientific objectives requiring deep drilling with the JOIDES Resolution, OHP approved the following:

Significance and objectives of deep drilling in the Somali Basin

The Somali Basin in the north western part of the Indian Ocean provides an opportunity to recover a complete Late Jurassic-Cretaceous record developed during rifting of Gondwanaland and opening of an oceanic gateway between Tethys and the Southern Ocean. This deep hole will enable investigations of Late Jurassic-Cretaceous biomagnetostratigraphy, Tethyan floral/faunal migration, early evolution of planktonic foraminifers and calcareous nannoplankton, and development of sediment-starved passive margins.

In order to enable drilling in the Somali Basin, ODP needs to develop the technology to drill in water depths up to 5 km and sediment depths approaching 4 km. Potential recovery problems include interbedded limestone and chert, which would be ideally drilled by a system with recovery capabilities expected of the diamond coring system. Continuous monitoring for hydrocarbons and hydrogen sulfide, as well as pressure, will be important given the probable presence of both evaporites and black shales at this site. These may indicate the need for a riser in drilling.

If OHP liaisons to a deep drilling working group are needed, Lisa Pratt and Tim Bralower were suggested by the panel as suitable choices.

9. OTHER PANEL BUSINESS

OHP reviewed the first four themes of the SOHP White Paper (JOIDES Journal, February 1989); these sections constitute our current white paper. These themes are: Neogene paleoceanography, history of sea level, pre-Neogene paleoceanography, and the carbon cycle and paleoproductivity. As part of this consideration, we also compiled a list of past and planned ODP legs grouped according to OHP thematic objectives. The current sections of the white paper are generally considered in good form and reflective of the broad objectives of our thematic mandate. Panel members agreed to undertake revisions and updates for consideration at the fall meeting. Revisions should be sent to the panel chair, who will coordinate the production of a new version of the white paper.

OHP is also formulating a written guide to our process of proposal review and ranking, primarily for the orientation of new members; this is currently in draft form and will be circulated to all members for further revision.

10. PANEL MEMBERSHIP AND LIAISONS

It was noted that normal length of panel membership is three years, and that panel members now routinely rotate off after the fall meeting. Panel members who were initially named for a fall meeting should anticipate serving to the end of a calendar year. Two members will rotate off after the fall meeting: Tim Bralower, with expertise in nannofossil biostratigraphy and evolution and Mesozoic paleoceanography, and Tom Loutit, with expertise in sequence stratigraphy, sea level history, paleoclimate, and basin analysis. Panel members were requested to think of possible nominees for replacements (from both the academic and industry communities), and preliminary discussion ensued on some of these.

In addition, it was noted that rotation of several representatives of other member nations should be anticipated. Panel members identified their areas of particular interest and expertise; panel composition currently reflects both balance and diversity relative to OHP thematic objectives. Future nominations should continue this balanced representation of expertise on the panel.

Guy Smith, at his last meeting as LITHP liaison, was thanked for his effective and reliable performance as that panel's liaison to OHP; it is hoped that a willing replacement for him be identified by LITHP. Jim Zachos, new OHP member, has agreed to serve as our liaison to SGPP.

11. NEXT MEETING

The fall 1992 OHP meeting is scheduled for 30 September-2 October 1992 (Wednesday-Friday), in Marseilles, France; Edith Vincent has agreed to serve as host.

It was noted that the Ceara Rise site survey cruise on the Maurice Ewing is scheduled to end on 26 September 1992 in Barbados. Given the high ranking of this proposal and the importance of this site survey in evaluating the Paleogene and Late Cretaceous sedimentary objectives possible in this location in addition to further definition of the highly ranked Neogene objectives, OHP intends to request the presence of participants in this cruise (Bill Curry or Jan Backman) at its fall 1992 meeting.

OHP regrets that we were unable to schedule a joint meeting with SGPP for this fall given the constraint placed by this cruise on our timing and their choice of dates; we look forward to this possibility for a meeting in the near future. OHP members should be aware that the fall SGPP meeting is scheduled for 26-28 September 1992 in Kiel (immediately post-ICPIV) and are encouraged to attend the first day of that meeting as guests as per the invitation of Chair McKenzie. There is some possibility that the dates and/or locations of the fall SGPP and OHP meetings given above may change to allow for a joint session.

SEDIMENTARY AND GEOCHEMICAL PROCESSES PANEL

MINUTES OF SPRING MEETING 6-8 MARCH 1992
MIAMI, FLORIDA

RECEIVED
APR 0 8 1992
Ans'd............

EXECUTIVE SUMMARY

SGPP'S PRIORITIZED SHORT LIST OF NON-ENGINEERING ITEMS:

I. Items Needing Further Engineering Development and Shipboard Testing.

1. Pressure Core Barrel: The instrument was run 12 times during Leg 141 (Chile Triple Junction) with moderate success. SGPP is encouraged by these results and requests that a second, if not even a third, system be authorized and constructed to be available for Leg 146 (Cascadia), the next opportunity for deployment and continued testing of this essential tool.

2. Vibra-Percussive Corer: SGPP requests that the redesigning and testing of this instrument, which was last deployed during Leg 133, be expedited. It is anticipated that during Leg 150 (New Jersey Transect) extensive unconsolidated sands will be encountered and it is essential that every effort be made to recover this material without extensive loss or damage to the cores.

II. Items for Downhole Measurements and Sampling.

3. In-situ Pore Fluid Sampling Tool: SGPP acknowledges the establishment of the JOIDES Steering Group for in-situ pore fluid sampling and supports the generation of a RFP for a feasibility study of a downhole device, such as the Top Hat, with appropriate packer for multiple in-situ sampling of free-flowing water in lithified formations and measurement of pore-water pressure and permeability.

III. Items for Shipboard Laboratory

4. Whole core X-Radiography: SGPP recommends the purchase of a shipboard whole core X-radiography or CATSCAN system to be incorporated with the multi-sensor track (MST) for viewing sedimentary and structural features in cores prior to cutting.

5. X-Ray Laboratory Procedures: SGPP requests that an outside advisory committee be established to review the procedures used in the Shipboard X-ray Laboratory (XRD and XRF) in order to improve the acquisition and subsequent usefulness of the data generated onboard the JOIDES Resolution. It is suggested that new procedures manuals for both the X-ray and Chemistry Laboratories may be required.

IV. Computing Improvements

6. Data Retrieval: SGPP suggests that software needs to be developed to facilitate the retrieval and use of data on the CD-ROMs compiled from the earlier DSDP volumes.

RECOMMENDATIONS FOR ODP LEG 146, CASCADIA MARGIN:

Based on the results of the deployment of the pressure core barrel (PCB) during Leg 141, Chile Triple Junction, and evaluation of the data, SGPP recommends that **(1) two complete, totally independent PCB systems be assembled and send onboard the JOIDES Resolution for operation during Leg 146, Cascadia margin.** The PCB is apparently such a sophisticated instrument that it can best be prepared prior to deployment only by a well-trained expert. SGPP further recommends that **(2) Mr. Tom Pettigrew, the ODP engineer with the greatest PCB expertise, be invited to participate on Leg 146 to insure successful testing and operation of the PCB.**

REVIEW AND GLOBAL RANKING OF PROPOSALS

In preparation for the spring global ranking of all "active" ODP proposals, SGPP reviewed 7 new proposals and 6 revisions or addendums to previously reviewed proposals. Afterwards, a list of 44 "active" ODP proposals was compiled based on their having a high SGPP thematic interest. All of these proposals were briefly reviewed by the original watch dogs and a decision whether to include in the voting for Global Ranking was made. Under all circumstances, proponents were requested to leave the room during the discussion of their proposals. The list was pared down to 25 proposals, among which 13 considered drillable in FY 1994 were identified.

The Global Ranking was done in a two-step process because of the relatively large number of proposals being considered. A straw vote, with 25 being given to the highest ranked proposal and 1 for the lowest, was taken to pare down further the list of 25. Proponents were excluded from voting on their proposals. Scores were assigned by normalizing rank to number of votes cast. The top 16 proposals from this straw vote, listed below, were then considered in the final Global Ranking pool. Voting procedures were as described for the straw vote.

SGPP Spring Global Ranking 1992

Ref. No.	Proposal (ODP Number)	Drillable in FY94	Score	Ranking
----	Generic Gas Hydrates (inc. 355Rev2)	no	14.2	1
414	N. Barbados Ridge Accretionary Prism	yes	12.8	2
405	Amazon Fan	yes	11.5	3
391	Mediterranean Sapropels	yes	10.9	4
059Rev3	Maderia Abyssal Plain	yes	10.7	5
409	Santa Barbara Basin	yes	8.9	6
330	Mediterranean Ridge	yes	7.7	7
388	Ceara Rise	yes	7.5	8
354Rev	Benguela Current	yes	7.2	9
DPG	Sedimented Ridges II	no	7.1	10
404	N. Atlantic Sediment Drifts	yes	6.5	11
361	TAG Hydrothermalism	no	6.2	12
412	Bahamas Sea Level Transect	no	6.1	13
DPG	Cascadia II	no	5.9	14
337	New Zealand Sea Level	no	5.8	15
360	Valu Fa Sulfides	no	5.2	16

REEXAMINING SGPP'S DEEP DRILLING INPUT:

SGPP wishes to restate a strong interest to locate a deep hole in the Somali Basin and awaits the submission of a new drilling proposal from Millard Coffin (UTIG) et al. by the 1 August 1992 deadline. SGPP supports the generation by ODP/TAMU of a RFP to hire consultants to determine the feasibilities for deep drilling.

CO-CHIEF NOMINATIONS:

SGPP regrets that the nomination and appointment of co-chiefs without first securing panel recommendations, particularly to legs of high thematic interest to the respective panels, have occurred. SGPP believes panel advice is an important component of this decision making process and should be taken into consideration by PCOM when making their nominations for co-chiefs. Thus, SGPP makes the following recommendation:

Along with the ranking of proposals in the Fall Prospectus, thematic panels should be requested to forward to PCOM names of individuals to be nominated as potential co-chiefs for the few highest ranked proposals of each thematic panel.

SGPP has no recommendations for Leg 151, but **SGPP strongly recommends that the co-chief scientists for Leg 152 consist of an igneous petrologist/geochemist and a marine geophysist, as both expertises are essential for the success of the leg.**

PROACTIVE VS. REACTIVE ROLE:

In order to proceed towards a more proactive vs. reactive advisory role in the planning stages of the Ocean Drilling Program, SGPP has initiated two new items to be placed on its agenda when deemed appropriate. The first item concerns the invitation of key shipboard geochemists, who have participated in the most recent legs, to attend SGPP meetings and report on the technologic and geochemical results of downhole fluid sampling. Such reports can inform SGPP directly of the scientific progress being made towards achieving goals set out in SGPP's white paper and assist SGPP in the making of recommendations to PCOM. Invitations to shipboard scientists need not be limited to geochemists. Secondly, to promote a more pro-active SGPP role in the development of proposals addressing questions of thematic interest, a period of time was devoted in this meeting to the discussion of selected scientific topics addressable by drilling. Three topics of long-standing interest to SGPP were put on the agenda , i.e. gas hydrates, sapropels - significance and origin, and bottom currents and contourites. The discussions, led by invited guests or selected panel members or liaisons, were welcomed and proved quite profitable, particularly for increasing the learning curves of new panel members. SGPP plans to continue these discussions at future meetings.

MINUTES OF SPRING MEETING 1992

DATES: 6-8 March, 1992

PLACE: Rosenstiel School of Marine and Atmospheric Sciences, University of Miami, Miami, FL

HOST: Peter Swart

LIST OF ATTENDEES

SGPP Members:

Jeffrey Alt
Jacques Boulègue
Paul Farrimond
William W. Hay
Judith McKenzie (Chair)
Charles Paull
Peter Swart
Jean Bahr
Nicholas Christie-Blick
Roger Flood
Richard Hiscott
Jürgen Mienert
Fred Sayles (Recorder)

Liaisons:

Peter Blum (JOIDES)
Maria Cita Sironi (PCOM)
Mitch Lyle (ODP/LDGO)
Alistair Robertson (TECTP)
Laura Stokking (ODP/TAMU)
James Zachos (OHP) (8 March)
Robert Zierenberg (LITHP)

Guests:

Philip Froelich (LDGO)
Keith Kvendvolden (USGS/Menlo Park)
Dorrick A.V. Stow (Univ. Southampton) (7 March)

Members unable to attend:

Henry Elderfield
Alexander Lisitsyn
Wonn Soh

1. WELCOMING REMARKS

Judy McKenzie, SGPP Chair, welcomed the participants to Miami. Introductions of all attendees were made. The agenda was discussed briefly. Peter Swart discussed logistics for the meeting.

2. REPORTS

a. PCOM - M. Cita

Cita discussed some of the history of interactions between SGPP and PCOM, noting some misunderstanding in the past and recent improvements. The decision making responsibility of PCOM was discussed, as well as changes in the roles and influence of the Thematic Panels. The panels could now be more proactive than reactive. She emphasized the resulting increase in responsibilities placed on the thematic panels as regards PCOM decision making process, noting that the top drilling priorities of each panel, plus the second priorities of two panels, were selected for the drilling schedule at the last PCOM meeting.

M. Cita briefly reviewed a number of decisions made by PCOM :

(1.) A decision was made to increase shipboard technical capabilities on the

JOIDES Resolution;
(2.) Add-on Supplemental Science Proposals were dropped;
(3.) The feasibility of deep drilling is being pursued; a RFP for a technical feasibility study is in the works;
(4.) The FY93 schedule as set was briefly reviewed;
(5.) A feasibility study of fluid sampling and logging was authorized. This is more or less in limbo as a result of criticism from NSF of OPCOM priorities. At present there are no funds to proceed with this. PCOM established a JOIDES Steering Group on In-situ Pore Fluid Sampling. The group will meet in College Station, TX on 2 April 1992. P. Swart will attend as SGPP liaison.
(6.) A data handling working group has been appointed (DH-WG) and charged with review of needs and development of plans to improve data accessibility.
(7.) The next PCOM Chair will be Brian Lewis with the JOIDES Office moving to the University of Washington, Seattle.

b. JOIDES Office - P. Blum

Blum discussed review and ranking issues, noting that these are among the most important charges to panels. He viewed the cooperation between the panels and JOIDES office as having been excellent. As regards to proposal handling, he noted that the institution of a statue of limitations (three years since most recent update) has made the number of "active" proposals manageable at about 100 total. Submission deadlines, now fixed at 1 Jan and 1 Aug, have helped in the orderly review by panels.

Blum reiterated that the Global Ranking of the panels has a major impact on PCOM scheduling decisions. He reviewed the request to "flag" drillable proposals. There ensued a discussion of ranking strategies and the utility of "conceptual" proposals (i.e. not drillable) as a means of establishing overall scientific priorities.

Blum completed his JOIDES report with a review of the history of panel rankings and the regional dependences of proposed drilling, noting the very strong dependence on current ship location.

c. EXCOM - P. Blum

Blum discussed the renewal and post-renewal period briefly. Most countries appear to be moving towards renewal; The UK has formally renewed, whereas France and Japan are currently less certain. The organization and management structure are under review. In particular, more international representations in management and operations are being discussed. He reviewed the status of alternate drilling platforms, noting strong activity in this arena by Russia and France.

In addition, the performance evaluation committee seems to be favoring a move away from the JOI dominated structure, particularly a broader sourcing of subcontracts to other countries. Peter summarized the various aspects of renewal review as providing considerable support for a broader participation in the organization, management and operation of the program.

d. PANCH - J. McKenzie

McKenzie reviewed discussions among the Panel Chairs, in particular the decision to use a "unified" voting procedure. This procedure is essentially that adopted by SGPP at LDGO (June, 1992). A discussion of presence/absence of proponents at SGPP discussions followed. The decision was made that proponents would not be present. She also noted that all panels supported a pro-active role in developing thematic interests.

e. ODP/TAMU - L. Stokking

Staffing for Legs 142-152 was reviewed, including co-chief decisions through Leg 147. The appointment of co-chiefs without panel recommendations was discussed with some heat. Although SGPP was satisfied with the co-chiefs selected without their input for Leg 150, SGPP's No. 1 ranked proposal in the 1991 Fall Propsectus, SGPP believes panel advice is an important component of this decision making process and should be taken into consideration by PCOM when making their nominations for co-chiefs.

<u>SGPP Recommendation</u>: Along with the ranking of proposals in the Fall Prospectus, thematic panels should be requested to forward to PCOM names of

individuals to be nominated as potential co-chiefs for the few highest ranked proposals of each thematic panel.

Results from Leg 142 were presented. The design of the DCS was presented along with the results of its use. Accomplishment fell far short of objectives: attempts to drill 100 m with 50% recovery resulted in penetrations of 15 m and 7 m on two successive holes; recovery was low. There were problems with the secondary heave compensator. As a consequence, an alternative leg for the scheduled Engineering, DCS IIB Leg148 is likely.

An overview of Leg 141 was presented along with a brief summary of the major accomplishment.

f. Leg 141 Geochemistry - P. Froelich

Froelich attended the SGPP meeting to review the shipboard geochemical results of Leg 141. The geologic setting of sites 860-863 was reviewed. A summary of equipment performance followed:

i. High Pressure Core Barrel - used 12 times; retained hydrostatic pressure 2 times, partial pressure 4 times, complete failure 6 times. He concluded that well-trained operators or experts are essential for successful operation of the PCB. Further, due to long turnaround time, two working units are required.
ii. Anodized Ti squeezers - appeared to work well with no problems. Trace metal results are forth coming.
iii. WSTP—deployed 18 times; one-third misfired; one-third worked partially with some dilution by drill fluid; one-third worked satisfactorily. An attempt to use WSTP as a gas sampler was made, successfully.

A summary of the geochemical results was presented, particularly those relating to hydrate occurrence and sampling. At Sites 859 and 860, Cl dilution typical of hydrate occurrence was found. Two dilution spikes occur at Site 860, the deeper one lies well below the stability range of hydrate. At Site 861, there is a BSR but no dilution was found.

A few observations with bearing on future legs with gas hydrate objectives were made:

i. Drastic changes in physical properties of the sediments makes hydrate recovery during routine drilling very difficult.
ii. A willful geochemist(s) onboard is a major ingredient for a successful geochemical program.
iii. One possible strategy for successful recovery of gas hydrates - rapidly drill and log (velocity and resistivity) a pilot hole to plan a gas hydrate drilling strategy; rotary drill a second hole as fast as possible for specific hydrate targets. Plan strategy in real time.

Extreme chemical compositions in the bottom of hole at Site 863, high pH (10.5) with very low alkalinity, were reviewed and possible origins briefly discussed.

SGPP thanked Froelich for attending the meeting and presenting the shipboard geochemical results of Leg 141. It was felt that future reports at SGPP meetings by shipboard geochemists after the completion of legs with strong SGPP geochemical objectives would be beneficial.

SGPP Recommendation: SGPP recommends that two complete, totally independent pressure core barrel systems be assembled and send onboard the JOIDES Resolution for operation during Leg 146, Cascadia margin. SGPP further recommends that Mr. Tom Pettigrew, ODP engineer and PCB expert, be invited to participate on Leg 146 to insure successful testing and operation of the PCB.

g. Panel Liaison Reports

OHP - P. Swart

Swart reported that the long sought, oft postponed joint OHP-SGPP meeting at Kiel, Germany in September 1992 is unlikely. The cause was reported as scheduling problems and OHP's desire to have for review at the fall meeting the seismic data from the planned Ceara Rise cruise in late September. Panel discussions concluded with the decision to continue to pursue such a meeting. The panel chairs will attempt to find suitable dates for a joint meeting. Swart was unable to attend the OHP discussions of priorities and rankings due to a time conflict with this SGPP meeting.

OHP - J. Zachos (March 8)

Jim Zachos attended the meeting and filled in the gaps in Swart's report. He presented OHP's global ranking and discussed the failure of OHP to rank Mediterranean Sapropels, a proposal highly ranked by SGPP.

LITHP - R. Zierenberg

No meeting since last SGPP meeting.

TECTP - A. Robertson

No meeting since last SGPP meeting.

DMP - J. Mienert

Mienert enumerated 8 items of note from the DMP meeting he attended: (1.) DMP is seeking better guidance in the development of new tools. (2.) The Geoprops saga continued; TAMU is now working to complete it, possibly by Leg 146. (3.) Worthington reported improved correlation between logging results and core samples. (4-6.) New lists/publications from DMP due by end of 1992 include: Guidelines for 3rd party tool development. A list of available logging tools; the standard suite will be used for Atlantic legs. A brochure on new development goals. These include: high temperature tools; bore hole gravity meter; magnetic susceptibility logging tool. (7.) A meeting of the JOIDES Steering Group for In-situ Pore Fluid Sampling will be held to discuss pore fluid developments. SGPP Liaison P. Swart will attend. (8.) The characterization of the lithosphere and tools required to conduct appropriate experiment s were discussed.

High temperature fluid sampling meeting - M. Lyle

Lyle summarized the discussions of a meeting held during the Fall, 1991 AGU meeting, which was called to discuss and coordinate high temperature fluid sampling efforts. DOE has a prototype instrument. NSF and DOE seek coordination on developments. John Edmond (MIT) agreed to submit a proposal for development and liaison with interested parties. The sampler characteristics include slim hole design; temperatures to 400 °C; pressure sealed to prevent boiling; on board P, T, conductivity; onboard recording; smart tool - programmable sampling.

3. NEW PROPOSAL REVIEWS

SGPP reviewed 7 new proposals and 6 revisions/addendums of previous proposals. The order of proposal reviewing was not in numerical order, but proceeded with thematic grouping of proposals whenever it was deemed appropriate, as follows. Proponents of proposals left the room during the discussion of their proposals.

Proposal 411 - Proposal for drilling the Caribbean Basalt Province - an oceanic basalt plateau, T.W. Donnelly, R. Duncan and C. Sinton. Of marginal interest to SGPP. Potential interest lies in the mass of volatiles released from such a huge volume of basalt as well as in alteration, as seen in exposures on Haiti. However, these issues are not pursued in the proposal.

Category 2

Proposal 403/Rev - Revised proposal to drill the K/T boundary, Gulf of Mexico Basin, W. Alvarez, J. Smit, E.M. Shoemaker, A. Montanari, R.T. Buffler, A.R. Hildebrand, S.V. Margolis, and Mexican proponents. Clear response was given to panel reviews of the original. However, concerns over recovery in the type of sediment to be drilled, as well as the siting of holes 5 and 6, were raised. Sediment objectives of interest to SGPP remain weak . Further discussion of proposal was combined with that for Proposal 415 with a similar scientific theme.

Category 3

Proposal 415 - Proposal for drilling the Cretaceous-Tertiary boundary in the Caribbean Sea, H. Sigurdsson, S. Carey and S. D'Hondt. Focus is primarily in field of interest of OHP but sedimentation rates are likely to have produced inadequately thin sequences of the desired material. Some concern should be shown for the location of the plates during the periods of interest. Diagenetic considerations are only peripheral. There is, however, considerable overlap with Proposal 403.

Category 3

Proposals 403/Rev and 415 - The number of proposals dealing with various aspects of the Caribbean and especially the K/T boundary in the Caribbean led to the suggestion of forming a DPG (or organization of a workshop of regional experts) to consider the most effective approach to a broader spectrum of questions in the Caribbean region. Although a highly controversial topic, the K/T boundary alone is not sufficient: secondary objectives are needed. What other problems can be solved by effective siting of holes to solve the primary objective?

Proposal 409 - High resolution late Quaternary paleoclimatic and sedimentary record. Santa Barbara Basin, CA., J.P. Kennett. The excellent potential return for only 36 hours of drilling was considered very positive. The site location is nonexistent and should be made using abundant available seismics. The proposal may stand or fall on safety considerations.

Category 5

Proposal 354/Rev - Neogene history of the Bengueala Current and Angola/Nambia upwelling system. G. Wefer. W.H. Berger. L. Diester-Hass. W.W. Hay, P.A. Meyers, and H. Oberhänsli. There is potential for strong SGPP interest. The sites are well suited for studying early diagenesis and composition and origin of organic matter in and upwelling zone. This scale of the drilling program (>13,000 m of drilling) is not needed to address SGPP interests in paleocean chemistry and diagenesis.

Category 4

Proposal 410 - A proposal for deepening Hole 504B to core and log the dike/gabbro, layer 2/3 boundary. J. Erzinger. J. Alt. and K. Becker. Although the site is very worthwhile, the inability to obtain good recovery continues to leave the question open concerning what material is not being recovered. Important rock information may be systematically lost and this could justify waiting for improved drilling technology to continue deepening the hole. Although recovery has been marginal, the problems with DCS appear to mean no real change in the drilling capabilities of the JR can be expected in the near future.

Category 5

Proposal 412 - The Bahamas transect: Neogene/Quaternary sea-level fluctuations and fluid flow in a carbonate platform. G.P. Eberli. E.F. McNeill and P.K. Swart. Proposal is of high interest to SGPP in that it provides an opportunity to pursue numerous outstanding questions related to sea level fluctuations within an end-member (carbonate) environment. Several deficiencies were identified; including the need for a denser seismic array and deeper objectives to obtain older sediments to be correlated with New Jersey margin transect. The possibility of more shallow drilling on the platform should be considered.

Category 4

Proposal 413 - Magmatic and tectonic evolution of oceanic crust: The Reykjanes Ridge. J. Cann. C. German. B.J. Murton, L.M. Parson. R.C. Searle. M. Sinha and S. Spencer. The research overlaps SGPP interests in the area of hydrothermal circulation and alteration of the crust. These are of relatively low priority in the proposal and the ability to achieve these ends in uncertain. How will the measurements be made? Concern was expressed about phase separation with release of steam in these shallow waters. Heat flow measurements were not mentioned.

Category 3

Proposal 414 - Rates, effects, and episodicity of structural and fluid processes, Northern Barbados Ridge Accretionary Prism. J.C. Moore, B. Carson, M. Kastner, X. Le Pichon, G. Moore and G. Westbrook. Addresses high priorities of SGPP. The proposal is highly focussed and straight forward building on the results of a previous leg. It was felt that the addition of a third site would greatly aid the definition of flow field and testing of models indicating water budget deficit. The need for a feasibility study was also felt to be high due to potential hole instability.

Category 5

Proposal 59/Rev3 - Continental margin sediment instability; Global sealevel history and basinal analysis through drilling abyssal plains. P.P.E. Weaver, R.B. Kidd, J. Thompson, s. Colley, I. Jarvis, R.TR.E. Schuttenhelm, G. de Lange, R.E. Cranston and D.E. Buckley. Of strong interest to SGPP on several counts, including sedimentary mass balances, transport of terrigenous material to the deep sea, diagenesis and preservation of organic matter, and sea level issues. Proposal received strong support . SGPP encourages more interaction with proponents of Proposal 380 - VICAP, Gran Canaria.

Category 5

Proposal 332/Rev3 - Florida escarpment drilling transect. C.K. Paull, M. Kastner, and D. Twichell. The response to prior criticisms is very limited despite extensive comments. Certain objectives have been removed to create am more mature but less comprehensive proposal. Questions of defining flow with the proposed sites were raised, as well as the correctness of the circulation pattern show in the figures. In addition, the objectives were felt to be unnecessarily restricted.

Category 4

Proposal 361/Add - Site Survey, TAG hydrothermal field, MAR 26 °N, G. Thompson. Proposal is a site survey proposal and was deemed inappropriate for SGPP review. The original proposal was highly ranked and interest remains high; however, the necessity for a site survey remains, as the proposal has not been funded by NSF.

Category 4

Proposal 333Add - Update to: Tectonic and magmatic evolution of a pull-apart basin: A drilling transect across the Cayman Trough, Caribbean Sea, P. Mann. The proposal is not within panel mandate, unchanged with addendum.

Category 1

4. DISCUSSION OF "NON-ENGINEERING" NEEDS

There was more than a little puzzlement over the meaning of "non-engineering" needs. McKenzie reviewed the PANCH discussion of this topic and presented the list S. Humphris compiled from input of all panels. SGPP considered two categories of instruments: (a) previously identified instruments/tools which still require engineering effort to complete and (b) shipboard laboratory needs.

a. Tools requiring additional engineering

The original priorities put forth by SGPP [(1) pressure core barrel; (2) coring equipment for unstable formations; (3) packer with multisampling device and permeability test capability] were discussed. In addition, (4) high resolution geochemical tool and (5) high resolution magnetic susceptibility tool were considered. A discussion of priorities left the original SGPP list unchanged:

1. Pressure core barrel
2. Corer for unstable formations (= vibra percussive corer)
3. In-situ pore fluid sampling

It was noted that the first two items have been given top priority by PCOM. For the third item, SGPP acknowledges the establishment of the JOIDES Steering Group for in-situ pore fluid sampling scheduled to meet in College Station, TX on 2 April 1992.

SGPP supports the generation of a RFP for a feasibility study of a downhole device, such as the Top Hat, with appropriate packer for multiple in-situ sampling of free-flowing water in lithified formations and measurement of pore-water pressure and permeability.

b. Shipboard laboratory needs

Both shipboard procedural and instrument needs were discussed, leading to the following recommendations with a lower priority than the above three listed items:

1. The addition of an adjustable, digital recording whole core X-radiograph or CATSCAN system should be added to the standard core processing scheme. This would provide a wealth of accessible, standardized structural and textural data almost entirely missed by present procedures.

2. The view that the XRD facility produces "utterly useless" data was expressed. The XRD procedures need to be reviewed and adequate standardization and use insured.

3. Concern over the effectiveness of use of the Chemistry Laboratory instrumentation, generally, was expressed by several recent leg participants. The procedures should be reviewed, updated, and adequate standardization implemented. This should include review of the training and level of expertise required to meet the needed analytical quality.

4. A very useful improvement would be the development of CO_3/organic carbon analyses that approach real time.

Finally, there was some discussion for much needed software to retrieve and use data stored on CD-ROMs compiled from previous DSDP volumes.

5. SCIENTIFIC TOPICS OF SGPP INTEREST

To promote a more pro-active SGPP role in the development of proposals addressing questions of thematic interest, a period of time was set aside for the discussion of science addressable by drilling. Three topics of long standing interest to SGPP were put on the agenda.

a. Gas Hydrates

A summary of previous studies of hydrates, their occurrence, hypotheses of origins, and strategies for drilling was presented by K. Kvenvolden and C. Paull. The review included assessment of the relative importance of clathrates as a potential resource; the carbon tied up in them exceeds that in known fossil fuel reserves. Clathrates also present a variety of hazards: pipeline plugging, slope failure on continental margins, potential climate effects from releases of CH_4. Occurrences are world-wide on continental margins and Arctic shelves. Most are composed of biogenic CH_4 but thermogenic sources have been seen.

Drilling programs need to investigate nearly all aspects of the occurrence of hydrates. Currently there is only limited direct observation of hydrate occurrence and characteristics. We need to define composition, abundance, lithologic characteristics of hydrate bearing sediments, origins of CH_4, mechanisms of CH_4 concentration, relation to acoustic signals, characteristic pore water signals, and relation to regional structures. Kvenvolden outlined how a potential drilling program for gas hydrates might be designed.

b. Sapropels - Significance and Origin

M. Cita reviewed the current status of research on sapropels occurring in Mediterranean sediments. The relationship of occurrence to the timing of glacial-interglacial transitions as well as various hypotheses of origin were presented. Maria argued strongly for the need for drilling in sapropel research, the rational included greatly extending the record, back to the Messinian (Late Miocene), determining the relationship to the hydrologic cycle and climate, and the relationships to nutrient budgets in the Mediterranean.

c. Bottom Currents and Contourites

D. Stow revisited SGPP and, along with Roger Flood, led a discussion of the occurrence and significance of contourite deposits. It was pointed out that contourites are widespread and most commonly occur on continental margins. They are associated, most often, with currents of a high latitude, deep origin. Scientific discussion focussed upon the nature of the sediments (not well defined at present), variations in architecture, significance in deep ocean fluxes, and their relation to climatic forcing functions and use in paleocirculation reconstruction. The surface morphology of drifts, in particular large scale sediment waves, and their relation to currents, was also discussed. The conclusion was that drifts and contourites not only present an opportunity to pursue important sedimentological and paleo-oceanographic questions but also are easily identifiable, readily drillable targets.

6. Spring Global Ranking 1992

The ODP proposals (44) considered in the SGPP Global Ranking 1992 exercise are listed in Appendix I. This list was compiled after panel consideration of the "Active" ODP Proposals list, circulated by the JOIDES Office, UTIG (Feb. 5, 1992). It includes proposals ranked in the Spring (Summer) SGPP Global Ranking 1991, as well as any old or new proposals designated as having a high SGPP thematic interest including those most recently reviewed at this meeting. The status of all proposals on this list was reviewed to cull those already drilled, now on the schedule, or inactive. All proposals in the final pool were briefly reviewed by the original watch dogs and a decision whether to include in the voting for Global Ranking was made. Proponents were not in the room during the discussion of their proposals. The original list (Appendix I) was pared down to 25 proposals, identified by a check mark in the right-hand column. Among the 25 proposals, 13 were considered drillable in FY 1994 were identified (those with asterisk in right-hand column).

The Global Ranking was done in a two-step process because of the relatively large number of proposals being considered. A straw vote, with 25 being given to the highest ranked proposal and 1 for the lowest, was taken to pare down further the list of 25. Proponents were excluded from voting on their proposals. Scores were assigned by normalizing rank to number of votes cast. The top 16 proposals from this straw vote, listed below, were then considered in the final Global Ranking pool. Voting procedures were as described for the straw vote. The SGPP Spring Global Ranking 1992 is basically consistent with the results of previous global rankings. Any perceived inconsistencies in the ranking can be explained by the changing panel membership and the submission of many new drilling proposals of SGPP thematic interest into the system.

SGPP Spring Global Ranking 1992

Ref. No.	Proposal (ODP Number)	Drillable in FY94	Score	Ranking
—	Generic Gas Hydrates (inc. 355Rev2)	no	14.2	1
414	N. Barbados Ridge Accretionary Prism	yes	12.8	2
405	Amazon Fan	yes	11.5	3
391	Mediterranean Sapropels	yes	10.9	4
059Rev3	Maderia Abyssal Plain	yes	10.7	5
409	Santa Barbara Basin	yes	8.9	6
330	Mediterranean Ridge	yes	7.7	7
388	Ceara Rise	yes	7.5	8
354Rev	Benguela Current	yes	7.2	9
DPG	Sedimented Ridges II	no	7.1	10
404	N. Atlantic Sediment Drifts	yes	6.5	11
361	TAG Hydrothermalism	no	6.2	12
412	Bahamas Sea Level Transect	no	6.1	13
DPG	Cascadia II	no	5.9	14
337	New Zealand Sea Level	no	5.8	15
360	Valu Fa Sulfides	no	5.2	16

7. Old and New SGPP Business

a. New Members Three US SGPP members are due to be replaced in Spring, 1993. They are: Nicholas Christie-Blick (sequence stratigraphy, sealevel and ocean history), Roger Flood (sediments, sealevel and ocean history), William W. Hay (modeling and mass balance, sediments, ocean history). It is essential to have new members with equivalent expertise to maintain the panel's scientific balance. Panel members are requested to submit names of possible nominees to the SGPP Chair prior to the fall meeting. Nominations should consider the fact that the panel's expertise is currently strong on the geochemical side, but needs to be strengthened on the sediments side. Also, with the replacement of Hay, SGPP will lose his invaluable knowledge derived from the many years experience he has had as an active participant in the ocean drilling programs.

b. SGPP Liaisons The importance of liaisons among the various panels and DPGs and WGs cannot be overemphasized. The following SGPP members have agreed to serve as liaisons:

OHP - P. Swart
LITHP - J. Alt
TECTP - C. Paull (temporary for 1992)
DMP - J. Mienert (J. Bahr after 1992)
SMP - F. Sayles (one meeting per year after Spring SGPP meeting)
TEDCOM - J. Alt (whenever possible)
OD-WG - J. Boulègue
Sealevel-WG - N. Christie-Blick, R. Flood
JOIDES Steering Group for In-situ Pore Fluid Sampling - P. Swart

c. Deep Hole in Somali Basin In anticipation that ODP/TAMU will be generating an RFP to hire consultants concerning deep drilling, SGPP wishes to restate its strong interest to locate a deep hole in the Somali Basin. Upon inquiry, the Chair has been informed by the principal proponent for deep drilling in the Somali Basin, Millard Coffin, UTIG, that a new proposal is in preparation to be finalized and submitted to the JOIDES office by 1 August 1992. In addition, a site survey proposal will be submitted to NSF in 1993 because the existing data are not adequate for a final site selection. Coffin estimates that the site will require 2500 to 3000 m of sediment penetration.

d. Red Sea Drilling R. Zierenberg updated the panel on the renewed potential for Red Sea drilling with the improved political atmosphere in the region. Drilling in the Red Sea could address one of SGPP's 5 main thematic objectives, i.e. metallogenesis. Large scale hydrothermal alteration and mineralization and associated hydrothermal circulation of hypersaline fluids are known to occur in the Red Sea. SGPP therefore requests that 1) the U.S. State Department be contacted to assess the possibility of future Red Drilling and 2) PCOM provide some feed-back to the thematic panel regarding the potential of Red Sea drilling. With a favorable response from the State Department, SGPP would support an announcement to be printed in JOIDES Journal soliciting proposals for Red Sea drilling.

e. Co-chief Nominees for Legs 151 (NAAG-I) & 152 (NARM volcanic - I) SGPP has no recommendations for Leg 151, but **SGPP strongly recommends that the co-chief scientists for Leg 152 should be an igneous petrologist/geochemist and a marine geophysist, as both expertises are essential for the success of the leg.**

f. Future SGPP Meetings
26-28 September, 1992, Kiel, Germany, Hosts - J. Mienert/K. Emeis
possible joint meeting with OHP
late February/early March, 1993, Menlo Park, CA, Host - R. Zierenberg,
possible joint meeting with LITHP
early October, 1993, St. John's or Corner Brook, Newfoundland, Host - R. Hiscott
possible field trip to see ophiolite complex

The meeting was adjourned in the early afternoon of Sunday, 8 March. Peter Swart was applauded for his excellent effort in organizing the meeting and his gracious hospitality. His secretary and graduates students, who sacrificed their week-end to help with the meeting, were thanked for their assistance throughout, for providing shuttle service, and for the preparation of Saturday's beach-side barbecue.

APPENDIX I

PROPOSALS FOR SPRING GLOBAL RANKING 1992

No. Proposal (SGPP theme score)	Spring 1991	Summer 1991	Spring 1992
355/R2 - Gas Hydrates (4) or Generic Proposal	1	not ranked	√
391 - Mediterranean sapropels (4)	2	2	√ *
DPG - Sedimented ridges II (4)	3	not ranked	Leg 139 √
348/A - New Jersey margin (5)	4	1	Leg 150
380A - VICAP (4)	5	5	√
DPG - Cascadia margin II (4)	6	not ranked	Leg 146 √
354Rev - Benguela Current (4)	7	7	In review √ *
59/Rev3 - Maderia Abyssal Plain (5)	8	9	In review √ *
DPG - East Pacific Rise II (4)	9	not ranked	Leg 142/147 √
337 - New Zealand sealevel (4)	10	not ranked	√
360 - Valu Fa sulfides (4)	11	not ranked	√
388 - Ceara Rise (4)	12	8	√ *
368 - Return to 801 (4)	13	not ranked	√ *
361/A - TAG hydrothermalism (4)	14	6	In review √
340/B - NW Australian margin (3)	15	not ranked	
330/A - Mediterranean Ridge (5)	16	4	√ *
378/A - Barbados accretion (4)	17	3	
367/C - South Australian margin (4)	18	not ranked	
275/E - Gulf of California (4)	19	not ranked	Inactive
372 - N. Atlantic water mass evol. (4)	20	11	
323 - Atl./Med. gateway (3)	not ranked	10	
345 - W. Florida margin (4)	not ranked	12	
332/Rev3 - Florida escarpment (4)	not ranked	13	√
379 - Mediterranean drilling (4)	not ranked	14	
313 - Equatorial Atl. pathway (4)	not ranked	15	Inactive
327 - Argentine Rise (3)	not ranked	16	
341 - Global climatic change (3)	not ranked	17	
253/Rev - Pac. carbon-rich strat. (5)	not ranked	not ranked	√ *
325 - High T/hydrotherm. Endeavor R. (4)	not ranked	not ranked	
338 - Sea-level fluct., Marion Plateau, NE Aus.	not ranked	not ranked	√
365 - Geothermal measurements (3-4)	not ranked	not ranked	
369 - MK-2 Deep Hole (3-4)	not ranked	not ranked	
373 - Site 505 Revisited (4)	not ranked	not ranked	
400 - Mass Balance/Costa Rica (4)	————	————	√ *
404 - N. Atl. sediment drifts (4)	————	————	√ *
405 - Amazon Fan (5)	————	————	√ *
407 - N. Atl. mantle anomaly (5)	————	————	√
403/R - K/T boundary, G. Mexico (3)			In review
409 - Santa Barbara Basin (5)			In review √ *
410 - Return to Hole 504B (5)			In review √ *
412 - Bahamas sealevel transect (4)			In review √
414 - Northern Barbados Ridge (5)			In review √ *
415 - K/T boundary, Caribbean Sea (3)			In review

√ Proposals included in the 1992 global ranking. * Proposals considered drillable in FY1994.

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JOIDES LITHOSPHERE PANEL
MINUTES OF 18-20 MARCH 1992 MEETING
DAVIS, CALIFORNIA

RECEIVED
APR 0 7 1992
Ans'd............

EXECUTIVE SUMMARY

3.0 STATUS OF ENGINEERING DEVELOPMENTS

3.1 Results of Engineering Tests on Leg 142 - East Pacific Rise (B. Harding)

LITHP is concerned that this Engineering Leg not be viewed as total failure of the concept of DCS drilling. Although this system has been linked most strongly to drilling highly fractured zero-age basalts and Leg 142 tested it in that environment, there are other lithologies of interest that can be successfully drilled only with DCS (e.g. alternating chert/chalk sequences). Given the limited drilling and coring time that has been achieved with the DCS, a fundamental question still remains concerning whether the system can core successfully from a drilling ship through any lithology, or whether the nature of zero-age crust is such that drilling and coring through it is beyond the capabilities of any currently available drilling techniques.

LITHP still strongly supports continuation of the development of the Diamond Coring System as the most likely method for drilling a number of formations that are beyond the capabilities of the drilling techniques currently available on the *JOIDES Resolution.*

3.2 Plans for the FY'93 Engineering Leg - Leg 148

The results from Leg 142 suggest that it is highly unlikely that the ODP Engineers will be ready to test the DCS again by Leg 148.

LITHP strongly endorses PCOM's recommendation that, if Leg 148 is not an Engineering Leg, a return to Hole 504B be scheduled. This Hole represents an extraordinary opportunity to further deepen the only continuous crustal section so far obtained, and LITHP has given it the highest position in the global rankings. In addition, LITHP is not in favor of incorporating APC coring in the Santa Barbara Basin into a return to 504B.

If Leg 148 becomes a return to Hole 504B, LITHP nominates the following as potential Co-Chief Scientists:

Jeff Alt
Jose Honnorez
Matt Salisbury

On the basis of logistical considerations, the desire to test the DCS in an environment less hostile than zero-age crust, and the need to maximize coring and drilling time, LITHP recommends that, if Leg 148 is an Engineering Leg, the DCS be tested at the Vema transverse ridge site. The second choice of LITHP would be a test at the Galapagos extinct hydrothermal mound.

If Leg 148 is an Engineering Leg at the Vema transverse ridge, LITHP recommends the following for the position of Chief Scientist:

Enrico Bonatti
Kim Kastens
Matt Salisbury

3.3 Update on the Status of Deep Drilling (B. Harding)

LITHP again reiterates the importance of the deep drilling feasibility study for its future planning, and needs to determine whether the goal of a continuous section through the oceanic crust is realistic in terms of time, technology and cost.

5.0 GLOBAL RANKING OF PROPOSALS

5.1 Global Ranking

LITHP identified twenty-seven programs (with associated proposals) that address high priority objectives of the Panel, which were reduced to fifteen for the ranking procedure. The results of the ranking procedure are listed below together with an assessment of each program's drillability in FY'94. Caveats and explanatory notes can be found in the Minutes:

Rank	No.	Proposal	Members Voting	Score	Drill in FY'94
1	410	Return to 504B	12	14.3	Yes
2	375	Hess Deep	13	13.0	Yes
3	369	MARK Area	12	12.9	Yes
4	361	TAG	12	11.2	(Yes)
5	300	Hole 735B, AII FZ	13	9.6	Yes
5	DPG	Sedimented Ridge II	12	9.6	(Yes)
7	DPG	EPR II	11	8.0	No
8	376/382	Vema FZ	13	7.8	Yes
9	DPG	NARM Volcanic	12	7.5	Yes

10	319	Galapagos	13	6.7	Yes
11	407	15° 20'N FZ	13	5.8	(Yes)
11	414	Reykjanes Ridge	13	5.8	No
13	325	Endeavor Ridge	12	4.8	(Yes)
14	368	Return to 801C	13	4.7	Yes
15	374	Oceanographer FZ	13	3.5	No

5.3 Other thematic interests

LITHP's interests extend beyond the themes that are currently indicated by the rankings. As noted above, some areas of interest are currently poorly represented in terms of numbers of drilling proposals (e.g hot spots). In particular, three prospective programs or areas of drilling were discussed:

- Lithosphere Characterization - The concept of a program of drilling to examine the scales of variation in oceanic crust has been discussed several times previously by LITHP. Such a program might involve two-three closely spaced holes; however, the spacing needs to be carefully considered and justified for the particular problem to be addressed and experiment to be conducted.

LITHP endorses DMP's efforts to use the drillship in an experimental mode and is prepared to issue a joint RFP on the subject of lithosphere characterization.

- Large Igneous Provinces (LIPs) - LITHP is interested in seeing proposals for drilling deep holes in LIPs. It is concerned that the Panel's membership does not reflect this broader interest, so will attempt to bring in some expertise in the field during the regular rotation of panel members.

- Red Sea Drilling - About a year ago, LITHP requested information on the current status of gaining research clearance for the Red Sea. The correspondence related to this are attached as Appendix III. It now appears that drilling in this area might be a possibility; consequently, LITHP is interested in again seeing proposals addressing thematic objectives that request drilling in the Red Sea.

5.3 Watchdogs

LITHP has set up watchdogs for each of the proposals that continue to be active and are of potential interest to the Panel. The responsibilities of these watchdogs are:

(i) to keep track of developments affecting the status of the proposal for LITHP;
(ii) to proactively assist the proponents in providing information on improvements necessary, what additional work needs to be done, and whether it is worth resubmission of a revised proposal;
(iii) to make sure proponents know of SSP requirements.

6.0 NON-ENGINEERING NEEDS

The list of non-engineering needs that was compiled by the Panel Chairs was considered for prioritization.

LITHP reemphasizes that the Pressure Core Sampler and Transfer Manifold are extremely important to the Panel's objectives.

LITHP ranked only their four top priorities:

1 Sidewall Coring Tool
2 Computer Hardware and Software for Core-Log Integration
3 In-situ Fluid Sampling and Measurement of Pore-Water Pressure and Permeability
4 CatScan or X-Radiography of the Whole Core

7.0 OTHER ITEMS

7.1 Nomination of Chief Scientists for Leg 152

LITHP nominates the following individuals for Co-Chief Scientists on Leg 152:

Hans-Christian Larsen
Mike Coffin
Bob White
Olaf Eldholm
Andy Saunders

7.2 Panel Membership

The panel membership was reviewed for disciplinary balance as well as representation of a number of tectonic environments of interest to the Panel.

A number of LITHP members are rotating off the Panel. G. Smith, J. Erzinger, S. Cloetingh and J. Franklin have all provided a great deal of help and devoted considerable time to ODP activities; LITHP thanks them all for their dedicated service.

T. Brocher and J. McClain will both rotate off after the fall meeting, which means LITHP will be lacking in seismics expertise.

There is currently no-one with expertise in Large Igneous Provinces (LIPs) on the Panel. This need must be addressed in one of the replacements.

For Jason Phipps-Morgan, LITHP nominates the following (in order):
- D. Wilson (UCSB)
- D. Forsyth (Brown)
- R. Buck (LDGO)

For Guy Smith, LITHP nominates the following :
- J. Tarduno (Scripps)
- R. Karlin (U. Nevada, Reno)
- B. Clement (Florida International)
- P. Rochett (France)

In addition, LITHP would like to add a LIPs expert to the Panel, and nominates the following:
- M. Coffin (U. Texas)
- J. Mahoney (U. Hawaii)
- R. White (U.K.)

7.3 Liaisons to Other Panels

The current status of liaisons to other Panels is as follows:

SGPP - R. Zierenberg
TECP - M. Cannat(?)
OHP - To Be Appointed
DMP - J. McClain (D. Moos from 9/92)
TEDCOM - D. Moos

OD-WG - S. Bloomer

7.4 Next Meeting

The next LITHP meeting is scheduled for 14-16 October 1992. The venue is not yet determined, but M. Cannat will be asked whether she would be willing to host it in France, either in Brest or Paris.

7.5 LITHP White Paper

In light of recent engineering developments, it is appropriate for LITHP to begin work on updating its White Paper to better reflect its short-term and long-term objectives. Although these have not changed substantially, there is likely to be a change in the emphasis of the goals for the next few years. The current White Paper will be distributed to Panel with these Minutes in order to include discussion of changes on the fall meeting agenda. It is planned that the White Paper will be updated over the winter.

In conjunction with this activity, LITHP will issue an RFP for drilling proposals addressing the Panel's high priority thematic objectives in any oceans, including the Red Sea.

000201

JOIDES LITHOSPHERE PANEL
MINUTES OF 18-20 MARCH 1992 MEETING
DAVIS, CALIFORNIA

Attending: J. Bender, S. Bloomer, T. Brocher, J. Erzinger, J. Francheteau (alternate for M. Cannat), T. Hasenaka (alternate for Y. Tatsumi), J. Hertogen (alternate to S. Cloetingh), S. Humphris, P. Kempton, J. Malpas (alternate to J. Franklin), J. McClain, D. Moos, R. Zierenberg

Liaisons and Guests: J. Alt (SGPP), B. Ambos (NSF), J. Austin (PCOM), B. Harding (ODP)

Regrets: G. Smith

WELCOMING REMARKS

J. McClain welcomed the Panel to Davis and discussed meeting logistics. As there were so many alternates who were new to LITHP, members introduced themselves, and the Panel welcomed Beth Ambos and Barry Harding as guests.

1.0 LIAISON REPORTS

1.1 PCOM (J. Austin)

The major item of business at the December meeting of PCOM in Austin was to establish a schedule for drilling between November 1992 and November 1993 based on the thematic panel rankings of the programs presented in the Atlantic Prospectus. PCOM approved the following drilling schedule for FY'93 (assuming 56 day legs and 5 port calls):

147	Hess Deep	26 Nov. 1992 - 21 Jan. 1993
148	Engineering - DCS Phase IIB (Back-up: Hole 504B)	26 Jan. 1993 - 23 Mar. 1993
149	NARM non-volcanic, Leg 1	28 Mar. 1993 - 23 May 1993
150	New Jersey / Middle Atlantic Transect	28 May 1993 - 23 July 1993
151	NAAG, Leg 1	28 July 1993 - 22 Sept.1993
152	NARM volcanic, Leg 1	27 Sept 1993 - 22 Nov.1993

(Note: lengths of Legs may vary, but ports are unlikely to change.)

Two issues have been raised since this schedule was put together:

(i) Leg 148 - it is highly likely that the engineers will not be ready for this to be an Engineering Leg. A review of Leg 142 and the DCS will be held on 6 April at Texas A&M. In this case, the back-up will be Hole 504B.

(ii) Leg 149 - PCOM adopted the NARM-DPG strategy for drilling the first non-volcanic leg.

(ii) Leg 150 - it is possible that drilling on the New Jersey Margin may encounter a significant safety problem related to gas trapped in shallow sands. Rescheduling may be necessary in order for a pre-drilling engineering study to be completed. There are some old lease track data that might be helpful in assessing the problem, and the Co-Chief Scientists will synthesize this new information.

Chief Scientists have been selected for the following cruises:

Leg 149 R. Whitmarsh and D. Sawyer
Leg 150 K. Miller and G. Mountain

In terms of short-term planning (i.e. FY'92), PCOM made the following decisions:

East Pacific Rise

PCOM supported TEDCOM's recommendation that coring time with DCS IIB be paramount during Leg 142.

Atolls and Guyots

Logging at Hole 801C will remain as an alternate activity if time is available after the following conditions are met (or attempted) as part of the prospectus program (in order of precedence):

1) that MIT-1 is maintained as a basement penetration site;

2) that Seiko-1, basement site, be retained to provide required latitudinal spread in basement sites;

3) that Harrie-2 be included to provide paired sites on Limalok (Harrie) to accomplish sea level/paleoceanographic (dipstick) objectives.

4) that Syl-4 be an alternate to Syl-2A to maintain the paired pelagic cap site philosophy and to optimize recovery for those objectives.

The PCOM chair has drafted a letter to the four A&G co-chiefs detailing the impact of this motion (i.e., emphasis on sea-level history).

North Pacific Transect

Because of its impact on Leg 145 drilling, PCOM declined the request to include OSN-2 in the FY 92 program plan. PCOM continues, however, to endorse the concept of dedicated holes for ocean floor seismic observatories and looks forward to receiving from FDSN a global plan for prioritized testing and implementation.

Cascadia

PCOM endorsed the plan to dedicate no more than 1.5 days during Leg 146 to replace the sensor string in Hole 857D. PCOM has requested that the Co-Chiefs of Leg 146 provide information on the impact of this on the scientific plan for Leg 146, for PCOM to evaluate at its April 1992 meeting.

The issue of technical support staff on board the *JOIDES Resolution* was discussed and PCOM endorsed SMP's recommendation to increase technical support staff by up to 2 personnel/leg. PCOM requested that ODP-TAMU provide BCOM information by January 1992 on the continuing costs of hiring and staffing the ship with these additions, with commensurate reductions in scientific participation, to evaluate its impact on the FY'93 budget. ODP-TAMU has responded by: (1) reorganizing their computer services group to provide two full-time systems managers, and (2) increasing the total technical complement by ~1/leg, about 50% of PCOM's has request. PCOM will continue to discuss this issue in April.

PCOM confirmed the necessity of carrying out feasibility studies for deep drilling as soon as possible. PCOM asked ODP-TAMU to draft a RFP, in consultation with the PCOM chair, for the hiring of one or more consultants, to carry out such studies, using candidate sites recommended by thematic panels as a basis. The draft RFP has been prepared and will be reviewed by TEDCOM at its next meeting in May 1992.

PCOM authorized the formation of a steering group for *in-situ* fluid sampling, to be constituted as a subset of DMP effective at its January 1992 meeting. PCOM approved the mandate and membership of the group as described in DMP recommendation 91/17. The formation of this group was discussed at the DMP meeting in January, and plans were finalized to have the group meet for the first time in College Station sometime in early April. After that first meeting, the group will probably meet in conjunction with future DMP meetings.

A Data-Handling Working Group, which was endorsed by PCOM, met in early March in Toronto under the chairmanship of Ian Gibson. A report is expected at the April PCOM meeting regarding: (1) a new database structure for ODP to cope with the rapidly-expanding needs of the project, and particularly to facilitate core/log data integration; (2) an appropriate hardware/software environment for ODP in the 1990's, compatible with 1).

There have been several other significant developments. The four-year (FY'93-FY'96) program plan was submitted by the subcontractors to JOI, Inc. for assembly in early March. It was officially submitted to NSF on 17 March, and will be reviewed internally by NSF, then submitted for final EXCOM/ODP Council approval in June. In terms of renewal, the United Kingdom has committed to the program, and Australia has committed for three years, although no decision has been made in Canada. The National Academy of Sciences has also just completed a primarily positive review of the program; the results of their evaluation have just been published.

In terms of the recommendations from the OPCOM meeting last year, NSF has not yet committed any funds, citing "insufficient detail and justification" in the advisory structure/JOI, Inc. proposals to date. With regard to DCS, the results from Leg 142 must be incorporated into planning for the future, including assignment of Leg 148. As discussed above, PCOM authorized a feasibility study for development of fluid sampling capabilities; however, NSF does not yet understand how feasibility becomes reality in the future. A proposal submitted to investigate additional drilling platforms was reviewed and received mixed results. The plan at present is to examine a couple of specific FY' 92 alternatives (i.e., case studies: MIT Guyot and New Jersey margin) with SEDCO/ODP-TAMU, then perhaps have Zaremba look at "independent" (i.e., drilling capability not specifically tied to the *JOIDES Resolution*) options (more cheaply!) for the FY'93-FY'96 time frame. However, NSF is concerned that funds for the use of additional platforms have not (yet) been budgeted for in the FY'93-FY'96 Program Plan, although this will probably not prevent the activities detailed above from proceeding.

1.2 NSF (B. Ambos)

Plans are proceeding for the establishment of an IRIS-JOI Planning Office for seismic network activities. Final budget negotiations are underway for the construction of a borehole seismometer. Additional proposals for OSN pilot experiments are expected in November 1992.

1993 site survey field programs that have been funded are:

Vema Transform Fault	LDGO/Kastens	Seamarc (with French)
Woodlark Basin	U. Hawaii/Taylor	Magnetics, Gravity, SCS
Cascadia Margin	Lehigh/Carson	*Alvin*, Fluid Sampling

A review of the program is mandated by NSF every two years, and the third of these has just been completed. The recommendations include the following:

(i) Publications - Part A remains a useful summary of the drilling; however, Part B (the scientific results volume) should be substituted by peer-reviewed journal publications. These can be collected into volumes as appropriate.

(ii) Advisory Structure - The entire structure needs to be reviewed. EXCOM will create a blue ribbon panel to evaluate the scientific advisory structure. In addition, the existing structure needs to be more proactive in designing programs to use the drillship.

1.3 PANCHM (S. Humphris)

The PANCHM Meeting was held in December the day before the PCOM Meeting. A number of issues were discussed that related particularly to proposal submission and review procedures, and to improving the exchange of information between service and thematic Panels in a timely fashion.

PANCHM felt there was still a need to be able to accommodate "less than a leg" proposals in the program even though supplemental science proposals have been discontinued. Incorporation of highly ranked "less than a leg" proposals into a drilling leg will be accomplished by the thematic panels prior to their inclusion in a prospectus for the fall rankings. Due to the problems of shipboard staffing, the PANCHM recommended that any drilling efforts that are combined into a single drilling leg form an integrated program.

PANCHM discussed the dichotomy they face in their roles of actively accomplishing a set of scientific objectives - which may involve them in writing proposals - and their other task of reviewing proposals; this situation can be viewed as a potential source of conflict of interest. However, actions such as excluding proponents totally from the voting and ranking process can result in an imbalance of discipline expertise in areas critical to the discussion. Consequently, the PANCHM recommended that, during the voting and ranking of proposals, all proponents be clearly identified and not be permitted to vote for their own proposals. They should be permitted to participate in the discussions; however, Panel Chairs must prevent any lobbying activities, and the presence of proponents is at the discretion of the Chairperson.

PANCHM recommended that the numbers be removed from the ranking boxes on the proposal review forms in order to avoid them being interpreted as a "poor" to "excellent" rating. In addition, PANCHM agreed to standardize their voting procedures for the fall rankings with a system of voting that allows correction for the varying numbers of panel members permitted to vote for each proposal. In addition, a new schedule of meetings was set up to allow feedback between service panels and thematic panels at the appropriate times:

	SPRING	FALL
Thematic Panels	Late Feb/Early March	Mid-October
SSP	Early April	September
PCOM	Mid-Late April	Late Nov/Early Dec
Activity	Global Ranking/ Drillability Assessment	Prospectus Ranking/ SSP Input from Data

Thematic panels will attempt to assess the drillability of their highly ranked global programs to assist SSP in investigating the appropriate proposals for available site survey data at their spring meeting. SSP will impose a 1 August deadline on site survey data for all proposals to be included in the fall prospectus and will then meet in September to assess the status of those programs in order to provide feedback to the thematic panels prior to their fall ranking procedures.

PANCHM also recommended new deadlines for the submission of proposals -- January 1 and August 1 -- to ensure timely submission to panels for review. This recommendation has been adopted and will be enforced for the 1 August 1992 deadline.

PANCHM endorsed the efforts of SMP, DMP and IHP to produce an action plan to permit cross-correlation of core and log data routinely on board the ship. In addition, PANCHM agreed to produce a combined prioritized shortlist of non-engineering needs to be presented for discussion at the April PCOM meeting.

1.4 Ocean History Panel (written report from G. Smith)

The Ocean History Panel met in early March in St. Petersburg, Florida. In terms of the new proposals that were reviewed, the recommendations for Proposal 409 (APC coring in the Santa Barbara Basin) should be considered by LITHP. OHP would like this program incorporated into the proposed return to Hole 504B that seems to be a likely response to the results of the DCS testing on Leg 142. However, there are several concerns that need to be addressed. While there is general agreement on the importance of this area, the siting of holes may not be well-constrained. Apparently, the seismic lines used to plan the holes came from oil company sources who purchased them from a private firm. The oil company only purchased basin margin lines, on which there was some concern about slumping. Lines exist in the center of the basin but they might have to be purchased directly from the private company. A second factor is that this site is also incorporated in the larger California Current proposal, which is of substantial interest to OHP but still requires some additional work to be drillable. It seems likely that it will be drilled in the next few years; proposal 409 could be incorporated into that program. Finally, there are some logistical problems. Proposal 409 is attractive with a San Diego port call as it would add only 2-3 days to the leg; however, a return to 504B following Hess Deep would probably have both port calls in Panama City.

The K-T proposals were met with interest and a degree of skepticism as to what information the proposed drilling would actually provide. OHP felt the general concept is sound, but more work is needed on the siting of holes. OHP has proposed a DPG to try to incorporate these and other Caribbean proposals into a coherent plan.

Although related primarily to the high-latitude drilling aspects of the Arctic Gateways program, there has been a promising test of the possibility of using an icebreaker in combination with the *JOIDES Resolution* to drill in the marginal ice zone rather than requiring clear water. The test used the *Polar Stern* towed by an icebreaker. The icebreaker is wide enough that it shelters the towed ship and is capable of holding position against ice pressure. This capability, if proven, may allow drilling at much higher latitudes than the current "clear water" standard permits.

OHP continues to support further development of DCS. They are willing to accommodate additional engineering legs if necessary to develop and test the system. Their primary concern is chert-chalk environments and recovery of black shales. There is significant interest in lower Paleogene/Mesozoic problems, some of which require DCS capability (e.g. Shatsky Rise). OHP also supports continued investigation of deep drilling, with the Somali deep stratigraphic test hole as their type example.

OHP compiled the following global rankings:

388 & 388-Add	Ceara Rise	1
NAAG-DPG	North Atlantic-Arctic	2
415 & 403-Rev	Caribbean K-T Boundary	3
354-Rev	Angola-Namibia Upwelling	4
253-Rev.	Ancestral Pacific Organic Carbon	5
386-Rev	California Current	6
404/406	Blake Plateau/NW Atlantic	7
412	Bahamas Transect	8
CEPAC & 390	Bering Sea/Shirshov	9
337	Exxon Sea Level Curve	10
347	S. Equatorial Atlantic	11
363-Add	NR1-NR3 Paleo.	12
345 & 345-Add	West Florida	13
338	Sea Level, Marion Plateau	14

Most of the highly ranked proposals still need some site survey work before they are drillable, although there are several cruises planned by Fall for this purpose.

OHP also prioritized the items for a non-engineering "wish" list. The "stratal geometry" item is software to allow study of stratal geometry during drilling of such sites as the New Jersey transect, which is heavily involved with sequence stratigraphy problems:

Core-core and core-log integration software	1
Core barrel magnetometer	2
High resolution magnetic susceptibility logging tool	3
Micropaleontological reference collection	4
MST upgrade for natural gamma core logging	5
Resistivity equipment for discrete core measurements	6
Carbonate autosampler and replacement coulometer	7
MST color scanning capabilities	8
High resolution geochemical tool	9
Synthetic seismology software	9
Sidewall coring tool	11
Stratal geometry seismic software	12

1.5 Sedimentary and Geochemical Processes Panel (R. Zierenberg)

SGPP has met twice since the last LITHP meeting: first last November in Zürich, Switzerland, and most recently, in early March in Miami, Florida.

At the November 1991 meeting, Erwin Suess was replaced as panel chair by Judith McKenzie. Erwin was thanked for his extensive contributions to the difficult job of defining the role of a new thematic panel and to the production of the SGPP white paper. The prime order of business was review of proposals and ranking of the North Atlantic Prospectus proposals which resulted in the following:

1	348	New Jersey Margin	12.2
2	391	Mediterranean Sapropels	9.7
3	405	Amazon Deep-Sea Fan	9.5
4	330	Mediterranean Ridge	8.4
5	361	TAG Hydrothermalism	8.0
6	388	Ceara Rise	7.4
7	323	Alboran Basin	7.0
8	380	VICAP Gran Canaria	6.4
9	NAGG	N. Atlantic Arctic Gateways	5.7
10	NARM	N. Atlantic Volcanic Rifted Margins	5.3
11	OD-WG	MAR Offset Drilling	3.6

12	346	Eq. Atlantic Transect	3.5
13	NARM	N. Atl. Non-Volcanic Rifted Margins	3.4

There was considerable discussion of the previous two global rankings by SGPP and the dismissal of the most recent ranking by PCOM. PCOM Minutes implied that the Barbados proposal moved up dramatically between the two rankings because E. Suess (SGGP-chair) was a proponent. E. Suess was not a proponent, either in fact or covertly, on any Barbados drilling. The panel as a whole was unhappy that its ranking was not considered and discussed the reasons for the poor communication between SGPP and PCOM.

SGPP strongly endorsed the joint LITHP/TECP motion regarding the importance of *in situ* sampling of formation fluids and determination of the temperature, pressure, and permeability. SGPP recommended that solutions to these problems should be a high priority for OPCOM funding, and endorsed the recommendation of the In Situ Pore Fluid Sampling Working Group to continue development of the Geoprops tool and to evaluate Schlumberger's Top Hat device for use on the *JOIDES Resolution*.

SGPP supported PCOM's decision to discontinue supplemental science proposals, but favored retaining the flexibility to address high priority or "emergency" proposals of short duration when appropriate. In this regard, strong support was given to reinstrumenting Hole 857D (Leg 139) and drilling in Santa Barbara Basin, although in the latter case, it was supported only if it did not detract from Cascadia drilling.

The primary duties at the March 1992 SGPP meeting were review of new proposals and global ranking of all active proposals of high thematic interest to SGPP in the following order:

1		Generic Gas Hydrate	Non-drillable
2	414	Barbados Fluid Sampling	Drillable
3	405	Amazon Deep-Sea Fan	Drillable
4	391	Mediterranean Sapropels	Drillable
5	59/R3	Madeira Abyssal Plain	Drillable
6	409	Santa Barbara Basin	Drillable
7	330	Mediterranean Ridge	Drillable
8	388	Ceara Rise	Drillable
9	354	Benguela Current	Drillable
10	SRDPG	Sedimented Ridges II	Non-drillable
11	404	North Atlantic Drifts	Drillable
12	361	TAG Hydrothermal	Non-drillable
13	412	Bahamas Sea Level	Non-drillable
14	DPG	Cascadia II	Non-drillable
15	337	New Zealand Sea Level	Non-drillable
16	360	Valu Fa Ridge	Non-drillable

Priorities for "non-engineering" equipment purchases were discussed, although there was some confusion about what constituted "non-engineering" equipment. The top priorities were to build two additional pressure core systems (PCS) for leg 146, obtain a functional vibrapercussive coring system for leg 150, and to support the development of a formation fluid sampler. Recommended items for shipboard use were to purchase an X-radiography or CatScan system capable of producing real-time core images that could be incorporated into the multi-sensor track system, and production of detailed methodology and improved data handling for the shipboard XRD unit, including increased technician training.

Part of one afternoon was set aside for discussion of scientific topics of interest to SGPP. K. Kvenvolden and C. Paull led a discussion on the nature and importance of gas hydrates and the rationale for a dedicated leg to investigate their formation. M. Cita, PCOM liaison to SGPP, presented a discussion on the occurrence of Mediterranean sapropels and assured the panel that a detailed proposal for drilling Mediterranean sapropels would be submitted by the Aug. 1 deadline and should be considered "drillable" for the 1994 prospectus, even though the sites have not been chosen and the site survey work is scheduled for this summer. D. Stow and R. Flood led a discussion of bottom current and contourite sediment drift deposits. The next meeting had been set for September in Kiel, Germany, to accommodate a joint meeting with OHP; however, OHP has scheduled their next meeting in France.

1.6 Tectonics Panel (summary from the October minutes)

Part of TECP's last meeting in October was held jointly with LITHP; however, a number of issues were addressed in a separate session. Ranking of the proposals in the Atlantic Prospectus resulted in the following prioritization:

1	NARM-DPG	Non-volcanic rifted margin - Leg 1	7.4
2	NARM-DPG	Volcanic rifted margin - Leg 1	6.1
3	346-Rev2	Ivory Coast Ghana Transform Margin	5.7
4	323-Rev	Alboran Sea (Comas et al)	4.8
5	403	K/T Boundary, Gulf of Mexico	4.0
6	376	Layer 2/3 Boundary, Vema FZ	3.2
7	369-Rev	MARK Area	2.5
8	399	Alboran Sea (Watts)	2.3

TECP also set up watchdogs on various thematic issues in order to enhance communication between the panel and the proposal proponents.

1.7 Downhole Measurements Panel (J. McClain)

Two meetings of DMP have been held since the last LITHP meeting, and included a number of issues of interest to LITHP:

1. During the Fall meeting, DMP was informed that the Geoprops tool was being abandoned by the subcontractor and that TAMU would take over the development of the tool, with Bob Carson taking the lead. Given the stated importance of Geoprops for the Cascadia leg, it was hoped that sufficient progress could be made to allow a test deployment of the tool two or more legs prior to Cascadia. However, at the winter meeting, it was reported that, while progress has been made, no deployment prior to Cascadia would be possible.

2. Given the recent history of third-party tools, DMP is initiating an effort to firm up requirements (deadlines, testing criteria, monitoring of progress etc.) for such logging tools.
   A particular change recommended by DMP is that no ODP leg be scheduled if its scientific goals are critically dependent upon a third party tool that has not completed its full testing (including at sea) and development schedule.

3. DMP was reminded that at the 9/89 joint meeting with LITHP, the highest priorities for high-temperature tool development were temperature and pressure logging, electrical resistivity and fluid sampling. A new temperature-pressure tool, rated to 500°C, and a logging cable rated to 350°C have been delivered to the logging subcontractor. A subcontract to Camborne School of Mines (U.K.) has been issued for the construction of a high-temperature resistivity tool. Progress for fluid sampling has not been great, but a working group has been formed to develop strategies for the recovery of fluid samples with no or minimal contamination.
   It was suggested that LITHP and DMP should consider new priorities as these tools come on line. One item discussed in 1989 was a high-temperature natural gamma tool.

4. DMP discussed the the old idea of lithospheric *characterization*. The goal of such an experiment would ultimately be to tie core properties (very small scale), downhole measurements (small scale), and surface geophysics (large scale) together. The conceptual experiment would be to place two or more closely spaced holes into oceanic crust and conduct a full range of experiments, including cross-hole measurements (e.g. cross-hole seismic tomography).
   As an example of such an experiment Jill Karsten (U.H.) presented a program being planned for the Pacific by a working group formed by the Office of Naval Research. Their plan, for two holes, 0.5 km deep and

separated by 1 km, is to be submitted for consideration by the August deadline.

5. Worthington suggested that given items 3 and 4 above, perhaps LITHP and DMP should consider another joint meeting. The next time when the two panels are scheduled to meet at roughly the same time is fall of 1992. Unfortunately, the DMP meeting is already scheduled for September. LITHP, on the other hand, is pushing its meeting to later (mid-October) because of the needs of the program and the changes to the meeting schedule discussed by the PANCHM. Therefore, such a joint meeting is probably not feasible at this time.

6. Brief presentations on new logging technologies were presented. One was the substantial progress being made by industry on borehole gravimetry. Available tools are too large for present ODP holes (unless ODP develops a "top-hat" fluid sampling capability). Additional problems are heave difficulties, which may be solved by using a gravity gradiometer.

1.8 TEDCOM (D. Moos)

TEDCOM has not met since the last LITHP meeting, but is scheduled to meet in May. At that time, TEDCOM will review the RFP for deep drilling feasibility studies that has been put together by ODP.

1.9 Offset Drilling Working Group (S. Bloomer)

This second meeting of the Offset Drilling Working Group focussed on detailed presentations of target areas and a discussion of strategy and prioritization of goals. The PCOM representative reiterated that the group was to function as a working group, not a detailed planning group.

The liaison reports, particularly those from LITHP and PCOM, generated a great deal of discussion. LITHP had ranked a generic offset drilling proposal as their third priority at the fall meeting. As a consequence, offset drilling was not included in the FY'93 plan, although a possibility does exist for drilling an offset drilling-related target on the Engineering leg scheduled for Leg 148. Factors contributing to the lower ranking of offset drilling were discussed at length. One factor was clearly timing. The offset drilling proposals reviewed in Cyprus were generated in a short period of time between the end of the first OD-WG meeting and the fall LITHP meeting. As a result, the proposals were incomplete and hastily prepared; the exclusion of proponents who might have aided in the discussion of individual proposals may have contributed to the lower ranking of some proposals. More importantly, it was perceived that there is a misunderstanding about what most of the group considered offset drilling to be.

The working group proposed a revised definition of offset drilling as:

"offset drilling is a strategy to deal with a complex, laterally heterogeneous ocean crust and shallow mantle by drilling key, partial sections in tectonic windows into crustal and mantle rocks".

OD-WG considered dropping the term "offset drilling" in favor of "composite section drilling" to emphasize the point that the crustal sections may have to be drilled in several different parts of the ocean basins. The group decided that since they were designated as an "offset drilling" working group, they should retain the title. However, the revised definition of offset drilling emphasizes three points:

1) a place exists in the strategy for legs devoted to single holes in crustal units or in unit transitions;
2) long sections through gabbro and mantle sections are as essential to the completion of composite sections as are sections through the major unit transitions;
3) such long sections address important hydrothermal, structural, and metamorphic objectives as much as they do petrologic and geochemical objectives.

The working group endorsed its general definition of four classes of objectives (Figure in Appendix I):

1 sections through the dike/gabbro transition
2 long sections of gabbroic crust
3 sections through the gabbro/mantle transition
4 long sections of upper mantle.

An 11- or 12-leg program could produce composite sections of slow and fast spread crust, and could also address some tectonic objectives, such as the nature of the master faults in median valley.

Potential target areas generally fall into three categories of tectonic windows: median valley exposures (on low-angle detachments?), rifted older crust, and transverse ridges (and associated fracture zone exposures). Those places reviewed in detail, and deemed to be promising for offset drilling were:

Type	Site	Objectives	Fast	Slow	Plume	Non-Plume
Rifted Crust:	Hess Deep	1, 2, 3, 4	x			x
	Pito Deep	2	x			x
	Endeavor Deep	?	x			x
	King's Trough	1, 2, 4?		x	x	

Median	MARK	2, 4	x		x
Valley	15°20'N	3?, 4	x	x	
Fracture	Atlantis II	2, 3?, 4	x		x
Zone	Vema	1, 2, 3, 4	x		x
	Oceanographer	2, 4	x	x	

Of these sites, Vema, Atlantis II, MARK, and Hess were deemed to be mature enough that they could be productively drilled now.

OD-WG produced the following recommendations and comments:

1) The highest priority for drilling should be the completion of a global composite section. This may require a number of single sites in appropriate locations. The sampling of the ocean crust to date has been extremely limited (Figure in Appendix I) and the first objective must be the recovery of all of the major units comprising oceanic crust.

2) The second priority should be the assembly of composite sections from fast and slow spread crust.

3) It would be preferable to develop these composite sections in small geographic areas. However, this may not be possible given the available exposures. *This should not be a deterrent to completing composite sections based on holes from various geographic sites which address one of the objectives 1 through 4.*

4) The most likely candidates (and existing sections) to meet objectives 1 through 4 presently include:

1. Dike/gabbro transition: Deepening Hole 504B clearly presents the best opportunity to drill this transition *in situ.*
2. Long sections of gabbro: A small section of gabbro exists from the Atlantis II fracture zone (735B). The Atlantis II, MARK area, and Vema could all provide sites for long gabbroic sections. Drilling at Hess Deep may also produce some gabbroic section.
3. Gabbro/mantle transition: This is the most problematic of the four objectives. There is presently no site in the ocean basins where this transition is unambiguously exposed. Many apparent juxtapositions of gabbroic and ultramafic rocks may be tectonic. Detailed 3-dimensional controls are needed to define a site at which this transition is likely to be *in situ,* and not tectonic. The Atlantis II, Vema, and Hess Deep all offer places where this transition may be exposed.
4. Long mantle sections: No such samples presently exist. Hess Deep drilling may contribute sections to this objective. The Atlantis II,

MARK, and 15°20'N (with some development) sites are all promising for recovery of long mantle sections.

OD-WG discussed revision of site survey recommendations for offset drilling sites. Kim Kastens (liaison from the Site Survey Panel) stated that their main concern was that a site could be placed in a geologic context within a regional perspective and related to a class of global problem. The Working Group endorsed the following guidelines:

Required of any site:	Detailed bathymetry Near bottom visual observations Surface magnetics Precise geologic sampling and description Analysis and synthesis of data
Recommended data:	Site specific geophysics: MCS, refraction Regional surface side scan Surface gravity Near bottom side scan
Potentially useful:	OBS seismics Near bottom observations or geophysics, as technically feasible.

Finally, the OD-WG endorsed the platform carbonate site on the transverse ridge at the Vema Fracture Zone for drilling on Leg 148 (an Engineering leg). The shallow water offers a logistic advantage and the site provides an opportunity to constrain the vertical history of a transverse ridge and could recover uplifted lower crustal rocks.

2.0 REPORTS ON RECENT SCIENTIFIC LEGS

2.1 Preliminary Results of Leg 140 - Return to Hole 504B (J. Erzinger/J. Alt)

Leg 140 was the seventh leg of DSDP/ODP to occupy Hole 504B, and has now established the most complete reference section to date through the upper oceanic crust by deepening the hole to a total depth of 2000.4 mbsf. Before drilling could commence, fishing operations were required to recover a core barrel lost at the bottom of the hole during Leg 137. This took ten days, and success was finally achieved using a fishing tool designed and fabricated on board the *JOIDES Resolution* during the cruise.

A temperature log run in the hole prior to the commencement of any operations showed a downhole flow of seawater into the basement below 288 mbsf. This had been seen in previous records, but it appeared to have decayed considerably since Leg 137. The linear temperature gradient in the deeper hole is still 61°/km, which extrapolates to a temperature of 195°C at 2000 mbsf.

Coring was straightforward, although penetration rates of less than 2 m/hr and recovery of 13% were low. Hole 504B was left open and clean, and there was negligible evidence of hole ellipticity.

The diabases that were recovered were divided into 59 lithological units. Although there was not a systematic increase in grain size with depth, coarser grained diabases became more common, and glassy chilled margins virtually disappeared, consistent with the emplacement of dikes at higher temperatures. The cyclicity in grain size is probably related to the sequence of dike injection. In the lower section, amphiboles were more pleochroic, epidote was observed replacing some plagioclase, and Mg-rich chlorite was more abundant – all suggestive of higher temperatures. Zn concentrations decreased systematically from an average of 70 ppm at 1500 mbsf to 30 ppm at 2000 mbsf, which may be indicative of proximity to the reaction zone.

All of the rocks exhibited mineralogical and chemical alteration with pervasive background alteration. Penetration by hydrothermal fluids resulted in heterogeneous veining, with epidote-quartz veins forming relatively late. The weak seismic reflector that was observed between 1660 and 1860 mbsf during a VSP experiment conducted on Leg 111 was clearly not the transition from the dike complex into the gabbros as predicted. It may be possible that this reflector was the result of the observed changes in the intensity of alteration and in physical rock properties in this interval.

Two problems arose that need to be addressed. Some improvements could be made to the design of the guide fingers of the drilling bits and of the core catcher that might help improve the recovery. ODP will work on this prior to the return to Hole 504B. Second, the LDGO logging group needs to include some engineering expertise as well as scientific expertise. There was no-one on board who was familiar with the flow meter tool (a third party tool), and the logging program was not well done.

Overall, Leg 140 was highly successful and the changes in alteration mineralogy, average grain size and geochemistry all indicate that drilling may have reached the lower part of the sheeted dike section.

2.2 Preliminary Results of Leg 141 - Chile Triple Junction (B. Harding)

Drilling on Leg 141 was designed to study the processes related to the subduction of a mid-ocean ridge spreading center. The Chile Trench is the site of collision between the Chile Ridge spreading center and the Chile Trench subduction zone. Five sites with thirteen holes were drilled, and three developmental systems were put into operation: the motor-driven core barrel, the pressure core sampler and the sonic core monitor. In addition, several new tools were deployed, including the hard-rock orientation tool; this will be tested again on Leg 143.

Four sites (Sites 859, 860, 861 and 863) were drilled in the forearc. Sites 859 and 863 were located in the base of the trench slope 0 and 30 km from the subducting ridge, and documented the transition from subduction accretion to subduction erosion. Sites 860 and 861 were located in the middle and upper slope region of the Chile Trench forearc and recovered records of complex depositional patterns and tectonic uplift prior to subduction.

All four sites showed traces of hydrocarbon gases. No solid hydrates were recovered, even though three prominent bottom-simulating reflectors were penetrated. However, geochemical anomalies in interstitial fluids from the sediments indicated that gas hydrates were present before drilling.

Site 862 was located on the Taitao Ridge, hypothesized to be an offshore extension of the Taitao ophiolite onshore. Recovery of andesites from this site and the inferred age of 3-4 Ma indicate that its origin and evolution are more complex and may be related to off-ridge volcanism.

3.0 STATUS OF ENGINEERING DEVELOPMENTS

3.1 Results of Engineering Tests on Leg 142 - East Pacific Rise (B. Harding)

Results from Leg 142 were disappointing in terms of the amount of time that was spent actually drilling and coring with the Diamond Coring System (DCS). Only 3.3 rotating days of DCS drilling were accomplished; this was partly due to technical difficulties, but was also a function of the 10' pipestand system and the long transit time. Although some rubble was cored and recovered, none of the rock was cored *in situ*. The new three-leg, hexagonal hard-rock guidebase (HRB) with a gimballed reentry cone was successfully deployed, and appeared to function as designed providing a stable base from which to initiate drilling. Two HRBs were left on site; one of them has junk in it, but both could be made operational.

The first attempt at DCS coring was hampered by the inability to maintain a constant cuttings discharge path. The fine-grained volcanic material tended to plug off the primary circulation paths necessitating taking cuttings back to the ship. This technique worked very well and, it should be noted, may represent an interesting opportunity (at the KTB site, cuttings are routinely returned to the surface and analyzed to allow determination of the formation geochemistry as it is being drilled). The major problem encountered was the inability to maintain constant weight on bit. Occasionally, the cuttings would break out at the seafloor causing an instantaneous drop in circulating pressure. This major pressure change caused the secondary compensator computer to sense an erroneous DCS tubing string weight, resulting in inaccurate WOB control or excessive weight applied to the slimhole diamond bit causing immediate bit failure.

It is not clear at the present time how extensive the problems with the secondary heave compensation system are. The systems worked much better on Leg 132 when the geologic conditions were not as severe. A meeting will be held on April 6 at ODP to review the operations and to try to determine whether refinements of the hardware and/or software can solve the problems or whether the drilling environment of zero-age crust is beyond our capabilities.

The Diamond Core Barrel (DCB) was also deployed towards the end of the Leg and was able to drill 7m in 8 hours.

Other problems encountered on the Leg included the loss of bit cones and carbide inserts during the deployment of the first stages of the deployment of the drill-in BHA, and the fragile nature of the diamond bits.

LITHP is concerned that this test not be viewed as total failure of the concept of DCS drilling. Although this system has been linked most strongly to drilling highly fractured zero-age basalts and Leg 142 tested it in that environment, there are other lithologies of interest that can be successfully drilled only with DCS (e.g. alternating chert/chalk sequences). Given the limited drilling and coring time that has been achieved with the DCS, a fundamental question still remains concerning whether the system can core successfully from a drilling ship through any lithology, or whether the nature of zero-age crust is such that drilling and coring through it is beyond the capabilities of any currently available drilling techniques.

It is clear that ODP is not in a position to put into DCS development the level of support that is common in the industry, i.e. a major investment upfront to concentrate all efforts on making the system operational. Consequently, progress and testing will proceed much slower. It also appears that development is currently <u>not</u> being held up by lack of shiptime for testing purposes, so any studies of the feasibility of using another vessel are premature.

The upgrade to DCS Phase III, which will bring the platform down to the rig floor will now be delayed. There has been so little coring time with the Phase II system that it is still not possible to evaluate coring operations on the ship. Phase III cannot proceed until successful coring, and more experience in coring, have been gained with DCS Phase II.

In spite of all these difficulties, LITHP still strongly supports continuation of **the development of the Diamond Coring System as the most likely method for drilling a number of formations that are beyond the capabilities of the drilling techniques currently available on the *JOIDES Resolution*.**

3.2 Plans for the FY'93 Engineering Leg - Leg 148

The results from Leg 142 suggest that it is highly unlikely that the ODP Engineers will be ready to test the DCS again by Leg 148; consequently, PCOM will make a decision on whether the back-up leg (Return to Hole 504B) should be scheduled at its April meeting.

LITHP strongly endorses PCOM's recommendation that, if Leg 148 is not an Engineering Leg, a return to Hole 504B be scheduled. This Hole represents an extraordinary opportunity to further deepen the only continuous crustal section so far obtained, and LITHP has given it the highest position in the global rankings. In addition, LITHP is not in favor of incorporating APC coring in the Santa Barbara Basin into a return to 504B.

If Leg 148 becomes a return to Hole 504B, LITHP nominates the following as potential Co-Chief Scientists:

Jeff Alt
Jose Honnorez
Matt Salisbury

If Leg 148 remains an Engineering Leg then LITHP recommends that:

- the DCS be tested in an environment less hostile than zero-age crust;
- a site be chosen that will maximize drilling and coring time.

There are a number of sites for such a test that would address scientific objectives of high priority to LITHP and could be considered candidates for drilling:

Middle Valley	- fossil hydrothermal deposit
Galapagos	- extinct hydrothermal deposit
TAG	- one of the relict mounds
Vema	- site on the transverse ridge with a limestone cap (recommended by the OD-WG)

Due to logistical considerations and the desire to meet the recommendations stated above, the two most feasible alternatives appear to be Vema and the Galapagos. The Vema transverse ridge site is attractive as an Engineering Leg for the following reasons:

1) the shallow water depth will provide the most drilling and coring time (even though the transit time is long for this Leg);
2) it requires only a small diversion from the proposed track of this Leg (Panama to Lisbon);
3) scientifically, it may be possible to constrain the vertical tectonics of the transverse ridge by understanding its subsidence and uplift history.

The Galapagos extinct hydrothermal mound (proposal 319) also provides an environment in which the DCS could improve recovery. This particular site is attractive because:

1) it is reasonably close to Panama - the starting point of Leg 148;
2) faulting has exposed the section of altered crust beneath the mound so the lithologies to be drilled are known and the hole could be carefully located;
3) scientifically, it may be possible to investigate the link between the highly-evolved nature of the basalts and the hydrothermal activity.

On the basis of logistical considerations, the desire to test the DCS in an environment less hostile than zero-age crust, and the need to maximize coring and drilling time, LITHP recommends that, if Leg 148 is an Engineering Leg, the DCS be tested at the Vema transverse ridge site. The second choice of LITHP would be a test at the Galapagos extinct hydrothermal mound.

If Leg 148 is an Engineering Leg at the Vema transverse ridge, LITHP recommends the following for the position of Chief Scientist:

Enrico Bonatti
Kim Kastens
Matt Salisbury

3.3 Update on the Status of Deep Drilling (B. Harding)

A request for proposals (RFP) has been drafted and will be reviewed by TEDCOM at their May meeting. It will most likely be sent to three consulting firms, and the proposals will be reviewed by a small group of people before the funds are dedicated.

There are a number of levels of deep drilling that need to be investigated. First, it is important that the capabilities of the *JOIDES Resolution* be maximized; this would satisfy the needs of some of the Panels. At the other end of the spectrum is LITHP's desire to drill a 6 km hole to obtain a complete section through the oceanic crust. The ODP definition of a "Deep Hole" is: "any scientific hole that takes more than 1 leg of *JOIDES Resolution* time to complete".

The RFP includes a spectrum of sites submitted by the Panels:

LITHP:	generic ocean crust site (derived from information gained from 504B and 735B) to be drilled to 6 km.
TECP:	the Galicia Margin and the Iberia Abyssal Plain, and the
SGPP:	Northern Somali Basin.

LITHP again reiterates the importance of the deep drilling feasibility study for its future planning, and needs to determine whether the goal of a continuous section through the oceanic crust is realistic in terms of time, technology and cost.

4.0 PROPOSAL REVIEWS

(Note: Panel members were excluded from the meeting for the review and discussion of the proposals for which they were proponents).

The following proposals were presented for evaluation and were deemed to not fall within the mandate of the Lithosphere Panel:

Proposal 412:	The Bahamas Transect: Neogene/Quaternary Sea-Level Fluctuations and Fluid Flow in a Carbonate Platform (G.P Eberli, D.F. McNeill and P.K. Swart)
Proposal 354-Rev:	Neogene History of the Benguela Current and Angola/Namibia Upwelling System (G. Wefer, W.H. Berger, L. Diester-Haass, W.W. Hay, P.A. Meyers and H. Oberhansli)

4.1 Proposal 409

High Resolution Late Quaternary Paleoclimatic and Sedimentary Record, Santa Barbara Basin, California (J.P. Kennett)

The main objective of this proposal does not address high priority objectives of the Lithosphere Panel. LITHP is interested in the possibility that the anoxic basin sediments may record episodes of fluid discharge into the basin. Expulsion of metal-transporting fluids, most likely along basin-bounding faults, into an anoxic basin can result in precipitation of metal sulfide minerals. Many sediment-hosted ore deposits are postulated to have formed by this process. Active fluid expulsion south of the Santa Barbara Basin along the San Clemente Fault supports chemosynthetic vent communities on mounds of hydrothermal barite. Hydrothermal barite has also been recovered from the San Clemente fault along the southern border of the Santa Barbara Basin. If drilling occurs in the Santa Barbara Basin, a geochemical investigation of the sediments for evidence of fluid venting to the basin should be included. It should also be noted that there might be significant safety problems related to the presence of active hydrocarbon seeps. The proponents need to obtain additional seismic data in the basin and address these safety problems.

Although this proposal is generally outside of the area of thematic interest of LITHP, it clearly represents an opportunity for obtaining a lot of interesting science for a very modest investment of ship time and resources.

4.2 Proposal 410

A Proposal for Deepening Hole 504B to Core and Log the Dike/Gabbro, Layer 2/3 Boundary (J. Erzinger, J. Alt and K. Becker)

Deepening Hole 504B is of extremely high priority to LITHP. The hole is clean, coring proceeded smoothly during Leg 140 with a reasonable penetration rate. The hole provides the best prospect for obtaining a continuous section through the crust, and has been cited by the Offset Drilling Working Group as a prime target to drill the dike/gabbro boundary. LITHP urges publication and critical evaluation of the VSP data collected during Leg 111, and stresses the need to tie all available seismic data to the drilled hole. Drilling through reflectors is extremely important in order to relate ocean crust structure and lithologies to seismic interpretations, and the available data suggest a major velocity discontinuity may be reached with one more leg of drilling.

LITHP is somewhat concerned about the poor recovery which could result in the loss of critical transition zones at the bottom of the sheeted dike complex. Although recovery may improve with grain size increases downhole, LITHP encourages further development of the bit and core catcher designs to enhance core recovery.

LITHP ranks the program very highly and is excited at the possibility that the next Leg may drill through the dike/gabbro transition.

4.3 Proposal 361-Add

Site Survey, TAG Hydrothermal Field, MAR 26°N (G. Thompson)

The site survey work proposed in 361-Add is exactly the type of study needed, both to select the best targets for drilling at TAG and to maximize the scientific return from drilling. Bottom source OBS surveys and detailed gravity and magnetics would also help constrain TAG drilling results. LITHP enthusiastically supports the proposed survey and hopes that funding will be available in a timely fashion.

There is still a lot of detailed submersible mapping, and survey work that have not been incorporated into either this site survey report or the original TAG drilling proposal. LITHP is disappointed that this information has not been presented to strengthen the case for scheduling the initial leg of TAG drilling in 1994. In order for TAG to be highly ranked for 1994 drilling, a detailed proposal with justification for site selection and scientific goals that are achievable with non-Diamond Core System technology is needed by the August 1 proposal deadline.

4.4 Proposal 411

Proposal for Drilling the Caribbean Basalt Province - an Oceanic Basalt Plateau (T.W. Donnelly, R. Duncan and C. Sinton)

Oceanic Large Igneous Provinces (LIPs), such as the Caribbean, Ontong-Java, and Kerguelan plateaus, are prominent large-scale bathymetric features of the ocean crust. However, in spite of their large size and obvious role in oceanic crustal formation, we still have a rather limited understanding of the tectonic and petrogenetic processes which created these features. LITHP clearly recognizes that our knowledge of oceanic LIP formation can only be enhanced by a systematic drilling initiative. LITHP fully agrees that such a drilling program needs to include sampling of the thick (0.5-1.5 km) sedimentary units which cap these plateaus. The sedimentary record will not only constrain the age of the LIP, but also can provide valuable insight into the subsidence history of these plateaus.

Evolution of the mantle source region(s) and the nature and extent of the "plume" component at any given LIP site will require extensive geochemical study of basaltic units obtained from numerous drillholes that penetrate basement to depths of at least 100-200m. In addition, one or two really deep (0.5-1.5 km) holes will also be required.

While LITHP heartily endorses LIP investigations and the proposed drilling strategy it cannot, however, enthusiastically endorse this particular drilling initiative for the following reasons:

1) Most of the margins of the Caribbean Cretaceous Basalt Province (CCBP) are either absent due to subduction, or are deeply buried beneath sediment. While it is recognized that there are pieces of obducted oceanic crust on land nearby, the geologic relationships of these materials to the submerged plateaus are still uncertain. This inherent feature of the CCBP prevents any access to normal oceanic crust adjacent to the plateau. Without the ability to

site "reference holes", it will be impossible to characterize the age and composition of the oceanic crust on which the plateau was built. The lack of any extrusive edge is a serious deficiency. Without at least one normal crustal reference hole, the interpretation of the petrogenetic history of the CCBP will not be very well constrained.

2) There is a lack of sufficient geochemical and geophysical data to adequately support a "megaplume and tail" model for the origin of the CCBP. What is the geologic evidence to support the idea that the CCBP and the present-day Galapagos hotspot are genetically linked? The relation between them cannot be based solely on a Sr- and Nd- isotope diagram. Furthermore, the geochemical affinities and the proposed spatial variation of the CCBP lithologies illustrated in Fig. 23 are extremely conjectural. The drilling strategy for this region, which is based on this hypothetical cross section, is highly questionable.

LITHP clearly recognizes the expertise of the proponents; however, this particular program at this point in time, is unsuitable for ODP drilling. It may be possible to get some preliminary information about the basement by collaboration with proponents of proposals to drill through the K/T boundary.

4.5 <u>Proposal 059-Rev3</u>

Continental Margin Sediment Instability: Global Sealevel History and Basinal Analysis through Drilling Abyssal Plains (P.P.E. Weaver, R.B. Kidd, J. Thompson, S. Colley, I. Jarvis, R.T.E. Schuttenhelm, G. de Lange, R.E. Cranston and D.E. Buckley)

This is an excellent proposal which does not, however, address issues of high priority interest to LITHP. Two issues of secondary importance to the Panel include:

(1) early sediment diagenesis and the "progressive oxidation front", and
(2) the study of processes occurring on the Canary Islands and Madeira (hotspot volcanism) through analysis of materials shed from the islands.

As a general comment, it would be valuable for these proponents to communicate with the VICAP proponents with the goal of possibly integrating these two proposals. However, this proposal shares with the VICAP proposal several shortcomings which make it unlikely that future versions would be ranked highly by this panel:

(1) there may be difficulty dating the deposits, because of dilution due to their distal nature; and
(2) it will be difficult to identify which island is the specific source of materials shed from the Canaries, and thus to generate useful information about temporal changes and hotspot evolution based on those materials.

4.6 Proposal 413

Magmatic and Tectonic Evolution of Oceanic Crust: Reykjanes Ridge (J. Cann, C. German, B.J. Murton, L,M, Parson, R.C. Searle, M. Sinha and S. Spencer)

This is an interesting and imaginative proposal that addresses high priorities of the LITHP. There is particular interest in the "Type" section hole for Layer 2 and the approach to investigating states of stress in the lithosphere. The proposal is clearly immature, and the panel has a number of recommendations for the proponents to consider in revising the proposal.

First, the case needs to be made more strongly as to why drilling is needed to address all of these problems. In particular, many of the questions about AVR evolution, and geochemical and petrological variations along and across the ridges, could be constrained by near-bottom observations and detailed sampling. LITHP appreciates the value of studying the Reykjanes Ridge, but feels it is premature to identify the specific problems that demand drilling. The upcoming PETROS cruise should contribute to a redefinition of the drilling problems.

The proponents' ideas on stress measurements were applauded. However, they should be aware that experience in the program to date has shown that at least 500m of basement penetration is needed to produce reliable stress measurements from breakouts. Shallow holes simply do not reliably represent the state of stress in the lithosphere. Only a few of the proposed holes could be used for stress measurements; that part of the program needs to be redefined.

This is logistically an ambitious program clearly requiring multiple legs of work. The ship can carry two guidebases, so, at most, two bare rock sites can be accomplished per leg. Given the current state of DCS development, the zero-age sites are unlikely to be drillable for a few years.

The proponents have some very intriguing ideas. They are encouraged to rethink and reformat the proposal when they have digested the results from upcoming sampling and mapping cruises. Some thought should be given to reorganizing the work into "leg" size packages with a well-described phased implementation plan - or the proponents should think about reducing the proposed work to a one-leg package. Part of this rethinking should include the technological limits of guidebases and DCS. Information on technical and time requirements for each type of drilling can be obtained from JOI. There are a number of sites in the proposal which do not require DCS; the proponents may want to think about how to group these sites in their revised plans.

4.7 Proposal 414

Rates, Effects and Episodicity of Structural and Fluid Processes, Northern Barbados Ridge Accretionary Prism (J.C. Moore, B. Carson, M. Kastner, X. Le Pichon, G. Moore and G. Westbrook)

This is a well-conceived, mature proposal. LITHP recognizes the scientific importance of long-term monitoring of active fluid flow using instrumented boreholes.

As presently implemented, the proposal is tangential to LITHP's main interests. However, the LITHP has a strong interest in the diagenetic history of subducted crustal material. This aspect could be better addressed by :

(1) deepening proposed Holes NBR1 and NBR2 to significant basement penetration (>100m);
(2) high recovery coring of decollement zone for in-depth geochemical studies on-shore;
(3) long-term monitoring of fluid composition along fractures in the basement.

Hole stability is likely to be a problem and the need to case the hole should be assessed from previous drilling. If swelling clays could inhibit logging, it may be necessary to plan the use of drill-in casing through those sections of the hole. Another problem that needs to be considered in the possibility of stress-induced borehole failure, particularly at the depths of the decollement and below.

4.8 Proposal 415

Proposal for Drilling the Cretaceous-Tertiary Boundary in the Caribbean Sea (H. Sigurdsson, S.Carey and S.D'Hondt)

The principal objectives of this proposal are not within the mandate of this panel. However, LITHP reviewed this proposal because:
(a) its objectives could result in exciting, high-profile science, and
(b) recovery of Caribbean Plateau basalts could be of interest, if this aspect could be developed further, scientifically.

LITHP thought the emphasis on the consequences of bolide impact (e.g. paleoclimate), as opposed to simply documenting the impact structure, was a major strength of this proposal. However, there were several concerns about implementation of some of the objectives:

1) Can the ejecta dispersal mechanism be deciphered in light of the poor understanding of plate tectonics in the area? It is important to understand

the regional tectonics in order to reconstruct the radial effects.

2) Why are there no sites located in the Gulf of Mexico where the tectonics are simpler?
3) Is recovery using APC going to be good enough to answer the questions on paleoclimate, i.e. is the time resolution going to be adequate?

LITHP felt that the proposal could be strengthened by involving someone with expertise in Caribbean tectonics in order to resolve the problems of ejecta dispersal. In addition, LITHP also encourages closer scrutiny of site selection to determine whether drilling could accommodate more basement objectives in addition to the K-T boundary aspects, particularly if these could be packaged as 1 or possibly 2 legs.

Furthermore, LITHP encourages the proponents to discuss scientific and drilling strategies for this area with proponents of proposal #403 (Drilling the K-T boundary, Gulf of Mexico Basin; Alvarez et al) and proposal #411 (Drilling the Caribbean Basalt Province, an Oceanic Basalt Plateau; Donnelly et al).

4.9 Proposal 403-Rev

Proposal to Drill the KT Boundary in the Gulf of Mexico (W. Alvarez, J. Smit, E.M. Shoemaker, A. Montanari and R.T. Buffler)

This proposal does not address high priority goals of LITHP; however, the Panel recognizes the importance of bolide impacts in the geological and biological record. This proposal, one of two with similar objectives, is exciting, topical and a role for ODP in this important research is appropriate.

LITHP has several recommendations:

1. A more carefully drawn discussion of what ocean drilling will accomplish complementary to, or instead of, the potential on-land research is needed.
2. The proposal is driven by the desire to find the "smoking gun". In addition to this fascinating problem, LITHP notes that the question of the geological consequences of an impact on a coastal margin is of great interest.
3. We feel that this proposal would be greatly strengthened if the Alvarez group could coordinate their research effort with that of the Sigurdsson group (proposal # 415) to develop a leg by leg scenario of drilling that would address issues of impact effects including crustal disruption, volcanism (if any, which would be of particular interest to this panel), and ejecta geometry.
4. This proposal, and the other, should address the distorting effects of tectonics and sedimentary processes occurring in the 65 million years after the impact. We note that this proposal is concerned with the Gulf of Mexico, where tectonic disruption is probably far less than that in the Caribbean to the south.

5. The Alvarez-Sigurdsson proposals could address important LITHP themes if they could combine their goals with those of the Donnelly et al. proposal (#411) which is targeted on the Caribbean Basalt Province. However, we do not feel that crucial KT work should be sacrificed for such a combination.

4.10 Proposal 332-Rev3
Florida Escarpment Drilling Transect (C.K. Paull, M. Kastner and D. Twichell)

Although this proposal is not within the mandate of LITHP, the Panel discussed it in terms of its interest in the fluid flow. An aspect of the proposal that requires further development is whether the proposed drilling will test the hydrological model and can determine the direction of fluid flow, i.e. through the platform or through the hemipelagics. If the fluid flow is from the carbonate platform then there is no source of metals for the formation of Mississippi Valley type deposits briefly mentioned in the proposal. However, if dewatering of the hemipelagics is occurring in that environment, then formation of such deposits might be possible.

4.11 Proposal 333-Add
Update to: Tectonic and Magmatic Evolution of a Pull-Apart Basin: A Drilling Transect across the Cayman Trough, Caribbean Sea (P. Mann)

LITHP appreciates the update on the status of site surveys that were requested by LITHP and TECP, and is pleased to learn of the completion of the aeromagnetic survey of the Cayman Trough. The objectives of CAY-4, 5, and 6 address high priority objectives of direct interest to LITHP.

LITHP notes that two of their major concerns remain unaddressed by the currently planned site surveys:

1) better characterization and documentation of the petrology and geochemistry of the Cayman Trough

2) the relatively poor constraint on crustal thickness.

As stated in the earlier LITHP review of this proposal, higher quality seismic refraction data than are currently available must be obtained to determine whether the crust is really as thin as proposed and to verify that Layer 2 is only about 200 m as is asserted in the proposal. Until this information is provided, LITHP regards this as an interesting proposal but one that it cannot rank highly due to the absence of this fundamental information.

5.0 GLOBAL RANKING OF PROPOSALS

5.1 Global Ranking

In response to the concern over the potential influence of proponents on panel rankings, LITHP notes the following proponents of proposals under consideration:

J. Alt (liaison from SGPP)	East Pacific Rise Drilling - proponent Galapagos Hydrothermal System - proponent Return to 504B - proponent
J. Austin	NARM - proponent (not on the NARM-DPG)
J. Bender	East Pacific Rise Drilling - proponent and DPG member
J. Erzinger	Valu Fa Hydrothermal System - proponent Return to 504B - proponent
J. Francheteau	East Pacific Rise Drilling - proponent and DPG member
J. Hertogen	Sedimented Ridges - not a proponent but a DPG member NARM - not a proponent but a DPG member
S. Humphris	TAG - proponent
R. Zierenberg	Sedimented Ridges - proponent

LITHP identified twenty-seven programs (with associated proposals) that address high priority objectives of the Panel. These are listed in Appendix II, grouped according to themes or topics. No topic was included for which a proposal did not exist; however, three prospective programs were discussed as having potential interest to LITHP:

- Lithosphere Characterization
- Deep hole in a Large Igneous Province (LIP)
- Red Sea Drilling

Although not included in the ranking, specific comments concerning these initiatives follow this discussion.

Since the purpose of this spring ranking procedure is to provide PCOM with priorities for drilling over the next 4-year time scale, LITHP then went through the list and eliminated all those proposals that would be unlikely to rank in the top fifteen. LITHP also decided that, in order to stress the need to schedule some offset drilling legs for FY'94, it would rank each of the proposals separately on their individual merits. This represents a change from the method used in the fall 1991 rankings when, in order not to preempt the findings of the OD-WG, LITHP grouped them together as an Offset Drilling I leg. However, the urgent need to achieve some of LITHP's objectives precludes waiting for, but by no means invalidates, the OD-WG report, which will provide a strategy for a long-term, multi-leg drilling effort.

Once a shortlist of fifteen was identified, each proposal that had not been previously discussed as part of the Proposal Review (section 4.0) was given to a panel member to present and lead the discussion. During this time, proponents were permitted to remain in the room, but could provide information only.

Ranking was done by written votes, which were tallied by the SGPP Liaison. All voting sheets were signed and have been kept as part of the meeting records. The results of this global ranking procedure are listed below. In addition, an assessment of each program's drillability in FY'94 was made and is included in the table with explanatory notes below.

Rank	No.	Proposal	Members Voting	Score ($\pm 1\sigma$)	Drill in FY'94
1	410	Return to 504B	12	14.3 (± 0.9)	Yes
2	375	Hess Deep	13	13.0 (± 1.5)	Yes
3	369	MARK Area	12	12.9 (± 1.4)	Yes
4	361	TAG	12	11.2 (± 2.6)	(Yes)
5	300	Hole 735B, AII FZ	13	9.6 (± 3.2)	Yes
5	DPG	Sedimented Ridge II	12	9.6 (± 3.8)	(Yes)
7	DPG	EPR II	11	8.0 (± 4.3)	No
8	376/382	Vema FZ	13	7.8 (± 3.4)	Yes
9	DPG	NARM Volcanic	12	7.5 (± 1.8)	Yes
10	319	Galapagos	13	6.7 (± 3.0)	Yes
11	407	15° 20'N FZ	13	5.8 (± 2.5)	(Yes)
11	414	Reykjanes Ridge	13	5.8 (± 2.9)	No
13	325	Endeavor Ridge	12	4.8 (± 2.7)	(Yes)
14	368	Return to 801C	13	4.7 (± 3.5)	Yes
15	374	Oceanographer FZ	13	3.5 (± 1.5)	No

The following caveats on these rankings should be noted:

Hess Deep: its high ranking is based on the assumption that Leg 147 is successful in reaching its objectives. It is theoretically drillable in FY'94; however, if it is to become the site of an offset drilling strategy then additional site survey information is required in order to understand the regional context.
Additional work known to be planned in the area:
Dorman and Hildebrand - near-bottom refraction
Hinz et al - MCS cruise may be diverted from study of the W. Coast of Mexico.

MARK: one of the best known regions of the sea floor. Sufficient data exist now to drill in this area; the proponents will be encouraged to synthesize the existing data and include a discussion of the tectonics in a revised proposal. Delaney/Karson cruise just completed.

TAG: proponents will be advised that a revised proposal needs to reevaluate the objectives and drilling targets in light of the Leg 142 results.
Additional work being proposed in the area:
Thompson and Kleinrock - side scan survey of the mound
Purdy, Collins et al - NOBEL and OBS experiment
von Herzen - heat flow and electromagnetics on the mound

Hole 735B: drillable in terms of reoccupying the same site. Currently, the proposal to return has expired, but a new one is expected for the 1 August deadline.

Sedimented Ridges II: the DPG report needs to be rewritten in light of the Leg 142 results for consideration of non-DCS drilling.

Vema Fracture Zone: sufficient data exist to carry out an Engineering leg on the top of the transverse ridge so that site is drillable. However, there is not enough data for drilling on the slopes.
Additional work known to be planned:
Kastens et al - side scan survey in Feb. 1993.

15°20'N Fracture Zone: a lot of new data will be available within the next year, which may make this location drillable in FY'94:
Needham et al - completed a SIMRAD survey
Bougault et al - cruise with *Nautile* currently underway
Dick, Thompson et al - proposed *Alvin* cruise for 1993.

Reykjanes Ridge: not presently drillable as more site survey information is needed and five sites require bare-rock drilling The PETROS cruise should provide additional sampling in the area.

Endeavor Ridge: the current proposal is not considered drillable at the present time; however, a revised proposal is expected by the 1 August deadline that contains additional new data.

5.2 General Comments Concerning Changes in Rankings from Previous Years:

Most of the rankings are not considerably different from previous years and reflect LITHP's continued interest in obtaining sections of oceanic crust. The bulk of active proposals that fall within LITHP's mandate currently address either drilling sections of the crust and upper mantle or hydrothermal systems; hence, in the rankings, these two themes tend to dominate. Other areas of potential interest (e.g. hot spots, large igneous provinces) are poorly represented in terms of numbers of proposals.

Several major changes in the rankings deserve comment:

1) The large number of offset drilling proposals that currently rank in the top ten is a direct reflection of the activity of the OD-WG and LITHP's acknowledgement that the Leg 142 results suggest that a change in emphasis from a continuous section through the crust to a number of sections within different layers and across the transitions may be a more effective short-term strategy. This has resulted in the MARK proposal (which LITHP believes could be scheduled for drilling) moving from 7th in 1991 to 3rd in this ranking. It is now the highest ranked Atlantic drilling proposal.

2) Continued drilling at Hole 735B has moved up from 12th to 5th. Apart from the reasons stated above, the results from this drilling have proved to be scientifically important and a considerable amount has been learned from the petrology and stratigraphy. In addition, the general approach of obtaining sections - not necessarily all from one location -- has now been endorsed by the OD-WG and, with an open hole in a shallow water depth, this option is now more attractive.

3) EPRII has dropped from 3rd to 7th. This is due to the results from Leg 142 and LITHP's sense of urgency to accomplish some successful lithosphere drilling in the near future. It does <u>not</u> reflect any decrease in support for the continuation of the development of DCS. In addition, it should be noted that all the proposals now ranked above it are either new or have ranked above it in the previous global rankings.

4) NARM volcanic margins drilling has dropped from 4th to 9th as a direct result of the Panel's decision to rank individual offset drilling proposals rather than combine them into an Offset Drilling I leg.

5) Galapagos drilling has moved up from 24th to 10th mostly as a response to its potential as an Engineering site. In addition, it is now of more interest in that drilling could be accomplished without DCS because the extinct mound will be indurated, and the underlying basalt is exposed and known to be highly altered.

5.3 <u>Other thematic interests</u>

LITHP's interests extend beyond the themes that are currently indicated by the rankings. As noted above, some areas of interest are currently poorly represented in terms of numbers of drilling proposals (e.g hot spots). In particular, three prospective programs or areas of drilling were discussed:

- Lithosphere Characterization - The concept of a program of drilling to examine the scales of variation in oceanic crust has been discussed several times previously by LITHP. Such a program might involve two or three closely spaced holes; however, the spacing needs to be carefully considered and justified for the particular problem to be addressed and experiment to be conducted.

LITHP endorses DMP's efforts to use the drillship in an experimental mode and is prepared to issue a joint RFP on the subject of lithosphere characterization.

- Large Igneous Provinces (LIPs) - LITHP is interested in seeing proposals for drilling deep holes in LIPs. It is concerned that the Panel's membership does not reflect this broader interest, so will attempt to bring in some expertise in the field during the regular rotation of panel members.

- Red Sea Drilling - About a year ago, LITHP requested information on the current status of gaining research clearance for the Red Sea. The correspondence related to this are attached as Appendix III. It now appears that drilling in this area might be a possibility; consequently, LITHP is interested in again seeing proposals addressing thematic objectives that request drilling in the Red Sea.

5.3 Watchdogs

LITHP has set up watchdogs for each of the proposals that continue to be active and are of potential interest to the Panel. The responsibilities of these watchdogs are:
(i) to keep track of developments affecting the status of the proposal for LITHP;
(ii) to proactively assist the proponents in providing information on improvements necessary, what additional work needs to be done, and whether it is worth resubmission of a revised proposal;
(iii) to make sure proponents know of SSP requirements.

The watchdogs are listed below; these appointments will be reviewed at each meeting:

Hess Deep	- S. Humphris	Hole 735B	- S. Bloomer
Reykjanes	- P. Kempton	Oceanographer	- S. Bloomer
Hole 504B	- T. Brocher	Mathematician	- S. Bloomer
Hole 801C	- T. Brocher	EPRII	- J. Erzinger

15°20'N	- J. Bender	Sed. Ridges II	- J. McClain
MARK	- J. Bender	Vema	- J. McClain
TAG	- R. Zierenberg	K/T+CCB	- J. McClain
Endeavor	- R. Zierenberg	Tyrrhenian Sea	- M. Cannat
Galapagos	- R. Zierenberg	Valu Fa	- M. Cannat
Cayman	- S. Cloetingh	Eq. Transform	- Y. Tatsumi
Alboran	- S. Cloetingh	Site 505	- D. Moos
VICAP	- J. Erzinger	NARM Volcanic	- J. Franklin
Aegir Sea	- J. Erzinger		

6.0 NON-ENGINEERING NEEDS

The list of non-engineering needs that was compiled by the Panel Chairs is included in Appendix IV, and was considered for prioritization. Prioritization by SGPP and OHP were also available and the following additional items had been added to the list by those Panels:

- Sidewall coring tool
- CatScan or X-ray radiography of the whole core
- Review of X-ray lab procedures
- Synthetic seismology software
- Stratal geometry software

The top two items on the original list - Pressure Core Sampler and Unstable Strata Coring Equipment - were not included in the procedure, since they had already been prioritized by PCOM under Engineering Developments. However,
LITHP reemphasizes that the Pressure Core Sampler and Transfer Manifold are extremely important to the Panel's objectives.
The transfer chamber is a third-party tool currently under development by Kastner and Brass.

LITHP ranked only their four top priorities:

1 Sidewall Coring Tool
2 Computer Hardware and Software for Core-Log Integration
3 In-situ Fluid Sampling and Measurement of Pore-Water Pressure and Permeability
4 CatScan or X-Radiography of the Whole Core

Specific comments on individual items follow:

a) <u>Sidewall Coring Tool</u>
These are currently available in the industry and, given the current status of geochemical tools, LITHP believes that, at the present time,

analysis of hard rock samples, may be a better approach. LITHP gives high priority to renting one of these and taking it to sea as a trial prior to purchase.

b) High Resolution Geochemical Tool
The high-resolution geochemical tool uses a germanium detector, and is able to detect many elements that are currently not available using the standard tool. This is a result of the sharper spectral peaks and significantly lower detection limits that can be achieved. The disadvantages of this tool are that it needs to be cryogenically cooled and the detector is not as sensitive requiring longer counting times, which in practice, means that it is necessary to integrate over longer time and core intervals. In addition, the accuracy and precision are not significantly improved. This tool is currently being used experimentally at the KTB site. It is important to note that use of this tool adds another logging run to every hole.

This tool is of potentially very high interest to LITHP, but it is important to understand the relation of geochemical logs to the chemistry of the rocks before its true value can be assessed. This correlation requires the capability to integrate core and log data.

c) CatScan or X-Radiography of Whole Core
This capability would be extremely useful for showing structure in cores prior to their being cut open. It would be particularly important for hydrothermal deposits, volcanoclastic sedimentary sequences at convergent margins, and for showing layering in gabbros. The procedure is commonly done in Europe and could be integrated directly into the standard core-handling procedures at sea.

d) High Temperature Resistivity Tool
LITHP did not include this tool in its rankings because considerable progress has been made in this area, as reported by the DMP liaison. LITHP endorses DMP's efforts to bring high temperature tools on line; these will be needed for future drilling of deep holes.

e) Borehole Gravimeter
LITHP is very interested in being able to measure formation density because of its relation to seismic velocities. Because it produces a gravity measurement for the formation, it would be particularly useful for sites where the drilling process has caused the formation to change in the immediate vicinity of the hole. However, LITHP acknowledges that this instrumentation is still in the developmental stages and consequently did not included in the present prioritized wish list.

7.0 OTHER ITEMS

7.1 Nomination of Chief Scientists for Leg 152

LITHP nominates the following individuals for Co-Chief Scientists on Leg 152:

Hans-Christian Larsen
Mike Coffin
Bob White
Olaf Eldholm
Andy Saunders

7.2 Panel Membership

The panel membership was reviewed for disciplinary balance as well as representation of a number of tectonic environments of interest to the Panel. Marc Parmentier declined to join LITHP, so a replacement for Jason Phipps-Morgan still needs to be nominated.

The current makeup of the Panel is as follows:

Name	Field of Expertise	Region	Rotation
J. Bender	Igneous Petrology; Trace Element Geochemistry	EPR, MAR	1/94
S. Bloomer	Igneous Petrology; Geochemistry	W. Pacific, Indian	9/94
T. Brocher	Seismic Reflection/Refraction	Not Specific	9/92
M. Cannat	Structure; Ultramafics; Ophiolites	MAR, Indian	F
P. Herzig	Hydrothermal	W. Pacific, MAR, Indian	G
S. Humphris	Basalt Geochemistry; Alteration	MAR, EPR	9/93
P. Kempton	Igneous Petrology; Geochemistry; Isotopes	Not Specific	UK
J. McClain	Marine Geophysics; Seismics	EPR, Juan de Fuca	9/92
D. Moos	Physical Properties; Shallow Structure	Not Specific	7/93
G. Smith	Magnetics	Not Specific	9/91
Y. Tatsumi	Igneous & Experimental Petrology; Geochemistry	Not Specific	J
A. Tsvetkov	?	?	R
R. Zierenberg	Hydrothermal; Fluid-Rock Interaction	N. Pacific; Red Sea	1/93

(Note: neither the ESF or the Canadian/Australian member is included in this list as the replacements for S. Cloetingh and J. Franklin are not yet known).

A number of LITHP members are rotating off the Panel. G. Smith, J. Erzinger, S. Cloetingh and J. Franklin have all provided a great deal of help and devoted considerable time to ODP activities; LITHP thanks them all for their dedicated service.

T. Brocher and J. McClain will both rotate off after the fall meeting, which means LITHP will be lacking in seismics expertise.

There is currently no-one with expertise in Large Igneous Provinces (LIPs) on the Panel. This need must be addressed in one of the replacements.

Two replacements need to be nominated at this meeting (for J. Phipps-Morgan and G. Smith):

For Jason Phipps-Morgan, LITHP nominates the following (in order):

- Doug Wilson (UCSB)
- Don Forsyth (Brown)
- Roger Buck (LDGO)

For Guy Smith, LITHP nominates the following :

- John Tarduno (Scripps)
- Bob Karlin (U. Nevada, Reno)
- Brad Clement (Florida International)
- Pierre Rochett (France)

In addition, LITHP would like to add a LIPs expert to the Panel, and nominates the following:

- Mike Coffin (U. Texas)
- John Mahoney (U. Hawaii)
- Bob White (U.K.)

S. Humphris will contact the top candidates to determine their willingness to serve if selected.

The Chair, S. Humphris, will also rotate off LITHP in 9/93, so will serve for only two more meetings. LITHP will nominate a replacement at the fall meeting.

7.3 Liaisons to Other Panels

New Panel liaisons will be need for TECP and for OHP. M. Cannat has been nominated for TECP liaison (she is at sea, so has not formally been asked). OHP liaison designation will wait until the replacement for G. Smith is determined.

In the fall, a new DMP liaison will be needed in place of J. McClain. D. Moos will take over, and LITHP requests that both individuals attend the fall DMP meeting to ensure a smooth transition.

The current status of liaisons to other Panels is as follows:

SGPP - R. Zierenberg
TECP - M. Cannat(?)
OHP - To Be Appointed
DMP - J. McClain (D. Moos from 9/92)
TEDCOM - D. Moos

OD-WG - S. Bloomer

7.4 Next Meeting

The next LITHP meeting is scheduled for 14-16 October 1992. The venue is not yet determined, but M. Cannat will be asked whether she would be willing to host it in France, either in Brest or Paris. An alternative option is Hobart, Tasmania.

7.5 LITHP White Paper

In light of recent engineering developments, it is appropriate for LITHP to begin work on updating its White Paper to better reflect its short-term and long-term objectives. Although these have not changed substantially, there is likely to be a change in the emphasis of the goals for the next few years. The current White Paper will be distributed to the Panel with these Minutes in order to include discussion of changes on the fall meeting agenda. It is planned that the White Paper will be updated over the winter.

In conjunction with this activity, LITHP will issue an RFP for drilling proposals addressing the Panel's high priority thematic objectives in any oceans, including the Red Sea.

7.6 PEC Recommendation (J. Austin)

One of the recommendations of the recent evaluation of ODP was that the advisory structure be evaluated. Although the process by which this will take place is not yet determined, the Panels might be involved at some level.

7.7 LITHP Annual Report to PCOM

The Annual Report given by the LITHP Chair to PCOM at the Annual Meeting in December 1991 is attached as Appendix V.

7.8 Vote of Thanks

LITHP thanked J. McClain for all his work in hosting the meeting. In addition, all of those who attended the "geological field trip" along the South Fork of the American River greatly appreciated the opportunity - and learned a lot!

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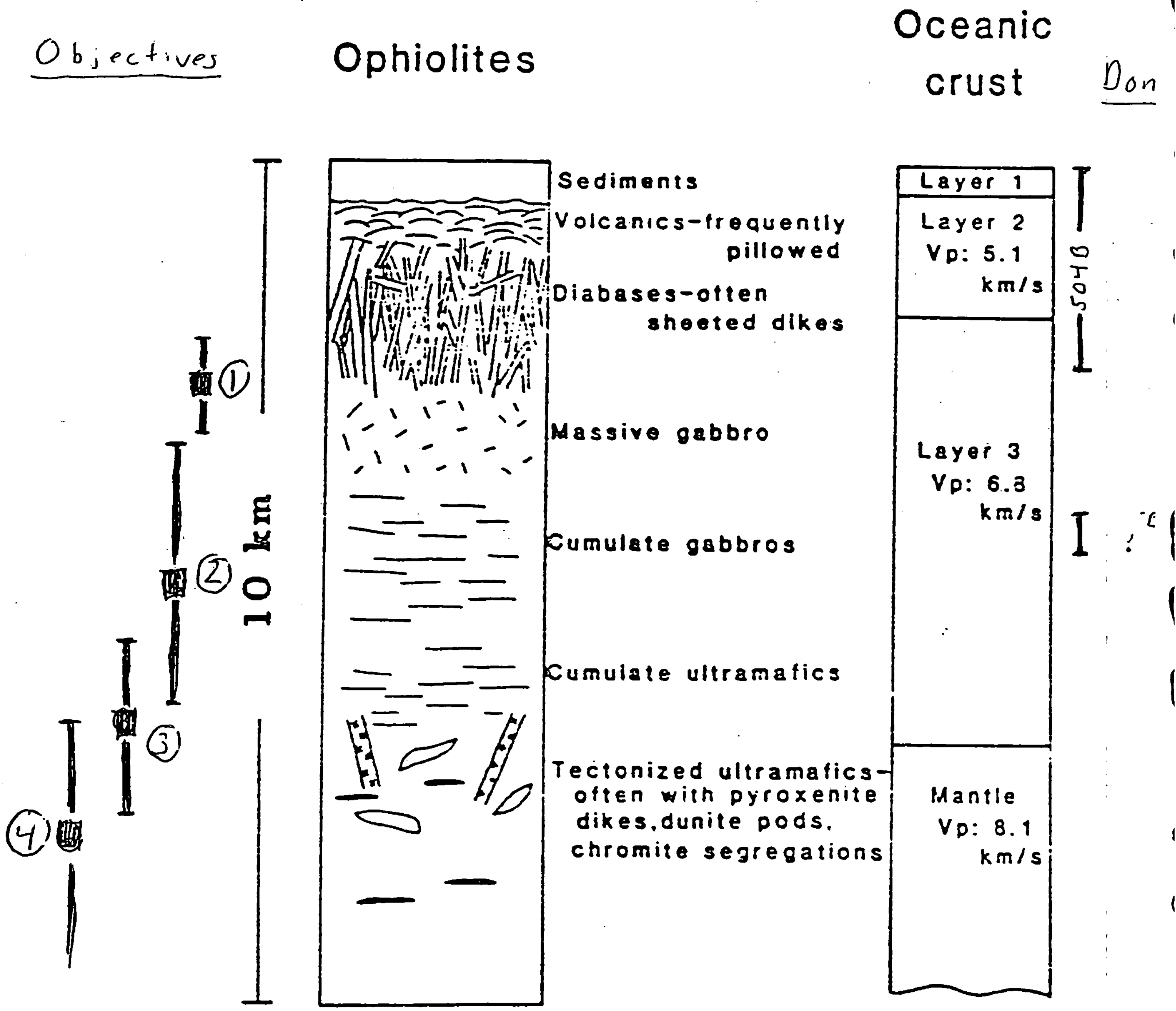
Appendix I



Appendix II. Proposals Considered in the 1992 Global Rankings

Program/Theme	Proposal #	Area	Rank 1991	Rank 1990
DEEP DRILLING				
Layer 2/3 and other Sites	375-Rev	Hess Deep	1	1
Upper mantle	369/A	MARK Area, MAR	7	2
Layer 2/3, Layer 3/Mantle	376A, 382/A	Vema FZ	5	5
Upper Mantle	374/A	Ocenographer FZ	13	21
Layer 3	352/E	Mathematician Ridge	26	22
Layer 3/Mantle - extinct ridge	300/B	Site 735B, AII FZ	12	17
Mantle - back arc basin	379/B	Tyrrhenian Sea	17	-
Layer 2/3	410	Hole 504B, EPR	-	-
Gabbro section	407	15°20'N	-	-
RIDGE CREST/HYDROTHERMAL PROCESSES				
Zero-age ridge crest	EPR-DPG	9°30'N, EPR	3	2
Sedimented Ridges II	SR-DPG	Escanaba Trough	5	5
Hydrothermal - slow	361/A	TAG, MAR	2	4
Hydrothermal medium	325/E	Endeavor Ridge	9	12
Extinct spreading ridge	331/A	Aegir Ridge	21	-
Hydrothermal, back-arc	360/D	Valu Fa Ridge	19	17
Extinct hydrothermal	319/E. Rev	Galapagos	24	-
Transform-dominated ridge	333	Cayman Trough	28	24
Axial valley ridge	413	Reykjanes Ridge	-	-
OLD OCEAN CRUST				
Jurassic crust	368E	Hole 801C	11	9
Cretaceous Volcanism	343/E, 411	Caribbean Sea	29	-

HOT SPOT/SEAMOUNT

VICAP	280/A.Rev	Canary Islands	21	-

CONVERGENT MARGINS

Back-arc tectonics	390	Shirshov Ridge	26	-

DYNAMICS OF RIFTING

Volcanic Rifted Margins	NARM-DPG	N. Atlantic	4	11
Non-volcanic Rifted Margins	NARM-DPG	N. Atlantic	8	11
Dynamics of Early Rifting	323-Rev.	Alboran Basin	18	-
State of Stress	373/E	Site 505	19	19

OEANIC PLATEAUS

Oceanic Plateau	142/E.Rev.	Ontong-JavaPlateau	10	-

Appendix III

July 22, 1991

Dr. William Erb
Director
Office of Marine Science and
Technology Affairs
U.S. Department of State
Washington, DC 20520

Dear Bill:

It was a pleasure to meet you on board the *JOIDES Resolution* at the San Diego port call earlier this month. Perhaps you could help me with the following query which came up at the last Planning Committee: What are the prospects for getting clearance to operate in the Red Sea? Has Operation Desert Storm changed things?

You may recall that early on in the life of ODP, the Planning Committee was hoping to schedule a drilling leg in the Red Sea. If the clearance situation had been very good, the leg would have happened in mid-1987. But the advice we were given was not encouraging, so it never got into the program.

The scientific interest in Red Sea drilling remains strong. If given encouragement, a Red Sea leg might get into the program in 1994 or '95. Should we encourage the scientific community in this quest?

Yours sincerely,

Tim Francis

Timothy J.G. Francis
Deputy Director

TJGF:hk

Ocean Drilling Program
Office of the Director
Texas A&M University Research Park
1000 Discovery Drive
College Station, Texas 77845-9547 USA
(' 15-8480
T. .umber: 62760290
FAX Number: (409) 845-4857

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United States Department of State

Bureau of Oceans and International Environmental and Scientific Affairs

Washington, D.C. 20520

July 31, 1991

Timothy J.G. Francis
Deputy Director
Ocean Drilling Program
Texas A&M University
College Station, Texas 77845-9547

Dear Tim:

I believe the answer to your query on Red Sea drilling is yes. Prospects there are imporved since 1987 especially with regard to Saudi Arabia. Egypt is likely to cooperate as I believe they were in 1987. Of course, all could change by 1995 but if you begin laying the groundwork now you could establish support within the countries.

I enjoyed meeting you as well and appreciate the kind hospitality aboard the vessel.

Best regards,

Bill

William Erb

Appendix IV

NON-ENGINEERING WISH LIST - UNPRIORITIZED
(For Discussion at Panel Meetings)
(Prepared: 3 March 1992)

I. ITEMS PRIORITIZED BY PCOM FOR ENGINEERING DEVELOPMENT AT APRIL 1991 MEETING

1 Pressure Core Sampler, including a manifold for extracting free and hydrated gases, a "harpoon" for extracting pore waters and an exchangeable pressure chamber.

2 Coring equipment for unstable strata to facilitate the recovery of unconsolidated sand/rubble without extensive loss or damage to cores.

II. ITEMS FOR DOWNHOLE MEASUREMENTS AND SAMPLING

	ITEM	STATUS
3	Acquisition of borehole gravimeter to determine formation density.	Current technology reviewed at last DMP Meeting
4	High temperature resistivity tool with fluid resistivity and temperature capabilities.	Development now under 1 year contract in U.K.
5	High resolution geochemical tool.	(Note: Panels need to define what they mean by high resolution)
6	High resolution downhole logging tool for magnetic susceptibility.	(Note: Panels need to define "high resolution")
7	Downhole device with appropriate packer for multiple in-situ sampling of free-flowing water in hard rock formations and measurement of pore-water pressure and permeability.	Steering Committee set up by PCOM in December

III. ITEMS FOR SHIPBOARD LAB

	ITEM	STATUS
8	Natural gamma data acquisition on the core on board in real-time.	At the RFP stage
9	MST (Multi-Sensor Track System) upgrade for natural gamma core logging device (and possibly spectral gamma as well).	The next step beyond Item 8
10	Resistivity equipment for discrete core measurements.	New instrument for continuous measurements on board
11	Sediment color scanner and necessary hardware and software for efficient shipboard data handling.	Non-ODP system used on Leg 138
12	Core barrel magnetometer for measuring/ monitoring the field in core barrel (checking success of demagnetization).	New one tested on last Leg
13	Carbonate autosampler, replacement coulometer.	SMP to review lab at next meeting

IV. COMPUTING IMPROVEMENTS

	ITEM	STATUS
14	New database structure to deal with expansion and to facilitate core-log data integration.	Data Handling Working Group to meet in March
15	New hardware/software to complete Item 14.	As above

V. OTHER ITEMS

	ITEM	STATUS
16	Generation of a composite index for the first 30 Legs of ODP.	ODP CD-ROM being produced
17	Micropaleontology reference slide collections (forams, diatoms, radiolarians). Minimum of two sets, with at least one set shipboard.	Not known

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Appendix V

LITHOSPHERE PANEL ANNUAL REPORT
December 1991
Austin, Texas

LITHP met twice in the last year: once in March in La Jolla, CA, and then in October in Nicosia, Cyprus, where we held a joint session with TECP.

1. Planning Activities

Last year I reported that two approaches are necessary to begin to address the LITHP's long-term goals presented in our 1988 White Paper: one is to continue planning towards developing the capacity to drill deep so that we can obtain a complete crustal section, and the second is to begin a program of offset drilling. Some progress has been made in both areas:

a. Deep Drilling - LITHP believes that it is ultimately critical to drill deep holes at a number of sites in order to understand lithospheric processes. It is likely that deep holes in fast and slow-spreading environments, together with a deep off-axis hole tied to a moderately deep on-axis site to study changes due to alteration will be necessary.

   In order to push technological developments towards deeper capabilities, at the spring meeting we decided that LITHP's **short-term strategy** will include drilling a scientifically sound program of intermediate (2-2.5 km) depth holes to maximize the present vessel's capabilities, to advance the technology, and to increase knowledge of the challenges to be faced in very deep drilling.

   We are now seeing proposals and programs that are being considered for drilling in the near future that begin to answer this need (eg. some of the rifted margin sites and some of the offset drilling proposals).

   At the same time as adopting this short term strategy, we continue to work towards the goal of deep (4-6 km) drilling. At the spring meeting, at the request of the Chairman of TEDCOM, we took our original six "example" sites and narrowed them to a single "ocean crust" site using information from Holes 504B and 735B. This site was submitted to TEDCOM.

   LITHP is also pleased that some OPCOM funds have been designated for a feasibility study of deep drilling. For our planning purposes, it is critical to know whether a goal of a continuous section through the oceanic crust is realistic in terms of time, technology and cost.

LITHP is interested in seeing this study evaluate the time, technology and cost of drilling: i) a 4 km hole, ii) a 6 km hole in oceanic crust. We have also designated one panel member--Dan Moos--to act as our liaison and to be available to assist in answering questions or providing information to the consultants whenever required.

b. Offset Drilling - at the last annual meeting, LITHP urgently requested that PCOM establish a working group to prioritize the scientific objectives that can be realized by offset drilling, and to determine a drilling program to meet those goals. The Panel was very disappointed that PCOM chose to delay formation of this group until its spring meeting. The WG has now met once and will meet twice more. The consequence of this delay is that the WG has only just begun its deliberations at a time when Atlantic drilling is being scheduled, whereas other programs involving Atlantic drilling have been given considerable attention.

In light of this, LITHP has recommended that the OD-WG be specifically charged with developing an initial drilling strategy for the Atlantic and laying out a provisional schedule for Atlantic drilling at its next meeting. This may require both an extra day of meetings, plus involvement of those proponents with interests specifically in the Atlantic. This in some ways turns the WG more into DPG, but we feel that, rather than form an additional group, this need can be addressed under the WG's mandate.

LITHP is pleased that development of the DCS system is the top priority for OPCOM funds, as the system is urgently needed in order to accomplish many of LITHP objectives, in particular drilling through the upper layers of the crust. However, it is now clear from the success of Leg 139 that some of our objectives, in this case initial exploration of hydrothermal systems, can be attained with standard drilling procedures. We look forward to drilling at Hess Deep as an opportunity to demonstrate that drilling in the lower layers can also be accomplished.

2. Supplemental Science

LITHP has strong interests in two of the supplemental science proposals. PCOM specifically charged us to delineate the drilling we would give up in order to accomplish these objectives.

In the case of logging 801C--LITHP supports its inclusion in Leg 144 and is willing to give up 3.5 days of basement drilling to accomplish the logging program. However, the Panel does not want to give up planned basement drilling at MIT-1 because of our interest in getting enough inclination data to average out secular variations and also recovering a number of flows to define geochemical composition and variations. I now understand that the Co-Chiefs have made some changes to the drilling program which includes reducing basement penetration by 100 m at MIT-1. I do not believe there are now 3.5 days left of basement drilling. However, LITHP believes the basement objectives at MIT-1 are important and at least 200 m of penetration needs to be planned.

In the case of OSN-2--LITHP has as one of its goals the establishment of global seismic arrays and has stated that installation of new observations needs to be an integral part of the implementation plan for the ODP Long Range Plan.

In reviewing this proposal, we have been plagued by varying time estimates--when we first reviewed it the estimate was 4 days; when we discussed it at our fall meeting it was up to ten days; it is now back down to 5.7 days.

In answer to PCOM's specific question--LITHP is willing to give up lithospheric objectives of Leg 145 in order to drill OSN-2.

However, there is not enough drilling of LITHP interest to give up 10 days, and our willingness to accommodate OSN-2 is due to the fact that Leg 145 does not address high priority objectives. The Panel also strongly felt that it is unacceptable to devastate Leg 145 by removing so much time from its schedule (and even with the revised time estimate, it is still more than the original guidelines for supplemental science). Needless to say, LITHP is pleased that the issue of supplemental science proposals is now dead.

3. Membership

There have been a number of changes in the last year to the Panel as U.S. members have rotated off and non-U.S. scientists have been changed. New British and French representatives began their terms in March, and we have replaced three U.S. panel members.

At the fall meeting, both Jason Phipps-Morgan and Guy Smith were scheduled to rotate off the Panel. Guy has agreed to serve for one more meeting and we have submitted nominations for Jason's replacement to fill our need for an individual with expertise in modeling. Our top candidate has been contacted and is almost certain he would agree to serve if invited.

PCOM had requested that LITHP discuss with TECP whether tectonics interests were covered sufficiently on LITHP. This we did in our joint session, and both panels felt their interests are well represented and the liaisons are appropriate.

A final personal issue that I would like to make you aware of is that I shall be leaving my current position with SEA and moving back to WHOI in a full-time capacity to work with Bob Detrick in coordinating the RIDGE Office. I plan to continue my term as Chair of LITHP, but if any PCOM members have concerns, I would be glad to discuss them.

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Ans'd.........

JOIDES TECTONICS PANEL MEETING
MARCH 23-25, 1992
LAS VEGAS, NEVADA

DRAFT EXECUTIVE SUMMARY

1. PRIORITIZATION OF SHORT LIST OF DESIRED NON-ENGINEERING EQUIPMENT

1. Fluid sampling strategy: pore pressure, permeability, and fluid sampling.
2. New Computer System--hardware and software (items 14 & 15 on March 3 list).
3. A. Downhole and shipboard equipment to enhance core-log integration,
   B. Hard-rock side-corer,
   C. Micropaleontology reference slide set(s)

2. CO-CHIEF SCIENTIST NOMINATIONS

Leg 152 (NARM 1): TECP nominates the following persons: Non-U.S.: Hans-Christian Larsen; U.S: R. A. Duncan, Emily Klein

3. OFFSET DRILLING

TECP is concerned that apparently members of the OD-WG: 1. find TECP's expectations for site survey information and pre-drilling analysis to be too stringent or impossible to attain; 2. feel that TECP does not appreciate the importance of small-scale structures that may be recovered by drilling long sections of individual rock units. Also TECP notes with concern the shift from offset drilling as originally conceived to an emphasis on drilling "long sections" of various rock units apparently with little regard for tectonic setting. These concerrns are discussed in more detail in the minutes.

3. DEEP DRILLING

TECP reaffirms its support for deep drilling (October 1991 minutes) and for the need for efforts to increast the efficiency of drilling, enhance core recovery, and increase the ultimate likelihood of success as deep sites such as those proposed for the North Atlantic Rifted Margins. ODP already has an on-going experiment in deep drilling--Hole 504B, now at 2000 m after 7 legs and roughly $40 M. The panel expressed the general opinion that the way to explore the feasibility of deep drilling is to try it. Deep drilling on conjugate rifted margins remains a high priority objective of TECP

4. WATCHDOG REPORTS

Watchdog reports and their subjects included: Transform Margins-Alastair Robertson, Plate history, sea-level change, magnetic questions-Tanya Atwater, Young Rifted Margins--Dale Sawyer, Old Rifted Margins-Hans-Christian Larsen, Mid-ocean Ridges--Jeff Karson, Marginal Basins--Yujiro Ogawa, Convergent Margins-Casey Moore, Collisional Margins--Phil Symonds, and Stress and Mid-Plate Deformation--Mark Zoback. TECP finds these reports are highly useful in updating the panel and focusing its discussions.

5. GLOBAL RANKINGS

1	NARM-DPG Non-volcanic Leg 2	7.18
2	346 African Equatorial Margin	5.31
3	NARM-DPG Volcanic leg 2	4.64
4	Alboran Sea (Comas/Watts combin)	4.46
5	265 W. Woodlark Basin	3.77
6.	410 Deepening Hole 504B	3.31
7.	400 Costa Rica Accretionary Prism	3.00
8.	Mediterranean Ridges I (shallow)	2.54
9.	414 Barbados Accretionary Prism	2.23
10.	369 MARK	2.17

11.	Mediterranean Ridge II (deep)	2.08
12.	333 Cayman Trough	1.92
13.	NARM-DPG Non-volcanic leg 3	1.91
14	411/415 Caribbean Basalt/K/T boundary combined	1.77
15	375 Hess Deep Leg 2 (tectonic)	1.54
16	376 Vema Fracture Zone	1.46
17	Chile Triple Junction, leg 2	1.38
18	363 Grand Banks, Newfoundland	1.31
19	361 TAG	1.08
20	403 Rev K/T Boundary, Alvarez	0.92
21	368 Return to Hole 801C	0.77

6. MEMBERSHIP

The Tectonics Panel currently is short one U.S. member, and two other U.S.members, Dale Sawyer, Mike Purdy, and Hans-Christian Larsen are rotating off. The Panel is concerned about maintaining proper balance, particularly in view of the loss of its expertise in rifted margins, in seismology, and the onset of drilling activity in the Atlantic Ocean and possibly offset drilling. Recommendations for new Panel members are in the Minutes

7. NEXT MEETING

Tentatively -Iceland, Hans-Christian Larsen will arrange for field trip and host(s)
Tentative Date: September 22-27
TECP members are fully aware of the need for economizing to the extent possible.

8. RECORDING AND ARCHIVING OF STRUCTURAL DATA ON *JOIDES RESOLUTION*

TECP believes that it is important that structural information on cores be collected as an integral part of routine core description, as appropriate. Accordingly TECP recommends: 1. that standardization of the shipboard structural VCD form and spreadsheet should be carried out immediately; 2. that integration of the spreadsheet data with the computer database should not be difficult and should be effected as soon as possible; and 3. that development of a Macintosh-based "structural barrel sheet" application, modeled after the "VCD" application currently in development, should be carried out as soon as possible.

9. POSSIBLE RED SEA ACTIVITY

There was general agreement that any Red Sea Working Group or rfp should include Tectonics Panel representation

JOIDES TECTONICS PANEL MEETING
MARCH 23-25, 1992
LAS VEGAS, NEVADA

DRAFT MINUTES

PRESENT:
Eldridge Moores, UCD, Chair
Tanya Atwater, UCSB
Jeff Karson, Duke U
Hans-Christian Larsen, Denmark
Casey Moore, UCSC
Yujiro Ogawa, Japan
Mike Purdy, WHOI
Jean-Pierre Rehault, France (substitute for J. Bourgois)
Tim Reston, Germany (substitute for R. Von Huene)
Alastair Robertson, U.K.
Dale Sawyer, Rice U.
Phil Symonds, Australia
Mark Zoback, Stanford U.

LIAISONS
Beth Ambos, NSF
Brian Tucholke, PCOM
Bob Musgrave, ODP-TAMU

APOLOGIES
Steve Cande, Lamont-Doherty

AGENDA
Introduction
Report of Liaisons:
- PCOM-Brian Tucholke
- NSF-Beth Ambos
- TAMU-Bob Musgrave
- SGPP/OHP-Alastair Robertson
- LITHP-Jeff Karson

Report from Offset Drilling Working Group-Dale Sawyer
Re-examination of deep-drilling, time for rfp?
Ranking of new proposals
Prioritization of short list of desired non-engineering equipment
Nominations of Co-Chief Scientists for legs 151 (NAAG) and152 (NARM 1)
Reports of Watchdogs
Global Rankings
Panel Membership
Field Trip Comments
ECOD Meeting
Structural data collection on *JOIDES Resolution*
Thanks to departing members

INTRODUCTION

The meeting opened with self-introductions. The Panel formally expressed its thanks to Tanya Atwater, official host, for arranging the meeting and the field trip, and also to Eric Frost, field trip leader, for his magnificient exposition of the secrets of continental rifting exposed in the Colorado River Corridor. Moores reminded watchdogs of their identities and their responsibilities for the reports as listed in the agenda.

REPORT OF LIAISONS

PCOM Brian Tucholke reported highlights of the December meeting. The NSF budget has been increased by 11.2%. The program renewal until 1998 is in review. NSF has just completed the peer review of the 4-year program, and it will be reviewed by the National Academy of Sciences. Regarding deep drilling, the problem is one of definition, which variously is > 1 leg (TAMU), or 2-4 km deep hole in the oceanic crust (LITHP). The *JOIDES Resolution* currently is capable of drilling 2500 m. Hole 504B is presently at 2000.4 m, and deepening of 200-300 m is viable. OCS 2 proposal occasioned considerable debate but was declined although the science was highly rated, because (1) the results from OCS 1 are not yet known and (2) the negative impact on the tightly scheduled leg 145 was considerable. FY 92 and 93 drilling schedules will be modified in view of experience with DCS 2 engineering leg (142) just completed. It is not yet clear what went wrong with the system on leg 142. Leg 148-engineering may be something other than MARK, perhaps 504B or EPR or unlithified Bahamas carbonates, or even TAG, although the latter is not a good object for an engineering study because drilling a hole changes the hydrogeologic situation.

NSF Beth Ambos outlined the renewal process and the current status. There is considerable support to broaden the JOIDES charge to include more than the *JOIDES Resolution*, and to "internationalize" ODP and JOIDES offices and operations. Field (site-survey) programs included the Vema Fracture Zone, Woodlark Basin, and Cascadia.

TAMU-ODP Bob Musgrave reported that TAMU was undertaking a self-analysis and reorganization, including restructuring of the marine techs or specialists' positions, addition of computer specialists and rewriting the policy of marine tech positions, hoping to improve morale. TAMU is looking to replace Audrey Meyer, a difficult task. Many other positions are open, leaving the entire staff overloaded. Regarding individual legs, Leg 140 ended just below 2000 m. Downhole seismics are very good. Petrologists reported gabbro clots, changes in grain size and trace element composition suggesting that the hole is within 10's of m of the 2C/3 boundary. Leg 141 (Chile T. J.) was hampered by two medical evacuations, but had good success in drilling 5 holes--3 on the Plio-Pleistocene accretionary prism just north of the collision zone (sites 859, 860, 861), one over the subducted ridge (863) and one on the Taitau ridge (862), suspected to be an obducted ophiolite. Penetration was slow in unconsolidated silts, densities and velocities high, temperature gradient in 863 unexpectedly normal. They drilled through the BSR but didn't find it. No sign of subduction erosion was found north of the collision, incipient tectonic erosion is present in 863 and the sandstones were cemented. Site 862 had poor recovery of rhyodacites and tholeiites, thought to be younger than the underlying seafloor. Leg 142 was a test of the Diamond Coring System (DCS). The secondary heave compensator apparently failed to operate properly, leading to marked fluctuation on bit weight, milling and smashing of bit, and essentially no core recovery (6 m total of chips). The mini hardrock guidebase worked well, however. Prospects of current and future legs were discussed. The final location of Leg 145 is not known.

Considerable discussion ensued about information handling system, logging of structural information, and need for review of results of past high priority legs.

SGPP Alastair Robertson reported on meetings in Zürich and Miami. There was considerable concern about the DCS system and SGPP's needs for it. The panel considered being more proactive, particularly for a gas hydrate leg, and non-Atlantic legs.

OHP as well as SGPP are interested in the Red Sea, and TECP might be interested in a joint effort. There was concern about the pressure core barrel operating effectively in the absence of an engineer. It might be time again for a joint meeting with SGPP. Several TECP members averred that such meetings should be accompanied by a field trip to be successful, in order to afford the opportunity for individual panel members to become acquainted in an informal setting. The last meeting with LITHP was considered a great success for that reason.

LITHP Jeff Karson reported on a telephone conversation with Susan Humphris about the just-completed meeting. LITHP strongly supports continued development of the DCS, wishes to de-emphasize drilling of zero-age oceanic crust for the time being, supports continuation of Hess Deep drilling and drilling in other long sections of lower oceanic crust. LITHP wants to initiate RFP's, especially concerning the Red Sea, hotspots, convergent margins, plateaus, and a crustal characterization suite of holes.

OFFSET DRILLING

Dale Sawyer reported from the second meeting of the Offset Drilling Working Group (OD-WG). The Group received reports from LITHP, SSP, TECP, and PCOM. The SSP and TECP reports stressed the common concern for the lack of understanding of the need for a three-dimensional view of the stratigraphy and structure of a given site. The Group has diverged from TECP's understanding of the nature of offset drilling--to develop the stratigraphic sequence in one place where the nature of the various components can be constrained. The Group apparently has abandoned this single site approach and is now arguing for 12 legs over 6-7 years focusing on a strategy of definition of the "global" nature of oceanic crustal structure.

Following this report, it seems necessary to clarify TECP's position on a few points related to this initiative. At the outset, TECP wishes to emphasize that it feels strongly that offset drilling is the best available means of sampling the compositional and structural variations of the oceanic lithosphere. The OD-WG has done a fine job of identifying the problems to be investigated. TECP is concerned, however, about several points: first, apparently members of the OD-WG find TECP's expectations for site survey information and pre-drilling analysis to be too stringent or impossible to attain; second, several members of the OD-WG apparently believe that TECP does not appreciate the importance of small-scale structures that may be recovered by drilling long sections of individual rock units, and third, TECP notes with concern the shift from offset drilling as originally conceived to an emphasis on drilling "long sections" of various rock units apparently with little regard for tectonic setting.

TECP wishes to emphasize that its interest is not in limiting offset drilling to structural and tectonic objectives, but rather to suggest approaches that will help to extract the greatest possible amount of information from the selected drill sites. We note that all sites under consideration exist because of apparently unusual tectonic activity; thus structural and tectonic information is integral to any offset drilling. In addition, we recognize that the process of construction of oceanic lithosphere, in whatever setting, is one in which tectonic, petrologic, and hydrogeologic processes are inextricably linked.

TECP also recognizes that the objectives of Offset Drilling are substantially different from many other types of ODP targets. The scale of lateral heterogeneities in composition and structure, for example, the size of coherent blocks between major faults, is often much smaller that that associated with drilling into a stratigraphic section of a large undeformed basin. The scale is not very different, however, from drilling into other active tectonic regims, such as accretionary prisms. TECP feels that similar regional and local scale geological constraints should be available in all such settings prior to drilling.

The OD-WG has apparently focused on the issue of balanced (restorable) cross sections in potential target areas as an unrealistic requirement. TECP fully recognizes that a balanced cross section of any geologic structure is a hypothesis, that is, an evolving concept that may change with the acquisition of additional data, and that it may not be attainable in all instances. Still it is a worthy goal to be attempted in most, or even all, cases, because it rigorously tests the quality of data and viability of three-dimensional models. Certainly drilling data can provide very important constraints on the construction of viable hypotheses of geologic structures represented by such cross sections. TECP feels strongly that cross sections must be produced for all potential offset drilling target areas or areas of potential long-section drilling. Cartoons or schematic sections that cannot be restored to a reasonable pre-deformational configuration can be very misleading and can lead to costly errors in hole siting. TECP fully appreciates that it may not be possible to produce a unique cross section for a given area with the available information, and several models may be equally viable. In some such cases, drilling may be the only means of testing these hypotheses. If so, proponents should address the question how drilling will help eliminate or confirm the range of possible structures in addition to other objectives. TECP feels that most of the available offset drilling target areas are in this category.

Small-scale structures in cores drilled as part of offset drilling or any other program are of great interest to TECP. We refer the OD-WG to TECP's recommended checklist of features to be looked for in ODP sites and cores, published in the June, 1991 JOIDES Journal. Specifically, TECP appreciates the OD-WG's interest in the small-scale structures that may be sampled by drilling long sections of rock units such as gabbroic or serpentinized ultramafic rocks. However, all offset drilling target areas by definition occur in areas where tectonic activity has exposed a considerable cross section of the crust. These tectonic processes are likely to produce rotations and relative displacements of major crustal blocks. Without adequate structural constraints on the geologic setting of a drill site, it will be impossible to unambiguously restore small-scale structures to their pre-deformational orientations. The lack of such constraints would severely limit the usefulness of such structures in any interpretation of oceanic lithosphere construction processes. TECP strongly endorses the OD-WG's interest in drill-core scale structures as a means of determining important processes of deformation, magmatism, and metamorphism. TECP simply wishes to see that the maximum possible amount of relevant information is extracted from any site.

Drilling long sections of gabbroic and ultramafic rocks without adequate constraints on the structural setting of the drill site is of interest in that structural and compositional variations may be encountered. However, any such geologic variations or contacts drilled are of limited use if they cannot be reoriented to their typical attitude in oceanic lithosphere. For example, if deformation fabrics or igneous layers are intersected by the core, in what attitude did they form--vertical, horizontal, or inclined? TECP feels that it is crucial that these types of ambiguities be eliminated as much as possible.

Drilling of long sections in major rock units as a means of developing a "global composite section" seems like a long route to filling the matrix of objectives outlined by the OD-WG. It appears, alternatively, that several sites at which offset-drilling could produce a composite section in a single setting are available and ready to drill now, or could be ready very soon. These include Hess Deep, the MARK area, the Mid-Cayman spreading center, the Vema Transform fault, and possibly the TAG area. Drilling other environments could be built around existing holes, such as 735 B, as site survey data become available.

Finally, TECP is concerned by the paucity of hypotheses to be tested by offset drilling, and especially drilling of long sections. Although it is not formal policy, TECP is generally much more favorably impressed by proposals that seek to use drilling to test hypotheses, whether the main focus is structural/tectonic or not. Penetrating unknown areas of the Earth's crust with little regard for the local structural setting or the potential for contributing to the understanding of the tectonics of oceanic lithosphere is a concept that marine science and ODP have outgrown. In such endeavor there is a hypothesis being tested by default, which is that the oceanic crust is uniform world-wide with a simple horizontal layered structure. The last decade of progress in marine geology and study of on-land oceanic crustal analogues has demonstrated that this simplistic model is the least likely to of a myriad of hypotheses of oceanic crustal structure to be representative of the true situation.

DEEP DRILLING

TECP reaffirms its support for deep drilling (October 1991 minutes) and for the need for efforts to increast the efficiency of drilling, enhance core recovery, and increase the ultimate likelihood of success as deep sites such as those proposed for the North Atlantic Rifted Margins. ODP already has an on-going experiment in deep drilling--Hole 504B, now at 2000 m after 7 legs and roughly $40 M. The panel expressed the general opinion that the way to explore the feasibility of deep drilling is to try it. Deep drilling on conjugate rifted margins remains a high priority objective of TECP

RANKING OF NEW PROPOSALS

059 Rev 3 Continental margin sediment instability: global sealevel history and basinal analysis through drilling abyssal plains

TECP maintains an interest in an understanding of the origin of turbidite-depositional signatures associated with sealevel changes.

Box checked: 2.

332 Rev 3 Florida Escarpment drilling transect

MCS seismic data should be presented to provide a context for considering potential fluid flow paths. Care should be taken to show that either there are no 3-dimensional effects on fluid flow or that they can be accounted for. The proponents should consider the possibility that much of the fluid flow through the carbonates could be channelized in a few fractures. If so, the proponents should indicate a strategy for intersecting these fractures in site FE-3.

Box checked: 2.

333-Add Update to : Tectonic and magmatic evolution of a pull-apart basin: a drilling transect across the Cayman trough, Caribbean Sea.

TECP continues to be enthusiastic about many aspects of this proposal. The panel is impressed by the effort of the proponents to augment the site survey data base for this area. The remaining lack of seismic refraction data is still a deficiency.

The proponents should be aware of two other ODP efforts that are related to the proposed work: 1. Other Caribbean and Gulf of Mexico proposals related to the Caribbean basalt province (411) and K/T Boundary impact studies (403 and 415). Contact Tanya Atwater, TECP watchdog on this topic. Cayman crouth tectonics could have had a significant effort on the rearrangement of relavant tectonic elements. 2. Hole CAY-3 is of potential interest to the Offset-Drilling Working Group (Fred Vine, Chair). Multiple holes in the median valley wall could address deep crustal objectives and possibly a detachment fault. Contact Jeff Karson, TECP watchdog on this topic.

Box checked: 4.

354 Rev "Neogene history of the Benguela current and Angola-Namibia upwelling system.

The proposal is concerned with Neogene-Recent paleoceanography, specifically the evolution of an upwelling margin, and has no identifiable or potential tectonics component

Box checked: 1

361 Add Site Survey, TAG hydrothermal field, MAR 26ºN.

While the primary emphasis at this site is (appropriately) likely to remain the collection of hydrothermal products, TECP is particularly excited about the related topics that can be addressed by integration with the proposed site survey data. The relationship of the vents and stockworks to the local and regional fault structures will supply important insight into hydrothermal plumbing systems. The possible correlation of hydrothermal demagnetization effects from the cm scale of cores through meters to km scale of magnetic anomalies will be unique. We strongly endorse the site survey proposal and hope that it can be done soon. We anticipate strong TECP interest when these new data are integrated into the drilling plan. For further information, contact Jeff Karson, TECP watchdog on this topic.

Box checked: 5

403-Rev Revised proposal to drill the K/T boundary, Gulf of Mexico Basin.

TECP continues to be interested in the K/T impact structure at Chicxulub, althou its relationship to our thematic objectives is not clear. The proponents have made a great deal of progress in complementary land studies--in fact it seems to us that dating of the structure may be accomplished on land, and not require ocean drilling. We asknowledge that core recovery has improved significantly since DSDP, and we agree that recovery of the key horizon is likely in one or more holes. The proponents seem to assume that the ejecta pattern may be determined from the land work, combined with the proposed sites. One TECP member suggested that ejecta patterns often are concentrated along one or a few radials, which would make determination of the pattern more problematical. Detailed siting should await the completion of the site survey. There are several proposals now under consideration that relate either thematiclaly or regionally to this one (e.g. 333-Tectonic and magmatic evolution of a pull-apart basin: a drilling transect across the Cayman trough, Caribbean Sea; P. Mann et al; 411-The Caribbean basalt province,, an oceanic basalt plateau province; T. W. Donnelly et al, and 415-The Cretaceous/Tertiary boundary in the Caribbean sea; H. Sigurdsson, et al). You might find it worthwhile to cooperate in some way with one or more of these proponent groups.

Box checked; 3.

409 High resolution late Quaternary paleoclimatic and sedimentary record, Santa Barbara Basin, California,

This proposal contains nothing of TECP interest.

Box checked: 1

410 A proposal for deepening hole 504B to core and log the dike/gabbro layer 2/3 boundary.

Successful drilling and coring through the seismic layer 2/3 boundary, coupled with downhole seismic and VSP data, represents an extremely important objective of TECP. The proponents of this proposal have not made the case that this boundary is within several hundred meters of the current depth of the hool (2000.4 m). The petrologic arguments are not convincing that the dike/gabbro contact lies just below the depth of the hole. The arguments based on the VSP data are equally unconvincing. Nevertheless, surface seismic data indicates the seismic 2/3 boundary is at 2 km +/-several 100 m. Thus TECP believes that the hole should be deepened, **so long as the seismic data (multichannel seismic and VSP data) are collected to make it possible to tie the hole to both local and general ocean crustal models based on seismics.** In this way, even if the dike/gabbro contact is not reached in the next drilling leg, it will still help to test the standard geophysical-ophiolite ocean crustal model.

Box checked: 4

411 Proposal for drilling the Caribbean basalt province-an oceanic basalt plateau

TECP has a secondary interest in the proposal as it stands. General improvements and stronger emphasis on the more tectonically oriented parts of the proposal potentially could make it of primary interest to TECP. These improvements might include: 1. a better justification for this locality as a suitable place for Large Igneous Provinces (LIPS) sudies, including references to the LIPS workshop recommendations, and better discussion and documentation of the plate kinematic history of the Caribbean plate (a subject that is itself of interest to TECP); 2. a better definition of the model to be tested ("blob-tail" model); 3 a more detailed discussion of the "bimodal" nature of basement (B smooth-B rough), the possible "B-smooth": over "B-rough" structure (as discussed in proposal 343-Window of Cretacous volcanic formation, Caribbean Zone, by A. Mauffret et al) and the possibility of "B-rough" representing original oceanic basement (as suggested in proposal 343); 4. an improved seismic database (perhaps by collaborating with the proponents of proposal 343) and a better seimic stratigraphic interpretation to provide constraints on the gross structure and stratigraphy of the plateau (Dipping reflectors at depth provide potential opportunities, untaken in this proposal, to explore lateral younging or aging of the plateau). Other themes that would be of particular interest to TECP include plate kinematic history of the Caribbean plate, the age and position constraints on the CCBP in relation to other mid-Cretaceous LIPS (e.g. Ontong Java Plateau) and the South Atlantic opening/J-Anomaly ridge event, and the structure of this province as an example of a LIP.

Box checked: 3

412 The Bahamas transect: Neogene/Quaternary sea-level fluctuations and fluid flow in a carbonate platform

This is a thorough drilling proposal based on exceptionally high-quality seismic data. However, its objectives are not of primary interest to TECP. The issue of identifing and quantifying tectonic subsidence of the carbonate bank is not adequately addressed by the proposal. TECP is interested in knowledge of global sealevel change because of the potential of using this signal to study the subsidence of passive margins and/or rates of sea floor spreading. The linkage of this proposal to these grand long-term goals is tenuous, however.

Box checked: 2.

413 Magmatic and tectonic evolution of oceanic crust: the Reykjanes Ridge

TECP appreciates the importance of this proposal to mid-ocean ridge volcanology and the construction of slow-spreading oceanic crust. The study would enhance NARM objectives related to the evolution of the Icelandic hotspot. The primary deficiences noted by the panel include a lack of integration of geological data from Iceland, uncertainities regarding dating of lavas, and lack of specific hydrothermal objectives. The velocity structure of the crust is not discussed, but in such highly vesicular material, practical drilling problems may arise. Regarding stress measurements, the proposed holes are not deep enough to obtain the necessary stress levels for break-outs in basaltic rock in an extensional environment. Finally the depth of basement penetration planned may not be sufficient to sample geochemical variations related to magmatic pulses. For additional comments or clarification, please contact Jeff Karson, TECP watchdog on this topic.

414 Rates, effects, and episodicity of structural and fluid processes, northern Barbados ridge accretionary prism.

This proposal is a high priority of TECP. While it is very similar to planned work on the Cascadia margin, it is clearly necessary to characterize fluids in more than one accretionary prism. Returning to the site of Leg 110 is a good idea, as it builds on existing knowledge, and the 3-D seismic survey will make the planned VSP's quite useful.

The deficiencies of this proposal are principally related to the fact that its success will depend on how well the borehole seal technique will work, which is completely unknown at this time. Thus this proposal is somewhate premature and hard to evaluate until it is clear how well borehole seal technology works at Cascadia. Drilling and casing problems may exist in this water depth.

There were several minor problems with this proposal (what are migrating dilatational waves? how could pore pressure be determined as a function of depth? how will one do a pulse permeability test with a submersible?) but these do not detract from the high importance we place on the overall proposal.

Box checked 4

415 Proposal for drilling the Cretaceous/Tertiary boundary in the Caribbean sea.

This very interesting and well-written proposal builds on new geochemical studies of glass spherules at the K/T boundary in Haiti, which provide evidence of a major bolide impact on continental terrane overlain by evaporite-rich sediments in the Caribbean region. Six drilling sites are proposed in the Caribbean and Yucatan Basin to evaluate the Chicxulub impact structure on the Yucatan Peninsula a very interesting as the source of Haiti K/T impact glasses, and to examine the distribution of K/T boundary impact ejecta, the nature of the depositional mechanism of the impact layer, and climatic and other environmental effects at the K/T boundary.

Clearly the nature of the K/T boundary is an important question that can be examined by ODP as identified in COSOD II and the Long Range Plan. Although TECP has a general interest in the problem, such questions are not specifically within its mandate. The proposal mentions that the sites proposed serve to address multiple scientific objectives including the study of the Caribbean Cretaceous Basalt province--ODP proposal 411 by Donnelly et al. This latter proposal definitely falls within TECP's mandate.

TECP members raised questions about knowledge of the post-bolide tectonic dispersal of various features within the study region, and its impact on understanding the distribution of impact ejecta within the region. No figure is presented in the proposal illustrating the proposed drill sites in their paleogeographic location. Some objectives of this proposal are similar to those in propossal 403-Rev by Alvarez and others, and TECP felt that at some stage it may be beneficial if the various proponents collaborate in proposing ODP drilling to examine the K/T boundary in the Caribbean.

Box checked 3

Letter of Intent:

Letter from K. J. Hsü.

TECP noted with interest Hsü's hypothesis of a southward rather than northward dipping subduction zone south of Cyprus and would like to see this incorporated into a Mediterranean drilling proposal, if possible. Alastair Robertson briefly summarized the status of Mediterranean drilling. Following a February meeting chaired by Maria Citta, it was agreed that 1) the two Alboran Sea propoals (323-Comas/399-Watts) would be combined and resubmitted as a single new proposal; 2) a second new proposal (to be submitted by 1 August, 1992) would focus on shallow drilling sites (largely using existing site survey data), principally the Mediterranean Ridge and the Eratosthenes Seamount. Sites chosen would also be suitable to recover sapropels, of interest to SGPP. The main tectonic them would be incipient collisional processes, involving evaporite-bearing sequences (also of interest to SGPP).

PRIORITIZATION OF SHORT LIST OF DESIRED NON-ENGINEERING EQUIPMENT

After extensive discussion, TECP voted on the priority of non-engineering equipment, utilizing the list "Non-engineering wish list-nonprioritized", prepared 3 March 1992 by S. Humphris for discussion at Panel Meetings, with one or two added items. TECP's recommendations are divided in two groups--first priority and second priority (but highly desirable), as follows:

First Priority Fluid sampling strategy: pore pressure, permeability, and fluid sampling.

Funds should be allocated to further develop tools for measurement of fluid pressure and permeability and for fluid sampling. In addition a strategy should be developed to conduct fluid measurements in boreholes in tectonically active environments. The Geoprops tool should be tested, modified as necessary, and utilized. An adequate number of Borehole Seals should be made available; the instrumentation for the Borehole Seal should be expanded for longer term monitoring and for measurement of borehole characteristics in addition to fluid pressure and temperature.

Second Priority New Computer System--hardware and software (items 14 & 15 on March 3 list).

Extensive and disparate data sets are collected, processed, and stored on board *JOIDES Resolution* . The substantial difficulties experienced in analyzing and integrating these data sets in a timely manner on board the *Resolution* are hampering early understanding of the significance of the results. In particular core-log integration (defined below) is considered vital in terms of optimising the the onboard scientific outcomes, locating boundaries/changes in the drill hole and promoting interaction between the various scientific groups. TECP feels that improvements in this area is a high priority and will maximize onboard utilization of the *JOIDES Resolution* data base.

Third Priority (listed alphabetically)

A. Downhole and shipboard equipment to enhance core-log integration,

In this context, core-log integration is defined as " the means of precisely positioning, orienting, and correlating core material with the hole, particularly where recovery is limited, through the use of downhole measurements, sonic core monitors, and shipboard measurements". For interpretation of structural observations made onboard the *Resolution* and later it would be extremely valuable to know precisely where in a core interval a piece of core came from.

B. Hard-rock side-corer

In recent years, commercially available sidewall coring systems have been successfully used in continental scientific drill holes. Surch coring was quite successful--both the German KTB (gneiss and amphibolite) and Long Valley drillholes (tuff). The capabilities, technical requirements, potential availabiltiy and costs of these tools should be investigated for possible application in ODP holes.

C. Micropaleontology reference slide set(s)

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TECP nominates the following persons:

Non-U.S.: Hans-Christian Larsen

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WATCHDOG REPORTS

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The main rationale for translational margin drilling is that this fundamental continental margin setting remains virtually unexplored by drilling despite global significance and importance for interpretation of continental orogenic belts (e.g. Alps, Oman, etc.) Three proposals are active:

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Our knowledge of the post-Pangaean kinematic histories of the world's plates has become increasingly refined, substantially aided by ocean drilling, both directly from local drill core information and indirectly by basement dating for the magnetic reversal time scale. A few, relatively intractable problems remain, some generic and some regional, as follows:

A. Early Rifting Histories

The pace of the acceleration of relative plate motion, from incipient continental rifting to true, steady, sea floor spreading is poorly known, leaving this last step in any continental reconstruction much less well-constrained than the rest. The time span involved appears to be very highly variable from one margin to another. The proposed NARM legs will characterize fast (volcanic) breakup and slower (non-volcanic) rifting. The Australian margins (and especially the south Australian margin) represent very slow, very diffuse non-volcanic rifting and may be important sites for investigation of this aspect. A tectonic proposal for south Australia is expected soon, and the N.W. Australia proposal (340: Tectonic, climatic, oceanographic change, N. Australian margin--Symonds et al) will be revised. The possible future work in the Red Sea offers another likely very fast breakup site.

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The relative and absolute motion histories for the Atlantic and Indian ocean plates are reasonably well-known for the Mesozoic and Cenozoic. Plate motions in the Pacific basin are much less well-constrained, especially for the Mesozoic, and drilling results may supply the strongest constraints for this important problem. For the Pacific plate, strong paleolatitude information is anticipated from the upcoming Atolls and Guyots legs (143 & 144), because of the sensitivity of coral reef development to latitude, and possibly from the North Pacific Transect (leg 145). The continuation of work in the Jurassic-crust hole 801C is of great interest to TECP. Proposal 253 (Sliter et al--Pacific black shales) might also supply latitudinal controls.

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There are many sites with many interesting possibilities.

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There was general agreement that any Red Sea Working Group should include Tectonics Panel representation.

4. Old Rifted Margins-Hans-Christian Larsen

There are many relevant proposals in this category: (326-Morocco-NW Africa--Hinz, 327--Argentine continental rise--Hinz, 328-E. Greenland continental margin (missing in the JOIDES list), 363-Plume volcanism and rift/drift-Grand Banks-Iberia-Tucholke et al, 392--mantle plume origin, north Atlantic volcanic margins--Larsen et al, 394--pre/syn extensional basins on passive marginns, Kiørboe, et al, 395--compressional tectonics on a passive margin--Boldreel, et al, , 397--mantle plume and multiple rifting, North Atlantic--Gudlaugsson, et al, and the NARM-DPG report (representing proposals 310, 358, 393, 396, 334, and 365). The main activity in this area since the last meeting was the presentation to PCOM of the NARM-DPG report and the scheduling of the first two legs of MARM drilling for 1993. One proposal (397) arrived too late to be processed by the NARM-DPG and is so far the only "post-NARM-DPG" rifted margin proposal. It potentially could have changed some of the later proposed drilling of NARM-DPG, but not the fundamental NARM concept. TECP's comments on proposals not included in the NARM-DPG are as follows:

326--not highly ranked because it lacks sufficient thematic approach

327--highly interesting area, but fairly thick sediments prevent it from being an ideal place for a major margin transect

328--was not included in the NARM-DPG proposal because it lacked a close conjugate position with the Vøring margin and suffucient data. It is a hostile environment for more systematic studies (NE Greenland, pack-ice).

363--not included in NARM-DPG proposal because it is only of secondary interest to rifted margin formation as it stands. As a "plume-study", it ranked lower than the "Icelandic plume" study (NARM volcanic rifted margins legs)

392--was ranked highly by TECP, but declared immature. NARM-DPG also felt it was immature by itself and partly also with regards to the drilling strategy proposed. It could be of high interest at a later date if revised.

394--ranked highly by TECP, but immature. Potentially very interesting correlation possibilities between volcanic rifted margin formation (seaward dipping reflector sequence[SDRS]) and adjacent marginal basins, but the relationship needs to be better demonstrated. A revised and improved proposal could be of high interest.

395--ranked lowly by TECP because it is a rather local/regional proposal as it stands

397--ranked highly by TECP as a proposal and study area with interesting complexities. The latter led to its avoidance by NARM-DPG, but the complexities might be a fruitful subject for future drilling after the first phase of NARM drilling has been digested.

5. Mid-ocean Ridges--Jeff Karson

TECP is eager to support proposals to drill old oceanic crust, as well as all of active processes along spreading centers. To be supportable, however, these proposals must attempt to place these holes in the context both of regional and local tectonic settings. In addition TECP expects careful attention to the original and significance of relatively fine-scale structures expected on the scale of the drill cores and holes. Extensional tectonics in well-studied settings clearly show a marked diversity of structures ranging from simple to exceedingly complex. The orientations of oceanic crustal structures formed at spreading centers, therefore, cannot be assumed. Proposals that integrate the geometry and kinematics of various deformation structures in the framework of testable hypotheses are most likely to receive strong TECP support.

Despite the obvious importance of mechanical extension to the creation and evolution of oceanic lithosphere, proposals reaching the TECP still generally are woefully deficient in attention to the processes and structures related to extension. TECP regards a proposal simply for drilling a deep hole into, say, gabbro or serpentinized peridotite as weak because the orientation of the hole and any structures in it or in the drill core may not be constrained. Thus these structures cannot be adequately used to evaluate models of sea floor spreading.

TECP has recently reviewed many proposals that potentially could address fundamental problems in mid-ocean ridge extensional tectonics and transform faulting. The panel would like to encourage the following types of proposals to this end:

1. Systematic drilling of active and inactive oceanic detachment faults that appear to be fundamental components of slow-spreading ridges;

2. Drilling of major geophysical horizons and geologic contacts within range of ODP capabilities. For example, the seismic layer 2/3 boundary, reflection and refraction MOHO's, sheeted dike/gabbro transition, and mafic/ultramfic transitions should be prime targets.

3. Drilling into areas of active processes such as hydrothermal outflow and persistent microseismic activity.

4. Areas related to major strike-slip faulting in transform faults to define the deformation/metamorphism histories of these shear zones and the state of stress in their vicinities.

5. So-called "transverse ridges" along fracture zones.

We stress that proposals that use drilling to test significant structural/tectonic hypotheses are most likely to receive TECP support.

At present there are 20 active proposals considered in this area. Major programs include those developed by (1) the EPR DPG report; (2) the Sedimented Ridges DPG Report, and (3) the Offset-Drilling Working Group (see Table). These were ranked by TECP at the Spring 1992 meeting. Of these, only two reached the top 10 ranked proposals (410-deepening hole 504B, ranked # 6, and 369-drilling gabbros and serpentinites exposed by detachment faulting in the MARK area, ranked # 10). Both proposals were also ranked highly by LITHP.

ACTIVE SPREADING CENTERS
No Title

325	Endeavor Ridge, Hi-T. hydrothermal site
333	Mid-Caymon spreading center (site CAY 3)
361	TAG Hydrothermal field
369	MARK western median valley wall (gabbro + serpentinite)
402	Geochemical anomaly at 12°-18°N on mid-Atlantic ridge
407	15°N on MAR-shallow mantle geochemical anomaly
413	Magmatic-tectonic evolution of Reykjanes Ridge
	EPR-DPG--EPR II (beyond leg 142)
	Sed. Ridges DPG-Sedimented ridges II (beyond leg 139)

TRANSFORMS AND RIDGE-TRANSFORM INTERSECTIONS (RTI'S)

319	East Galapagos-Inca Transform extinct hydrothermal site
333	Cayman trough
374	Mantle heterogeneity at Oceanographer Fracture Zone
376	Layer 2/3 boundary, Vema Transform fault

OTHER SITES

331	Aegir Ridge
352	Mathematicians Ridge
368	Return to hole 801C
370	Mid Atlantic Ridge magmatic processes and natural tracers
373	Stress measurement at hole 505
375	Hess Deep (beyond leg 147)
410	Deepen Hole 504 B

Sedimented Ridges The first holes in this program were drilled during Leg 139. They were very successful in recovering massive sulfides and a variety of altered and fresh sediments and igneous host rocks. Several faults were apparently drilled. A second leg must await the development of high-temperature drilling capabilities. This leg was not ranked among the top 20 by TECP, because it lacks attention to tectonic objectives that obviously must exist in the area.

EPR Drilling Despite great optimism, EPR Leg 142 (bare-rock drilling with DCS) was a major disappointment, as discussed above. A second leg apparently must await engineering progress on the DCS. TECP did not rank this leg among its top 20 proposals, because the DPG did not address the tectonic aspects of lithosphere generation.

Offset-Drilling Objectives The Offset Drilling Working Group is considering a number of potential sites (10) and a number of other target sites. All proposals are deficient in addressing TECP thematic interests, but the MARK proposal was considered the best and ranked # 10. Cayman Trough drilling, which includes a median valley hole, ranked # 12; Hess Deep at #15, and Vema Fracture Zone at # 16. TECP notes that several of the "potential sites" have no active proposals and lack sufficient site surveys for near-term drilling.

6 Marginal Basins--Yujiro Ogawa

Convergent margins were the subject of several recent legs (125, 126, 127, 128). There are new proposals for back-arc/marginal basins except for the Caribbean. With regard to future planning, little is known about back arc or forearc settings. Models include active stretching and passive upwelling and active upwelling which causes stretching. These models need testing, possibly with deeper holes, coherent cross-sections, and oriented cores to get at dynamics of system. Back-arc basins are not equal to marginal basins. Entrapped basins such as the Bering Sea or south China Sea are not so interesting from the active tectonic point of view as back-arc basins.

7. Convergent Margins-Casey Moore

Active proposals for drilling in accretionary prisms extend from the Mediterranean through the Atlantic to the Eastern Pacific Ocean. The Mediterranean Ridge proposal is unique in involving salt tectonics in an incipient collisional setting. TECP looks forward to a more topically focused proposal(s) with structural control provided by soon-to-be-completed MCS studies. The drilling of leg 141 across the Chile Triple Junction only partially completed the proposed study of subduction erosion and subsequent accretion. An additional leg would be necessary to finalize this program, and should concentrate south of the ridge-trench contact. A proposal for drilling the Costa Rica accretionary prism would focus on constraining the process of sediment subduction. The seismic data is of high quality; a relatively well-known convergence history, coupled with an absence of surface erosison of the accretionary prism, suggests that the proposed drilling leg will really determine the mass balance of accretion and sediment subduction in this system. A rejuvenated Barbados proposal concentrates on analysis of fluid and fault dynamics along a hydrogeological flow line out of the accretionary prism. The program would test for the migration of fluid pulses along the decollement surface and tie these to MCS imaging of high amplitude seismic reflections. Consideration of the proposed second leg along the Cascadia margin was deferred, pending the outcome of Leg 146.

8 Collisional Margins--Phil Symonds

There are eight active proposals that fall within this theme--seven in the Mediterranean region and one on the north Australian margin. The status of these proposals is summarized in the following table:

No.	Title	Contact	TECP Rating	Review Maturity	RANKING Global 3/91	RANKING N.Atl Pros 10/91.
323-rev	Alboran Basin & Atlantic-Med. gateway	Comas	4	I--im-mature	2	4
324	Malta Escarpment-Mediterranean tectonic evolution	Cita-Sironi	2	I		
330A dd2	Mediterranean Ridge--accretionary prism in collisional context	Cita-Sironi	4	I	3	
340	Collisional tectonism and foreland basin development--N. Austr. margin	Symonds	4	I	11/12	
364	Thrust units of continental basement-Sardinia-African strait	Torelli	2	I		
379	Scientific drilling in Medit. Sea	Mascle	3	I	2	
383	Extension & continent/continent collision--Aegean	Kastens		I	2	
399	Tectonic evolution of Alboran Sea	Watts	4	I		8

potential of using this signal to study the subsidence of passive margins and/or rates of sea floor spreading. The linkage of this proposal to these grand long-term goals is tenuous, however.

Box checked: 2.

413 Magmatic and tectonic evolution of oceanic crust: the Reykjanes Ridge

TECP appreciates the importance of this proposal to mid-ocean ridge volcanology and the construction of slow-spreading oceanic crust. The study would enhance NARM objectives related to the evolution of the Icelandic hotspot. The primary deficiences noted by the panel include a lack of integration of geological data from Iceland, uncertainities regarding dating of lavas, and lack of specific hydrothermal objectives. The velocity structure of the crust is not discussed, but in such highly vesicular material, practical drilling problems may arise. Regarding stress measurements, the proposed holes are not deep enough to obtain the necessary stress levels for break-outs in basaltic rock in an extensional environment. Finally the depth of basement penetration planned may not be sufficient to sample geochemical variations related to magmatic pulses. For additional comments or clarification, please contact Jeff Karson, TECP watchdog on this topic.

414 Rates, effects, and episodicity of structural and fluid processes, northern Barbados ridge accretionary prism.

This proposal is a high priority of TECP. While it is very similar to planned work on the Cascadia margin, it is clearly necessary to characterize fluids in more than one accretionary prism. Returning to the site of Leg 110 is a good idea, as it builds on existing knowledge, and the 3-D seismic survey will make the planned VSP's quite useful.

The deficiencies of this proposal are principally related to the fact that its success will depend on how well the borehole seal technique will work, which is completely unknown at this time. Thus this proposal is somewhate premature and hard to evaluate until it is clear how well borehole seal technology works at Cascadia. Drilling and casing problems may exist in this water depth.

There were several minor problems with this proposal (what are migrating dilatational waves? how could pore pressure be determined as a function of depth? how will one do a pulse permeability test with a submersible?) but these do not detract from the high importance we place on the overall proposal.

Box checked 4

415 Proposal for drilling the Cretaceous/Tertiary boundary in the Caribbean sea.

This very interesting and well-written proposal builds on new geochemical studies of glass spherules at the K/T boundary in Haiti, which provide evidence of a major bolide impact on continental terrane overlain by evaporite-rich sediments in the Caribbean region. Six drilling sites are proposed in the Caribbean and Yucatan Basin to evaluate the Chicxulub impact structure on the Yucatan Peninsula a very interesting as the source of Haiti K/T impact glasses, and to examine the distribution of K/T boundary impact ejecta, the nature of the depositional mechanism of the impact layer, and climatic and other environmental effects at the K/T boundary.

Clearly the nature of the K/T boundary is an important question that can be examined by ODP as identified in COSOD II and the Long Range Plan. Although TECP has a general interest in the problem, such questions are not specifically within its mandate. The proposal mentions that the sites proposed serve to address multiple scientific objectives including the study of the Caribbean Cretaceous Basalt province--ODP proposal 411 by Donnelly et al. This latter proposal definitely falls within TECP's mandate.

TECP members raised questions about knowledge of the post-bolide tectonic dispersal of various features within the study region, and its impact on understanding the distribution of impact ejecta within the region. No figure is presented in the proposal illustrating the proposed drill sites in their paleogeographic location. Some objectives of this proposal are similar to those in propossal 403-Rev by Alvarez and others, and TECP felt that at some stage it may be beneficial if the various proponents collaborate in proposing ODP drilling to examine the K/T boundary in the Caribbean.

Box checked 3

Letter of Intent:

Letter from K. J. Hsü.

TECP noted with interest Hsü's hypothesis of a southward rather than northward dipping subduction zone south of Cyprus and would like to see this incorporated into a Mediterranean drilling proposal, if possible. Alastair Robertson briefly summarized the status of Mediterranean drilling. Following a February meeting chaired by Maria Citta, it was agreed that 1) the two Alboran Sea propoals (323-Comas/399-Watts) would be combined and resubmitted as a single new proposal; 2) a second new proposal (to be submitted by 1 August, 1992) would focus on shallow drilling sites (largely using existing site survey data), principally the Mediterranean Ridge and the Eratosthenes Seamount. Sites chosen would also be suitable to recover sapropels, of interest to SGPP. The main tectonic them would be incipient collisional processes, involving evaporite-bearing sequences (also of interest to SGPP).

PRIORITIZATION OF SHORT LIST OF DESIRED NON-ENGINEERING EQUIPMENT

After extensive discussion, TECP voted on the priority of non-engineering equipment, utilizing the list "Non-engineering wish list-nonprioritized", prepared 3 March 1992 by S. Humphris for discussion at Panel Meetings, with one or two added items. TECP's recommendations are divided in two groups--first priority and second priority (but highly desirable), as follows:

First Priority Fluid sampling strategy: pore pressure, permeability, and fluid sampling.

Funds should be allocated to further develop tools for measurement of fluid pressure and permeability and for fluid sampling. In addition a strategy should be developed to conduct fluid measurements in boreholes in tectonically active environments. The Geoprops tool should be tested, modified as necessary, and utilized. An adequate number of Borehole Seals should be made available; the instrumentation for the Borehole Seal should be expanded for longer term monitoring and for measurement of borehole characteristics in addition to fluid pressure and temperature.

Second Priority New Computer System--hardware and software (items 14 & 15 on March 3 list).

Extensive and disparate data sets are collected, processed, and stored on board *JOIDES Resolution*. The substantial difficulties experienced in analyzing and integrating these data sets in a timely manner on board the *Resolution* are hampering early understanding of the significance of the results. In particular core-log integration (defined below) is considered vital in terms of optimising the the onboard scientific outcomes, locating boundaries/changes in the drill hole and promoting interaction between the various scientific groups. TECP feels that improvements in this area is a high priority and will maximize onboard utilization of the *JOIDES Resolution* data base.

<u>**Third Priority**</u> (listed alphabetically)

A. Downhole and shipboard equipment to enhance core-log integration,

In this context, core-log integration is defined as " the means of precisely positioning, orienting, and correlating core material with the hole, particularly where recovery is limited, through the use of downhole measurements, sonic core monitors, and shipboard measurements". For interpretation of structural observations made onboard the *Resolution* and later it would be extremely valuable to know precisely where in a core interval a piece of core came from.

B. Hard-rock side-corer

In recent years, commercially available sidewall coring systems have been successfully used in continental scientific drill holes. Surch coring was quite successful--both the German KTB (gneiss and amphibolite) and Long Valley drillholes (tuff). The capabilities, technical requirements, potential availabiltiy and costs of these tools should be investigated for possible application in ODP holes.

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There was general agreement that any Red Sea Working Group should include Tectonics Panel representation.

4. Old Rifted Margins-Hans-Christian Larsen

There are many relevant proposals in this category: (326-Morocco-NW Africa--Hinz, 327--Argentine continental rise--Hinz, 328-E. Greenland continental margin (missing in the JOIDES list), 363-Plume volcanism and rift/drift-Grand Banks-Iberia-Tucholke et al, 392--mantle plume origin, north Atlantic volcanic margins--Larsen et al, 394--pre/syn extensional basins on passive marginns, Kiørboe, et al, 395--compressional tectonics on a passive margin--Boldreel, et al, , 397--mantle plume and multiple rifting, North Atlantic--Gudlaugsson, et al, and the NARM-DPG report (representing proposals 310, 358, 393, 396, 334, and 365). The main activity in this area since the last meeting was the presentation to PCOM of the NARM-DPG report and the scheduling of the first two legs of MARM drilling for 1993. One proposal (397) arrived too late to be processed by the NARM-DPG and is so far the only "post-NARM-DPG" rifted margin proposal. It potentially could have changed some of the later proposed drilling of NARM-DPG, but not the fundamental NARM concept. TECP's comments on proposals not included in the NARM-DPG are as follows:

326--not highly ranked because it lacks sufficient thematic approach

327--highly interesting area, but fairly thick sediments prevent it from being an ideal place for a major margin transect

328--was not included in the NARM-DPG proposal because it lacked a close conjugate position with the Vøring margin and suffucient data. It is a hostile environment for more systematic studies (NE Greenland, pack-ice).

363--not included in NARM-DPG proposal because it is only of secondary interest to rifted margin formation as it stands. As a "plume-study", it ranked lower than the "Icelandic plume" study (NARM volcanic rifted margins legs)

392--was ranked highly by TECP, but declared immature. NARM-DPG also felt it was immature by itself and partly also with regards to the drilling strategy proposed. It could be of high interest at a later date if revised.

394--ranked highly by TECP, but immature. Potentially very interesting correlation possibilities between volcanic rifted margin formation (seaward dipping reflector sequence[SDRS]) and adjacent marginal basins, but the relationship needs to be better demonstrated. A revised and improved proposal could be of high interest.

395--ranked lowly by TECP because it is a rather local/regional proposal as it stands

397--ranked highly by TECP as a proposal and study area with interesting complexities. The latter led to its avoidance by NARM-DPG, but the complexities might be a fruitful subject for future drilling after the first phase of NARM drilling has been digested.

5. Mid-ocean Ridges--Jeff Karson

TECP is eager to support proposals to drill old oceanic crust, as well as all of active processes along spreading centers. To be supportable, however, these proposals must attempt to place these holes in the context both of regional and local tectonic settings. In addition TECP expects careful attention to the original and significance of relatively fine-scale structures expected on the scale of the drill cores and holes. Extensional tectonics in well-studied settings clearly show a marked diversity of structures ranging from simple to exceedingly complex. The orientations of oceanic crustal structures formed at spreading centers, therefore, cannot be assumed. Proposals that integrate the geometry and kinematics of various deformation structures in the framework of testable hypotheses are most likely to receive strong TECP support.

Despite the obvious importance of mechanical extension to the creation and evolution of oceanic lithosphere, proposals reaching the TECP still generally are woefully deficient in attention to the processes and structures related to extension. TECP regards a proposal simply for drilling a deep hole into, say, gabbro or serpentinized peridotite as weak because the orientation of the hole and any structures in it or in the drill core may not be constrained. Thus these structures cannot be adequately used to evaluate models of sea floor spreading.

TECP has recently reviewed many proposals that potentially could address fundamental problems in mid-ocean ridge extensional tectonics and transform faulting. The panel would like to encourage the following types of proposals to this end:

1. Systematic drilling of active and inactive oceanic detachment faults that appear to be fundamental components of slow-spreading ridges;

2. Drilling of major geophysical horizons and geologic contacts within range of ODP capabilities. For example, the seismic layer 2/3 boundary, reflection and refraction MOHO's, sheeted dike/gabbro transition, and mafic/ultramfic transitions should be prime targets.

3. Drilling into areas of active processes such as hydrothermal outflow and persistent microseismic activity.

4. Areas related to major strike-slip faulting in transform faults to define the deformation/metamorphism histories of these shear zones and the state of stress in their vicinities.

5. So-called "transverse ridges" along fracture zones.

We stress that proposals that use drilling to test significant structural/tectonic hypotheses are most likely to receive TECP support.

At present there are 20 active proposals considered in this area. Major programs include those developed by (1) the EPR DPG report; (2) the Sedimented Ridges DPG Report, and (3) the Offset-Drilling Working Group (see Table). These were ranked by TECP at the Spring 1992 meeting. Of these, only two reached the top 10 ranked proposals (410-deepening hole 504B, ranked # 6, and 369-drilling gabbros and serpentinites exposed by detachment faulting in the MARK area, ranked # 10). Both proposals were also ranked highly by LITHP.

ACTIVE SPREADING CENTERS
No Title

325 Endeavor Ridge, Hi-T. hydrothermal site
333 Mid-Caymon spreading center (site CAY 3)
361 TAG Hydrothermal field
369 MARK western median valley wall (gabbro + serpentinite)
402 Geochemical anomaly at 12°-18°N on mid-Atlantic ridge
407 15°N on MAR-shallow mantle geochemical anomaly
413 Magmatic-tectonic evolution of Reykjanes Ridge
EPR-DPG--EPR II (beyond leg 142)
Sed. Ridges DPG-Sedimented ridges II (beyond leg 139)

TRANSFORMS AND RIDGE-TRANSFORM INTERSECTIONS (RTI'S)

319 East Galapagos-Inca Transform extinct hydrothermal site
333 Cayman trough
374 Mantle heterogeneity at Oceanographer Fracture Zone
376 Layer 2/3 boundary, Vema Transform fault

OTHER SITES

331 Aegir Ridge
352 Mathematicians Ridge
368 Return to hole 801C.
370 Mid Atlantic Ridge magmatic processes and natural tracers
373 Stress measurement at hole 505
375 Hess Deep (beyond leg 147)
410 Deepen Hole 504 B

Sedimented Ridges The first holes in this program were drilled during Leg 139. They were very successful in recovering massive sulfides and a variety of altered and fresh sediments and igneous host rocks. Several faults were apparently drilled. A second leg must await the development of high-temperature drilling capabilities. This leg was not ranked among the top 20 by TECP, because it lacks attention to tectonic objectives that obviously must exist in the area.

EPR Drilling Despite great optimism, EPR Leg 142 (bare-rock drilling with DCS) was a major disappointment, as discussed above. A second leg apparently must await engineering progress on the DCS. TECP did not rank this leg among its top 20 proposals, because the DPG did not address the tectonic aspects of lithosphere generation.

Offset-Drilling Objectives The Offset Drilling Working Group is considering a number of potential sites (10) and a number of other target sites. All proposals are deficient in addressing TECP thematic interests, but the MARK proposal was considered the best and ranked # 10. Cayman Trough drilling, which includes a median valley hole, ranked # 12; Hess Deep at #15, and Vema Fracture Zone at # 16. TECP notes that several of the "potential sites" have no active proposals and lack sufficient site surveys for near-term drilling.

6 Marginal Basins--Yujiro Ogawa

Convergent margins were the subject of several recent legs (125, 126, 127, 128). There are new proposals for back-arc/marginal basins except for the Caribbean. With regard to future planning, little is known about back arc or forearc settings. Models include active stretching and passive upwelling and active upwelling which causes stretching. These models need testing, possibly with deeper holes, coherent cross-sections, and oriented cores to get at dynamics of system. Back-arc basins are not equal to marginal basins. Entrapped basins such as the Bering Sea or south China Sea are not so interesting from the active tectonic point of view as back-arc basins.

7. Convergent Margins-Casey Moore

Active proposals for drilling in accretionary prisms extend from the Mediterranean through the Atlantic to the Eastern Pacific Ocean. The Mediterranean Ridge proposal is unique in involving salt tectonics in an incipient collisional setting. TECP looks forward to a more topically focused proposal(s) with structural control provided by soon-to-be-completed MCS studies. The drilling of leg 141 across the Chile Triple Junction only partially completed the proposed study of subduction erosion and subsequent accretion. An additional leg would be necessary to finalize this program, and should concentrate south of the ridge-trench contact. A proposal for drilling the Costa Rica accretionary prism would focus on constraining the process of sediment subduction. The seismic data is of high quality; a relatively well-known convergence history, coupled with an absence of surface erosison of the accretionary prism, suggests that the proposed drilling leg will really determine the mass balance of accretion and sediment subduction in this system. A rejuvenated Barbados proposal concentrates on analysis of fluid and fault dynamics along a hydrogeological flow line out of the accretionary prism. The program would test for the migration of fluid pulses along the decollement surface and tie these to MCS imaging of high amplitude seismic reflections. Consideration of the proposed second leg along the Cascadia margin was deferred, pending the outcome of Leg 146.

8 Collisional Margins--Phil Symonds

There are eight active proposals that fall within this theme--seven in the Mediterranean region and one on the north Australian margin. The status of these proposals is summarized in the following table:

No.	Title	Contact	TECP Rating	Review Maturity	RANKING Global 3/91	N.Atl Pros 10/91.
323-rev	Alboran Basin & Atlantic-Med. gateway	Comas	4	I--immature	2	4
324	Malta Escarpment-Mediterranean tectonic evolution	Cita-Sironi	2	I		
330Add2	Mediterranean Ridge--accretionary prism in collisional context	Cita-Sironi	4	I	3	
340	Collisional tectonism and foreland basin development--N. Austr. margin	Symonds	4	I	11/12	
364	Thrust units of continental basement-Sardinia-African strait	Torelli	2	I		
379	Scientific drilling in Medit. Sea	Mascle	3	I	2	
383	Extension & continent/continent collision--Aegean	Kastens		I	2	
399	Tectonic evolution of Alboran Sea	Watts	4	I		8

Two of the above proposals (324, 364) were not highly rated by TECP and will not be discussed further in this report

Alboran Basin--Proposals 323-Rev and 399

In line with TECP's recommendations the proponents of these proposals have recently met to discuss a joint tectonics proposal for the Alboran Sea. Information received from the proponents indicates that they intend to submit an addendum referring to both proposals, and containing updated thematic, and site-specific geodynamic and tectonic objectives, a prioritized list of drill sites chosen from those submitted previously, and updated site survey forms. The Atlantic-Mediterranean gateway goals will be addressed in a separate addendum.

Other progress relates to site surveys in the area, as notified by Comas. In the past summer two multichannel seismic and seabeam cruises have been conducted in the Alboran Sea and Gulf of Cadiz on R/VHesperides. These data currently are being processed. A data package containing the seismic data presented in proposal 323 has been sent to the ODP Data Bank

This proposal is thought to be drillable within four years, and it should be considered also for 1994.

Mediterranean Ridge--Proposals 330Add2 and 379

A meeting was held in Milano on 2 March 1992 to discuss ODP proposals in this region. The main themes proposed for ODP drilling in the area are: accretionary complexes, continent-continent collision, salt deformation and dissolution, and fluid circulation. The consensus of the meeting was that a two-leg strategy should be adopted for drilling in the region:

Leg 1--shallow, post-Messinian objectives and mud diapirism. This is thought to be ready to go with the data available, and drillable in 1994. The proposed sites are 3 on a transect across the Sirte Abyssal plain deformation front, 2 sites on the crest of the cental Mediterranean Ridge, and one site on the Eratosthenes seamount.

Leg 2--dep objectives, including evaporites and pre-Messinian formation. Requires additional site surveys already planned and partially funded.

Deep drilling on the Mediterranean ridge will be further discussed at the meeting "Focussing on scientific objectives on the Mediterranean sea" to be held in Trieste, 15 October, 1992. The proponents hope to lodge a site survey package for the shallow objectives before August 1992, and a revised drilling proposal will be submitted as soon as possible.

Northern Australian margin--Proposal 340

Data collection is continuing on the Australian side of the Timor foredeep, and several deep seismic transects of the foreland basin system will be collected in the near future by tying BIRPS and BMR surveys. Although in the next year it should be possible to propose more definitive sites on the flexed Australian craton, the proposal would also benefit from site surveys over the foredeep and orogen, in INdonesia waters, thus allowing all parts of the collisional system to be examined by drilling. The preliminary proposal has been revised (but not yet formally re-submitted) following the original TECP review and the proponents have informally responded to TECP on matters raised in its review. These revisions and review comments will be incorporated into a revised proposal when appropriate seismic site data become available. It seems unlikely that the proposal will be ready for drilling within the next 4 years.

9. Stress and Mid-Plate Deformation--Mark Zoback

Determination of stress in boreholes requires a paradoxical combination of conditions--rocks that are lithified, but which are not too strong to withstand the applied stresses. As drill holes are essentially vertical, the stress of concern is the maximum horizontal stress. The maximum horizontal stress increases fastest with depth in areas of compressional deformation, and slowest in areas of extensional deformation, (such as mid-oceanic ridges). Thus stress measurement opportunites require an optimum combination of depth, tectonic regime, and rock strength.

Principal opportunities include the NARM deep holes, especially those in the Iberian Abyssal Plain and Newfoundland basin, and, if they are deep enough, the volcanic rifted margin holes. Investigation of the ridge-push force is interesting because it seems to be the dominant source of horizontal stress in North America and Europe. Stress determinations in accretionary prisms are complicated by the fact that generally the poorly consolidated rocks encountered are too weak to support elastic stresses. The Alboran basin presents exciting opportunities, and Cayman Trough holes 1 and 2 (east of the Cayman Spreading Center) look promising. Hole 504B is the most important site, the borehole breakouts there are surprising because they indicate strike-slip aand reverse faulting, with a maximum horizontal stress of about 1 kilobar. Modeling suggests that earthquakes in young oceanic crust should be compressive because of cooling stresses.

Taking a proactive stance, areas that would be potentially interesting include the Vema Fracture zone, Equatorial Atlantic, Queen Charlotte-San Andreas transform systems, and the Gulf of California. Regarding strategy, the best tool is the borehole televiewer, and the next best the formation microscanner. TECP's aim should be to see that these continue to be routinely deployed.

GLOBAL RANKINGS

Voting procedure: TECP followed the procedure agreed upon at the December, 1991 Panel Chairs' meeting. A total of 33 drilling legs were identified from the Watchdog Reports and the "Active" ODP Proposal list which were achievable in the next 4 years. Each Panel Member voted for 10 in ranked order, with # 1 ranked receiving 10 points, #2 9, etc. Proponents, including NARM-DPG Chairs, were identified on their respective proposals. Voting was by paper ballot, with it agreed in advance that proponents could not vote on their own proposals. The total number of points for each drilling leg were totaled and normalized by the total permitted to vote. Rankings and scores are as follows:

Rank	Name	Score/10
1	NARM-DPG Non-volcanic Leg 2	7.18
2	346 African Equatorial Margin	5.31
3	NARM-DPG Volcanic leg 2	4.64
4	Alboran Sea (Comas/Watts combin)	4.46
5	265 W. Woodlark Basin	3.77
6.	410 Deepening Hole 504B	3.31
7.	400 Costa Rica Accretionary Prism	3.00
8.	Mediterranean Ridges I (shallow)	2.54
9.	414 Barbados Accretionary Prism	2.23
10.	369 MARK	2.17

11.	Mediterranean Ridge II (deep)	2.08
12.	333 Cayman Trough	1.92
13.	NARM-DPG Non-volcanic leg 3	1.91
14	411/415 Caribbean Basalt/K/T boundary combined	1.77
15	375 Hess Deep Leg 2 (tectonic)	1.54
16	376 Vema Fracture Zone	1.46
17	Chile Triple Junction, leg 2	1.38
18	363 Grand Banks, Newfoundland	1.31
19	361 TAG	1.08
20	403 Rev K/T Boundary, Alvarez	0.92
21	368 Return to Hole 801C	0.77

MEMBERSHIP

The Tectonics Panel currently is short one U.S. member, and two other U.S.members, Dale Sawyer, Mike Purdy, and Hans-Christian Larsen are rotating off. The Panel is concerned about maintaining proper balance, particularly in view of the loss of its expertise in rifted margins, in seismology, and the onset of drilling activity in the Atlantic Ocean and possibly offset drilling. The following recommendations for membership are made with an eye to maintaining proper balance, to add needed expertise in modeling and small-scale structures, and to preserve a degree of ocean-going field experience within the Panel.

A. Seismology-generalist

1. Anne Trehu, OSU
2. Uri Ten Brink--USGS Woods Hole

B. Rifted Margins

1. Chris Beaumont, Dalhousie
2. Mike Steckler, Lamont
3. Debbie Hutchinson, USGS
4. Mike Coffin, UT Austin

C. Ocean Crust-Microstructures

1. Sue Agar Northwestern
2. Jill Karstens--U. Hawaii

NEXT MEETING

Location Iceland, Hans-Christian Larsen will arrange for field trip and host(s)
Date: September 22-27, per discussion with Jamie Austin, concerning problem of information flow from SSP,

At the next meeting the Panel wishes to invite one or more of the Co-Chief Scientists from Leg 141 to assist the Panel in evaluation of the results of the leg and what further questions remain to be pursued. This will be the first evaluation of a series that the Panel plans to initiate for its highly prioritized legs that get drilled.

FIELD TRIPS

TECP wishes to record that the experience of participation in the two recent field trips (Cyprus, S. W. U.S. extensional corridor) have been of immense scientific and practical benefit and should be continued. The aim of these trips has been to gain experience with outstanding field examples of geologic phenomena that can be studied in three dimensions in detail and that also bear on topics of current high priority to ODP. Our feeling is that such trips are extremely important in providing panel members with direct hands-on experience with three-dimensional features that are usually only imaged in the oceans. This experiences greatly enhances the insights from which ODP proposals are evaluated. The informal atmosphere of field trips has also served to form bonds between members of the Tectonic Panel and, in the case of Cyprus, with LITHP members as well. As a result, each panel now has a better perspective of the priorities and interests of the other. TECP intends to continue this practice but also to evaluate it from time to time to assess its continued value in our deliberations.

RECORDING AND ARCHIVING OF STRUCTURAL DATA ON *JOIDES RESOLUTION*

In response to a request from Moores, Bob Musgrave reported on the status of routine archiving and recording of structural data on the *Joides Resolution*. Currently no formal structure exists for the initial recording of structural observations during core description, or for the database archiving of this information. Structural geologists have not been routinely included in staffing of ODP legs, and this is reflected in the lack of a standard structural "visual core description":(VCD) form, of the type used by shipboard sedimenytologists and igneous petrologists and in the absence of detailed (and quantitative) structural information on "barrel sheets" Structural geologists on recent legs (e.g. Legs 131, 141) have constructed their own "structural VCD's" from MacDraw templates, on which they have hand-drawn and written structural observation. These paper forms are currently filed by the ODP database group and are available as photocopies on request, but there is no means at present to transfer these data to the computer database. Lithology, sedimentary structures, color, etc., which are recorded on the existing barrel sheets, are currently entered into the database at ODP; ODP is in the process of final development of a Macintosh-based barrel-sheet drafting program, which can be directly stored in the computerized database. A similar approach could be usefully applied to core-by-core summaries of the structural VCD data.

Leg 141 structural geologists also summarized attitudes (both in core-and corrected geographic-frames) of structural elements in an EXCEL spreadsheet, similar to the spreadsheet-based data-entry formats being developoed for the physical properties lab. At this stage, this structural information has not been incorporated into the database, but is available only through the "Initial Reports". A formalized version of this spreadsheet could be developed and routinely used and entered into the computer database.

TECP believes that it is important that structural information on cores be collected as an integral part of routine core description, as appropriate. Accordingly TECP recommends:

1. that standardization of the shipboard structural VCD form and spreadsheet should be carried out immediately;

2. that integration of the spreadsheet data with the computer database should not be difficult and should be effected as soon as possible; and

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Information Handling Panel, April 1st - 3rd, 1992, College Station, Texas.
Draft Unapproved Uncorrected Minutes

Attendees: Ian Gibson, Patricia Fryer, Brian M. Funnell, Michael S. Loughridge, Ted C. Moore, William R. Riedel, Tsunemasa Saito, John B. Saunders, Andre Schaaf, Henry Spall, Volkhard Spiess, Sherwood W. Wise

Liaison: Wolfgang Berger, Michael A. Hobart, Russ Merrill, Adrian Richards

Recommendations to PCOM

1. IHP endorses the recommendations embodied in the Data Handling Working Group report and urges PCOM to take immediate action on this matter. As noted in the report, the inadequate computing and database resources presently installed on the JOIDES Resolution are significantly constraining scientific work on board.
2. IHP urges PCOM to continue to support the efforts of the operator, NGDC, and the Logging Group in producing data, indexes, and other information on CD-ROMs. The appearance of the new ODP CD-ROM set in March '92 emphasises that this new medium is a convenient and cost-effective way of ensuring that the results of the program are widely available to the user community.
3. The scientific productivity of the shipboard party could be increased if electronic communication with the JOIDES Resolution were improved. IHP urges PCOM to support such an upgrade which is also a feature of the LDGO DataNet Proposal.

Suggestions to the TAMU/ODP Operator

1. The panel asked if the details of the RFP dealing with the routine indexing of the volumes could be examined by the indexing subcommittee before it is issued.
2. The panel asked TAMU/ODP and NGDC to evaluate the electronic index demonstration (Microsoft's Viewer software) to see to what degree the software meets the needs of the project, and to prepare a report for the next meeting of IHP.
3. ODP should pursue production of the cumulative index in electronic form and an RFP for this issued this Summer following the guidelines presented elsewhere in the IHP minutes.
4. Interstitial water samples should continue to be archived at ODP, as recommended by SMP. Scientists should be actively discouraged from taking 'home' all the available water from samples taken during a leg. Some should be retained for future work.
5. BRG should continue attempts to publish logging data on CD-ROMs that will be inserted in the back of ODP volumes. Such CD-ROMS might also contain long data tables.
6. The usefulness of the BugWare package for collection of biostratigraphy data should be investigated, and if satisfactory, implemented as the standard paleontology data acquisition package on the JOIDES Resolution.
7. The users guide to computers on the JOIDES Resolution needs to be modified to include information on how software developed by scientists can be made available for use by participants on future legs. An effort to catalog such software should start as soon as possible.
8. The panel recommends that a lead stratigrapher (not necessarily a paleontologist) be identified on each leg. This scientist would be charged with identifying and correcting deficiencies in biostratigraphic coverage for the leg in the Proceedings volumes.
9. The Panel recommends that all data collected on board the JOIDES Resolution be archived by ODP.
10. The ODP database group should prepare a brief synoptic table indicating the status of the ODP datasets (Which legs have been added, where additional checks are required, etc). This information should be provided to IHP every six months.
11. The panel suggested that a revised 'Handbook for the Shipboard Stratigraphers' be issued which would include specific suggestions for the shipboard stratigrapher, perhaps with these important pages printed on a different coloured paper.

1. Words of welcome and Review of Agenda

While welcoming the panel to College Station, the chairman noted, with great regret, the absence of the CanAus Panel member, Dr Nicholas Rock, who died in Australia earlier in 1992. The death robbed the Panel of one of its most effective contributors and significantly impoverished the Earth Sciences community. Nick's work with the ODP index and expertise with the CD-ROM format will be particularly remembered. H.Spall agreed to write formally to the University of Western Australia, on behalf of the Panel, to express regret and appreciation of Nick's contribution. ACTION

2. Review of actions by PCOM in relation to earlier IHP recommendations.

- PCOM accepted the recommendation of the panel and established a working group to advise on the future direction of computing within ODP. The group met in Toronto and the resulting report (Appendix G) was discussed later at this meeting.
- Two computer system managers are now operating on each leg as suggested by IHP.
- PCOM did not act on the recommendation to prepare a cumulative index for the first 25 volumes. The panel will consider re-submitting this recommendation at a later date.
- Additional staff for the East Coast Repository — C. Mato explained that plans are in hand to expand the repository to provide adequate space but that the appropriate personnel resources are not available to deal with the extra load that Atlantic drilling will bring. This problem remains. PCOM was warned, but no action was taken.

3. Review of actions by the TAMU/ODP Operator in response to earlier IHP suggestions.

The Panel asked whether direct suggestions to the Operator are useful. R. Merrill replied that TAMU appreciates the suggestions and normally accepts these whenever the budget allows. The operator confirmed that it had accepted and implemented the suggestions made in September 1991 in relation to:

- Camera-ready art and tables for use in the Scientific Results Volume.
- Only one copy of the locality map is being used in each volume. Authors are required to refer back to it. This procedure is now implemented for the Initial Reports and will be tried in the Scientific Result volumes.
- M. Hobart said that the BRG will start publication of logging data on CD-ROM. TAMU's role will be to insert the CD in the respective volume, and the Publications Group is prepared to do that. TAMU is also working on writing shipboard results on CD-ROMS and work is in progress in relation to Leg 138.
- An advertisement for the Micropaleontological Reference Centers was placed in the JOIDES Journal. The Brochure is being prepared. ACTION
- R. Merrill said that ODP will coordinate a workshop on the depth issue when the database design is resolved. IHP and SMP will be consulted on the matter.
- The Publications Policy was modified to eliminate the possibility of dual submissions to the Scientific Result volume and the outside literature after the science (second) post-cruise meeting.

Other matters were deferred for discussion under the appropriate agenda items.

4. Review of Action Items from the September 1991 IHP Meeting.

- T. Moore talked with B. Malfait about DSDP data that only appears in a printed form in the DSDP volumes (eg isotopic information). B. Malfait replied that NSF probably would not fund the creation of new data bases containing only data from the Initial Reports. He also indicated that there are no left-over DSDP funds.

- Efforts to design a system for electronic sample requests are on hold as computing programming resources are limited and probably only a small number of scientists would use such a system.

- I. Gibson will continue to pursue revision of the letter to non-performers with the Chairman of PCOM when the 1991 defaulters are reminded of their obligations to the Program following this meeting. ACTION

- I. Gibson proposed that the Panel might like to hear the opinions of some European co-chiefs. It was agreed that two should be invited to the IHP meeting in Marseilles. ACTION

- J. Saunders talked to Ramsey to convey that the Panel is also concerned about biostratigraphic synthesis in the Scientific Result volumes.

- M. Loughridge said that he will inquire as to the status of the RIDGE database to avoid duplication of efforts. ACTION

5. Report from the Paleontological Sub-Committee

The report prepared by the sub-committee was presented by W. Riedel (see Appendix A). The sub-committee met for two days prior to the IHP meeting, and agreed to meet for one day prior to the Marseilles meeting in September. W. Reidel will continue to coordinate the work of the sub-committee. ACTION

Guidelines for the shipboard stratigrapher. The panel supported the inclusion of new guidelines in a revised 'Handbook for the Shipboard Stratigraphers', perhaps with these important pages printed on a different coloured paper, to avoid the material being overlooked. The guidelines outline minimum requirements for shipboard work and it was agreed that these should be developed with SMP.

Assistance to the Shipboard Paleontologist. After extensive discussion, the panel suggested that the operator arrange for the acquisition of the BugWare paleo data-entry program demonstrated to the sub-committee during the meeting and that this be placed on board the JOIDES Resolution for use by scientists as soon as possible. S. Wise will be the member of IHP in charge of tracking developments in this area. ACTION

Micro-paleo reference material for Shipboard Use. IHP agreed with Sub-Committee that images on CD-ROM might be the most practical way to serve the needs of scientists on the ship. W. Riedel agreed to continue to coordinate volunteer efforts to develop such a CD-ROM. The work involved is large. A useful data-set might contain 5–6000 images. Experiments by W. Riedel and I. Gibson suggest that an experienced operator might generate 100–200 images a week from existing photographs. M. Loughridge said that the image scanning might possibly be done at NGDC. ACTION

Reference sets of micro-fossils. Although there are difficulties with the maintenance of such material, IHP was grateful to S.W. Wise who had contributed a collection of 70 Neogene calcareous nannofossils for use on the JOIDES Resolution. It was hoped that additional reference sets covering other fossil groups might be added.

Age-depth plots — IHP noted that shipboard parties must be made aware that an appropriate public domain software package exists that generates such plots. IHP noted that much effort is invested by scientists developing programs that are then left on the ship. They therefore suggested that a statement be added to the Computing Users Guide indicating how to contribute unsupported user software. R. Merrill agreed that such a list of unsupported user software could be started. ODP would have to verify that the packages were not covered by licensing and that there was some documentation. If a package becomes particularly useful, ODP could invite the scientist to improve the package, perhaps by visiting TAMU/ODP to work on the program in association with TAMU/ODP staff. ACTION

IHP agreed that to improve stratigraphic coverage on legs, the information given to the co-chiefs on appointment should be revised with the addition of a paragraph on the appointment of a lead stratigrapher for the leg. This person should be charged with ensuring adequate stratigraphic coverage, both at sea, and subsequently in both the Initial Report and Scientific Results volumes. I. Gibson will forward a draft paragraph to TAMU/ODP for consideration. ACTION

6. Report of the TAMU/ODP Data Base Group

The report was presented by J. Coyne (Appendix B). In discussion he replied that it was possible to extract all the information from the data files generated by the VCD program and that this information will be added in the future to a VCD dataset. This work is not being done at present. I. Gibson asked, on behalf of the Panel, for a clear statement on the present status of the different ODP datasets. J. Coyne promised to provide such information for the next meeting. ACTION

The panel appreciated the fundamental importance of the work in progress on the corelog data set, as migration to a new database structure cannot be accomplished until all core-log data are verified.

J. Coyne noted that the Database Group and the Computer Systems Group will be joined to constitute 'Information Services' at the level of Science Operations, Engineering, Logistics, Science Services and Administration and that a new Information Services Manager will be appointed.

Matters relating to the review of the structure and content of the ODP datasets are dealt with under agenda item 15.

7. Report of the TAMU/ODP Publications Group

The report (Appendix C) was presented by W. Rose, who noted that the production of the Initial Report volumes 134 and 135 was delayed by difficulties introduced by use of the VCD program. Problems with printer created further delays. The Scientific Results volume 122 was also delayed because of problems with the printer, and volume 120 was impacted by implementation of the new index requirements and the co-chiefs' desire to make it a very complete volume. It is expected that the small backlog of Scientific Result Volumes will be eliminated by the end of 1992.

The Panel was delighted with the progress made in indexing which appears to be very substantial. Further discussion of this item was deferred until later in the agenda.

IHP noted that, in general, they were well satisfied with progress with publications and the demonstrated increasing impact of these on the user community.

8. Report of the TAMU/ODP Computer Services Group

The report (Appendix D) was presented by J. Foster who commented that ODP is required to provide long-range plans for computing to JOI. Help from the panel in formulating these plans is appreciated. J. Foster stressed that he was keen to implement many of the suggestions of the Data

Handling Working Group and that he had been inhibited from adopting the suggestions before this time by a lack of resources.

The major improvements in networking and the file server, implemented following Leg 141, were noted by the panel with enthusiasm. A twice-daily internet mail link to the JOIDES Resolution will be implemented shortly at 2400 bps. ODP is investigating upgrading the hardware for higher transmission rates but the costs will be significant. However, this upgrade was recommended by the Data Handling Working Group and was supported by IHP.

A program for Water Sample Temperature Probe data collection was developed and demonstrated to the panel. The panel was much impressed and noted that new software tools are helping in the design and development of user-friendly MS-Windows software for the PC-386 equipment on board the JOIDES Resolution.

J. Foster also presented information gathered from questionnaires filled out by the scientists before leaving the ship. The summary shows that 90% of the scientists consider the system effective, so that while there is need for improvement, much has been done. The principal difficulty is in satisfying sophisticated users.

I. Gibson asked what is the current level of staffing of the Computer Services Group? J. Foster replied that, in addition to himself, at the moment there is one software engineer, Lisa Patton, and one network engineer, M. Sun. There is also a vacant position for a shorebased systems manager. IHP recognizes that this is a small staff and that the implementation of any new relational database will require significant additional human resources. J. Foster said that one additional system analyst was included in the base budget for FY93, in addition to the one requested from the special operating expenses budget, so that programming support will be enhanced beginning in October 1992.

9. Report of the TAMU/ODP Curator

C. Mato, in presenting the report (Appendix E), noted that the Leg 138 sampling party had taken over the Gulf Coast Repository for 3.5 days and that this effectively closed the repository to other activities. It was noted that this had proved to be a very effective sampling strategy.

Interstitial water policy — After discussion, the panel agreed to recommend that unused water samples should be archived, and that liaison on this matter with SMP should continue.

The question of sampling the archive half was brought before the panel. The panel noted that it was clear that the archive half is being used, and that there was no necessity for a revision of the policy at this time.

Geriatric core study — Assistance is needed with paleontology. Samples have been taken at certain time intervals. They need to be analyzed to determine if the samples are deteriorating during refrigeration. Scientists with expertise in this area are being asked to volunteer their efforts.

10. Report of the LDGO Borehole Research Group

M. Hobart, in presenting the report (Appendix F), noted that during the processing of Leg 138 geochemical log data, errors were found in the calibration. Approximately one year's worth of geochemical log data need reprocessing. The errors were produced by calibrations with a short half-life! The errors were caught in time to be corrected before the results were published, and the backlog that resulted is almost all processed.

In February, 1992, Hobart visited the University of Leceister log analysis group, which has been working closely with the Borehole Research group for several years. Not only has the Leceister group supplied many logging participants on ODP cruises, but it now acts as a secondary data repository that services requests for ODP logging data from U.K. scientists. They have also developed a Well-Log analysis package for the VAX, which is now being rewritten to run on Unix platforms.

With reorganization of the TAMU technical staff, there is now a need to train new technicians for FMS processing, if this is to continue as a shipboard activity. This data are being distributed as fiche in the back of the volumes at a cost of $6,000–11,000 per leg, personnel costs not included. BRG will move to distribute this, and other data on CD-ROMs. M. Loughridge offered assistance from the NGDC to help in the test phase. IHP supported the move from fiche to CD-ROM with enthusiasm.

R. Merrill noted that TAMU/ODP hope to purchase equipment to write CD-ROMs and that this might be placed on board the JOIDES Resolution and used for the scientists to take data back to their own laboratories after the cruise. IHP supported this concept.

A mechanism to make log data available in real time has been requested. A common complaint is that logging results are not ready in time to be incorporated into the site chapters. Improved computing and a better database structure might alleviate this problem.

11. Indexing of ODP Initial Reports and Scientific Results volumes

The Indexing Sub-committee reviewed the index from volumes 120 and 122. J. Saunders commented that the index for volume 122 is much easier to use than the indexes for the earlier volumes. Inversion of terms was implemented, and it is now much easier to know the level at which you are working when turning the page. H. Spall added that the overall result represents a tremendous improvement.

After further discussion, it was agreed that at present IHP did not need to provide further detailed guidance on indexing. B. Rose explained that the indexes are presently being evaluated by a geological indexer, who was capable of making corrections where deficiencies are detected. A new RFP dealing with indexing is due to be released shortly. The panel asked if the details of the RFP, dealing with the routine indexing of the volumes, could be examined by the indexing subcommittee before it is issued.

After discussion, IHP agreed that a second RFP for the preparation of an electronic version of an ODP cumulative index should be issued as soon as possible. It was agreed that volumes prior to the introduction of the two-level indexing style should not be re-indexed, but that the cumulative index should be issued in a two-level style. Thus the RFP must require:

- The translation of the older three-level indexes to an index with two level entries, starting with the available ASCII text files of each index.
- The elimination of the resulting duplicate entries
- The inversion of entries where appropriate
- The generation of the cumulative index

I. Gibson demonstrated an electronic version of portions of the indexes for volumes 120 and 122 using Microsoft's Viewer software. Scientists can browse through the index of each leg, or search a merged list of first level entries, or use a sophisticated search engine to find occurrences of a word anywhere in the index. It was agreed that TAMU/ODP and NGDC would evaluate the demonstration to see to what degree the software meets the needs of the project, and to prepare a report for the next meeting of IHP. ACTION

12. National Geophysical Data Center Report

M. Loughridge reported that the DSDP cumulative index on CD-ROM was NGDC's first experience with the use of commercial software. This move has helped reduce development time for the ODP CD-ROM. Notwithstanding, the development of the CD containing the ODP data took two person years plus some help from illustrators.

C. Moore, in introducing a demonstration of the ODP CD-ROM, noted that the work has resulted in the identification and removal of many errors in the ODP datasets. Consequently, development took longer than expected as the data was not as clean as hoped. Users are asked in the 'read me' notes accompanying the ODP CD-ROM to identify and report problems that can be corrected in future releases.

IHP noted with approval that the user interface associated with the ODP CD-ROM was significantly more elegant and useful than that used with the DSDP data, and that users should appreciate the additional functionality. The ODP CD-ROM will greatly improve data accessibility, particularly to the GRAPE data, a dataset now valued highly by the scientific community. C. Moore stressed that critical input from scientists on the ODP CD-ROM was important as the information helps NGDC address users needs.

At the conclusion of the demonstration, I. Gibson thanked NGDC for their work on the ODP CD-ROM — a very valuable contribution to ODP's publications. He volunteered to write to NGDC formally expressing the gratitude of the ODP community. ACTION

13. Data Handling Working Group Report

This agenda item was discussed in executive session. In general, IHP received the report of the working group (Appendix G) with enthusiasm. The changes recommended are needed and the Panel urged PCOM to act on the report. It was noted that both the TAMU/ODP Database Group and the Computer Services Group viewed the changes proposed as necessary. However, both Groups lacked the manpower resources needed to implement the changes. The panel also noted that expertise at TAMU/ODP in the critical areas of client/server database systems and the Unix operating environment was limited. Such expertise was available, to a degree, in the user community. Delay in acting on the Working Group recommendations will continue to prejudice both optimum real-time use of data on board, and scientific use of ODP data post-cruise, to the detriment of the overall scientific progress of the Program.

Significant short-term additional manpower resources, will be required to implement the recommendations of the Working Group within a reasonable time-span. This could be provided either as funding, or in kind by ODP partners, over a two-year period.

The Panel agreed that it would be useful during any implementation of the working group report if the database design for the core-log dataset was completed initially. The database design and associated programming for each of the remaining datasets could then proceed in parallel.

IHP noted that implementing rigid data collection with quality control on the JOIDES Resolution is presently opposed by scientists because it involves entering data into a system that does not make it readily accessible for manipulation afterwards!!! It was hoped that the new system outlined in the Working Group report would not suffer from the same deficiency. A. Richards indicated that the SMP is also very concerned about this issue.

14. Panel Membership Review

Members of the Panel expressed concern about the Panel's communications with PCOM. The PCOM liaison must be present for the greater part of the IHP meeting for the liaison to be effective. I. Gibson will emphasize this point with W. Berger and Y. Lancelot. ACTI

The Panel considered that it would be appropriate, when new members were appointed to IHP, for them to have expertise in database design, or computing, or electronic publications, or geochemistry or some combination of these specialities. I. Gibson will pass this information to JOI and PCOM and to the appropriate National Committees when new members are nominated to the Panel. ACTION

It was noted that Sherwood Wise, one of IHP's two appointed co-chiefs, will be retiring from the panel following the September IHP meeting. R. Merrill pointed out that the complete cycle (from preparation for the cruise to publication of the Scientific Results) may last between three and four years. The insight of the co-chiefs into the ERB process is very valuable to IHP.

15. Review of ODP Datasets

With the possible forthcoming change to a new database structure, IHP considered it appropriate that IHP and SMP should review the detailed content of data sets being kept at ODP and make recommendations as to any that should added or deleted. J. Coyne prepared a document containing detailed descriptions of all datasets, the fields in each, and their relationships. IHP therefore assigned major groups of datasets to appropriate panel members with expertise in the area. Each member will take copies of this information home and, in cooperation with a member of SMP, work on reviewing it. The fields and those responsible for reviewing the datasets in each are as follows: ACTION

- Core log/leg, site, hole — Andre Schaaf, Ted Moore
- Sediments, Age Profile, Paleo — John Saunders, W. Riedel
- Igneous/metamorphic rocks — Ian Gibson
- Paleomagnetism and Physical Properties — Volkhard Spiess, William Sager

Specific recommendations will be considered at the Fall meeting of the IHP in Marseille. Those recommendations will be reviewed and forwarded to a joint meeting of SMP and IHP to take place Spring '93 at College Station. Levels of precision, what is being recorded, and other details should be reviewed. It was suggested that some datasets will need to be examined regularly, perhaps every four years.

R. Merrill stressed that IHP should establish guidelines to handle new types of data. At present, scientists bringing new tools simply took their data home after the cruise. IHP therefore recommended that as a matter of policy ALL data collected on the JOIDES Resolution should be provided to ODP and archived. Those data would be distributed under the same moratorium guidelines as for all other data. Data not properly documented after a reasonable period (2–3 years), and not formally included into a ODP dataset, could then be discarded.

Some data published as data tables in the Scientific Results volumes is NOT being entered into the ODP databases because of a lack of resources to code the information. Obvious examples include post-cruise hard-rock geochemical data and much paleontological data. The backlog on these data is increasing with time and the problem is significant. IHP would like to review the document that instructs authors to submit the data, and R. Merrill agreed to provide this information at the next IHP meeting. ACTION

16. Review of Recent ODP Volumes.

IHP moved to initiate a review of recent ODP Proceedings volumes. After some discussion, it was decided that both the Initial Report volume and the Scientific Result volume for a group of recent Legs would be examined by a panel member for:

- Scientific coverage. Is it complete in relation to the drilling?

- Layout, typographic errors, positioning of figures and tables, headings
- Illustrations, photographs, data tables — are these well reproduced?
- Stratigraphic synthesis — is it complete? Is a synthesis of the Leg results present?
- Index and table of contents coverage

The objective is to assess the performance of the co-chiefs, scientific party and editorial review board AND the work of TAMU/ODP in editing and producing the volumes. The following volumes/Legs will be examined by the panel member(s) indicated: ACTION

- Leg 119 - Sherwood Wise
- Leg 120 - Brian Funnell and Henry Spall
- Leg 121 - Andre Schaaf
- Leg 122 - Tsunemasa Saito
- Leg 124 - Patricia Fryer

17. The JOIDES Journal

IHP considers that the new double column format for the JOIDES Journal represent a significant improvement over the older, smaller format. It also noted that there was an increasing tendency to adopt the 8.5 x 11 inch format in the publishing industry and that ODP was thus conforming to a growing industry 'standard'. IHP consider the content of the JOIDES Journal to be informative and useful but hope that the section dealing with Panel and Working Group reports would be expanded to include reports for the service panels and perhaps information on developments in progress in the Engineering group. A list of the appropriate TAMU personnel, with their telephone numbers and internet addresses, would also be a useful addition to the content.

18. Non-performers

The panel reviewed a list of potential non-performers prepared for seven recent legs. Five scientists were identified to receive letters from the PCOM chairman. A smaller group will receive letters from the Chairman of IHP.

19. DataNet

M.Hobart reviewed the White Paper on DataNet, submitted by the Borehole Group to XCOM in January, 1992, which PCOM had asked IHP to examine. The White Paper (Appendix H) proposes the establishment of an international network of collaborating institutions that could, for the first time, participate actively in the day-to-day operations of ODP. This 'ODP DataNet' would provide and maintain an electronic archive of all ODP digital data that would be instantly available from any Internet site around the world. Real-time communication of data and images to and from the JOIDES Resolution would be an integral part of the ODP DataNet. Hobart then provided a demonstration of the search/retrieval capabilities of the ODP DataNet using a demonstastion Macintosh diskette.

The on-line data base would handle interactive requests, which would save sending data requests to TAMU and free up ODP personnel for other tasks. The ship-shore data transfer would allow the satellite transmission of data to 'processing nodes' around the world, with a return of processed data to the ship within a target turnaround time of 24 hrs. Much of the data would be logging data that is not now processed on the ship and, consequently, is not always looked at by the scientist after the shipboard cruise (e.g., temperature logs from the Lamont tool). Not only could this procedure assist with the general problem of core-log integration, but data could be returned to the ship in near real-time. This might allow the drill bit to be 'steered' by knowledge from the physical property measurements.

The ODP DataNet would allow the establishment of speciality nodes, called 'technology nodes', to provide technical services funded now on an ad hoc basis, such as for borehole seismology, developmental engineering of third party tools, and hydrogeology.

IHP is supportive of the concepts presented in the white paper. The establishment of the DataNet, processing nodes and technology nodes will require new funds. Priorities would have to be established as to which data can be handled most efficiently by the Processing and Technology Nodes. However, the Panel stressed that DataNet did not provide an alternative to the renewal of the shipboard computing system and associated database structure. This upgrade of the shipboard facilities continues to be the IHP priorty.

20. Micro-Paleo Reference Center

The Panel received from Dr. Annika Sanfilippo (Scripps Institution of Oceanography), a Progress Report (Appendix I) on Radiolaria Preparation (Oct. 1990 – Sept. 1992). The Panel noted with pleasure the expeditious way that she will complete her assigned task of processing all the radiolarian samples from the DSDP/IPOD phase of drilling (to the end of Leg 96). To get 2700 high-quality radiolarian preparations in place at the eight Centres so quickly is a fine achievement.

The integrated collections now include four major fossil groups (nannofossils, foraminifera, radiolaria and diatoms). Foreign partners (Switzerland and Japan) have made a major contribution of more than half the effort of choosing and processing material that is held at no cost to the Project in four centers in the U.S.A. and four overseas.

Material from the ODP legs 101 through 128 has been selected and this includes important high-latitude southern sites. IHP strongly support the proposal from Dr. Sanfilippo for a continuation of the radiolarian preparation work. The cost for continuation for an additional two years is $167,389. Funding could be released on an annual basis.

21. A Rational PCOM wish-list

The panel re-affirmed that it accorded highest priority to the re-structuring of the ODP computing and Database facilities.

Equipment required to allow core-log integration was given second priority. However, IHP noted that it is inadvisable to make substantial permanent additions to the range of shipboard equipment available until computing resources are available to deal with the resulting data!! (This does not preclude the installation of visiting equipment for specific Legs.)

22. Date of Next Meeting.

The panel accepted the invitation of Yves Lancelot to meet in Marseilles on Sept 9th, 10th and 11th and agreed to meet in conjunction with SMP at College Station early in 1993 at a date to be arranged.

Data Base Group Report to the Information Handling Panel

I. Data Requests

The Data Librarian and Data Analyst responded to a total of 1,463 requests for individual DSDP and ODP datasets since May 1985. From August 1, 1991 to February 24, 1992 a total of 203 requests were processed. The variation in the number of requests with time is shown in Figure 1. The 1992 data include requests received up to February 24th. The number of requests by type of data is shown in Table 1.

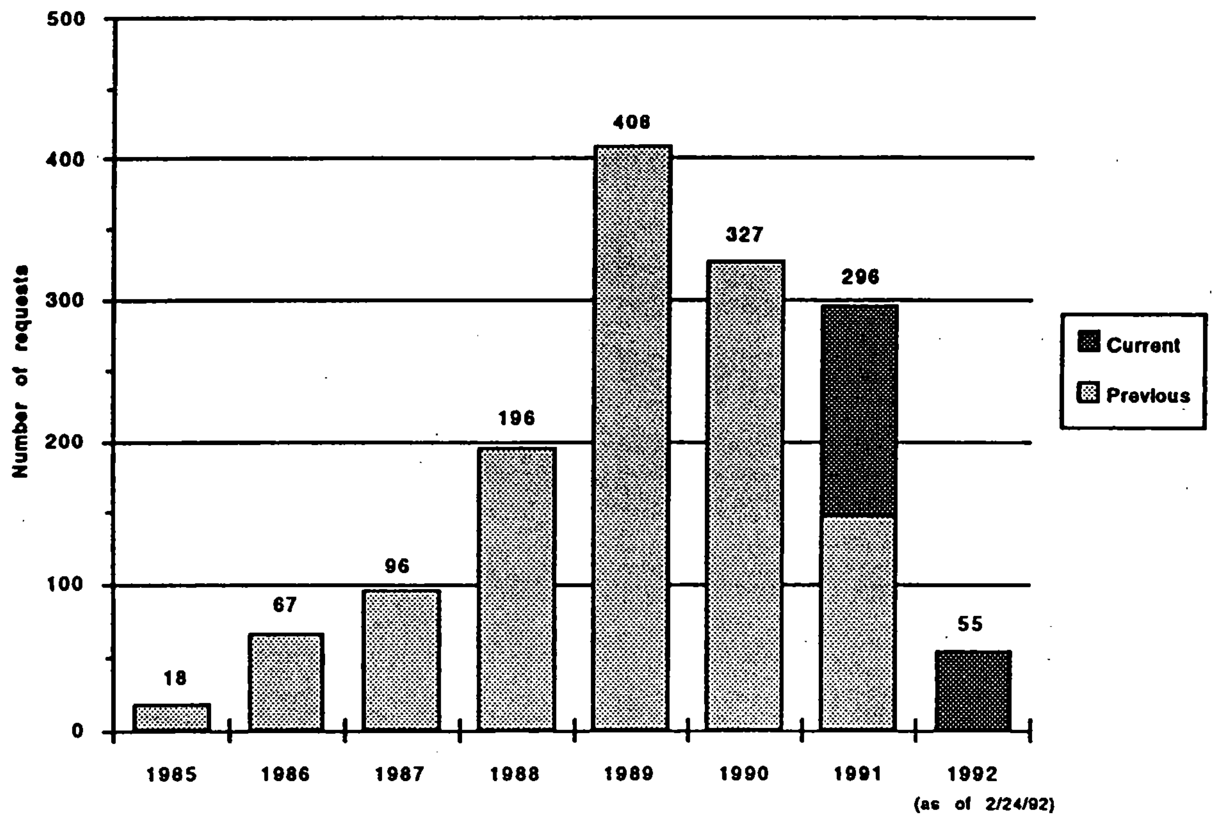


Figure 1: Total Data Requests by Year

II. ACTIVITIES

VCD

John Olsen has continued work on providing a stable version of VCD for use in collecting data on the ship and production in the Art Department. The interface revisions have been completed and the feature set frozen for the current version. Numerous serious bugs were fixed and portions of the program have been rewritten. VCD is undergoing Beta testing on Leg 143. Any bugs that are found will be fixed before Leg 145 sails. The final version of VCD 1.0.1 is anticipated along with release notes and a written manual for Leg 145.

Data Type	Public Previous	Public Current	In-house Previous	In-house Current	Subtotal Previous	Subtotal Current	TOTAL
Photo	361	31	14	1	375	32	407
Legs, Site, Hole Summary	85	5	43	24	128	29	157
Physical Properties	71	22	23	3	94	25	119
Chemistry	54	8	28	5	82	13	95
Sediment Description	73	5	7	0	80	5	85
Underway Geophysics	56	4	7	1	63	5	68
Core Log	26	4	36	8	62	12	74
Paleontology	53	11	5	2	58	13	71
Smear Slide	33	1	19	4	52	5	57
Paleomagnetics	41	8	5	0	46	8	54
Sample Record	22	0	9	0	31	0	31
Igneous/Metamorphic Rock Description	22	4	7	0	29	4	33
XRF	25	4	3	0	28	4	32
Igneous/Metamorphic Thin Section	11	1	0	0	11	1	12
Sample Request	8	0	1	0	9	0	9
Bibliography	7	0	1	0	8	0	8
Other†	88	29	16	18	104	47	151
TOTAL	**1036**	**137**	**224**	**66**	**1260**	**203**	**1463**

TABLE 1: Number of Data Requests by type.

Previous= from May 1985 to July 31,1991
Current = Aug.1 1991 to Feb.24 1992

† This category includes maps, technical notes, well logging journals and downhole tools data requests as well as any requests not covered in the above categories.

000295

CORELOG Editing

This project is necessary to provide a "clean" version of the CORELOG dataset with which to verify the sample identifiers in other datasets. The inclusion of this identifier in all datasets requires the sample IDs to match in all instances in order that the database be searchable using even simple queries. The process requires review of the core photos, VCDs, and sample records to identify discrepancies in the CORELOG dataset. These discrepancies are resolved by inspection of the core, or discussions with staff scientists, marine technicians and or lab officers. The objective is to provide a "clean" CORELOG dataset for the scientists at the first post cruise meeting. This method was implemented beginning with Leg 139. Table 2 is a progress chart showing the activity to date and the remaining work on editing the CORELOG dataset.

Paleontology Program

The RFP for a Paleontology program has been delayed. A reevaluation of the problem suggests that it may be more cost effective and expedient to identify a commercial product which will handle the majority of the functions required. Work on this project has centered on finding a commercial database product with the functionality to provide rapid data entry and range charts for publications. An initial "prototype" has been developed using 4th Dimension, a relational database management system for the Macintosh from Acius , Inc.

Database Review/Migration

A review of the data types, datasets and methods of collection has been completed and compiled in anticipation of a redesign of the database. This information will serve as a starting point for the development of individual data models for each of the identified data types.

Core/Log Integration

Prior to his departure, the Data Analyst undertook a short project to identify some of the database issues involved in Core/Log Integration. A commercial visualization product called PV Wave, from Precision Visuals, Inc., was obtained for a 30-day trial. This software was installed on both Silicon Graphics GVX and SUN ipx Unix workstations on loan from the respective companies.

A series of simple procedures were written to import data files from the VAX and display and manipulate them with PV Wave. The preparation of the data files for import required a significant amount of time under the current database structure. It is obvious that to implement real-time Core/Log integration will require a restructuring of the database and the querying methods.

Leg Nos.	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145
Edit started																																													
First edit complete																																													
Second edit complete (if applicable)																																													
Final review complete																																													
Final corrections complete																																													
Core evaluation complete (if applicable)																																													
Error/change documents sent																																													
CORELOG revisions complete																																													
Hardcopy revisions of CORELOG filed																																													

 Table 2. Status of CORELOG Editing

0002297

ODP CD Rom

The ODP CD Rom should be available for distribution by the end of March.

III. PERSONNEL

The Data Analyst, Paul Davis, has returned to school in a work study program. He is not available for full time work at ODP. An advertisement was placed in March for a Database Administrator to augment the abilities of the three remaining full time employees. Student help for the coming year will be provided by 6 graduate students working on data editing and input for CORELOG, database redesign and the paleontology database.

	September	October	November	December	January	February
Supervisor	←		John Coyne			→
Systems Analyst	←		John Olsen			→
Data Librarian	←		Laura Bagwell			→
Data Analyst	←	Paul Davis		→		
Database Admin.			TBA			

iHP April '92, Appendix C

Summary of ODP Publications Activities, September 1991–February 1992
(Prepared by W. D. Rose for April 1992 IHP meeting)

1. **Proceedings volumes:** We continued preparation and publication of ODP *Proceedings* volumes as follows (see ATTACHMENT 1):

a. *Initial Reports:* Vols. 133 and 134 were printed and distributed.

b. *Scientific Results:* Vols. 119, 121, 122, and 124 were printed and distributed. Vol. 120 is at the printer.

c. ATTACHMENT 2 shows the time in distribution of IR Vols. 120 through 141.
ATTACHMENT 3 shows the time in publication of SR Vols. 104 through 129.

These attachments were prepared by our chief production editor, Jennifer Hall.

2. **Informal publications:** Technical Note 15, *Chemical Methods for Interstitial Water Analysis Aboard* JOIDES Resolution, by Joris Gieskes, Toshitaka Gamo, and Hans Brumsack, was printed and distributed.

3. **Other publications:** The National Geophysical Data Center, in cooperation with ODP, is producing a CD-ROM set consisting of two discs of ODP data from Legs 101 through 129. One disc contains underway geophysical and sediment/hard-rock data, and the other disc, GRAPE data.

4. **Volume indexes:** The Vol. 121 index was prepared following the IHP meeting in Victoria last September and was a transitional effort in the sense that the IHP indexing subcommittee's recommendations could be implemented only partially. Since that time, two additional indexes were completed--those for Vols. 122 and 120. We attempted to implement all the indexing subcommittee's recommendations in these indexes. Of the two, I feel that the Vol. 120 index (the last prepared) followed the subcommittee's guidelines more closely. Some of the principal changes include (1) only two hierarchies of entries (instead of three), (2) combining the site index with the subject index, (3) better standardization of terminology, and (4) adding more cross-references.

5. **History of manuscript submission and review:** Debbie Partain and Janalisa Soltis have continued the series of four graphs that show the period of elapsed time vs. the number of manuscripts during the periods when (1) manuscripts were initially submitted, (2) reviews were received, (3) revised manuscripts were received, and (4) final disposition (acceptance or rejection) was received. The series of graphs prepared for the IHP meeting in September covered SR Vols. 120, 122, and 124. The current series (ATTACHMENT 4) covers Vols. 121 (corrected), 123, 125, and 126. This information shows in detail where lag time developed before and during the review process.

6. **Manuscript-submission deadlines:** Original and revised deadlines for manuscript submission for SR Vols. 127/128 through 136 are shown in ATTACHMENT 5, prepared by Janalisa Soltis.

7. **ODP/DSDP literature citation search:** The search we subcontracted with the Institute for Scientific Information (ISI) to evaluate the effectiveness of ODP (and DSDP) by the number of citations from their respective volumes in the literature of marine geology and geophysics covered the years 1981–90. This search showed a large number of citations for DSDP. Only the years 1987–90 cover the ODP *Proceedings* volumes, and only the years 1989–90 cover the *Scientific Results,* but the exponential increase is striking. Russ Merrill and I have authorized ISI to conduct an additional

literature citation search covering 1991 to see if the increase in citations to ODP volumes continues at the projected rate. We will have the results of the updated search (1981–91) in the form of graphs and other illustrations and statistics at our meeting in April.

8. **Experiment to identify alternate printers:** When we continued to have problems with our long-time printing subcontractor, Edwards Brothers, mostly involving billing and distribution matters and halftone reproduction, we decided to identify several other printers who were capable of doing our work. We prepared requests for proposals (RFPs) for the printing of IR Vol. 134 and SR Vol. 122. We were gratified to receive several proposals from reputable firms; Allen Press, of Lawrence, Kansas, submitted the most favorable proposal in the first round. We received IR Vol. 134 and SR Vol. 122 in February. A striking feature of both these volumes is the high quality of halftone reproduction from the use of 300-line screens. In the second round, Thomson-Shore, of Dexter, Michigan, was the successful bidder for printing SR Vol. 120; this book is due for distribution in March.

The foregoing process delayed our schedule by 2 or 3 months, but we feel it was worth it in the long run by familiarizing additional printers with our books and interesting them in bidding. We continued the process with IR Vol. 135; the proposals for printing are due next week. So far, we are quite pleased with the response and the results of dealing with these new printers, and with the savings of about 10% relative to what it would have cost at Edwards Brothers.

9. **Other subcontractors:**

a. Typesetting: 3-year subcontracts were executed with Industrial Publications and Graphics, Anaheim, California, and Graphic Composition, Menasha, Wisconsin, beginning 1 October 1991. Our subcontract with Design Service, Anaheim, California, was extended for 1 year through the 1992 fiscal year.

b. Indexing: Our subcontract with Wm. J. Richardson Associates, Inc., was extended for 1 additional year through the 1992 fiscal year. We are preparing a new indexing RFP so that we can execute a new 3-year contract before the end of the 1992 fiscal year.

c. Microform: Southwest Image Technology, Inc., Houston, is our current vendor.

10. **Electronic publishing:** We are planning to add the Microsoft Word software package to WordPerfect for editorial processing of manuscripts. We are also evaluating two page-makeup programs, Quark XPress and Framemaker. The former operates from both Macintosh and PC platforms, and the latter, from Unix as well as Macs and PCs. These programs are used by our typesetters. We are also evaluating commercial programs for MANTRACK, our manuscript tracking system, to see if any of them will enable us to expand our ability to track manuscripts from receipt all the way through production to publication. We are finding that authors and shipboard parties are realizing the advantages and potential of CD-ROMs in presenting data from their cruises in conjunction with the printed *Proceedings* volumes. A CD-ROM insert already is planned for IR Vol. 138. The Leg 140 scientists have expressed a possible interest in this medium, as well as some authors of SR Vol. 130. We do not now have equipment or facilities for in-house mastering of CD-ROMs. Should we be funded to acquire such equipment, an estimated cost for production of 1900 discs to accompany 1900 books (our normal print run) is $4000.

11. **Publication storage space:** We were allotted additional storage space by Texas A&M University to enable us to house our current back stock of ODP and DSDP volumes and to provide sufficient space to accommodate volumes published through the 1998 fiscal year. The Publications Distribution Center will be moved to the new facility this summer.

Attachments 1 through 5

ATTACH T 1

Proposed Distribution Dates of ODP Volumes - Fiscal Year 1992

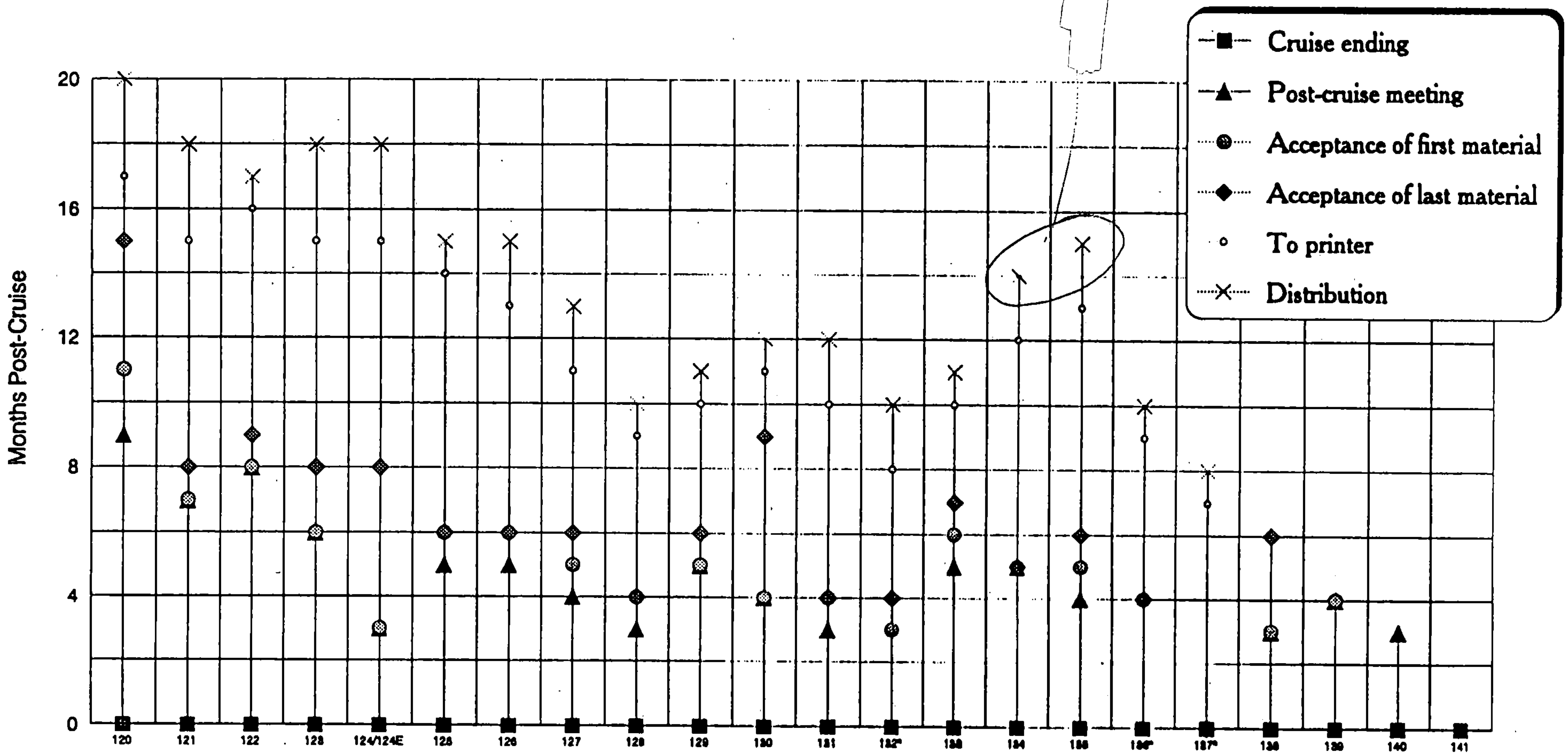
	Initial Reports Volume	Date to Printer	Date Distributed	Months Post-Cruise	*Scientific Results* Volume	Date to Printer	Date Distributed	Months Post-Cruise
OCTOBER								
NOVEMBER					121	8-20-91	11-30-91	41
DECEMBER								
JANUARY	136/137	12-10-91	1-27-92	10/8				
FEBRUARY					122	12-19-91	2-28-92	42
MARCH	134	12-19-91	3-92	15				
APRIL	135	2-92	4-92	14	120	2-3-92	4-92	48
MAY					123	2-92	5-92	42
JUNE	138	5-92	6-92	12	125	3-92	6-92	38
JULY					126	4-92	7-92	37
AUGUST								
SEPTEMBER	139 140	8-92 8-92	9-92 9-92	12 10	127/128	7-92	9-92	37/35

Month-day-year listings indicate actual dates. Month-year listings indicate proposed dates.
February 18, 1992

000301

000302

ATTACHMENT 2

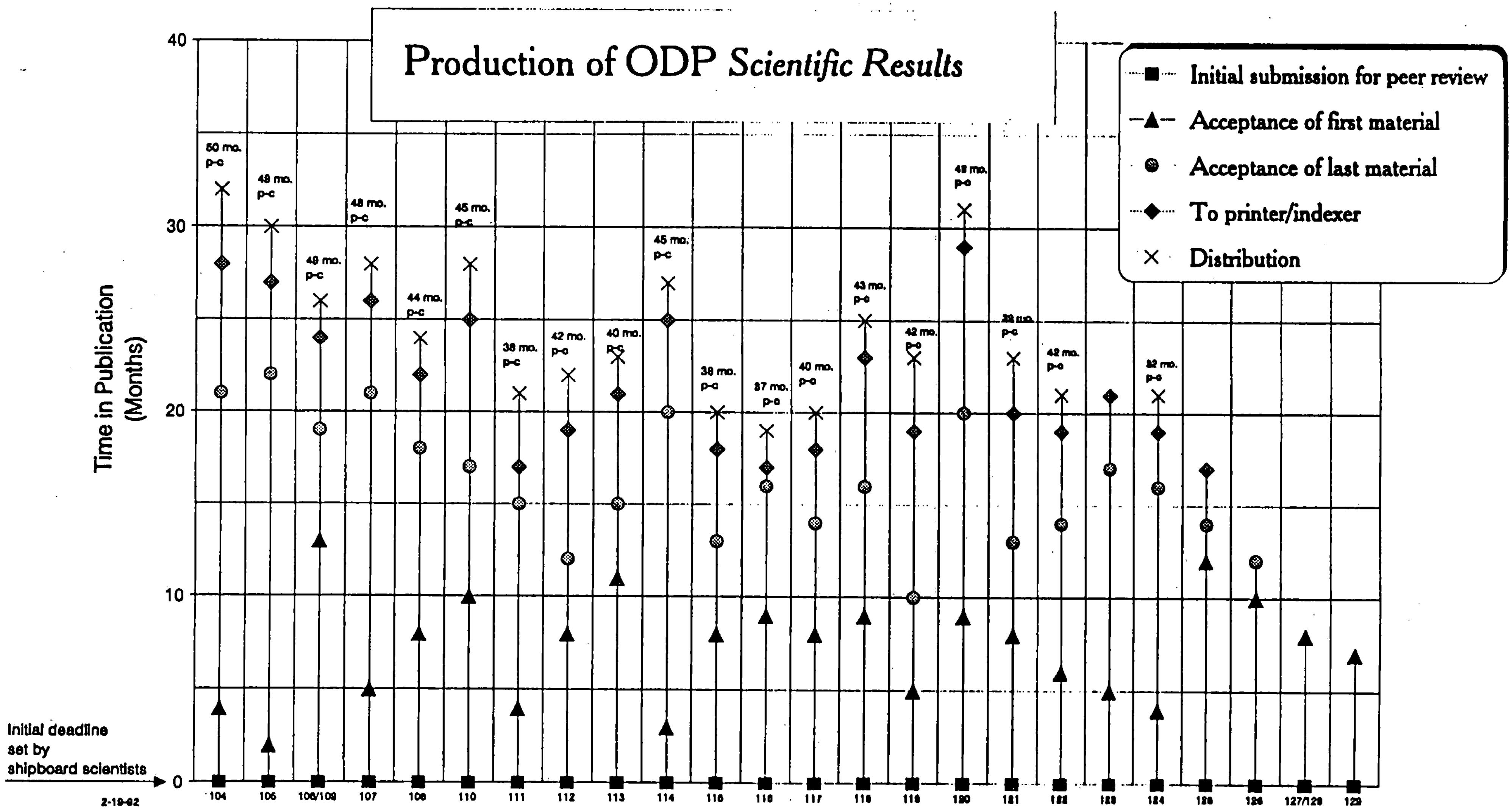


Production of ODP *Initial Reports*

*No post-cruise meetings held

2-19-92

ATTACHMENT 3



000303

ATTACHMENT 4

000304

Key for Volumes 121, 123, 125, and 126 IHP graphs:

○ Original specialty manuscript submission deadline (approx. 16 months, or 69 weeks, post-cruise)

◎ Original synthesis manuscript submission deadline (approx. 22 months, or 96 weeks, post-cruise)

△ Closing deadline for specialty manuscript submission (approx. 19 months, or 83 weeks, post-cruise)

Closing deadline for synthesis manuscript submission (approx. 24 months, or 104 weeks, post-cruise)

□ Final submission of specialty manuscript (if later than closing deadline)*

Final submission of synthesis manuscript (if later than closing deadline)*

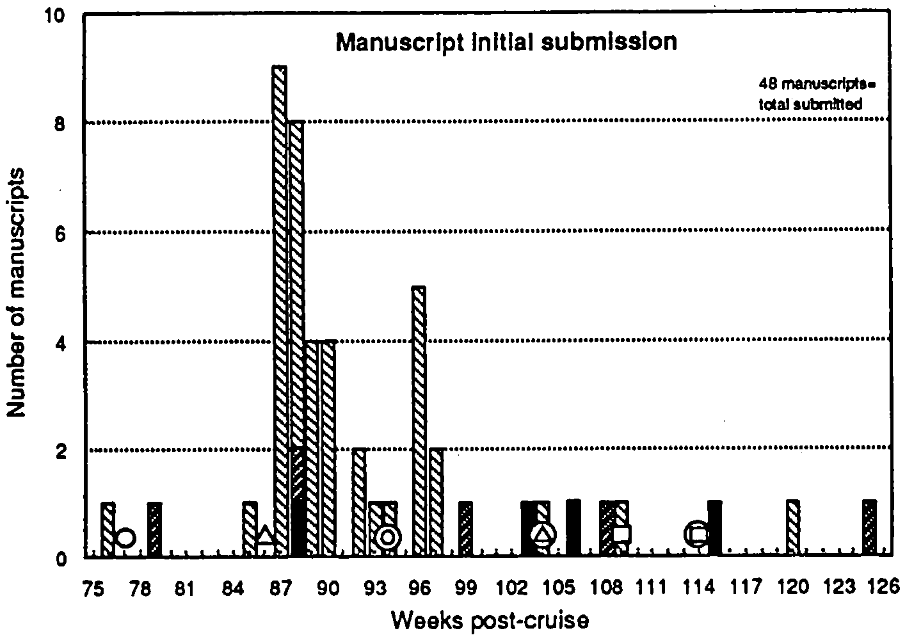
Synthesis

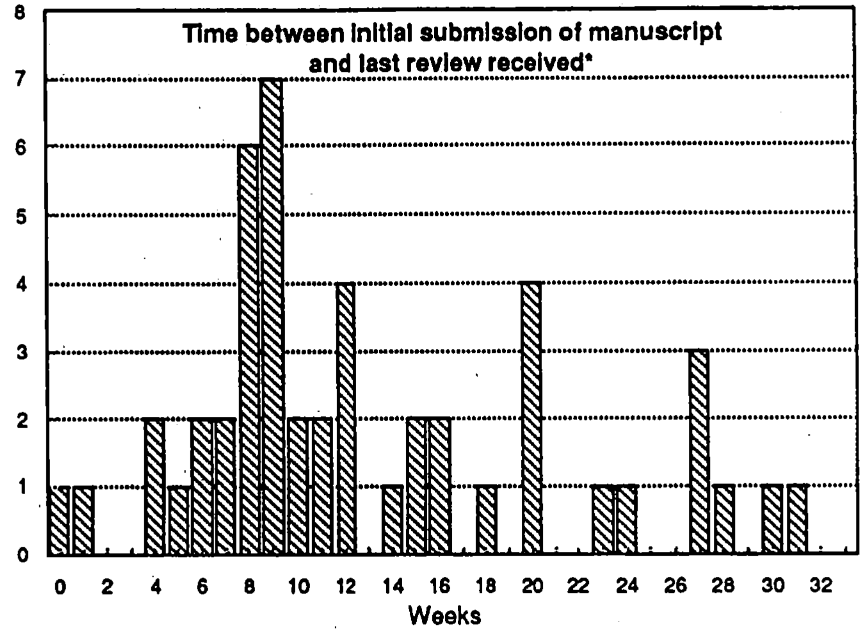
Data Report

*Note: This is the latest submission that was allowed to the volume.

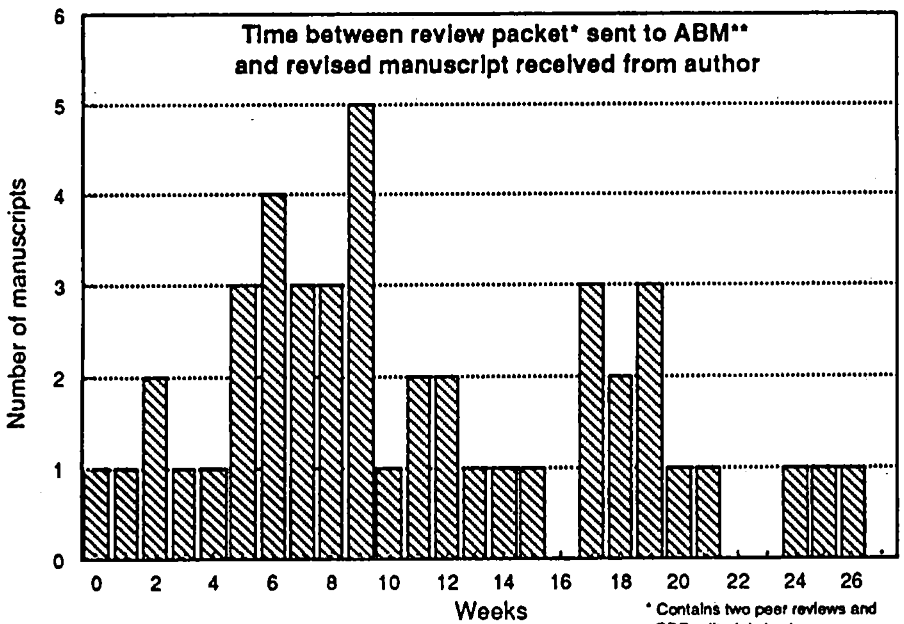
ATTACHMENT 4

Volume 121B

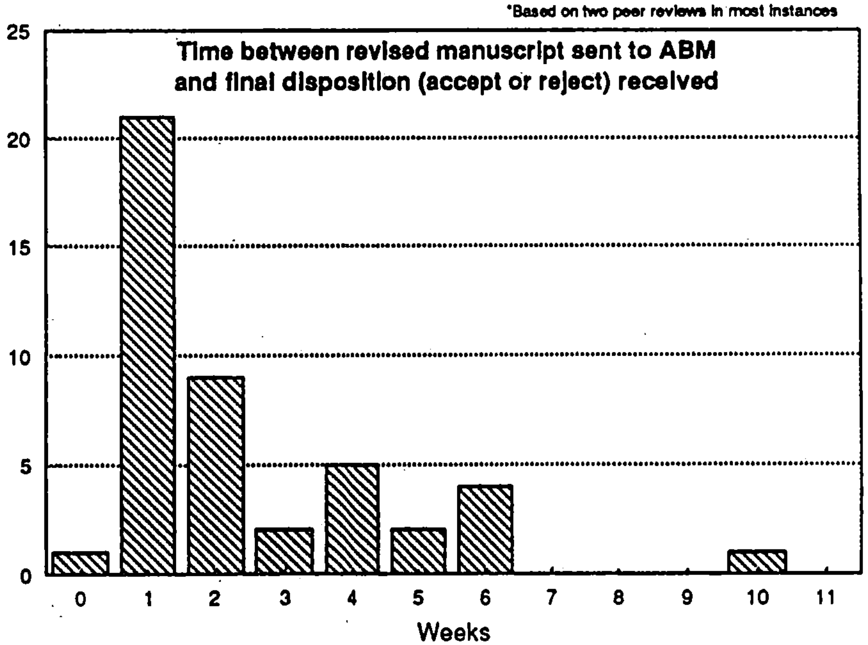




*Based on two peer reviews in most instances



* Contains two peer reviews and ODP editorial check
** Assigned Board Member



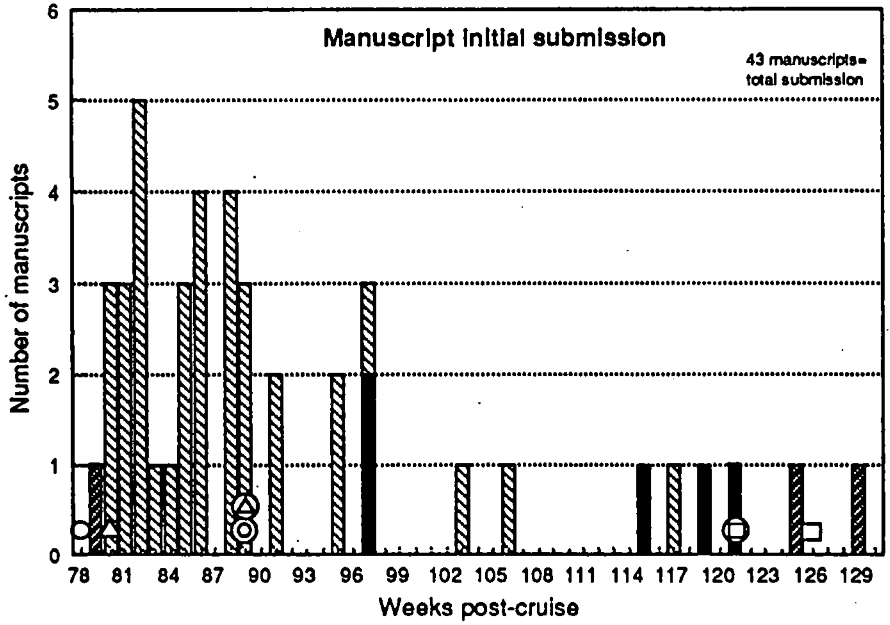
Leg 121 co-chiefs:
John W. Peirce, Petro Canada
Jeffrey K. Weissel, Lahmont-Doherty Geological Observatory

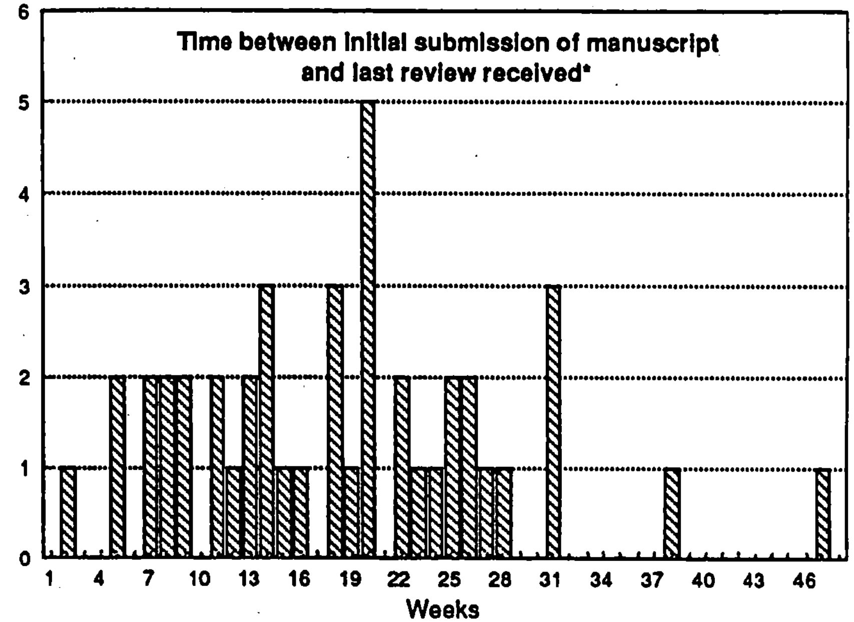
Cruise ending date:
28 June 1988

Post-cruise meeting:
9 January 1989

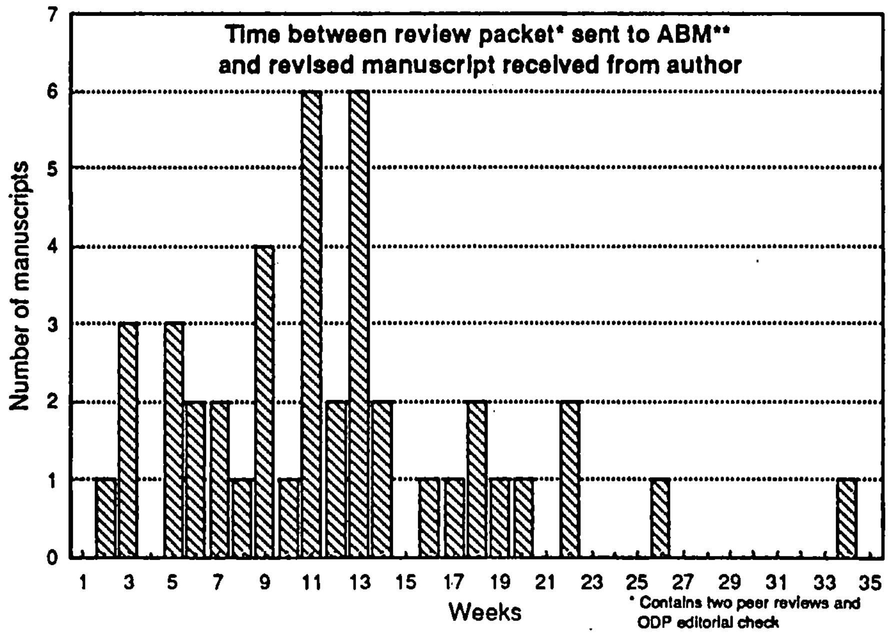
000305

Volume 123B

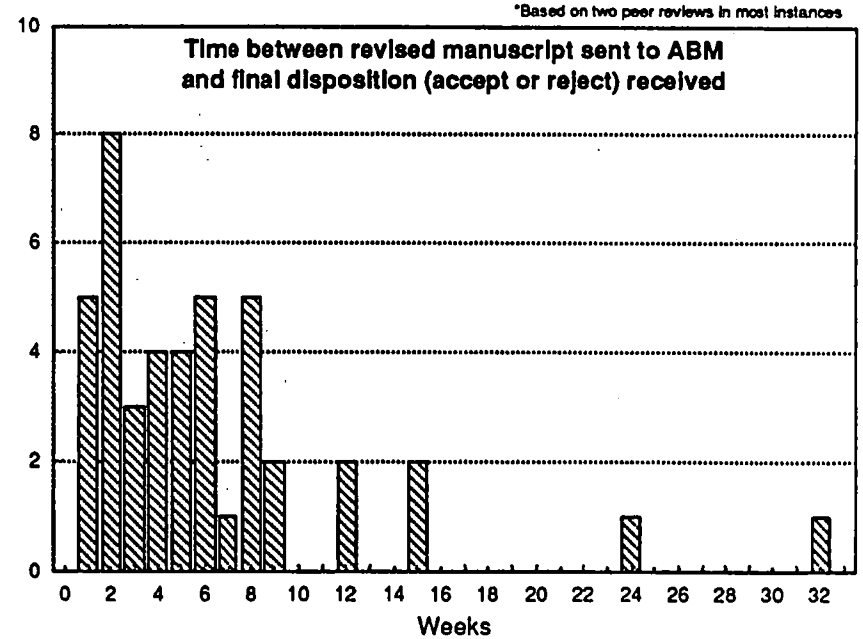




*Based on two peer reviews in most instances



* Contains two peer reviews and ODP editorial check
** Assigned Board Member



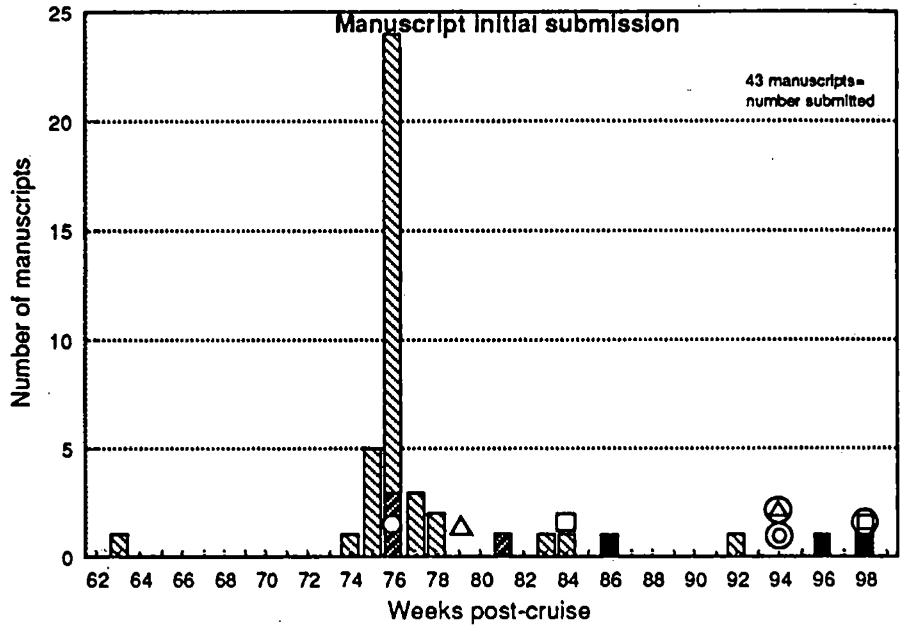
Leg 123 co-chiefs:
Felix M. Gradstein, Bedford Institute of Oceanography
John Ludden, Université de Montreal

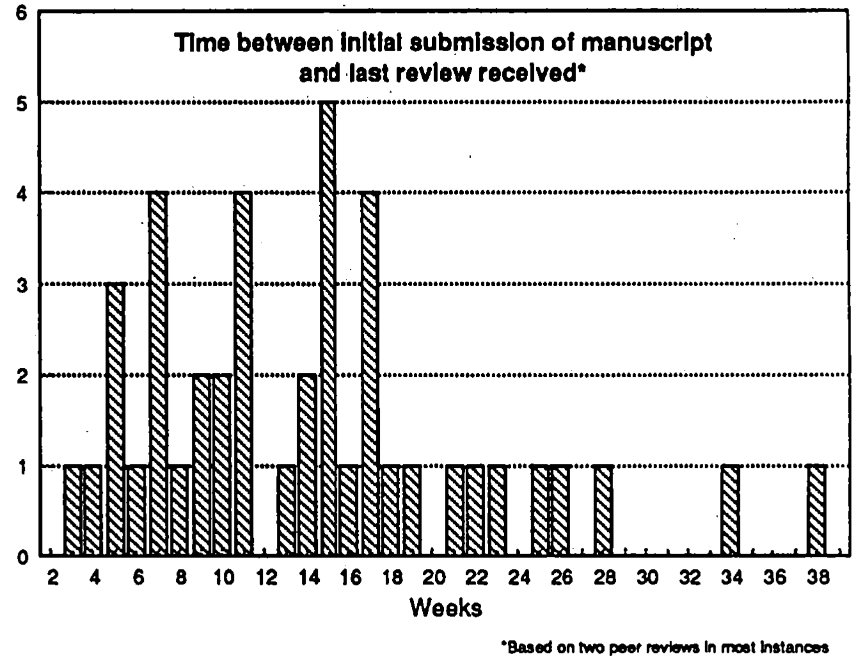
Cruise ending date:
1 November 1988

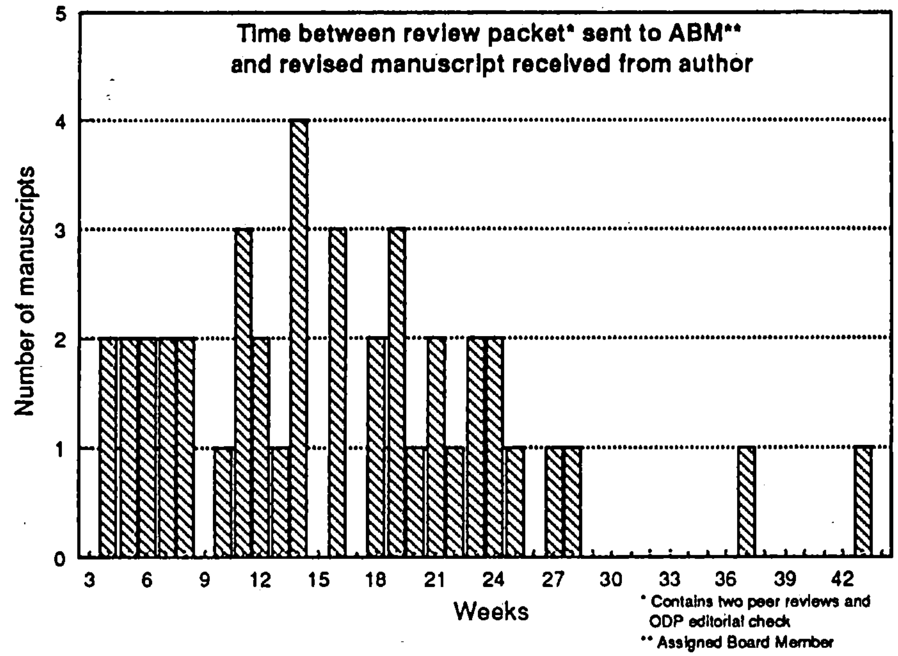
Post-cruise meeting:
1 May 1989

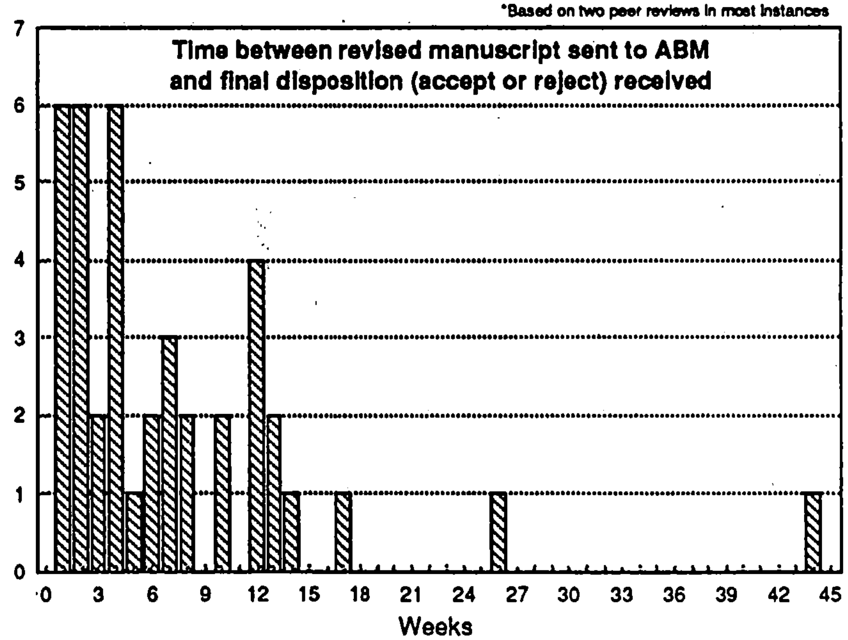
ATTACHMENT 4

Volume 125B









Leg 125 co-chiefs:
Patricia Fryer, University of Hawaii
Julian A. Pearce, University of Newcastle upon Tyne

Cruise ending date:
18 April 1989

Initial post-cruise meeting:
29 September 1989

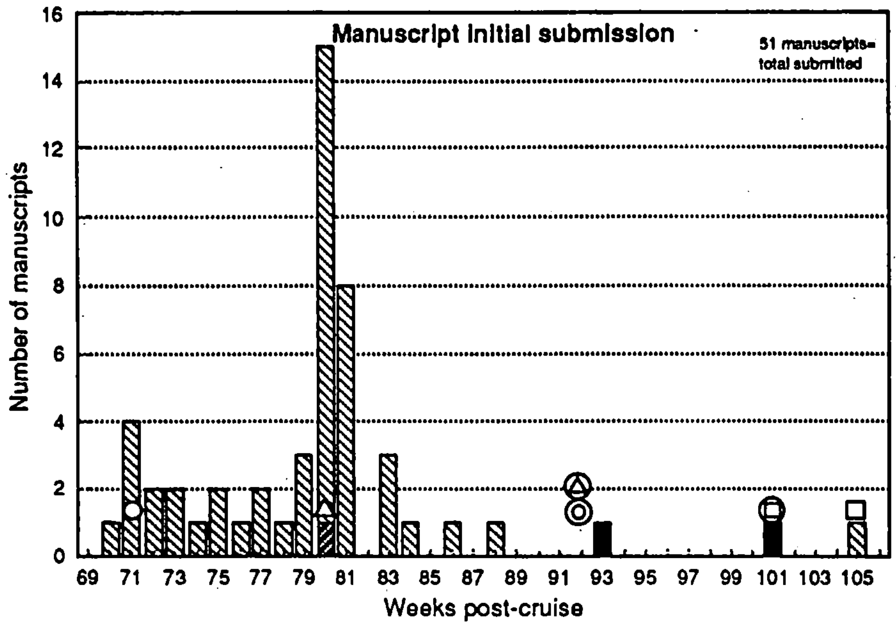
Science post-cruise meeting:
22 May 1990

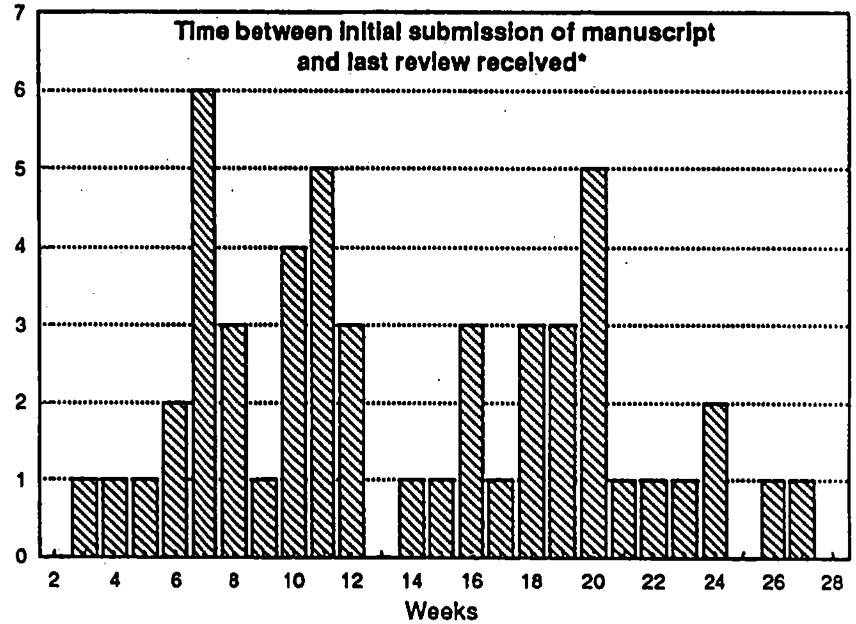
000307

ATTACHMENT 4

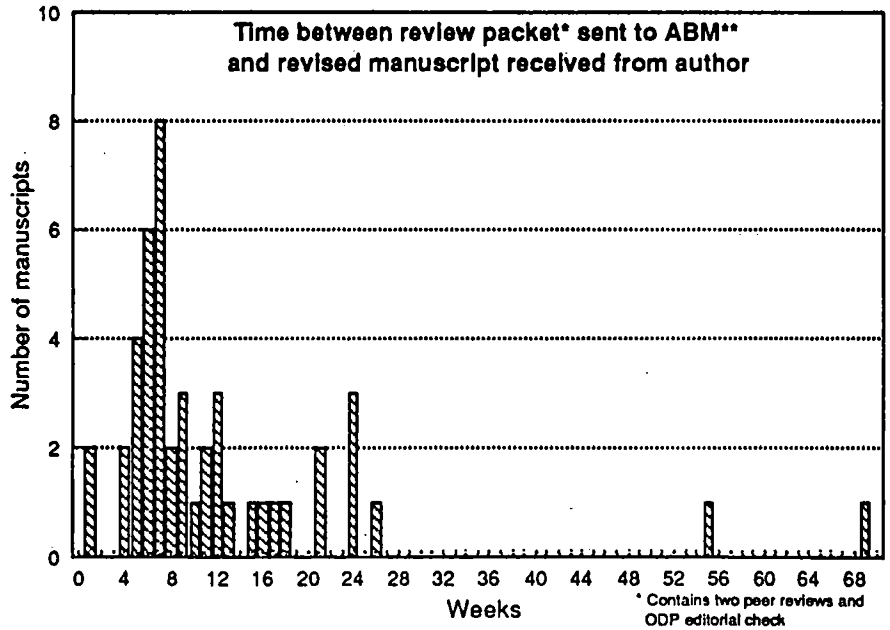
000308

Volume 126B

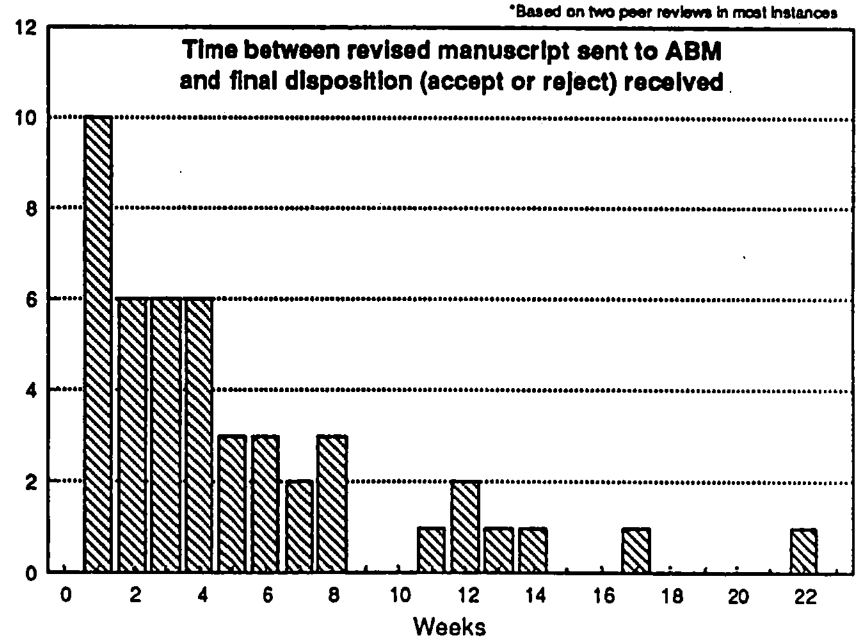




*Based on two peer reviews in most instances



* Contains two peer reviews and ODP editorial check
** Assigned Board Member



Leg 126 co-chiefs:
Brian Taylor, University of Hawaii
Kantaro Fujioka, University of Tokyo

Cruise ending date:
19 June 1989

Initial post-cruise meeting:
20 October 1989

Science post-cruise meeting:
25 July 1990

ATTACI IT 5

Scientific Results Manuscript Submission Deadlines as of February 27, 1992

Leg	SPECIALTY Initial Submission[1]	SPECIALTY Revised Submission[2]	SYNTHESIS Initial Submission[3]	SYNTHESIS Revised Submission[4]	ALL to Production[5]
127/128	15 MAR to 15 APR 91 *6 JUN 91*	15 JUL to 15 AUG 91 *	15 JUL to 15 AUG 91 *	15 DEC 91 *	15 JAN 92/29 FEB 92
129	1 JUNE 91 *4 NOV 91*	1 OCT 91 *	30 NOV 91 *27 JAN 92*	1 MAR 92	1 APR 92
130	1 SEP 91 *6 FEB 92*	1 JAN 92 *	1 JAN 92 *	1 MAY 92	15 APR 92/1 JUN 92
131	1 OCT 91 *11 FEB 92*	10 JAN 92 *	10 JAN 92 *	1 MAY 92	1 JUL 92
133	15 MAR 92	15 JUN 92	15 JUL 92	15 OCT 92	15 DEC 92
134	15 APR 92	15 AUG 92	15 AUG 92	15 NOV 92	1 JAN 93
135	30 JUN 92	30 SEP 92	30 DEC 91/10 JAN 93	28 FEB 93	31 MAR 93
136	1 SEP 92	1 DEC 92	1 MAR 93	1 MAY 93	1 JUN 93

Deadlines established by IHP (updated Feb 91):
[1] 16 months post-cruise (specialty initial)
[2] 19 months post-cruise (specialty revised)
[3] 22 months post-cruise (synthesis initial)
[4] 24 months post-cruise (synthesis revised)
[5] 25 months post-cruise (ALL to Production)

Dates in italics: Actual submission of last manuscript
Dates in bold: New deadlines
* still expecting late submissions
Deadline given to authors

0000309

IHP April '92 Appendix D

March 1,1992

Summary of CSG Activity Since Last IHP Meeting

Since the last CSG report to the IHP, software development work has continued on the Physical Properties System, the shipboard sampling program (SHIPSAM) , and the WSTP program. The beta test version of the WSTP program has been delivered and we are awaiting feedback from the testing. The shipboard sampling program will be delivered for beta test in the middle of March with installation of the completed version anticipated for May 1992. Phase one of the Physical Properities System is expected to be complete in May 1992 also.

A significant upgrade has been made to the shipboard network since the last IHP meeting and a 'scratch' server added to facilitate a more efficient mechanism for sharing and storing working data. This 'scratch' server is much faster than the DRAKESHARE file server and provides a 1 gigabyte fast hard disk for data storage. The network was upgraded to provide ethernet speeds of 10Mbps to all of the Macs and PC compatible units. The majority of the microcomputers were upgraded to ethernet cards to take advantage of the higher speed.

Computer Services Group
Task Completion Report for Past 12 Months
03/01/92

* - Completed since last IHP meeting

Application Name	Ship/Shore Usage	Status	Comments
Core Sample Inventory	Both		
- Phase 3A: Repository Sampling program REPOSAM linkage to Vax central data base for validation of leg,site,hole, sample id and depth of sample at data entry time.		Complete	This phase completes the conversion of the Repository Sampling program from the PRO350 to the PC with all of the planned enhancements.
Upgrade Vax Systems to Version 5.3 of Vax/VMS	Ship	Complete	Upgrade Vax systems to use same operating system as being used on shorebased systems
Upgrade shipboard PCs to provide more capabilities	Ship	Complete	Provide faster CPU, more memory, additional software, and a graphical user interface.
Modifications to ODP Computer Userroom at ODP Headquarters.	Shore	Complete	Modifications to ODP computer userroom and additional equipment added for teaching of 'hands-on' computer courses.
Core Sample Inventory	Both		
-Phase 5: Installation of SAMUTL Vax Core Sample Database program at ECR and WCR		**Complete***	
Upgraded Appletalk Network on Ship	Ship	**Complete***	Upgrade networking capability on ship to provide 10Mbps service to all PCs and Macintosh units.
d Ethernet network cards shipboard PCs and Macs	Ship	**Complete***	Upgrade PCs and Macintosh microcomputers with Ethernet cards to provide faster network speed.
Added 'scratch' server to Shipboard network	Ship	**Complete***	Added an additional server with 1 gigabyte hard disk to provide more space for file sharing and storage as well faster file retrieval/storage speed for scientists.
WSTP (Water Sample Temp. Prob) - Phase I	Ship	**Complete***	Water Sample Temperature Probe application software.

000312

Computer Services Group
Task Status Report
03/01/92

Application Name	Ship/Shore Usage	Status	Expected Compl. Date	Comments
Core Sample Inventory	Both			
- Phase 4: Conversion of Shipboard SAM to PC with enhancements similar to those for REPOSAM		Development	May 1992	Application currently running on PRO350 and will be converted to IBM PC compatible unit.
- Phase 6: Further automation of residue and inventory tracking.		Analysis	To be determined	
- Phase 7: Implementation of bar code printing and reading for sample IDs.		Pending	To be determined	
Water Sample Temperature Probe (WSTP) - Phase 2	Ship	Pending	To be determined	Software enhancements for temperature probe developed under the Windows 3.0 environment on the PC.
Physical Props (strength, index props, discrete sample GRAPE, velocity)	Both	Development	May 1992	Development of a new Physical Properties Data Collection application program.
Paleontology Database Update Program	Both	Pending	To be determined	Loading of PC entered Paleontological data into S1032 data sets and post-processing. Further work on hold pending acquisition of an acceptable data entry program.
Utility Libraries	Both			
- Phase 2: Make CSG utility libraries available to users with appropriate documentation; supply other utilities as requested.		In Progress	To be determined	Documentation is being upgraded on a time-available basis.
Integration of Logging & Corelog data aboard the Resolution	Ship	In Progress	To be determined	This is currently being done on some legs by shipboard scientists with assistance from the shipboard system managers. It is expected that a full needs analysis and design effort will be forthcoming.
Evaluation of alternate data base management systems	Both	Pending	To be determined	
Develop and Improve User Interface to Computers	Both	On-Going		
Development & teaching of computer courses for ODP computer users	Both	On-Going		Provide computer short-courses to ODP personnel on Vax, IBM, and Apple computers.
User software support and maintenance of micros	Shore	On-Going		User support for software applications, application installation, and maintenance of microcomputer hardware and peripherals.
Network Monitoring and Support	Shore	On-Going		Monitoring and correction to problems encountered on ODP LAN. Enhancements as needed to enhance operation and efficiency.
Daily Support of Shore Computer Systems	Shore	On-Going		Day-to-day operations and support of shorebased computer systems and peripherals.

IHP April 92. Appendix E

Curation and Repositories
January 1991 - December 1991

I. Repository Sampling Statistics

A. Average yearly sample distribution from the repositories under DSDP vs. ODP

23,230/year under DSDP (1976-1984) versus 44,368/year taken under ODP (Jan 1985-December 1991; based on ODP total to date of 266,205. Average # samples taken per year under ODP is 48% greater than under DSDP (i.e. an average of 21,138 more samples are taken per year under ODP).

B. Total sample distribution (January 1991- December 1991) is 66,147. Breakdown of sample distribution by repository (East Coast Repository= ECR Gulf Coast Repository= GCR and West Coast Repository= WCR) is as follows:

ECR =18,756 (all subsequent)
GCR = 35,633 (23,558 shorebased, 10,928 subsequent)
WCR = 11,758 (all subsequent)

C. Total number visiting scientists at each repository (includes sampling, describing and photographing cores)

ECR = 100
GCR = 73
WCR = 44

D. Average request approval turnaround by the Assistant Curator's office is:
1.4 weeks

E. Non-Visitor average sampling turnaround (based on date received at ODP until samples are sent):

ECR = 4 weeks
GCR = 2 weeks
WCR = 3 weeks

F. The GCR held its first high resolution post cruise sampling party during 20-26

Ocotober 1991. A total of 15,475 samples were taken by 20 visiting scientists and the repository staff.

II. Shipboard Sampling Statistics

Total sample distribution (January 1991 - December 1991) is 43,059. Breakdown of sample distribution by leg is as follows:

```
Leg 135 =  6,408
Leg 136 =    750
Leg 137 =     82
Leg 138 = 21,138
Leg 139 =  8,344
Leg 140 =    844
Leg 141 =  5,593
```

III. The Curation Project and the Recuration Program

A. The Core Curation Project, initiated by DSDP in 1983 and continued by ODP until 1986, involved photography and in some cases, rephotography of all archive halves of cores stored at the ECR and WCR for Legs 1-65. Cores in whole round were split and labeled (including many igneous/metamorphic, zero and miscellaneous sections). At the ECR, all archive halves were cleaned and occasionally reconstructed when time allowed. At the WCR, all archive halves were cleaned and reconstructed. Cores were intermittently rephotographed by ODP when necessary in order to complete this project. The end result of this work can be seen on the ODP video disc. A steady state was achieved in January 1989.

B. The Recuration Program was initiated by ODP in 1985 in an effort to combat the advanced state of deterioration of many cores due to expansion, desiccation, heavy sampling associated with lack of proper curatorial maintenance, and poor initial shipboard curation. If necessary, restoration of the core sections is performed by the permanent staff of each repository when a section is being sampled for a request, however, this process slows the sampling process tremendously. Sponges stored with the cores are always refreshed when a core is sampled. In order keep sample output high and also maintain the cores, a full fledged Recuration Program is proposed (Appendix A). At present the Program exists in the summer months only, when student labor is readily available. The following is the work that has been accomplished to date.

mmw = #man months of work
done = #man months completed

	ECR mmw	ECR done	GCR mmw	GCR done	WCR mmw	WCR done
1. rewet sponges*	0	12	3	3	4.0	1
2. recurate cores**	110	4	65	1.5	53	1
3. inventory thin sections/smear slides***	.5	-	-	-	4	1
4. curate frozen OGs****	-	-	4	1	-	-
5. curate frozen dedicated cores****	-	-	1	.5	-	-

* suggested sponge rewetting schedule is every two years
**(ECR/GCR=archive & work, WCR work only)
*** Not applicable to GCR which continues to receive thin sections and smear slides while ship is in the Pacific/Indian Oceans.
**** Not applicable to the ECR which does not house frozen OGs or frozen dedicated cores. The WCR, which houses all DSDP OGs, is caught up.

IV. Geriatric Core Study (GER)

In January 1988 IHP and PCOM endorsed a request to collect cores of convenience to monitor the changes (if any) which occur in cores while they are stored in the DSDP/ODP repositories. As of this writing eight cores have been collected for use in the Geriatric Study. No additional cores intended for use in the Geriatric Study have been added to the collection since the last report to the IHP.

A. Collected Cores

2 GER cores from Leg 119 (Kerguelen Plat.) are stored at ECR
3 GER cores from Leg 124E (Luzon Straits) are stored at GCR
1 GER core from Leg 132 (Shatsky Rise) is stored at GCR

B. Status of Geriatric Core Sampling

Sampling of Leg 119 from the Kerguelen Plateau was done in February 1992.

V. Communication with the Scientific Community

All three repositories now have readily accessible fax machines. Scientists with requests for information or those having questions about sample requests are encouraged to communicate freely with the repositories and the Assistant Curator via fax or electronic mail. The possibility of implementing an electronic mail "forum" as suggested in the minutes from the March 1991 IHP Meeting, for the purpose of requesting samples is being explored by the Assistant Curator. The fax numbers and email addresses are:

Assistant Curator fax = 409-845-4857, email address = CHRIS@TAMODP.BITNET
ECR fax = 914-359-5262, email address = ECR@LAMONT.LDGO.COLUMBIA.EDU
WCR fax = 619-534-4555, email address = WCR@ODPWCR.UCSD.EDU
GCR fax = 409-845-4857, email address = GCR@TAMODP.BITNET

VI. Computer Status

A. Communications

1. File transfers- Routine file transfers are being made between the repositories and the Assistant Curator using FTP (file transfer program). In addition, the repsitories have the added flexibility of transferring files with KERMIT via modem.

2. Computing environment, new computer installation and networks- Five program versions at the ECR and WCR were updated. The updates will speed file transfers and allow the use of error checking programs which have been, or will be installed on the remote systems. The utilities were activated first at the WCR with an on-site visit by a representative of the Computer Services Group, and then remotely at the ECR after WCR testing was completed.

B. Sample Investigations Database (SID)

1. Sample Requests (January-December 1991)

Requests processed = 552
Requests coded and entered = 3,333
Backlog of requests to code as of 31 December 1991 = 2,698

2. Data entry of the bibliographic reprints are at a steady state. All published ODP Scientific results and part A papers have been entered. All reprints from the outside journals that authors have sent ODP are entered.

Reprints entered = 2,525

C. DSDP Bibliographic Database (Curation assumed responsibility in May 1991)

As of 31 December 1991, the Initial Reports of the Deep Sea Drilling Project through volume 96 have been entered.

D. Sample Records Data

All ODP shipboard sample records are recorded in real-time and are available in a computerized database during the cruise. Recent improvements to the shipboard system includes the addition of the request number and request part providing a clear link to the sample request datasets. Several reports are made available to the scientists. DSDP sample records have been cleaned up and loaded into searchable datasets. They will be used to ease the task of residue inventory. The sample records datasets are used to determine the extent of sampling across specific intervals in a core. These records can be linked to SID which contains detailed information about the proposed studies, the investigator and the resulting papers.

DSDP Sample Records have reached a steady state.
Legs 100-141 shipboard sample records uploaded and on-line.
Legs 1-135 subsequent sample records are uploaded.

E. Thin Section Database (TSD)

The TSINFO (Thin Section Information) dataset and its user interface program were modified per specifications provided by ODP thin section technicians and repository staff. Changes should make it easier to inventory and track ODP thin sections.

Steady state achieved for ODP thin section data entry.
Upload DSDP (Legs 64-96) thin sections inventory (mmw = 6).

F. Repository Sampling Database (REPSAM) - the backlog of sample request data entry from all repositories has been entered using REPSAM.

Sampling in the repositories is quite different than sampling in the shipboard environment and as such, requires computer programs which address special data entry needs. With the completion of the beta version of REPSAM, scientists now receive sample inventories with calculated sub-bottom depths and when requested, electronic copies of sample data. The Computer Services Group installed the customized SAMUTL, the VAX based package of utilities that allows uploading, searching, editing and report writing, and installed it on the ECR and WCR microVAXes. The problem of electronically transferring "uploaded" sample data from the remote repository microVAXes to ODP/TAMU datasets has yet to be resolved.

G. Section Log Dataset

This dataset is designed to keep a record of the history of core sections which require curation or have experienced a noticeable change from the original state as recorded in barrel sheets or core photographs. In addition, it will contain information on critical or rare material in the cores. It is intended to supplement the core-specific information stored in the CORELOG database.

The SECTIONLOG dataset's user interface program has been rewritten. The beta version of the program has been tested and debugged. A user's guide is in preparation by the curatorial staff.

Testing and debugging = 1 month of curatorial staff effort
Data entry of backlog = 12 mmw

H. Other computer related enhancements

1. New sample/D-tube labels were produced. The new labels are slightly larger, contain no printed horizontal line (previously used to separate the core information from the sample interval and ID number), and are printed on a wider backing. These changes make it easier to align the labels using a printer's feed mechanism and permits the user to peel one label off the backing without having to advance the labels. These new labels were manufactured in smaller stacks to hopefully reduce the problem of labels sticking to each other as they are being fed into a printer.

VIII. Curation and Repository Improvements

A. West Coast Repository

1. The new lab construction is slowly taking place. The floor tiles and heat pump have been installed. The additional electrical and plumbing work remains to be done. The last order of new core racks has been received and will be installed as time permits. The new core racks will allow the WCR to gain some additional space for the storage of residues and other miscellaneous collections. Archive and work halves of each core are now stored in the same rack.

2. The trailer used for bulk stores has been moved to a temporary location until its final location can be prepared. The final location will be behind two locked gates and should be more secure than it has been in the past. It will be connected to power which will permit its emergency use as refrigerated storage.

3. The paper inventory of the core catcher and IW collections has been completed.

B. Gulf Coast Repository

1. (As of now) The TAMU Physical Plant completed a design specification for the expansion of the GCR's B118 core refrigerator. The specification was put out for bid - the construction contract was awarded to a local contractor (4D Mechanical). The contractor is currently procuring items necessary to complete the expansion. Actual construction is scheduled to begin in March, 1992 and must be completed by no later than 31 March 1992.

2. Five and ten year expansion plans for the GCR were completed. These plans included total square footage estimates based on expected future core recovery, potential floor plans, and a list of equipment requirements and costs.

3. A wall display depicting core flow from the JOIDES Resolution's drill floor to an ODP repository was completed and mounted on the east wall of the GCR's sampling area.

C. East Coast Repository

1. The recuration is continuing (both spot and systematic) on a full-time basis by a temporary worker. The present rate of recuration is: 170 sections/month

2. Planned summer projects utilizing student work force:

a. rewet sponges (2 years since last rewet)
b. inventory backlog of returned residues
c. inventory Leg 75 physical properties sections/samples
d. train student to do recuration (in addition to temporary worker)

3. Plans to expand the refrigerators to receive the Atlantic cores in March 1993 are underway.

D. New Sampling Tools

1. (As of now) A mold has been made to produce newly designed 5 cc/1 cm wide and 10 cc/2 cm wide plastic sample scoops. Initial design and production problems have been resolved; the mold and a special cooling fixture are now being used to produce scoops. These scoops will be useful for high-resolution sampling and for taking samples from intervals which were previously sampled using sample tubes. Because the scoops collect a significant amount of outer-core contamination, they will not be used to replace plastic sample tubes as the standard ODP sediment sampling tool.

2. U-channels used to take continuous samples over long intervals were produced by GCR staff for use by French paleomagnetists during the Leg 138 post-cruise meeting. Based on advice received from Dr. Bob Karlin (University of Nevada, Reno), clear acrylic square tubing was purchased. One side of the square tubing was then cut off and the resulting inner edges were sharpened to produce "u-channels".

Appendix A

Budget for DSDP-Only Recuration Program

Action Item #3 of the March 1991 IHP Meeting asked for a "revised cost of core curation and reconstruction at the time cores are opened for sampling (limit to DSDP) cores." The following estimates are based on this request but also include costs to recurate all badly deteriorating DSDP cores at the ECR and WCR on a time available basis. That is, after the "recurator" has completed the task of recurating all cores scheduled to be sampled (both by repository staff and visitors) for a given period of time, that person will be assigned to recurate cores chronologically by leg, starting with the earliest DSDP legs. This is, in effect, what was done at the ECR during the summer months of 1990 and 1991 and at the GCR during the summer of 1990. This system worked well and should prove to be an efficient way to tackle this problem if resources are made available on a yearly basis using "left-over" DSDP funds.

	costs/yr	Total costs
ECR core recuration costs		
77 man months of work = 6.5 man years (72,640 sections)		
1. one full-time position (includes fringe costs)	$25,000	$186,799*
2. supplies	5,000	37,360**
WCR core recuration costs		
54 man months of work = 4.5 man years (40,000 working sections only***)		
1. two 1/2 time undergrad students(includes fringe costs)	$23,000	$113,111
2. supplies	5,000	24,589
TOTAL PER YEAR	$58,000	
TOTAL FOR PROJECT		$361,859

* Total cost for salaries includes a yearly 5% cost of living increase.

** Total cost for supplies includes a yearly 5% inflation increase.

***The WCR curated archive halves during the Curation Project (1983-1986). However, when recurating the working halves in the future, the corresponding archive half will have to be pulled so that comparisons can be made. In some cases, the archive half will also have to be recurated.

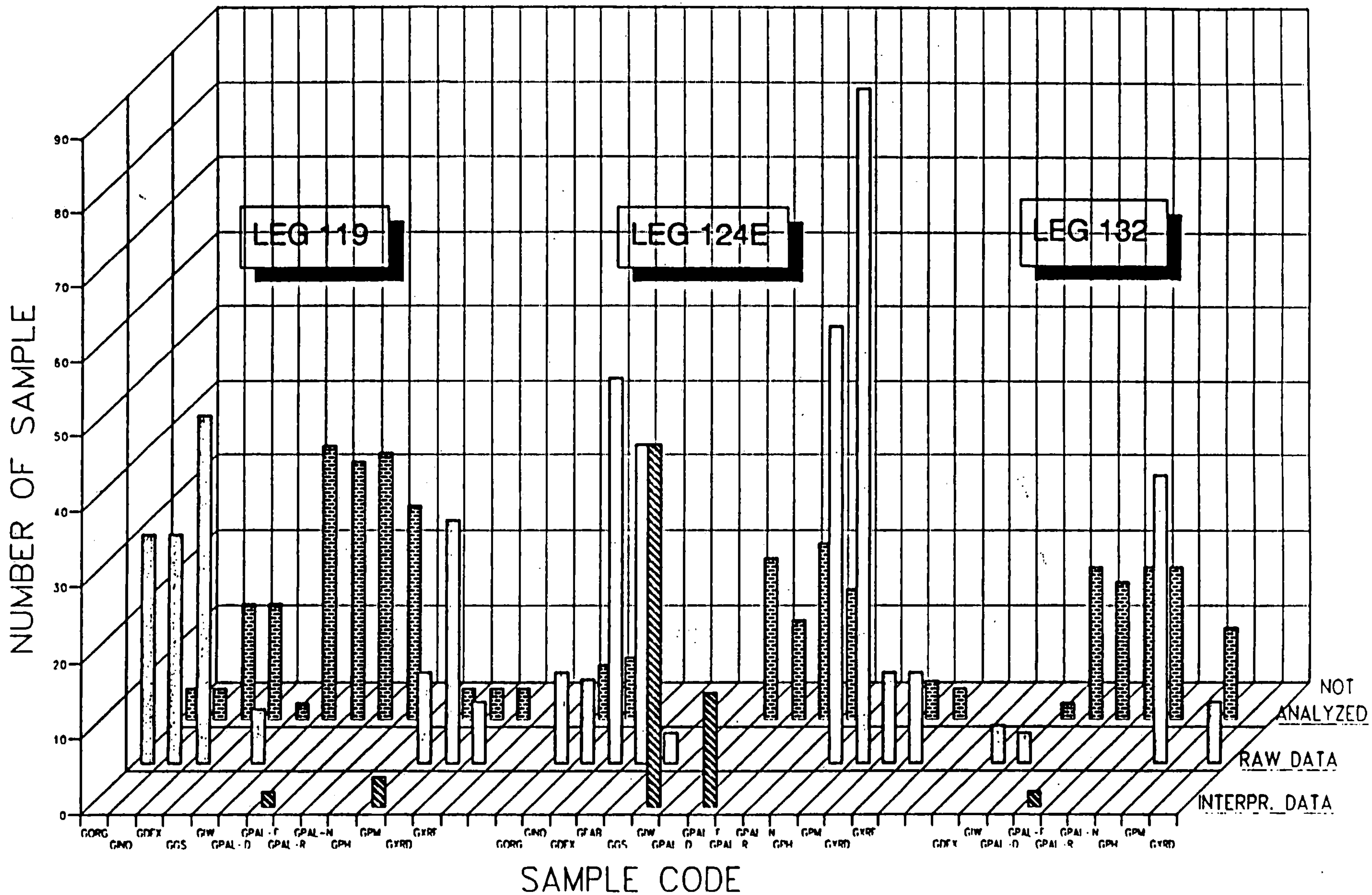
Appendix B

Geriatric Study
January 1991-December 1991

LEG	SAMPLE CODE	NOT ANALYZED	RAW DATA	INTERPRETED DATA
119	GINO	4	30	-
	GDEX	-	15	46
	GIW	-	2	7
124E	GORG	-	7	12
	GINO	-	8	11
	GFAB	-	42	-
	GGS	-	4	-
	GPH	-	58	-
132	GIW	2	4	-

NOTE: 137 samples were inadvertently left out in last reports statistics.

Geriatric Study: Bar graph of sampling statistics, analysis and interpretation of data



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PROGRESS REPORT

TITLE: Micropaleontological Reference Centers: Preparation and Distribution of Radiolarian Microscope Slides

PROJECT PERIOD: October 1, 1990 - September 30, 1992

AMOUNT AWARDED: $135,198

PRINCIPAL INVESTIGATOR: Annika Sanfilippo
Specialist in Paleontology
Geological Research Division
Scripps Institution of Oceanography
La Jolla, CA 92093-0220
Tel: (619)534-2049

AGENCY NO: JSC18-90. In response to RFP 90-1 Joint Oceanographic Institutions, Incorporated (JOI,INC.)

The contract includes sample preparation, distribution of slides, and selection of additional radiolarian samples for incorporation into the Centers' archives.

Sample Preparation. Approximately 2700 radiolarian samples have been taken from DSDP Legs 7-96. Strewn slides have been prepared from 2200 of these samples. The remaining 500 samples have not been processed yet. Of these, 120 samples are chert samples requiring special techniques to separate the radiolarians from the rocks. We will meet our goal of preparing all of the samples taken from DSDP Legs 7-96 by the end of the grant period.

Sample Distribution. Sets of the prepared radiolarian slides have been shipped to the eight Micropaleontological Reference Centers in boxes containing 100 preparations per box at approximately quarterly intervals. Records, suitable for incorporation into existing databases, have been kept of the received and prepared samples, distributed slides, whether or not a cleaned residue exists, and abundance and preservation of radiolarians on each slide. The slides have been examined to ensure consistency among the eight prepared sets, and that the preservation and abundance of the microfossils is representative of the sample.

Sample Selection. Two trips have been made to the Gulf Coast Repository in College Station, Texas to select 403 samples for radiolarians from ODP Legs 117-128. (1525 samples from ODP Legs 101-115 were selected and taken prior to this project period.) The samples have been taken, and are presently kept at the ODP Repositories until a decision is made to prepare the slides.

DEPARTMENT OF GEOLOGY
Head of Department Professor M. Brooks BSc PhD FRAS M.Inst. Geol

CARDIFF

University of Wales
PO Box 914, Cardiff CF1 3YE
United Kingdom
Fax (0222) 874326 (Department)
(0222) 371921 (College)
Telex 498635
☎ (0222) 874830

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Ans'd............

Dr J. Austin,
Institute of Geophysics,
University of Texas at Austin,
8701 Mopac Boulevard,
Austin, Texas 78759-8345,
U.S.A.

8th April, 1992

Dear Jamie,

SITE SURVEY PANEL MEETING, LDGO, 1-3 APRIL 1992

This is to follow up on items that were discussed at the LDGO meeting. Appended are the listings of Consensus and Action items that will accompany the minutes which are being mailed today.

Some action items that I have for you:

There was discussion over PCOM's idea that Kim Kastens should rotate off the SSP with the incoming of Greg Mountain also from LDGO. SSP's feeling is that our Panel is selected on an expertise basis and should not be primarily influenced by institutional representation. If SSP were to lose Kim and myself when I rotate off the Panel will lose all of its sidescan expertise at a stroke. We saw no reason why Kim should not complete her four-year SSP term (she is now at the two-year stage). So I was requested to write to you asking for PCOM to reconsider its suggestion.

At the end of the meeting, during discussions as to who SSP should recommend to PCOM as successor to myself when I leave the Panel at the end of the year, the conclusion was that Kim Kastens is our prime candidate. Greg Mountain was asked whether he would be prepared to take on the Chair again, but pressure of work as an up-coming Co-chief precluded this. So this

...../

possibly supercedes the action item above and our recommendation to PCOM is that Kim Kastens assumes the Chair from mid-December 1992 and thus will continue on SSP for a further three years. I hope you can persuade PCOM of the advisability of this appointment, since we all consider Kim would make an excellent Chairperson.

After a great deal of discussion on the heavy workload implied by the data packages that we expect to receive by August 1, we came to the conclusion that our next meeting should again be at LDGO and the dates should be 4,5,6 August if we are to provide PCOM with some guidance for the 1994 prospectus preparation by the following week. The first day of the meeting will be for viewing of data packages, while days two and three will concentrate entirely on the twenty plus proposals for 1994 drilling. We will dispense with the usual reports as much as possible and will send to PCOM an up-dated version of the appended Spring consensus list.

Best regards,

Rob

Professor R.B. Kidd,
Chairman, JOIDES Site Survey Panel.

Encs: April SSP Consensus

JOIDES Site Survey Panel Meeting, LDGO, April 1992

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EXECUTIVE SUMMARY

The main charge for the Spring'92 Site Survey Panel meeting was:
1. Detailed assessment of submitted data for FY'93 North Atlantic drilling;
2. Initial assessment of proposals for potential FY'94 drilling taking account of the recent Spring thematic panel global rankings.

Discussions at LDGO and assessment of the data packages submitted and of the ranked proposals resulted in the following consensus items:

SSP Consensus 1: At this Spring'92 meeting SSP will consider initial assessments of the top 25 "drillable" proposals from the thematic panel's global rankings of March 1992.

SSP Consensus 2: Drilling into tectonic windows is a new strategy, and the community is still in the process of learning what kinds of survey data are useful or vital. SSP invites continued input from the Offset Drilling Working Group, and from proponents, surveyors and Co-Chiefs involved in early offset drilling legs. SSP anticipates continued problems over requests to drill deep holes (>500m) at sites where there is no sub-bottom data; proponents are urged to explore all possible techniques for obtaining clues to subbottom structure and igneous stratigraphy prior to drilling.

SSP Consensus 3: For Leg 145 N.W. Pacific Neogene SSP reiterates its recommendation that the co-chief scientists ensure that high quality seismic lines are run over the NW-1A, 3A and 4A drillsites by JOIDES RESOLUTION prior to drilling.

SSP Consensus 4: There was no visit to Hess Deep on Leg 140 but the full data package that was compiled pre-cruise by co-chief Henry Dick should be submitted to the Data Bank as part of the package for Leg 147 and potential future Hess Deep Legs.

SSP Consensus 5: For Leg 149 NARM-Non Volcanic Margins most data are in the Data Bank. However, SSP noted two deficiencies in the data submitted (i.e.3.5 kHz profiles and core data) that are known to exist. Because these data relate to setting of cones for re-entry, proponents are asked to submit 3.5 kHz profiles or equivalent and core data as soon as possible. Proponents are also asked to provide details on how they estimated sound velocities at each projected site.

SSP Consensus 6: The proponents of Leg 150 New Jersey Margin Sea Level are urged to examine the industry sparker/boomer lines for indications of shallow gas pockets before the next PCOM meeting. SSP should consider amending the guidelines to require sparker/boomer data for drilling in extremely shallow water. The proponents are reminded of the need to submit the remaining "required" data types (3.5kHz and seismic velocities) as well as any available data of the "desirable" types to the Data Bank before August 1.

SSP Consensus 7: Much of the required data for the NAAG I Leg 151 drilling, including alternate sites, is now in the Data Bank. These minutes record where proponents are asked to submit minor items of site specific data. SSP make the following specific recommendations:

1) NAAG proponents should reconsider placement of drill sites at or near Yermack Plateau in the light of new Arctic IV data.
2) New Polarstern data for YERM-2, YERM-3 and FRAM-1A and 1B sites should be processed to clarify whether BSR's exist.
3) The possibility of BSR's is flagged for PPSP attention and TAMU is alerted to the potential of strong currents at a number of these sites.

SSP Consensus 8: Most survey data has been lodged in the Data Bank for NARM-Volcanic Margin drilling on the East Greenland Margin, Leg 152. SSP provided advice on leg lines to be collected on the upcoming Larsen cruise and requests that collection of 3.5 kHz and core data important to operational considerations be pursued by proponents (White cruise summer '93?) A compilation of sonobuoy velocity data relating to TD estimates is requested. TAMU is again alerted to the importance of obtaining water current data.

SSP Consensus 9: SSP thanks the proponents for the excellent MCS data recently submitted to the Data Bank in support of Alboran Sea drilling, and encourages deposition of additional "required" and "desirable" data types as soon as the merger of proposals 323/rev and 399 is completed. SSP is concerned about the possible presence of Messinian evaporites, which could pose a safety problem; we consider that the burden of proof remains on the proponents to make a case that drilling in the deep Alboran Basin has a reasonable chance of reaching the proposed early and middle Miocene objectives without being stalled by Messinian evaporites.

SSP Consensus 10: Proponents of the Mediterranean Ridge proposal 330 have revised their drilling strategy into shallow and deep objectives. SSP considers that update by August of data in the Data Bank from previous Mediterranean drilling legs will probably result in a sufficient package for shallow drilling objectives. Yet to be acquired MCS data will be required in support of any new deep objective proposal.

SSP Consensus 11: Almost all the data is collected and available in support of Equatorial Atlantic proposal 346-Rev2 and processing will be complete by summer 1992. SSP recommends that PPSP take a opportunity to pre-review this data package with proponent J. Mascle at its London meeting, which could ascertain whether heat-flow data is a requirement.

SSP Consensus 12: SSP reiterates its contention that there exists already a substantial database on TAG that could be compiled as an initial site survey package in support of proposal 361-Rev. Proponents are urged to begin lodging these data with the Data Bank even though some key data is still to be collected on cruises proposed for 1993.

SSP Consensus 13: A sufficient data set for the proposed eight shallow APC/XCB sites on Ceara Rise is likely to be available after September '92 although existing data in proposal 388 is poor. SSP will be thus unable to comment further in August but can arrange for a review of the new data by an SSP member, probably in November.

SSP Consensus 14: Based on the proposal only, it seems that all necessary site survey data is available to support Continental Margin Instability proposal 059 Rev. SSP awaits deposition of this Site Survey data package at the ODP Data Bank for further review in August.

SSP Consensus 15: SSP awaits submission by the August 1 deadline of data in support of specific drillsites in the Mediterranean Sapropels proposal 391. It notes that there is a reasonable chance that sufficient data may already exist in Europe and in the Data Bank from previous Mediterranean drilling.

SSP Consensus 16: SSP awaits a compiled package of existing MARK (Proposal 369 Rev) data to be deposited in the Data Bank but notes that other data to image the deeper structure may still be required to meet the objectives posed.

SSP Consensus 17: SSP urges that a preliminary package of existing Vema FZ, proposal 376-Rev, data should be lodged with the Data Bank but notes that potentially critical sidescan data will not come available until a cruise in 1993.

SSP Consensus 18: Most of the necessary data probably exists or will be collected in 1992 for NAAG-II additional Arctic Gateways drilling and may be ready for assessment in Spring 1993 but not for August assessment. The proponents are urged to begin submitting identified as existing but still outstanding data to the ODP Data Bank.

SSP Consensus 19: SSP was generally impressed with data submitted to the Data Bank in support of the Newfoundland Basin DPG proposal (NARM-DPG). They flagged minor deficiencies (lack of sediment core and water current data) that may be required for operations. SSP recommends that PPSP carry out a pre-review of these sites and NB-1 in particular. The Panel provided proponent Srivastava with advice on the design of tracks for a summer 1992 survey cruise and PPSP's input should also be sought before that cruise.

SSP Consensus 20: Most data required in support of proposed Voring Plateau (NARM II) drilling appears to exist and may reside in the Data Bank. Proponents are urgently requested to update this data package by August 1. No data has been submitted for SE Greenland sites in this

Non-Volcanic margins proposal. No problems are anticipated gathering data for EG66-2 but EG66-1 may be problematic because of its thick sediment cover (possibly problematic to operations) and present lack of 3.5 kHz and core data in the area.

SSP Consensus 21: There is adequate data with which to frame the Western North Atlantic Drifts proposal 404 and to locate the optimal core locations, but the requisite data search has yet to be done. The identification of optimal drill site locations on high-resolution SCS and 3.5 kHz records requires special expertise that may be best supplied by a third proponent on this proposal; the proponents are encouraged to enlist the contribution of such a person.

SSP Consensus 22: SSP is impressed by the apparently extensive dataset that exists in support of shallow drilling on the Amazon Fan. The Panel recommends that the proponents not only complete their processing of existing 40 cu. in. airgun records in support of Amazon Fan proposal 405 but also investigate whether further SCS data can be collected on the upcoming Mountain Ceara Rise cruise in September 1992. SSP is concerned about sites AF-4 and 5, aiming to penetrate a major debris flow unit, which have only single crossing lines along with a group of relatively deep sites (AF-7-11) which again have no crossing lines.

SSP Consensus 23: The quality of the seismic data offered for the sites in North Atlantic Climate Variability proposal 406 is at present insufficient for the drilling proposed, but satisfactory data can probably be compiled from old DSDP surveys or from IOSDL (UK) files. Proponents are urged to carry out this compilation prior to the August 1 deadline for data submission.

SSP Consensus 24: The geophysical data outlined in the proposal for studies of the Benguela Current and the Angola/ Namibia upwelling system (354 Rev) are apparently insufficient in terms of SSP's guidelines, although the Panel notes that there is a potential for much more compilation of existing data from South Africa and institutions outside Europe. SSP recommends that the proponents plan upcoming site survey activities to satisfy its guidelines and notes that abundant SCS and 3.5 kHz or Parasound lines will be required to select sites in this area unaffected by erosion and mass wasting.

SSP Consensus 25: For the North Barbados Ridge Proposal 414 SSP notes that two of the proposed sites to penetrate the decollement are at the locations of ODP Leg 110 sites 671 and 672 and thus there are no further survey requirements. One of the sites, NBR-3, is also planned to penetrate the decollement but further survey data in support of this site is likely to be required for August 1. However, a 3-D seismic cruise scheduled for June '92 is probably going to fill in any required data gaps.

SSP Consensus 26: SSP will contact the two sets of proponents involved in KT boundary proposals 403 and 415 directly and urge that they consolidate their proposals into one submission for purposes of compiling the Site Survey Data package. SSP underscores the need to reduce as much as possible the chance that the K/T boundary event is missing at any site

SSP Consensus 27: The status of survey data for Sedimented Ridges II (DPG Report) drilling is unchanged since previous SSP assessment. The Panel is still recommending additional heat flow and near-bottom sidescan data be collected in Escanaba Trough, but most other site survey requirements have already been met.

SSP Consensus 28: SSP eagerly awaits the results of the upcoming Dorman deep source/deep receiver refraction experiment, both to evaluate the potential for future Hess Deep II scientific drilling at and to evaluate the utility of this techniques as a site survey tool for tectonic windows. SSP endorses the MCS, Parasound, magnetics and gravity surveys proposed for the Sonne in fall of 1992, and encourages the deployment of OBS's for seismic refraction measurements during this experiment if at all possible.

SSP Consensus 29: For the California Margin proposal 386 Rev most of the required data appears to exist and the Panel notes that three of the sites are projected re-drillings of old DSDP sites. SSP looks forward to reviewing the full data package compilation at its August 1 meeting, and urges proponents to investigate before the availability of crossing SCS lines for each site.

SSP Consensus 30: A nearly complete data set appears to exist for Middle America Trench Proposal 400, including 3-D MCS and swath mapping data. SSP urges proponents to obtain heatflow data which may be required for safety evaluation and in support of fluid flow objectives.

SSP Consensus 31: There are no site survey requirements for further drilling at Site 504B.

SSP Consensus 32: For the Santa Barbara Basin one-site proposal (409), SSP considers that more effort is required in compiling the survey data package for this drilling, particularly since there may be operational and safety problems in drilling in this area. Proponents are urged to submit the data to the Data Bank as soon as possible and notes that 3.5 kHz lines may be required for safety review.

SSP refrained from making any revisions of its Survey Guidelines to take account of Tectonic Window and BSR drilling at this time, judging any modifications to its February '92 (JOIDES Journal) set to be premature since more information is required in a number of areas

The next meeting of SSP is planned to take place at LDGO on 4-6 August immediately after the August 1 deadline for submission of data in support of proposals for FY'94 drilling. Proposals which successfully pass these assessments will become candidates for the 1994 Prospectus to be decided by PCOM at its mid-August meeting.

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Lou Garrison opened the meeting by requesting self introductions from and circulating a signature list to attendees.

Tim Francis reviewed drilling results since the last PPSP meeting. Hole 504 B, Leg 140 now exceeds 3 km in sub-bottom depth, constituting the deepest hole in ocean crust. Drilling in the Chili Triple Junction, Leg 141, resulted in 3 penetrations of bottom simulating reflections (BSR's). Only small amounts of gas were encountered. Some heavier hydrocarbons (gas) were detected. These occurrences are consistent with the high geothermal gradients of the region. The secondary heave compensater failed to work during deployment of the diamond coring system (DCS) on leg 142 with the result that bits were pounded to pieces.

Francis submitted corrected locations and penetration depths for a number of Leg 143 and 144 at all drill sites. The corrected information is included here as table 1 (a) and (b) and constitutes an amendment to the minutes of the PPSP meeting of 10/24/91 of SIO in San Diego. The minutes of the October meeting were otherwise accepted.

Nathan Bangs, Chile Triple Junction, Leg 141, seismologist, led a detailed discussion of the BSR drilling. At site 859, no solid hydrates were recovered, no voids were observed which might have contained subsequently melted ice, and cored material did not contain any visual evidence of variations that could cause BSR's. Freshening of pore water just above 100m sub-bottom depth could be ascribed to as geochemical evidence for melting of clathrates in an amount equal to 25% of pore space, similar freshening occurred at the BSR level in hole 860. No logs were run. Analyses to date, principally based on geophysical data, regarding existence of free gas beneath the BSRs are ambiguous.

Bobb Carson and Graham Westbrook reviewed the regional geologic setting and scientific objectives > for leg 146 drilling on the Oregon-Vancouver accretionary prism. This program has been designed to study processes related to the structural style, physical properties, fluid movements, hydrology, and clathrates in this setting. The Chief Scientists expressed their opinion that potentially hydrocarbon bearing formations of Neogene age have been uplifted along the seaward stepping progression of the subduction fault zone so that they are structurally higher and isolated from the younger Plio-Pliestocene section to be drilled in this leg.

Graham Westbrook then led a site-by-site safety review of proposed drilling locations on the Vancouver Margin.

VI-1 Approved to a sub-bottom penetration of 600m or bit destruction at shot point 340 on seismic line 89-04.

VI-2 Approved to a sub-bottom penetration of 600m at shot point 650 on seismic line 89-04, with one dissent because tie lime for definition of structure is lacking at drill site.

VI-2a Approved to a sub-bottom penetration of 600m or bit destruction at shot point 735 on seismic line 89-04 with one dissent because of presence of a small fault near projected total depth.

VI-3 Approved to a sub-bottom depth of 600m at shot point 843 on seismic line 89-04. A penetration of a BSR in a structurally low position is expected at this site. Further processing of line 89-04 across this site is desirable. There was one abstention.

VI-3a Approved to a sub-bottom penetration on 600m at shot point 1050 on seismic line 89-04. A penetration of a BSR in a structurally low position is expected at this site.

VI-5, 5b, and 5c Approved to sub-bottom penetrations of 600m at: 48° 41.8' N and 126° 52.30' W; 48° 42.27' N and 126° 54.36' W; and 48° 39.82' N and 126° 56.55' W, respectively. Some panel members are concerned that, if reservoir conditions exist below the BSRs at these sites, hydrocarbons may be encountered. The majority of Safety Panel members feel that absence of bright spots or other signs of high impedance contrasts at ther BSRs suggests penetration of the BSRs is reasonably safe.

VI-5a Rejected due to location of the BSR at this site on a structural crest.

Bobb Carson then led a site-by-site safety review of proposed drilling locations on the Oregon Margin.

OM-2 Rejected because site is located on a fault-related closure.

OM-2a Approved to a sub-bottom penetration of 700m at 44° 44.42' N and125° 17.63' W.

OM-3 Approved to bit destruction 44° 38.59' N and 125° 19.57' W with one dissent. The dissent stems from the possibility that the fault penetrated at this site flattens with increasing depth and may form a trapping configuration due to the flattening.

OM-4 Approved to a sub-bottom penetration of 700m at 44° 40.44' N and 125° 17.63' W.

OM-6 Rejected. Seismic data quality is poor and possibility of trap related to faulting is suggested.

OM-7 Approved to bit destruction at 44° 40.45' N and 125° 07.23' W. Penetration of a BSR in a structurally low position is expected at this site.

OM-7b Approved to bit destruction at 44° 40.45' N and 125° 07.23' W. Penetration of a BSR in a structurally low position is expected at this site.

OM-8 Approved at shot point 632 on line OR-22. Seismic data obtained by the drill ship should be used with existing data to insure that this site is well off the crest of anticline at the level uppermost strong sub-bottom reflections.

OM-8a Approved to a sub-bottom penetration of 660m but moved 500m to the east along seismic line OR-25 to avoid a structurally high position.

OM-10 Approved to a sub-bottom depth of 600m at 45° 11.00' N and 125° 32.10' W. This site appears to be structurally low.

David Rea the lead a site-by-site safety review of proposed drilling locations on Leg 145, the North Pacific Neogene Transect and Patton Murray and Detroit Seamounts.

000338

NW-1a Approved to basement at 47° 06' N and 161° 30' E. This site is located in a region of thin cold immature, and oxidized oceanic sediments.

NW-4a Approved to basement at 44° 43' N and 168° 17' W. Sediment section like NW-1a above.

DSM-1 Approved to basement at 51° 11.8' N and 167° 44.7' E. This site is structurally low.

DSM-2 Approved to a sub-bottom penetration of 300m at 51° 05.6' N and 167° 51.6' E. This site is structurally low.

DSM-2a Approved to a sub-bottom penetration of 300m at 50° 12.4' N and 167° 45.6' E. Two abstemptions because of structurally high position.

DSM-3 Approved to a sub-bottom penetration of 300M at 50° 21.0' N and 167° 36.9' E. This site is off structure.

DSM-4 Approved to a sub-bottom penetration of 800m at 51° 32.7' N and 168°19.5'E. This site is off structure.

PM-1a Approve to a sub-bottom penetration of 350m at 54° 21.9' N and 148° 27.3' W. One abstemption because of structurally high location.

PM-1b Approved to a sub-bottom penetration of 340 at 54° 25.0' N and 149° 54.1' W.

PM-1c Approved to a sub-bottom penetration of 410m at 54° 22.3" N and 148° 54.1' W.

Greg Mountain led a preview discussion of Leg 150, The Mid-Atlantic Shelf Transect. Because the shallow water drilling (30-50m) proposed for this leg substantially increases possible safety and pollution problems it was decided that Ball, Francis, Garrison, and Barry Katz would attempt to assist Mountain in obtaining Mineral Management Service and oil company data to enable solution of sites free from shallow gas hazards. Austin requested information on these endeavers prior to the PCOM meeting of 20 April 1992.

The next PPSP meeting is tentatively set for 22-23 October 1992 in London.

000340

Table 1a. Leg 143 time estimates.

Site	Location: Latitude	Location: Longitude	Water depth (m)	Meters of penetration (sed/bsmt)	Drill (days)	Log (days)	Total (days)	Transit (days)
Honolulu	21°18'N	157°53'W						
ALL-A	18°27'N	179°32'W	1440	500/0	4.3	1.1	5.4	4.9
[1]HUE-A	21°19'N	174°18'E	1365	960/200	17.9	2.1	20.0	1.4
[2]HUE-B	21°22'N	174°18'E	1370	300/0	5.9	1.3	7.2	0.0
SYL-3	11°00'N	164°45'E	4800	850/0	8.8	1.7	10.5	3.3
[3,4]ANE-1	11°22'N	162°19'E	30	50?/0	1.3	0.0	1.3	0.7
Majuro	7°05'N	171°08'E						2.3
		Subtotals =		2660/200	38.2	6.2	44.4	12.6
		Grand total =		57.0 days				

Sites/tasks in Detailed Planning Group report that were cut, but will be done if time permits (in order of occurrence during leg):

Site	Task	Penetration	Drill	Log	Total
ALL A	Deepen hole through limestone and 50 m into basalt	385/50	4.0	0.7	4.7
	APC top 80 m	80	0.7	0.0	0.7
SYL-3	APC cores to 150 m	150	1.4	0.0	1.4

Note: transit times are calculated for a speed of 10.5 kt.
[1]Multiple reentry hole.
[2]Hard-rock guidebase site.
[3]Engineering test site.
[4]Anewetak test takes a total of 2.5 days of extra steaming plus operations.

Table 1b. Leg 144 time estimates.

Site	Location Latitude	Location Longitude	Water depth (m)	Meters of penetration (sed/bsmt)	Drill (days)	Log (days)	Total (days)	Transit (days)
Majuro	7°05'N	171°08'E						
								0.5
HAR 1	5°29'N	172°20'E	1500	500/50	5.3	1.3	6.6	
								0.1
HAR-2	5°33'N	172°21'E	1300	430/0	3.6	0.8	4.4	
								2.5
PEL-3	10°07'N	162°48'E	1080	455/50	5.3	1.3	6.6	
								0.7
SYL-1	11°59'N	164°56'E	1350	200/50	3.4	1.2	4.6	
								0.1
SYL-2A	11°54'N	164°56'E	1350	200/0	2.0	0.8	2.8	
								4.6
[1,2]MIT-1	27°19'N	151°53'E	1400	650/200	13.5	2.3	15.8	
								2.1
SEI 1	34°13'N	144°19'E	1550	125/50	2.5	1.1	3.6	
								1.0
Yokohama	35°28'N	139°34'E						
		Subtotals =		2560/400	35.6	8.8	44.4	11.6
		Grand total =		**56.0 days**				

Sites/tasks in Detailed Planning Group report that were cut, but will be done if time permits (in order of occurrence during leg):

[4]SYL-4	12°04'N	164°58'E	1390	200/0	5.0	0.9	5.9
Hole 801C	18°39'N	156°22'E	5674	0/0	[3]1.3	[4]2.0	3.3
[2]SEI-2	34°14'N	144°20'E	1450	250/50	6.4	1.1	7.5

[1] Multiple reentry hole.
[2] Hard-rock guidebase site; proposed by Co-Chief Scientists following the Detailed Planning Group meeting.
[3] 18 hr for site location, pipe trip down and reentry; 14 hr for pipe trip up.
[4] Standard Schlumberger runs in 132 m of basement, stress magnitude test with drill stem packer, borehole televiewer, and Japanese magnetometer.

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Shipboard Measurements Panel *20-22 March 1992*

EXECUTIVE SUMMARY

SMP visited the ship at the port call in Honolulu and thus, focused the discussions on individual laboratories. The panel was impressed with the new core laboratory layout. The panel congratulates the technical and science staff for a job very well done. The new configuration provides much better core flow and space for future acquisition of systems, such as the split core MST. In addition to its review of individual laboratories, SMP discussed the implementation plan for core-log data integration, the ODP DataNet proposal, new technologies (CATSCAN and Infrared spectroscopy), methods for sediment analyses using the XRF, and the recommendations of the Data Handling Working Group. The panel also reviewed the equipment priority list, making some changes.

The panel again found the ship visit to be very productive. There is no substitute for 'hands-on' and much information was exchanged between the technical staff and SMP members. SMP recommendations are listed below grouped in categories of: laboratory specific recommendations, recommendations related to safety; recommendations on core-log data integration; the recommendation on ODP DataNet Services; and recommendations specific to upcoming legs. Finally, this summary list includes the revised SMP equipment priority list.

Laboratory Recommendations

The panel recommends that the cryogenic software be completed for use on Leg 145 (92-1 to ODP/TAMU).

SMP restates the need that technical staff must have shorebased training prior to sailing and should remain in a specific laboratory for at least 8 legs (92-3 to ODP/TAMU).

SMP recommends that sailing petrologists should be told that only Tungsten-Carbide grinding vessels are available on the ship, but that they are welcome to bring other types of vessels for use during their leg. (92-4 to ODP/TAMU)

SMP recommends that programming software (preferably C) be added to the list of supported software for the Macintosh computers (95-6 to ODP/TAMU).

SMP recommends the acquisition of the Minolta colour measurement instrument for quantitative measure of L*a*b and Munsell colour on core samples (92-7 to BCOM - see priority list).

SMP recommends that a few samples are sent to Corelabs for infrared mineral analyses (92-8 to ODP/TAMU) to evaluate the IR method.

SMP recommends the acquisition of a workstation for digital seismic data acquisition and processing (92-9 to BCOM - see priority list).

000344

Safety Recommendation

SMP recommends that assessment of AC fields as a potential human health hazard take place as soon as possible or at the latest, during the next port call for Leg 144 (92-2 to ODP/TAMU).

Upcoming Legs

SMP recommends adoption of the procedures for XRD sediment analyses for Legs 143 and 144 as proposed by M. Rhodes which include using standard procedures for trace elements and using fused samples for major element analyses with matrix corrections. The use of pressed powders should not be used until the methods have been investigated and appropriate software developed. (92-5 to ODP/TAMU)

The panel was dismayed to learn the pore pressure component of the WSTP had been removed for reasons that are not acceptable (calibration problems). This is the only standard tool which measures pore pressure and all components of the tool are essential to the success of Leg 146. SMP recommends immediate action to re-install the pore pressure transducer into the WSTP, calibrate the tool so that it is reliable and ready for Leg 146 (92-10 to ODP/TAMU and PCOM)

Core-Log Data Integration

The TOTCO system was reviewed. This system is supposed to provide real-time drilling parameters. However, none of these parameters are available in real-time. The panel agrees that these data are important for core-log data integration because some of these data are required for use with the SCM which is a key component for data integration. **SMP recommends that development of the real-time drilling parameters data acquisition system should be put back on the list of engineering developments (92-11 to ODP/TAMU; PCOM).**

The panel recommends the acquisition of the Corpac software as the shipboard core-log data correlation tool. Current available versions of Corpac require the provision of a manual and some modifications to meet the specific requirements of shipboard data correlation. The panel agrees that these modifications should be performed by the author of the software with support from the ODP. Once this software is acquired, a minimum of one technical staff member must have formal training using this software tool for each leg. Training at an appropriate level must also be provided for the sailing core-log data correlation specialist (92-12 to ODP/TAMU; PCOM).

Data Handling Working Group

SMP endorses the recommendations of the DHWG report. The panel wishes to emphasize to the Planning Committee that this initiative represents a significant, additional level of effort and cannot be completed by the operator under the current budget level. The panel is concerned that this activity will be looked upon as something that can be completely contracted out. Although the panel agrees that significant parts of this activity can be performed outside of the existing contractor(s) through subcontracts, the computing system is a central activity of the ODP and therefore must remain the responsibility of the lead contractor. SMP **recommends the following:**

The area of shipboard computing as a facility for data handling is a central activity of the ODP. As such, the recommendations of the JOIDES Data Handling Working Group should be implemented under the direction of the Science Operator, advised by a specialist JOIDES steering group for development of the new computing system. The JOIDES Computing Steering Group, in conjunction with the Science Operator, will serve as a technical forum for monitoring and reviewing software developments, especially those arising through external sub-contract and other third-party inputs from the ODP community (92-13 to PCOM).

ODP DataNet Services

SMP supports the overall direction of the proposal for DataNet Services. Specifically, SMP agrees that real-time shipboard data processing capacity has in some labs reached its limit (e.g. downhole measurements), thus requiring some level of shore-based support. The panel envisions that there will be an increasing need for shore-based data processing support, particularly for cases where operational decisions are required, and to handle large shipboard-measured datasets (e.g. images or VSP). Although these needs can conceptually be met with a system such as DataNet, the panel emphasizes the requirement that any and all shore-based processing 'nodes' must be set up as a service to the shipboard science operations. The concept of an on-line database for readily accessing ODP and other related data is excellent. The database specifically proposed (GeoBase) is not truly a database, but a database browser specific for geographic information. The 'proposal' does not address the real requirement of a functional relational database which is an essential requirement for both shipboard and shore-based science. The panel encourages submission of a more detailed proposal for review (92-14 to PCOM).

SMP Equipment Priority List

- **Core-log data integration needs:**
  - **a) natural gamma and MST upgrade**
  - **b) computer workstation**
  - **c) resistivity equipment for discrete core measurement**
- **Colour measurement instrument**
- **Bar code system**
- **Carbonate autosampler**
- **Seismic workstation**
- **Auto titration**
- **Seismic towing system**

000346

Shipboard Measurements Panel *20-22 March 1992*

DRAFT MINUTES

I Introduction

Members, liaison, and guests were introduced. Meeting participants are as follows:

J. Baldauf (ODP liaison)
R. Chaney (member)
R. Current (ODP liaison)
P. Dawson (guest)
J. Fox (PCOM liaison)
D. Goldberg (guest)
J. King (member)
K. Moran (member, chair)
M. Mottl (member)
M. Rhodes (member)
A. Richards (member and liaison to IHP)
E. Thomas (member)
H. Tokuyama (member)
J.P. Valet (member)
R. Whitmarsh (member)
P. Worthington (DMP liaison)

II Minutes from the sixth meeting were approved with one clarification

R. Whitmarsh and A. Richards will rotate off the SMP after the March '92 meeting.

III Business Arising

Paleomagnetics

J-P Valet and J. King reported that the move of the paleomagnetics laboratory was excellent. The ODP personnel should be commended for their efforts. There are still some needs in this laboratory which can be grouped into two categories (very short fuse requirements and long fuse items). Very short fuse items include (1) completion of the cryogenic magnetometer software; (2) re-configuration of the alternating field demagnetization coils; (3) shielding of the Walker Scientific magnetometer; (4) determination of the source and hazard level of the AC magnetic fields on the ship; and (5) completion of a core barrel magnetization study using the Walker Scientific magnetometer. One long fuse item is needed, a new more sensitive spinner magnetometer.

Very Short Fuse Items
It is critical that the key software developer (D. Bontempo) is allowed the time to finish the paleomagnetics software upgrade as soon as possible. This development has gone on for much too long. **The panel recommends that the cryogenic software be completed for use on Leg 145 (92-1 to ODP/TAMU).** The alternating-field demagnetization coils need to be reconfigured. The largest of the nested coils needs to be replaced by a smaller coil. This change should be made at the port call before Leg 145 by B. Gorree. The cost will be small because ODP already owns the necessary coils and installation can probably be accomplished in one day. The Walker Scientific magnetometer and probe must be shielded to be useful on the ship. AC magnetic fields interfere with the measurement of DC magnetic fields on the drill floor. Encasing the magnetometer in copper-bronze screening will provide the necessary shielding. The magnitude, location and sources of the AC magnetic fields (which were identified during the SMP ship visit)

must be determined immediately. These fields have been suspected to be human health hazards. Equipment for detection of these fields cost a few hundred dollars. SMP **recommends that assessment of these AC fields as potential health hazards take place at the next port call for Leg 144 (92-2 to ODP/TAMU).** A study of core barrel magnetization should be done with the shielded Walker Scientific magnetometer. Values should be determined for a used APC barrel, for a new APC barrel, for the drill pipe, and for the drill floor. If these studies indicate that it will reduce magnetic overprint, then core barrel demagnetizer must be constructed as previously recommended (SMP recommendation 91-7).

Long Fuse Item
A new, more sensitive spinner magnetometer should be purchased for the ship to replace the Minispin. A Czechoslovakian-made spinner is available for ~ $25k that will provide sensitivity comparable to the cryogenic magnetometer for weakly magnetized samples.

Physical Properties

A. Richards reported that the possibility of a physical property workshop to be held through ESF in cooperation with GEOMAR is not logistically feasible. The panel agreed that the workshop issues are still important and that they could be addressed during a special meeting of physical property specialists associated with an SMP meeting. **(ACTION: K. Moran to request a one day special meeting associated with the next SMP meeting)**

R. Chaney and A. Richards reported on the physical property laboratory. There are several concerns about the current condition of the laboratory. They reported that the physical property technician who is to sail on Leg 143 had no training and was out on the ship for the first time. Although the technician was enthusiastic and capable, her knowledge about the laboratory, due to lack of training, was poor. This laboratory is not a simple one and an untrained technician is unacceptable. **SMP restates the need that technical staff must have shorebased training prior to sailing and should remain in a specific laboratory for at least 8 legs (92-3 to ODP/TAMU).**

The laboratory is missing equipment which should be part of standard measurements. This equipment includes a miniature vane shear device and discrete electrical resistivity. The miniature vane shear equipment includes two apparatus: a Wykeham-Farrance motorized vane shear and a custom built torque transducer vane shear. The Wykeham-Farrance device is very simple and**should never be removed from the ship.** This instrument can be repaired by the ET onboard, it is comprised of a simple electric motor connected by a belt to a spring which drives the vane. Any repairs to the instrument should be done onboard. The other shear vane should be repaired, modified so that the output goes directly to a PC, and should be out on the ship for Leg 144. Two additions should be made to the testing procedure: (1) mark each vane shaft for insertion depth, so that measurement depths are consistent; and (2) include a procedure for determination of residual strength in the vane shear manual. In addition, the Torvane had only one head in the drawer, the remaining two heads with the instruction manual must be located and returned the laboratory. **(ACTION: Report from B. Mills at next SMP on the status of the shear vane and Torvane).** In order to avoid losing track of equipment, a checklist of physical property equipment, standards and manuals should be available and reviewed at the beginning and end of each leg.

The discrete electrical resistivity equipment was taken off the ship for repair or replacement after Leg 133 and there has been no action since then. This situation must be rectified immediately. SMP members can assist in selecting new equipment, if necessary. As reported at the last SMP meeting, an instrument built by the Universität Bremen would be an appropriate instrument for shipboard use **(ACTION: K. Moran to request information from Bremen and forward to TAMU).**

The laboratory draft manuals are good, but there is some clarification needed. For instance, example calculations with expected ranges of values for all measurements would useful additions. There are a large number of very old manuals and old versions of the cookbooks which should be removed from the lab to avoid confusion. It may be best to keep these old versions in the lab officer's area. The Seitec scale manual requires the addition of a manual for the Fluke multimeter. **(B. Mills to present status of physical properties manuals, copies should be forwarded to R. Chaney for review prior to the next meeting)**

The spreadsheets on the micro-computers are excellent and the panel encourages further development of this software. Some suggested changes are to provide consistent significant figures throughout the spreadsheet, change the names of variables so that they are easily deciphered, and provide a definition sheet for all of the variables and terms in the spreadsheet.

R. Whitmarsh reported on the MST/GRAPE. The Co-Chiefs of Leg 138 reported discrepancies between GRAPE density and other density measurements. They blamed the GRAPE. Although no documentation of this problem was available, or could be found onboard, the GRAPE system was checked as thoroughly as time allowed. It appears that the current Cs 137, 5 millicurie source has been on board since at least June 1989. It was discovered, by chance, that the source may have been badly aligned (this could have an effect on measurements by effectively reducing the density of electrons passing through the cores). The retaining bolts appeared to have little thread left and both retaining nuts were quite loose (presumably due to vibration). A more positive alignment and retaining system (probably with locking nuts) should be used. One of the closure clips on the source container was rather corroded and should be replaced. Parts of the lead shielding around the Cs 137 source has a makeshift appearance and the main shield appears to rest directly on top of the source container. It is so heavy that it is difficult not to knock the container when removing/replacing the shield.

The GRAPE equipment was checked by running the regular 3-in-1 air-66mm/Al-25.5mm standard through the machine. In addition a distilled water "standard" was also run in place of a core. At first nonsensical (systematically wrong) readings were obtained; a marked improvement was noted after the source retaining bolts had been tightened. Eventually the equipment appeared to function correctly. However, on consulting the output files it was found that densities of -0.119, 2.519 and 0.869 g/cc had been computed for the three standards. The GRAPE software was then inspected. The software clearly lists values of 0.000, 2.600, 1.000 (see files GRSTART.DAT and GRAPE.DOC) for the standards (and these appear to be correct for the old Ba 133 source). If they are also correct for the Cs 137 source (this requires further investigation) then the software is obviously in error in computing values of -0.119, 2.519 and 0.869 g/cc.

An attempt was made to trace the computation path in the software, but it is written in such a way that it is not easy to relate the C coding to the physical equations of Compton scattering.The problem is likely software related.

Documentation for GRAPE was either meagre (no reprints other than Boyce). There is useful literature on the fundamentals of the equipment which should be on board. There was also a lot of old, and possibly out of date, information scattered among different ring files. Some tidying up is required.

The screen display of computed density is in F3.1 format (i.e. to one decimal place). This is useless and the software should be altered as soon as possible to produce an output to two decimal places.

(Action: R. Whitmarsh to follow up with assessment of the GRAPE software and make recommendations to SMP Chair for immediate action; ODP/TAMU to determine if constants in the software are appropriate for Cs 137 source, and, if so, determine why there is a discrepancy between what should be measured by the standard and what actually is measured. Also, the mounting of the source should be modified to secure it.)

Micropalaeontology

E. Thomas reported on the status of the micropalaeontology laboratory. There has been no specific technician in charge of the maintaining the lab microscopes which require special attention. This situation has recently been partially remedied by including this task as part of the responsibilities of the photographic technician. Generally, the photography technician does not have the expertise in this area. Consequently, training should be provided to the shipboard photographers. In addition, at the end of each leg, an inventory of all microscopes should be made, and all accessories and parts placed in appropriate, marked bins in a storage cabinet. the petrologic microscopes should be provided with objectives so that they can be used for nannofossil work. At the last SMP meeting, a recommendation was made on the training of technicians for sample preparation in this laboratory. The duties of this technician should include the maintenance of the sample preparation area, operation and maintenance of the centrifuges, ovens, fume hoods, dishwasher, slides dryer, and supplies. This technician should also prepare an end of leg technical report, just as in other labs.

The new software which is currently under development is excellent. A prototype version was demonstrated to SMP and the Leg 143 palaeontologists. The panel encourages further development as soon as possible. Suggested additions to the software are as follows:

- must be able to sort species list by alphabet, abundance, FA, LA, manual
- desirable if whole chart could be viewed before printing (similar to page preview)

- desirable if heading (species names) bar could be kept in place while sample list is scrolled (similar feature in VCD)
- must be checked if size of data files permit backup on floppy discs, or whether extra storage is needed (possibly one extra storage device for the whole lab), to prevent total data loss during hard drive crash

(Action: ODP/TAMU presentation of paleo software at the next SMP meeting)

Improvements have been made in the library arrangements for this laboratory. However, the ODP Part 2 volumes should be placed in the lab, along with the DSDP volumes. Determination literature should be kept in the lab and the remaining reference literature retained in the ship's library.

(Action: J. Baldauf to report on the status of technician training and changes to the micro-paleo laboratory)

Petrology

M. Rhodes and P. Dawson reported on this laboratory. Good stuff was reported: the lab has been producing good data of an accuracy and precision equivalent to some of the best shorebased research laboratories. The ODP/TAMU technicians have received training on the repair of the XRF from the manufacturer (ARL). The only problem area was concerning the shatterboxes, once again. On the last leg, two new ceramic shatterboxes were cracked. The sailing scientists attributed the cracking to ship's motion and not sample size as we previously had thought the problem to be. SMP briefly discussed the problem and because of lengthy discussions on this topic at previous meetings, the panel quickly agreed on the following recommendation:**Because of the excellent results of the shipboard XRF, increasingly more sailing scientists wish to take powdered samples home with them for additional analyses. However, agate grinding vessels have not proved to be reliable in the shipboard environment. SMP recommends that sailing scientists should be told that only Tungsten-Carbide grinding vessels are available on the ship, but that they are welcome to bring other types of vessels for use during their leg. (92-4 to ODP/TAMU)**

P. Dawson 'dove' into the XRF onboard the ship without harm (to himself, the machine, or the ODP technician) and gained valuable information about the shipboard instrument which will significantly enhance future training of ODP technicians. Thanks were relayed to Pete for his efforts.

The PDP11 is still the data acquisition computer for the XRF. The manufacturer now has a PC upgrade and the panel encourages the program to make this change so that data can be directly dumped to the file server and the database. Currently, all data are re-entered onto a spreadsheet by hand.

M. Rhodes presented the results of his study on sediment analysis using the XRF (Attachment A). The current methods are perfectly satisfactory for trace element analyses.

Major element analyses should be performed using fused glass discs. For sediments with extreme compositions, matrix corrections are advised. If the PDP11 is upgraded as planned to a PC, then matrix corrections can be applied. For large numbers of analyses which require less accuracy, then the pressed powder method as described by Gardner (Chem. Geol, 1990) may be the solution. This method would require a significant level of effort in software development.

The chair thanked Mike for providing an excellent report to the panel.

It was noted by P. Worthington that the ability to analyze sediments for elemental analyses will provide a major step forward in the calibration and interpretation of the Geochemical Logging Tool.

SMP recommends adoption of the procedures for XRD sediment analyses as proposed by M. Rhodes which include using standard procedures for trace elements and using fused samples for major element analyses with matrix corrections. The use of pressed powders should not be used until the methods have been investigated and appropriate software developed. (92-5 to ODP/TAMU)

Computers

K. Moran presented the status of shipboard computing. A discussion of the results of the Data Handling Working Group (DHWG) were not presented here. This status did not include an evaluation of the overall computing environment (i.e., VAX/VMS/1032) because it was discussed in detail by DHWG. In general, the micro-computer environment on the ship is very good. Software is available for scientific use on both MAC's and PC's with the exception that there is no programming software supported for the MAC. Network upgrades have been implemented so that most of the micro-computers on now connected on the Ethernet trunk which has significantly improved file transfer speeds. In addition, a scratch file server has been added which now provides an interim solution for data access for the scientific party. All of the changes are very positive and, in no way, restrict or vary from the recommendations of the DHWG. **SMP recommends that programming software (preferably C) be added to the list of supported software for the Macintosh computers (95-6 to ODP/TAMU).**

Leg 143 system managers will be testing new procedures for regular email and, if successful, they will become standard for all subsequent legs. SMP was very pleased to hear this good news.

There was some concern from recently sailing scientists that the restrictions on report format were too severe. Although SMP sympathizes with these concerns, the panel does not agree that requiring the final versions of reports to be submitted in one standard format (in this case Wordperfect) is too onerous. The computing environment on the ship is very flexible and, with two systems managers, help is just a few decks away.

Sedimentology/Visual Core Description/Sampling

E. Thomas and K. Moran tested the latest (beta) version of the computerized barrel sheets and found it to be excellent. This version is much improved over the previous one and the panel looks forward to hearing the response from science parties. Two comments on the existing beta version: (1) it would be useful if in the structure column draw one long arrow, instead of a group of small arrows; and (2) it is difficult to make age-lithostrat-colour fields exactly adjacent (the program refuses to draw because of overlap, or generates a double boundary line). It would save time in manipulating if the program automatically assumed continuity of fields, while allowing overrides.

The software for core recovery data entry (CORELOG) and sample information entry (SAM) is still running on old DEC PRO350. These software utilities are in the process of being changed to IBM-PC versions. Data from CORELOG will be used at many sites onboard and the structure of this program is of prime importance. Based on discussions with the curation staff, E. Thomas reported that SAM will be updated, but the new version may not be addressing the old software problems. The program should be discarded and replaced by a spreadsheet type program (preferably on a MAC since the VCD and paleo programs run on Macs). This is of prime importance since SAM is used in a labour intensive lab area and it is cumbersome, out of date, and user unfriendly (for example, corrections are difficult to make). It would be worthwhile for SMP to evaluate the performance of the new versions as soon as they are available.**(Action: J. Baldauf forward beta versions to Thomas and Moran for evaluation)**

The curation rules which define "critical areas" in cores should be better defined(**Action: E. Thomas to review and make recommendations for the next SMP meeting)** .

A. Mix was not able to attend the meeting to describe the digital colour scanner he used very successfully on Leg 138. It was reported that he has been supported by NSF for further upgrades to this system. After upgrades, the system could be incorporated as a routine instrument located in the new space which was made available with the restructuring of the core lab. The panel will monitor this device as a third party development. **(Action: K. Moran to again request to invite Mix to the next SMP for a report on the colour scanner)**

H. Tokuyama brought the new Minolta colour measurement instrument to the ship visit. The device is an excellent solution for quantitative colour measurement which can be used now. The device was tested by SMP by using it to measure a core and to measure the colour of Munsell colour chips. In both tests, the instrument performed very well. This device will eliminate the subjective nature of colour estimates made on cores, it is quick and easy to use and it is relatively inexpensive. This instrument in no way competes with the Mix development which is a much more sophisticated device (measures colour spectra over visible and infrared ranges). However, we do not now make consistent, repeatable measurements of colour and the Minolta could provide this now to the program. SMP **recommends the acquisition of the Minolta colour measurement instrument for quantitative measure of L*a*b and Munsell colour on core samples (92-7 to BCOM - see priority list).**

M. Rhodes presented the results of his investigation (Attachment B) into infrared spectroscopy for quantitative mineral evaluation as a possible replacement for smear slide analyses. This method is used by Corelabs (Houston and elsewhere) which utilizes a Fourier transform technique to resolve individual spectra from the simultaneous measurement of absorbance over the full range of infrared wavelengths. At first glance the method looks simple and elegant. However, there is very little experience in the geological community using this method. The most severe problem may be sample preparation. Corelabs grinds their samples to about 2 microns. We can currently grind to approx. 20 microns. This method does need some further investigation and Mike suggested the following:

1. Send a few well-known samples to Corelabs for analysis; and
2. If these results are promising, either lease equipment from Corelabs or develop the technique within the program (perhaps using data from Mix instrument).

M. Rhodes, in the mean time, will be gaining experience with this technique at the Bruker application laboratory. **SMP recommends that a few samples are sent to Corelabs for infrared mineral analysis (92-8) for evaluation of the IR method. Action: J. Baldauf to report on Corelab results and M. Rhodes to report on Bruker experience at the next SMP meeting)**

R. Current reported that a mistake was made in modifying the X-ray system and it is not yet on the ship. The panel emphasizes the need to get the system back onboard for Leg 144. **(ACTION: B. Mills to report on X-Ray status.)**

Geochemistry

As reported at the last meeting, M. Mottl reported that the Geochemistry lab is bursting its bulkheads. Although the lab still functions, planned improvements should proceed in order to reduce the labour intensive aspects of the analyses (thus freeing up technician time for more types of analyses) and to rid the lab of equipment which is so outdated that spares are difficult to supply. The technical staff provided M. Mottl and the panel with well thought out list of possible changes and improvements. The panel reviewed and discussed this list and prepared an action plan for lab improvement. New pieces of equipment in this action plan have been incorporated into the current SMP equipment priority list. The suggested Chem lab action plan in priority order is as follows:

- Coulometer: test autosampler and software and purchase, if satisfactory
- Rock Eval: (a) cross correlate with the Geofina HM on Leg 143; (b) because this instrument is increasingly burdensome to maintain, present the results of (a) to the OG community and evaluate the impact of the loss of § data (which is presently used by the Safety Panel) and TOC data; (c) investigate alternative methods of measuring TOC; (d) if acceptable base on these steps, remove Rock Eval.
- Automatic Titration System: replace present system for measuring pH/alkalinity with commercial system with (a)$\pm$ 0.1 mV readout; (b) capability of calculating endpts. via GRAN plots; (c) capability of measuring chlorinity and calcium with $\geq$ precision than via present colorimeteric titration.
- Upgrade GC#2 to Series II for easier training and easier maintenance
- Replace LAS computer system (HP1000) with PC-based system which will free

up a significant amount of space and will be much easier to use
- Replace Dionex with either a single or dual-channel instrument which will free up bench space plus improve the efficiency of analyses
- Upgrade computers (HP 150's) to PC's so that the lab has a common platform for easier use
- Automate balances to improve efficiency of this time consuming task

With all of these improvements, the lab will provide a more efficient and easier work environment. Although the panel would like to see all of these changes, they must be incorporated over time. This action plan will be reviewed and priorities placed on each item relative to the needs of other labs during subsequent meetings. **(Action: M. Mottl to review status of the chemistry lab upgrade plan at the next SMP)**

Action: M. Mottl review appropriate system for Dionex replacement.

Underway Geophysics

J. Baldauf reported again that the navigation equipment had not yet been purchased. However, a letter of interest which had been reviewed was sent out and some responses had been received. **Panel members again expressed their concern over the delay and suggested prompt action on the acquisition of this much needed equipment.**

A high speed streamer was tested at the end of Leg 142. H. Tokuyama reported on the results of the test. Mechanical problems occurred in the cable after the ship increased speed greater than 8 knots. After some of these problems were solved, the data were still very noisy and Tokuyama once again suggested major changes to the towing system (extended lateral boom) as presented at SMP meeting 3. These changes include a modified towing position, incorporation of at least three stretch sections, and a weighted section with a depth transducer output.

The panel discussed the need for this equipment again and are still convinced that it is somewhat negligent of us to proceed through remote locations of the world oceans without attempting to collect data underway. Although the panel realized primary program objectives are more important, improvements to this system have not occurred at all. The panel will attempt to break down the tasks required for improvement at the next meeting, then include these tasks in the overall ranking of new equipment for the program. **(Action: H. Tokuyama review and itemize tasks required for seismic data acquisition while underway including estimated costs for the next SMP meeting)**

H. Tokuyama also reported on the SparcII workstation which was temporarily installed on the Resolution by G. Moore (SOEST) during the port call. In the configuration installed by Moore, the system worked well. This station could replace the existing system (which the panel has previously flagged for replacement) and could be acquired (including software) for the cost of the equipment which includes the workstation, an A/D card, and a tape storage device because the software is under development by SOEST/WHOI for some of the US scientific ships. In addition, this software would incorporate real-time navigation.

SMP recommends the acquisition of a Sparc workstation for digital seismic data acquisition and processing (92-9 to BCOM-see priority list).

ODP Sampling and Downhole Tools

R. Whitmarsh reported on the status of downhole tools laboratory. Very little change had occurred since our last visit to the ship. The Adara temperature shoe has now been used for 3 legs with good success. A new digital core orientation tool (TENSOR) has been added and appears to be very functional. This includes two horizontal fluxgate magnetometers, two micrometers and it has a solid-state memory. Data is easily dumped from the tool to a micro-computer, freeing up some technician time. The WSTP has undergone some re-design with Titanium incorporated into the pore water container and an improved tip. **However, the panel was dismayed to learn the pore pressure component of the WSTP had been removed for reasons that are not acceptable (calibration problems). This is the only standard tool which measures pore pressure and all components of the tool are essential to the success of Leg 146. SMP recommends immediate action to re-install the pore pressure transducer into the WSTP, calibrate the tool so that it is reliable and ready for Leg 146 (92-10 to ODP/TAMU and PCOM).** The panel noted that for the most critical accretionary prism Legs (110 and 131), the WSTP did not have one successful run.

P. Worthington reviewed the TOTCO system. This system is supposed to provide real-time drilling parameters which include the following: Depth and Rate of Penetration (ROP); Torque; RPM; Hook Load; Weight on Bit (WOB); Pump pressure; Sandline weight; Calculated pump flow; and Pump strokes. However, none of these parameters are available in real-time. The panel agrees that these data are important for core-log data integration because some of these data are required for use with the SCM which is a key component for data integration. SMP **recommends that development of the real-time drilling parameters data acquisition system should be put back on the list of engineering developments (92-11 to ODP/TAMU; PCOM).**

IV PCOM Report

Our new PCOM liaison (J. Fox) did not attend the last PCOM meeting. He assured the panel that he would relay our concerns and recommendations at the PCOM meetings. The panel members welcomed the new liaison. K. Moran summarized the previous PCOM meeting and reported that SMP recommendations had been considered and the most critical were fairly addressed and acted upon by PCOM (specifically with respect to Core-Log Data Integration and Technical Staffing).

V DMP Report

P. Worthington reported on several issues of interest/concern to SMP. DMP are preparing a 20 page glossy booklet on downhole measurements which will include a general overview of downhole measurements, illustrations of applications, and links to core and geophysics. This booklet is partially supported by the science operator and partially by JOI. It is scheduled to be out by the end of May. P. Worthington suggested that, if this is a successful endeavour, SMP may also wish to prepare a similar style of booklet. **(Action: Moran to monitor the booklet development and report to the panel at the next meeting).**

The DMP liaison also reported on the status of the French high resolution magnetic susceptibility tool. Software is under development now to improve the vertical resolution from 0.5m to <5cm. The tool will be tested on Legs 144 and 145. In addition, the French are also developing a pad-type magnetic susceptibility tool which will have a vertical resolution of the same order as core measurements. The software developments are expected to be complete within 12 months which may provide data for direct core-log data correlation using susceptibility.

The Pore Fluid Sampling Steering Group was formed to develop a plan for developing pore fluid sampling capabilities because the wireline packer was not a successful development. They suggested that a feasibility study should be contracted out and also recommended 5 different options for proceeding with tool development.

Paul will be stepping down as chair of DMP after the annual PCOM meeting. As a suggestion for industry membership on SMP, Paul suggested that we invite a scientist from Corelabs in Houston. The panel agreed that this member would be a good addition to the panel.

VI Upcoming Legs

J. Baldauf reviewed the current ship schedule and the new schedule for 1993 in the Atlantic. The chair asked all panel members to review the objectives of these legs so that shipboard measurement concerns can be flagged early. **(Action: all panel members review 1993 scheduled leg objectives for next panel meeting)** The panel previously identified the Atolls and Guyots legs as requiring special consideration. Procedures for elemental analyses using the XRF were prepared by M. Rhodes for this purpose. The Mix colour scanner will not be available for Leg 145. The panel emphasizes the need to acquire, as a minimum, a device for quantitative colour measurement prior to Leg 145. If this is not possible, the colour measurement instrument used by K. Moran may be able to loaned to the program for this Leg. The panel is still concerned that limited log data will be acquired on Leg 146 to Cascadia. **SMP emphasizes that physical property (including pore pressure), structural geological and pore water geochemical core data have previously provided results which have been the backbone of major advancements in the study of active margins. The collection of these data coupled with downhole discrete measurements should be given highest priority.** Highest priority means very high resolution sample intervals for these three data sets, of the same order as Leg 131 with appropriate time allocated to downhole tools.

Again SMP discussed the need to communicate directly with the co-chiefs on legs where special procedures or laboratory needs are required. A pre-cruise planning meeting for each leg is attended by our ODP/TAMU liaison, the liaison should communicate specific SMP concerns/recommendations to the co-chief scientists. **Action: J. Baldauf to discuss Leg 145 and 146 SMP recommendations and suggestions at the pre-cruise planning**

meetings. An assessment of the availability of a colour measurement instrument for Leg 145 should be done at the time of the Leg 145 meeting. An assessment of the status of the WSTP should be done at the time of the 146 meeting.

VII Discrete Measurements of Index Properties

K. Moran reported that she had modified the discrete measurement of index property manual and at the time of the meeting had received comments for changes to that document from all appropriate members and liaison. These changes have been incorporated into the document (Attachment C) and provided to ODP/TAMU for immediate use. R. Chaney reported that ASTM is currently developing standard methods for the use of the gas-comparator pycnometer for index property determination. **(Action: Chaney to report on the status of ASTM standard for the pycnometer at future meetings)**

At the last meeting, the panel agreed that new methods should be investigated to replace the labour-intensive method of discrete index property determination. R. Chaney reported on the most promising of the potential replacement methods, the CATSCAN (Attachment D). There are two types of CATSCANS currently available: medical units and industrial units. Ron ran tests on sediment samples and presented the results in image form. The results are very promising and given that the data can be stored and manipulated digitally, the technology can be used to determine bulk density at a very high vertical resolution. It is possible with this technology to essentially 'zoom' in on an operator-selected 'biscuit' and determine density for small pixels. Although this technology could meet our requirements for discrete density determination, there are two major problems. The medical units, which are available as used equipment, are much too large for the ship. They require up to 20" of concrete or the equivalent in lead (which the panel speculated could flip the ship over). While the industrial units are designed for specific applications and not just for human body sizes, the size and shielding is smaller, but the cost would make BCOM flip over and could not even be considered in the a budget exercise. After considerable discussion, other alternatives were suggested by A. Richards, specifically, X-Ray fluoroscopy. Although this technique is used successfully for full whole round core samples, it has not been developed for the wide range of sediment and rock recovered on the Resolution. Consequently, further development of the method is required, including a significant level of effort in software design. Based on these considerations, the panel agreed that additional research was required.**(Action: R. Chaney to investigate two possible methods for improved discrete measurement of index properties: (1) possible downsizing of a medical unit for shipboard use including software modifications; and (2) possible use of X-Ray fluoroscopy with the modifications for detection of good biscuited material)**

VIII Integration of Core and Log Data

At the last SMP meeting, a joint session was held with DMP to prepare an implementation plan for Core-Log Data Integration. K. Moran reported that this implementation plan was presented to PCOM at the annual meeting in Dec '91 and received endorsement. The critical list of requirements was prepared as follows:

1 quantify methods of depth measurement for drillpipe and wireline
2 refer all depths to the gamma log

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3 develop software and graphics for depth matching
4 establish a relational database with an adequate structure for shipboard and shorebased access of core and log data
5 create the position of*Data Correlation Specialist*as a member of the shipboard scientific party
6 disseminate data to the scientific party in a readily transportable format
7 support related development work currently taking place at ODP/TAMU

SMP identified item 3 as still requiring discussion so that specific software could be developed or purchased. At previous meetings, SMP had identified Corpac as a tool which could potentially meet requirement #3. D. Goldberg presented the capabilities of Corpac to the panel (Attachment E). Corpac can handle any digital data series, data can be inverted, normalized, and the data series can be mapped as function of a second data series. This means the software is capable of relating one depth (or time) data series to another depth (or time) data series with no additional information required. However, if a user, for example, knows of a data point or a series of data points in each depth record that are definitely correlated, the user can identify this by graphically picking peaks on each data series. The panel agreed that this software tool is an ideal tool for use by the data correlation specialist. This software can be used by this specialist to match MST data with the gamma log, for example, and the correlation 'mapping' function which is generated from this match can then be applied to all of the core data sets to get reference depth. However, the panel is concerned that the software may not be available quickly enough, the existing software is a beta version. **(Action: J. King will assess the status of the Corpac software and manual and assist ODP/TAMU in the preparation of specific ODP requirements which must be met before acquisition). The panel recommends the acquisition of the Corpac software as the shipboard core-log data correlation software tool. Current available versions of Corpac require the provision of a manual and some modifications to meet the specific requirements of shipboard data correlation. The panel agrees that these modifications should be performed by the author of the software with support from the ODP. Once this software is acquired, a minimum of one technical staff member must have formal training using this software tool for each leg. Training at an appropriate level must also be provided for the sailing core-log data correlation specialist (92-12 to ODP/TAMU).**

IX Data Handling Working Group Report

K. Moran reported to the panel on the results of this working group. The working group was successful in identifying the basic requirements for a new ODP computing system which include: a new on-line relational data base that has client/server capabilities; a UNIX based system; and the requirement for user-friendly data acquisition modules and data retrieval modules. The working group agreed that the need for this new system is now urgent and that development cannot take more than 2 years. With this constraint, it is clear that this development is a major new initiative in the program.

SMP endorses the recommendations of the DHWG report. The panel wishes to emphasize to the Planning Committee that this initiative represents a significant, additional level of effort and cannot be completed by the operator under the current budget level. The panel is concerned that this activity will be looked upon as something that can be completely contracted out. Although the panel agrees that significant parts of this activity can be performed outside of the existing contractor(s) through subcontracts, the computing system is a central activity of the ODP and therefore must remain the responsibility of the lead contractor.SMP, **therefore, recommends the following:**

> **The area of shipboard computing as a facility for data handling is a central activity of the ODP. As such, the recommendations of the JOIDES Data Handling Working Group should be implemented under the direction of the Science Operator, advised by a specialist JOIDES steering group for development of the new computing system. The JOIDES Computing Steering Group, in conjunction with the Science Operator, will serve as a technical forum for monitoring and reviewing software developments, especially those arising through external sub-contract and other third-party inputs from the ODP community (92-13 to PCOM).**

SMP members reviewed prime datasets, processed datasets and datasets which are generated semi-routinely from shorebased studies. The intent of this review was to provide a basis for definition of the database structure. The lists of datasets are compiled in Attachment F.**(Action: Moran to forward dataset list to IHP for review).**

X ODP Datanet Services

The PCOM chairman requested that the panels review the proposal for Datanet Services and provide recommendations. Prior to the meeting, panel members had reviewed the documentation and D. Goldberg presented the proposal at the meeting. He presented an overview of the proposal which includes two primary aspects: (1) real-time link to shore-based data processing support and (2) a user-friendly, accessible database. The panel was very positive about the direction of the proposal and could immediately see the benefits of shore-based processing support for downhole measurements. However, the panel did not see the current requirement for a real-time link for other shipboard data. Core-log data integration could potentially be met by utilizing shore-based processing, but the need to access (and discuss with colleagues) all shipboard information for this task (including looking at the core) suggests that a better solution would be to install a workstation on the ship for this task, as has previously been recommended. There were other aspects of data processing that most panel members agreed could potentially benefit from a real- or near real-time link to specialized shore-based laboratories, such as, access to a signal processing (time series analysis) laboratory or access to facilities for VSP processing and, in future, access to facilities for processing large image datasets when additional equipment is added to the split core MST. The proposal for use of GeoBase is a good idea; however, this is not actually a database, it is a database access utility or 'browser'. ODP is currently in need of a relational database for storing and accessing all shipboard and shore-base collected data which cannot really be met with GeoBase. GeoBase is a good tool for geographically accessing information, but it cannot really be used to search on any ODP-type data field.

Following fruitful discussions of the Datanet Services proposal, the panel agreed to the following recommendation: **SMP supports the overall direction of the proposal for DataNet Services. Specifically, SMP agrees that real-time shipboard data processing capacity has in some labs reached its limit (e.g. downhole measurements), thus**

requiring some level of shore-based support. The panel envisions that there will be an increasing need for shore-based data processing support, particularly for cases where operational decisions are required, and to handle large shipboard-measured datasets (e.g. images or VSP). Although these needs can conceptually be met with a system such as DataNet, the panel emphasizes the requirement that any and all shore-based processing 'nodes' must be set up as a service to the shipboard science operations. The concept of an on-line database for readily accessing ODP and other related data is excellent. The database specifically proposed (GeoBase) is not truly a database, but a database browser specific for geographic information. The 'proposal' does not address the real requirement of a functional relational database which is an essential requirement for both shipboard and shore-based science. The panel encourages submission of a more detailed proposal for review (92-14 to PCOM).

XI Lab Equipment Priorities

Shipboard equipment needs were again reviewed. All equipment which was identified from the lab visits and from previous SMP recommendations were included in the ranking. One addition was included in the ranking which spanned all of the laboratories and is an ideal addition if the DHWG recommendations are adopted, that is a bar code system. The panel also identified equipment which are third-party developments and require monitoring by the panel, but are not yet ready for shipboard use. Finally, the panel prepared a list of equipment which will soon require replacement. If the science operator does not have a capital replacement plan, then the panel would encourage the development of such a plan and the items listed on the third list should then be included in this plan.

Current equipment requirements, in priority order, are as follows:

1 Core-log data integration needs:
- a) natural gamma and MST upgrade
- b) computer workstation
- c) resistivity equipment for discrete core measurement (low cost)

2 Colour measurement instrument (low cost)
3 Bar code system
4 Carbonate autosampler
5 Seismic workstation
6 Auto titration
7 Seismic towing system

Note: The reference slide collection which had previously been approved for acquisition, has not yet been completed, but is still a high priority.

Third-party equipment under development which SMP is monitoring for future use on the ship:

1 Colour reflectance scanner (Mix)
2 Electrical resistivity core imaging system (Jackson)
3 Split core MST track (?)
4 DISC (ODP/TAMU)

Equipment which will soon require replacement (note that this list does not include the computing and software replacements identified by DHWG):

1 LAS computer replacement (should be included in DHWG plan, if approved)
2 Magnetometer
3 IC

XII IHP Report

A. Richards reported that the IHP meeting is scheduled after SMP so that he had little to report. He noted that the IHP chair had forwarded information items to him since the last meeting and one of these items of specific interest to SMP are the CD-ROM development of a paleo-reference collection which will include images. He also reminded the chair that a new SMP liaison to IHP would have to be selected since he was rotating off of the panel.

XIII Do we need an entire half of the core for archive?

J. Baldauf briefly reported on the history of this standard procedure. The panel agreed to table this item until the next meeting due to time constraints.

XIV Revisions to Core Disturbance Meeting Report

All comments were received from panel members and meeting participants and the final report is included as Attachment G. SMP agreed that this and other reports should be submitted to the JOIDES journal for publication. **(Action: Moran to submit this report to the JOIDES office for possible publication)**

XV Panel Membership

R. Whitmarsh and A. Richards are rotating off of SMP and this was their last meeting. The panel chair thanked both members for their diligence and efforts in improving shipboard procedures. R. Whitmarsh reported that his replacement has been named, Dr. N.R. Brereton of BGS, a physical property specialist. The ESF replacement has not yet been named and the panel would encourage this organization to nominate a sedimentologist to SMP, if possible. **SMP recommends that R. Chaney take over from A. Richards as liaison to IHP (92-15 to PCOM).**

XVI Next Meetings

After much discussion about panel member participation in cruises, SMP agreed that the next meeting should be requested to be held at Pat Bay, B.C., Canada for the dates of 12-13 September (Saturday and Sunday). K. Moran will host the meeting. The spring meeting should be held in

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College Station, jointly with IHP. The SMP proposed dates are 23-27 March. IHP requested (after the close of the SMP meeting) that they would prefer to hold the meeting in February. **(Action: all panel members contact the chair if they have any conflicts during the month of February '93).**

The SMP chair thanked all members, liaison and guests and closed the meeting with thanks to our meeting host, Mike Mottl.

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WOODS HOLE OCEANOGRAPHIC INSTITUTION
Woods Hole, Massachusetts 02543
Phone: (508) 457-2000
Fax: (508) 457-2187
Telex: 951679

Department of Geology and Geophysics

Jamie
Fyi.
S

12 February 1992

RECEIVED
FEB 18 1992
Ans'd............

TO: Panel Chairs

FROM: Susan Humphris

RE: "Wish List" of Non-Engineering Needs

At the last PANCHM meeting, we agreed to put together a prioritized joint list of our non-engineering needs (e.g. logging tools, core-data log integration, etc.) that could be discussed at the Spring PCOM Meeting. As the Chair of that meeting, I suspect it is going to fall to me to try to coordinate that effort!

The thematic panel meetings are coming up soon, so we need to take action. I think we should produce a list of all items that are considered important by both the thematic and service panels so that each group can work from the same base during discussions at their upcoming meetings (I know some of the service panels have already met, so I am depending on the Chairs to represent the needs of their Panel). Here is how I suggest we proceed:

- By **Monday, 24 February**, please send me a list of items that you would like included in the list

- By **Friday, 28 February**, I will compile all lists into one and return them to you for your panel's prioritization

- **At the upcoming panel meetings** (or by other means if you have already met), make additions, deletions etc. to the list and have your panel rank the items in order of importance

- By **Friday, 3 April**, send me your panel's final list

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• I will then compile the rankings and produce a prioritized list, which I will circulate for final comment before submitting it to Jamie. for the PCOM Meeting on 21 April.

I have now moved and can be reached very easily now by all sorts of methods -- so no excuses! Here are the details:

Dept. of Geology and Geophysics
Woods Hole Oceanographic Institution
Woods Hole, MA 02543

Tel: (508) 457-2000 ext.3451
Fax: (508) 457-2187

OMNET: RIDGE.OFFICE
Bitnet: ridge@copper.whoi.edu

Hope to hear from you soon!

Date: Fri, 3 Apr 92 08:06:31 EST
From: ridge@copper.whoi.edu (RIDGE Office)
To: joides@utig.ig.utexas.edu

2 April 1992

To: Panel Chairs
From: Susan Humphris

Please find below a compilation of all the ranking information for the wish-list that I have at this point.

Our next task is to produce one prioritized wishlist -- it is not going to be easy! Jamie has informed me that PCOM is essentially looking for a short list of probably no more than six items (any more would be totally unrealistic). They would like to end up with a list (somewhat like the one they produced for Engineering Priorities at the April 1991 PCOM meeting. We need to get this list to the JOIDES Office no later than 10 April so we do not have much time.

I am not sure just how to go about this - but here are some suggestions:

1) there are two items that are clearly of strong interest to more than one Panel:

% computer hardware and software to allow core-log data integration
% fluid sampling, and permeability capabilities

I suggest we make these numbers 1 and 2 repectively on our list.

2) the next thing we could do is take each Panel's top priority (or second priority if their top is covered above. If a Panel's top 2 are covered they don't get to add another one):

% Core barrel magnetometer (OHP)
% Pressure core sampler (SGPP)
% Sidewall Coring Tool (LITHP)
% Sediment Color Scanner (SMP)
% Core Natural Gamma (IHP)

Ranking these is a little more difficult. SGPP were the only Panel to rank the Pressure Core Sampler; LITHP did not because progress is already underway on this item from PCOM's Engineering List (I don't know why the other Panels did not include this). However, SGPP's interest in this is specific in that, due to its success on Leg 141, they are interested in getting a second system built (if possible in time for Leg 146). Since this is their top priority, I believe it should be included high in our rankings.

For the others, we should perhaps look at how many Panels are interested in each item and prioritize based on that.

If we do all this, here is the list I come up with:

1 Core-Log Data Integration
2 Fluid Sampling and Permeability Capabilities
3 A Second Pressure Core Sample
4 Sidewall Coring Tool
5 Sediment Color Scanner
6 Core Barrel Magnetometer
6 Core Natural Gamma

(I can't distinguish between these last two).

Let me reemphasize this is only a suggestion! I need input from all of you!

Given the tight timeframe that we are working under, please send me responses by fax (508)-457-2000 ext. 3451 or E-mail (ridge@copper.whoi.edu) by Tuesday, 7 April. I will then turn this around in a day and send out another (hopefully final) version on Wednesday for your approval before sending it to Jamie.

Hope to hear from soon!

Susan

NON-ENGINEERING WISH LIST

			OHP	SGPP	LITHP	TECP	SMP	IHP
I	*1	Pressure Core Sampler		1				
	2	Coring in Unstable Strata		2				
II	3	Borehole gravimeter						
	4	High T Resistivity Tool						
	5	High res. Geochemical Tool	9					
	6	High res. Mag. Susc. Tool	3					
	7	Fluid Sampling & Perm.		3	3	1		
	8	Core Natural Gamma						2
	9	MST Upgrade for Nat. Gamma	5					
	10	Core Resistivity Meas.	6					
	11	Sed. Color Scanner	8				2	
	12	Core Barrel Mag.	2					
	13	CO3 Autosampler	7				4	
		Sidewall Coring Tool	11		1	3b		
		Catscan or X-ray Radiography		4	4			
		Autotitration					6	
		Seismic Towing System					7	
		Meas. for better core-log corr.				3a		
		X-Ray Lab Procedures		5				
III	14 & 15	Core-Log Data Integ.	1		2	2	1	1
		Sythetic Seismology Software	10					
		Stratal Geometry Software	12					
		Bar Code System					3	
		Seismic Workstation					5	
		Improve Paleo Data Acq.						3
IV	16	Composite Index		6				4
	17	Micropaleo Slides	4			3c		

* - Numbers relate to original list

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Ocean Drilling Program

White Paper
ODP DataNet Services

LAMONT-DOHERTY GEOLOGICAL OBSERVATORY
WIRELINE LOGGING SERVICE OPERATOR

Submitted
January 27, 1992

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I. EXECUTIVE SUMMARY

II. THE ODP DATANET

A. ON-LINE DATABASE

B. PROCESSING NODES

Geochemistry, Sonic Waveforms
FMS
Physical Properties
Stress
Temperature, Heat Flow

C. TECHNOLOGY NODES

Hydrogeology
Borehole Seismology
Developmental Engineering

III. APPENDICES
Description of Lamont's GB@ geographic browser
Current Marisat costs

I. EXECUTIVE SUMMARY

"The Ocean Drilling Program (ODP, and earlier incarnations DSDP and IPOD) is widely acclaimed as one of the best (if not the best) international programs that has ever been attempted." So begins the Prologue of the Report of the Performance Evaluation Committee III (PEC III, December 20, 1991). ODP's accomplishments have been formidable not only in scientific terms, but also from a management perspective. Again quoting PECIII, "ODP's management structure has allowed and fostered multi-national participation with a minimum of bureaucratic complications. It is justifiably regarded by many as a model for future scientific undertakings, within or without the geological sciences."

Thus, the ODP carries a management -- as well as a scientific -- legacy into the future. We must operate the ODP at the forefront of international collaboration because we are forging new links within the friendly world order we all hope will follow. Worldwide communication has evolved so quickly, thanks to computers and electronic networks, that we in ODP now have the opportunity, indeed the obligation, to expand our database structure to become an internationally managed, on-line, data network (ODP DataNet).

We propose that an international network of collaborating institutions be established that will, for the first time, participate actively in the day-to-day operations of the ODP. This "ODP DataNet" will provide and maintain an electronic archive of all ODP digital data that will be instantly available from any Internet locale around the world. The network will be accessed through a Geographic Information System (GIS), Lamont's GeoBase, that allows access to much of the geological community's geophysical, geological, and geochemical information about the Earth. Real-time communication of data and images to and from the *JOIDES Resolution* would be an integral part of the ODP DataNet.

A demonstration of the search/retrieval capabilities of the ODP DataNet is enclosed on Macintosh diskette. Core, log, and geological information from Leg 134, Vanuatu, were used for this demonstration of the added scientific value to be achieved with an ODP on-line database.

Internet now links North America with Europe (and soon Japan) with a T3, 60 MB, fiber optic communication network (Figure 1). All major ODP member organizations are now, or soon will be, connected to this worldwide communications backbone. Among the advantages of adapting the ODP structure to a networked set of technological and processing nodes are:

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- better science,
- increased international participation,
- increased expertise-base,
- more cost-effective use of resources,
- better planning and decision making.

The ODP DataNet is proposed as the future way to support, coordinate, and manage downhole measurements and its integration with the digital ODP database. In addition to the maintenance of an on-line database at Lamont;

Processing Nodes at remote locations are proposed for:

- Geochemical and sonic waveform log interpretation,
- Electrical and magnetic imaging log interpretation,
- Physical Properties of core and logs,
- Stress determination, and
- Temperature and heat flow measurements;

Technology nodes are proposed at remote locations for:

- Borehole seismology,
- Developmental Engineering, and
- Hydrogeology.

A Network of Networks That Keeps Scientists Plugged In

By JOHN MARKOFF

From his laboratory in the hills above Los Angeles, Harvey Newman, a California Institute of Technology physicist, can control and monitor experiments taking place in a giant atom-smashing particle accelerator half a world away in Switzerland.

Dr. Newman is one of a group of international researchers using the atom smasher in their hunt for the Higgs Boson, an elusive subatomic particle whose existence would help confirm the basic theories of modern particle physics.

High-energy physics, along with virtually every other scientific discipline, is in the midst of a remarkable transformation, thanks to an expanding international network of computer links.

Known as the Internet, this network of networks was created in the late 1960's by the Pentagon's Advanced Projects Research Agency. Since then it has expanded into a web containing more than 60 countries, and it is still growing at an astounding rate in response to the declining costs of computer work stations and communications services. In 1991 alone, the data traffic doubled on the NSFnet, the National Science Foundation-operated system that serves as a primary backbone for the thousands of interconnected networks that make up the Internet.

The system has even extended its reach across what was once the Iron Curtain: Dozens of electronic-mail links now tie the former Soviet Union and other former Eastern bloc countries to Western Europe and the United States.

Besides carrying electronic mail, these modern networks let researchers remotely control computers as if they were sitting in front of them, and enable scientists and engineers to instantly disseminate research data to their professional peers.

Although physicists were among the first researchers to use global networks, other scientists are quickly catching up. Geneticists at Johns Hopkins University who are collecting data on the human genome are sharing information with researchers in England and Germany through a computer network that uses Internet links.

Just as significant as such multimillion-dollar experiments is the new wave of less formal scientific cooperation that has been fostered by international computer networks.

"Most of the interaction is not the flashy kind," said Larry Landweber, a professor of computer science at the University of Wisconsin. "It's not the kind where people are dialing up a Cray supercomputer or transferring hundreds of gigabytes."

Meantime, large industrial corporations are using private computer networks, connected to the Internet, to create truly global development laboratories.

A striking example is the National Semiconductor Corporation, which operates integrated-circuit design laboratories at its headquarters in Santa Clara, Calif., as well as in Tel Aviv and Tokyo. National Semiconductor has used its global network to solve one of the biggest challenges for chip designers: simulating the remarkably complex circuits.

The simulations, in the form of computer programs, are performed on powerful computer work stations, which can be tied up for weeks or months by such tasks.

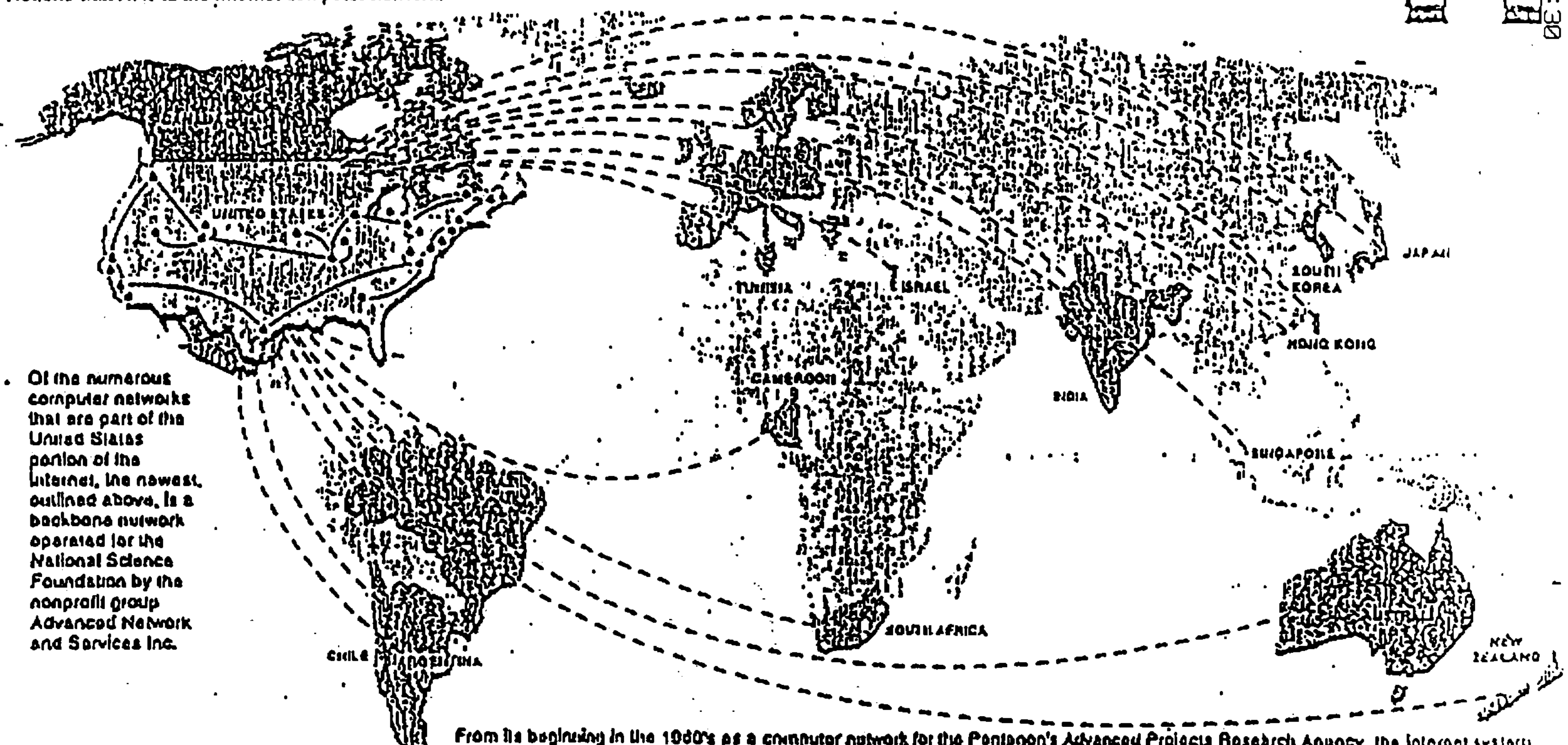
But National's chip designers use their network to transfer the simulations from work station to work station, around the world and around the clock.

After the chip designers at one laboratory have gone home each evening, their work stations are used for running the simulation. When they return the next morning, they reclaim their machines and pass the simulation partway around the globe, where their colleagues are just leaving for the day. And so it goes: Tel Aviv hands off the research to Santa Clara and, when it is time for workers in Santa Clara to begin their day, the torch is passed to Tokyo.

And at just about this same time each day, down in Los Angeles, Dr. Newman may be sitting down to a morning update from the atom smasher in Zurich.

Uniting the World Through Work Stations

Nations with links to the Internet computer network.



Of the numerous computer networks that are part of the United States portion of the Internet, the newest, outlined above, is a backbone network operated for the National Science Foundation by the nonprofit group Advanced Network and Services Inc.

From its beginning in the 1960's as a computer network for the Pentagon's Advanced Projects Research Agency, the Internet system has expanded to a web that contains more than 90 countries — and is still growing.

Source: Larry Landweber, University of Wisconsin

Figure 1. Description of Internet, the backbone of the proposed ODP DataNet.

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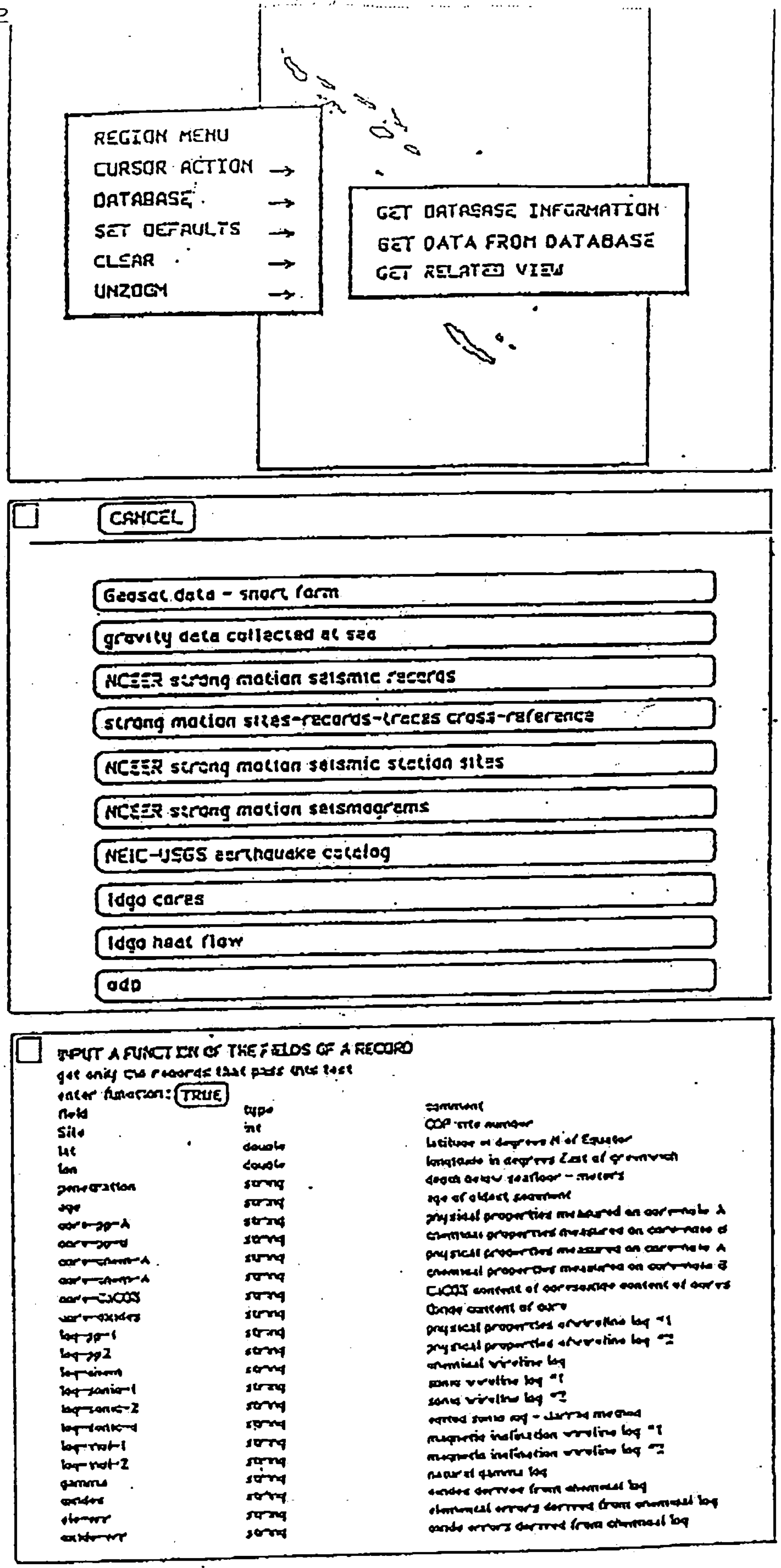

Figure 2. First 3 screens of database information from GeoBase. A region is selected, then databases are displayed, and finally, individual data sets are shown.

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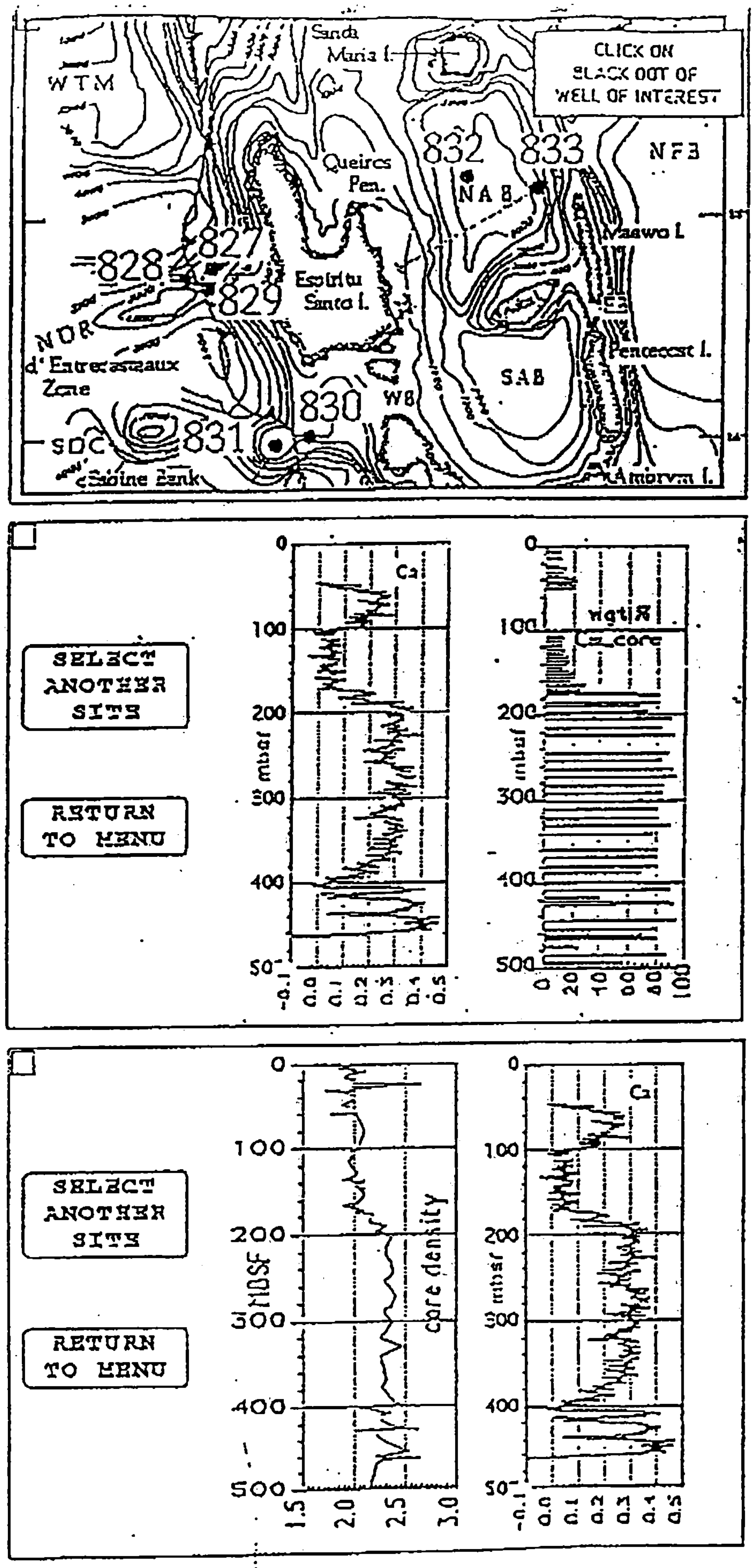

Figure 3. . Data from individual drill sites, showing core and log comparisons

II. ODP DataNet

The proposed ODP DataNet responds both to identified needs in the ODP downhole measurements program and to new opportunities brought about by the worldwide telecommunications revolution for scientific utilization of the extensive ODP data archive. For example, shipboard scientists need faster access to processed logging data correlated with sediment cores. For the first time, worldwide computer networks are sufficiently powerful to actually allow real-time remote access to ODP data from anywhere in the world and to allow for a truly international consortium of technological and processing centers to speed access to scientifically usable information. For this reason we propose remote international processing and technology nodes and an on-line, digital database. If logging data are processed fully, electronically archived, and cross-referenced with digital data from the coring program and from regional geological surveys, the ODP DataNet should prove to be a powerful new resource for global scientific exploitation of ODP data.

A. The On-Line Database

Our present "database" management processes, corrects, archives, and fills all requests for ODP data by mailing magnetic tapes, floppy disks with ASCII data, and paper copies of logs, barrel sheets, etc. A new ODP Database Group would prepare all digital data for on-line storage in the proper format, cross-referenced and tied to appropriate GIS parametric files. In addition, all communications of ODP could be recorded and transmitted electronically. Working group reports, minutes of panels, technical manuals would all be available in an electronic ODP library.

Responsibility for development of software for electronic filling of data requests, and ultimately of course for remote access to the on-line database, would reside with this group. Included in this new group's mission is the design, management and operation of a proposed "jukebox" archival system, preferably housed at a mini-supercomputer. All ODP logging and other digital data would be loaded onto DAT tapes for permanent storage within the magazines of several jukeboxes being served in real-time by the mini-super.

The ODP DataNet would be a UNIX-based network which would respond to remote terminal access from InterNet by accessing a mini-super server through a T10 connection. Throughput transfer rates from the jukebox to the minisuper would be on the order of 3MB/sec, and transfer rates from the mini-super to the UNIX net can be maintained at 4MB/sec through a SCSI-2 interface that supports multiple initiator inquiries (i.e., more than one host can be interrogating the jukebox at once). Also, multiple "targets" (e.g., all processing nodes) can be addressed simultaneously by the initiator. Advantages of this DAT jukebox over permanent disc storage are easy access, support of data growth and maintenance, but above all, increased safety of the database itself. The impact on the backlog in processing of ODP datasets such as wireline logs should be immediate improvement, since routine archiving and data requests will immediately shift to electronic service over InterNet.

Groups such as the Wireline Logging contractor at Lamont are acutely aware of the need to exploit the phenomenal breakthroughs in computer communications, because we generate gigabytes of new ODP data per year. Yet the need within ODP to restructure data access is much broader than just data obtained by the Wireline Logging contractor. The digital database being maintained at ODP/TAMU would be brought to the centrally maintained, mini-super jukebox, as well. Further, this integrated ODP database should be merged with the other geophysical and geological databases being maintained throughout the world and accessed through a geographic browser system (such as Lamont's GB@ geobase browser (see below).

The core of the proposed ODP DataNet is on-line maintenance by a geographic browser. GB@ is a Lamont-generated browsing system for databases (similar to a card catalogue in a library; see Appendix for description) that allows one to locate all on-line datasets within the bounds of a geographic box (Figure 2, see demonstration discette as well). A list of available databases, for both ODP and other geological data, is then provided, which then can be entered to locate the specific data of interest. A relational database management system can then be called by GeoBase to locate the data and return it to the user.

One of the most important features of GeoBase is that data access is transparent to the user. The relational database structure contains not only the data itself, but also a pointer to its location on storage media. Any or all data from within the window can then be downloaded from the host machine to the target. Commercial software is then used (Kaleidagraph, or other of the scientist's choosing) to compare, cross-plot, or otherwise manipulate the newly acquired data.

For example, geochemical analyses from logs can be compared with core-derived abundances (Ca weight %, Figure 3), physical properties from core or from logs, or impedances (to test for chemical control of reflectors, Figure 4). The digital image of a core photo can be compared with a FMS electrical resistivity image , or one can overlay a synthetic seismogram onto a seismic section. Power spectra, cross-well comparisons, etc. can be sent anywhere on the network.

Ship/Shore Data Transfer

The final piece of the ODP DataNET is the near realtime transfer of data from the *JOIDES Resolution* to shore for processing and access to processed data by the ship. For example, the satellite transmission of logging data to Lamont, where it could then be parcelled to processing nodes around the world. Quality control, environmental corrections, and interpretations (cyclicity, stress direction, etc.) could be returned to the ship, with a goal of a turnaround time of 24 hours.

Security of proprietary data should not be confused with the capability to transmit information. The responsibility to follow ODP rules rests with JOIDES, and to our knowledge, has never been violated in ODP operations to date. We see no reason why a DataNet operation would affect confidentiality in the future. As for the costs, the communications portion of the DataNet is fully subsidized to educational institutions and government labs in all ODP countries. The ODP DataNet is taking dramatic advantage of this subsidy in a manner exemplary to the planners of the InterNet. ODP is only left to pay Marisat costs, which are continually dropping (see appendices for current charges).

The DataNet might affect operations on the ship in many ways. For example, the co-chiefs might log onto the on-line DataNet to browse, select and transfer databases not carried onboard at the beginning of the leg. Options similar to these must be available if the scientific party is downsized. Also, proponents who do not sail can participate in the leg to a level not possible to date.

B. Processing Nodes

Several processing nodes are proposed at the beginning. Future needs could be easily accommodated with the addition of new nodes. Within the last few years, logging expertise has grown within the ODP member countries and is now equal to, and often surpassing, that available to ODP through the wireline logging contractor. The DataNet allows us to incorporate that vast new pool of expertise into the ODP at minimal cost. Each node might have a responsibility for specialized processing, with the final product transfered back to the mini-super jukebox for on-line maitenance and distribution.

Specific Processing Nodes for which there is an obvious need now are:

- Geochemical and sonic waveform log interpretation. Neither of these valuable datasets are receiving the technical attention they require (see PECIII).

- Electrical and magnetic imaging in boreholes. This node will process electrical and magnetic measurements made by Schlumberger tools, including the new sediment magnetometer/susceptometer that promises to deliver magnetic stratigraphy in the not-too-distant future.

- A stress determination program for ODP. Stress directions from borehole imaging and FMS calipers will be analyzed on a routine basis, and hopefully transmitted to the ship so that stress information can be available to the shipboard party. This node will also coordinate a direct incorporation of ODP data into the World Stress Map. A systematic examination of all previous ODP holes should add tens of stress points to that map.

- Temperature, thermal conductivity and heat flow data. Temperature logs from the Lamont tool, attached to every Schlumberger logging run, provide a valuable thermal dataset, because repeat temperature logs permit correction for drilling disturbances. These data are not systematically looked at now, nor are they combined with the thermal conductivity measurements made on core to produce heat flow measurements.

- Physical property integration of core and logs that can be returned to the ship in near real-time. The technology, which was developed independent of ODP, was applied on Leg 138, where the bit was "steered" by knowledge from the physical property measurements. Already, Leg 145 co-chiefs have requested this real-time data transmission capability.

C. Technology Nodes

The ODP DataNet allows for the establishment of specialty nodes that provide services to ODP that no longer require "red-brick walls". We propose to incorporate technical services currently funded on an ad hoc basis into three remote technological nodes of the DataNet. The technology nodes are also equipped with data distribution connections to the DataNet, so they can supervise the archiving and on-line maintenance of data acquired under their supervision. Again, new nodes can be added as new needs and funding sources are identified.

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Technology nodes for which there is an obvious need now are:

- Borehole Seismology. VSP services, including walk-away capabilities, will be provided for 3 legs per year. Currently, VSP is funded only on a leg-by-leg basis. Often it is recommended by the Downhole Measurements panel, but not run on the ship because of a lack of advocates within the shipboard party. This technology node will provide shipboard services, as well as shore-based processing. Transmission of data from sea can result in rapid processing on shore, and interpretations of depth to targets within 24 hours. This could lead to changes in ODP drilling strategy similar to those that have occurred in the oil industry, where VSP's are shot to evaluate drilling progress in the context of location within the seismic section. A JOI-sponsored workshop report advocates just this sort of service for the ODP.

- Developmental Engineering. Third party tool development has been a continuing problem to manage within ODP. Poor performance of magnetometers, fluid samplers, the wireline packer, and now the GEOPROPS probe development point to a systemic problem. We believe an independent group should be set up to "manage" (i.e., monitor, advise, and expedite) the development of downhole measurement tools for the ODP. Developers of high-temperature tools, slimhole tools, fluid samplers, and the miriad of magnetometers under development in the world must be assisted by the full-time efforts of a group if they are to have any chance to deliver useful scientific information to the ODP.

- Hydrogeology. This node is required not by lack-of-success, but by the enormous scientific rewards accrued to the ODP by the success of these experiments in the past. They are becoming so routinely required that it is time to move the management and funding of these vital experiments to an ODP subcontract.

The world is launched upon a new "information age" that has already changed the form of human interaction on the planet. First radio, then television swept barriers to communication away. That communication led to the unbridled exchange of information, albeit analog. And that information has swept the world toward an era of unprecedented international cooperation and collaboration. The Internet computer network has advanced the information frontier to an entirely new level by allowing the massive transfer of digital data around the world in seconds. And think what communication will look like ten years from now when the "Superhighway" network is in place with its Gigabit/sec transmission rates.

Eos, Transactions, American Geophysical Union, Vol. 72, No. 38, September 17, 1991, Pages 409, 413–414.

Sharing Data Over Internet with the Lamont View-Server System

William Menke, Paul Friberg, Arthur Lerner-Lam, David Simpson, Robert Bookbinder, and Garry Karner

We envision a time when an Earth scientist from any institution will be able to access high-quality data regardless of where it may actually be archived. The scientist will not have to know the data's actual location nor its format. He or she will only have to specify the type of data, and the workstation software will handle finding it and gaining access. Here we describe a method to achieve this vision that is now in use at Lamont and several other institutions. Institutions make "views" of their databases publicly available to Internet users, employing database-serving software that runs on one of their computers. This software completely automates the process of finding out what kind of data are available and retrieving them. Hence a wide variety of different databases become, from the scientist's perspective, parts of an Internet-wide Earth science database. At the same time, the institution that archives the data is not locked into any particular database management system, so it is free to provide alternative access methods and to exclude some of its data from the system. The self-teaching nature of this concept is especially useful in large cooperative scientific efforts.

Need for Data Access

To advance understanding of a given region of the Earth, a scientist may need to study and compare many different data types with very different structures and volumes. In a geological study of a volcanic region, for instance, a scientist may need to examine topographic data to locate major volcanic edifices, gravity anomaly data to infer crustal thickness, seismicity data to locate active geologic faults and regions of magma movement, satellite photos to map recent lava flows, and chemical analyses of rocks to understand the magma generation process. Furthermore, a large number of subsidiary databases (such as magnetic anomaly, heat-flow measurements, well temperatures, meteorological reports, and others) may play a role in resolving a particular problem.

William Menke, Paul Friberg, Arthur Lerner-Lam, David Simpson, Robert Bookbinder, and Garry Karner, Lamont-Doherty Geological Observatory, Columbia University, Palisades, NY 10964; William Menke is also with the Dept. of Geological Science, Columbia University.

0096/3941/7238/91/409/$01.00.

Research in such integrated studies can be greatly facilitated by a carefully designed database tool, which must first of all be capable of teaching the user which data are available. Too often a researcher has overlooked a source of data that might further his or her research out of ignorance of its existence—even though a nearby colleague may have it in a desk drawer—or because the structure of the database was perceived as being too complex. This problem is worsening because more data are being collected in much larger volumes than previously and by a larger and more international group.

The data must also be readily available, preferably on-line. A month's delay while a scientist attempts to obtain a tape of a critical data set can greatly interfere with a study, especially with the pursuit of promising but speculative paths of research. The available data should also be complete and up-to-date, obtained as close as possible to their original sources instead of using incomplete copies of unknown pedigree.

In addition, the method of data access needs to be reasonably uniform even though the individual data sets may be stored in physically different places and by different methods. A scientist should not have to deal with a dozen or so idiosyncratic data access methods in order to access as many kinds of data. There is also a critical need for user-friendly software applications that can access, display (in map format, for instance), and manipulate data. Finally, the whole system must be flexible enough to allow for scientific creativity in an exploratory research environment. The various pieces of the system must not be combined so tightly that they cannot be replaced with new, experimental, or custom-made pieces. The system must not be self-contained; rather, it should constitute only one facet of an overall research environment.

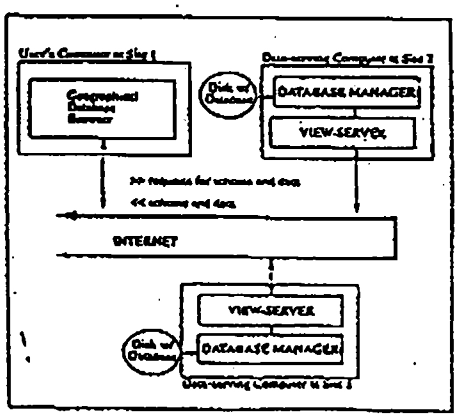

Fig. 1. Data accessing system. The scientist's computer at Site 1, which is running a map-based geographical database browsing program such as GB, can retrieve data from data-serving computers at Sites 2 and 3, located elsewhere on Internet.

Poor Access to Data

While Earth scientists gradually make greater use of on-line data, the current situation, with a few exceptions, is poor. Most groups still archive data mainly onto magnetic tape that is distributed by mail. Some modernization has taken place, mostly as a move to CD-ROMs, but often without any improvement in data formats or in the level of compatibility between different software that reads CD-ROMs. Furthermore, continued reliance on distribution by mail leads to much slower and more awkward access than can be achieved by electronic means such as Internet.

The exceptions to this situation are noteworthy. Some institutions make data available through Internet's File Transfer Protocol (FTP) facility, which can be used to transfer files from an archive to a scientist's computer. A few institutions, such as the Center for Seismic Studies and NASA, make arrangements for scientists to access their on-site database management systems through guest accounts on their computers. A very few have network-accessible databases, such as the Incorporated Research Institutions for Seismology's Data Center and Lamont. These exceptions demonstrate that a large segment of the community is both willing and able to use network technology to share data.

There has been considerable discussion among Earth scientists on how to improve data access. Some favor the establishment of more centralized data centers. We believe, however, that data quality suffers when archives are far removed from the scientists who extensively use them. Archiving centers that are completely divorced from research tend to become mere "clearinghouses" for distributing third-party data of uncertain quality. Furthermore, without research-driven competitiveness, archiving centers tend to fall quickly behind technologically. Thus, we see distinct advantages to a combination of "smallish," topical data centers and scientific groups at research institutions that make individual data sets available as part of a loose, network-distributed database. The data remains close to the scientists who generate it, but—given software able to find the data on the network automatically—it is also available to everyone else.

One argument against using a network-distributed database is that such a system would exclude Earth scientists at smaller institutions who lack access to Internet. Actually, an inexpensive telephone modem can be used to communicate between a personal computer at a small institution and a computer on Internet, provided that an account has been set up. Once connected, the scientist has access not only to that computer's

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data, but to all data in the network (albeit at a fairly slow transmittal rate). Furthermore, the cost of a direct Internet connection is rapidly declining.

Lamont's Design for a Data Access System

No current software system comes close to embodying the features we have discussed (although many data management and display systems contain clever, innovative ideas worth emulating). Most of the commercial Geographical Information Systems (GIS) either have very limited capabilities (with access only to satellite photographs, for instance) or are very rigidly structured in a way that might be suitable for production but not for research. Furthermore, most existing GIS software provides only minimal data management and access services. At Lamont, we developed a prototype system to work out some of the theoretical and practical problems. Development of these tools has great potential to lead to scientific advances, since it simultaneously frees the scientist from the drudgery of assembling a data set and provides a larger set of data from which new insights can be gained.

Our design was motivated primarily by the way in which Lamont and many other labs function, with small groups collecting and archiving a given type of data, but with a much wider community of scientists gaining access to or reading the data. The scientists who collect the data want primary control; they want it to reside on a nearby computer system, and they want to choose their own data management system, to design their own database structure, and to control changes made to the database. Since they are the experts on that data, they need the most sophisticated access. Other scientists have only "reading" access to the data, and may be willing to trade flexibility for convenient access. For instance, if the data are stored under a relational database manager, they may be satisfied with a few predefined "views" (where a view is a single flat table built from the many database tables) rather than general access to the complex database itself.

We therefore decided to distinguish between these two types of data access. We assume that the data are stored using some database management (DBM) software, which may be of university or commercial origin. This software is used to input data and can be invoked directly by the scientist for "expert" access. We then designed an intermediate layer of software, a "view-server," that separates and insulates the ordinary scientist from the complexity of the DBM software and of the database itself. The view-server keeps track of which databases and schema are available (there may be many, each controlled by a different, small group of scientists, and each at a different location on the local, or wide, area network). It can also obtain views of data from the database (Figure 1). Each view is a simple, rectangular table of data. A view's structure is intentionally kept simple to make it easy to write software that can learn the schema of new views from a view-server and that can present the data in some scientifically desirable form, such as graphs, tables, or maps. The ability of the scientist's display software to manipulate a particular view is not built in, but rather is learned from the view-server. This automatic learning facility improves the software's versatility.

To further simplify the design of applications that can communicate with the view-server, we have limited the fields of views to parametric data (integers, floating point numbers, and character strings). We handle time series and images in a rather ad hoc fashion by assuming that they are stored in a predefined format in a file and including the file pathname as a field of the view. Standard Internet file transport (such as FTP or Network File System [NFS]) is then used to recover the time series or image.

Our main effort in application development has been a geographical database browser (called "GB"), the main tool for extracting data from databases. It also has most of the features of a traditional GIS application: a scientist can mathematically manipulate parametric data and images and display them on maps. GB can be used in conjunction with other software (including commercial GIS applications) as part of a larger data processing environment. A key part of the overall philosophy of the Lamont system is to keep the different parts of the system coupled as loosely as possible, with just enough standards to maintain a "look and feel" similarity between applications and to facilitate interchange of data. Thus the system can be built upon easily by specialized users. For example, Lamont's seismology division has developed several substantial seismogram manipulation and earthquake location applications that are, on the one hand, completely distinct from the data access system and yet function smoothly with it.

View-Servers for Access to Parametric Data

A pervasive problem in dealing with data sets provided by different institutions or even the same institution is that they are usually in incompatible formats. Furthermore, software provided by the institution to read one data set often cannot read another. Even making a simple plot or map containing two types of data can be very difficult and time-consuming. This could be solved if institutions would agree on a common format and conventions for data units. However, this seems unlikely given the wide variety of formats in use, ranging from simple text files of FORTRAN "card-images" to formats imposed by commercial database management products. Furthermore, database technology has not yet provided a single solution to all data archiving problems. Formats appropriate for one kind of database might be completely unsuitable for another.

The view-server concept is an attempt to define a compromise—a standard in the absence of standards. No requirements are placed on the underlying format in which the data are stored at the institution. Instead data are reformatted as they are transmitted over the network to the scientist. The issue of data format is effectively sidestepped, providing the scientist with a uniform, network-based access method for publicly accessible geographical databases. Furthermore, the view-servers provide indexing and documentation services not usually provided by formats alone. Unfortunately, one of the negative aspects of the compromise is that uniformity in the data archiving process is not improved, and some of the complex—but useful—relationships that might exist between data in their original format might be lost when they are reformatted for distribution over the network.

The view-server is implemented as a standard network service, built upon a client-server computer architecture. The scientist runs a software application (the "client") to retrieve and display data, which communicates over the network to another software module (the "server") running on a different computer that supplies the data (Figure 1). Communication is by messages using a standard protocol that we have developed.

Before designing the view-server and its underlying network protocol, we considered whether any existing standards could be adapted and applied. We evaluated Structured Query Language (SQL), a database access programming language used in many commercial database management systems, but decided it could not be used directly, fc such a choice would seem to preclude the use of fast, simple non-SQL databases that are already in many university data archives. Also, in practice, relational database managers from different vendors use substantially incompatible versions of SQL and completely different methods of communicating SQL queries to database managers. Finally, SQL lacks standard features for documenting the contents of databases. In our opinion the ability to recover information about data in a standard way is every bit as important as the ability to recover the data itself.

The protocol we developed provides the client with a detailed description of the database views, including their names and a detailed description of their contents; suggests view names related to any view name selected; and satisfies a request for data for a specific view. The first two functions are essentially "contents" and "index" functions, respectively. They automatically document the contents of databases and provide information that helps scientists assess whether a particular type of data is relevant to their work. They are used to answer questions such as: What kinds of data does this institution have? Is there data on the geographical region that interests me? What is the meaning of a particular field in the database? Equally important, the view-server provides this information in a machine-readable format that can be used by software applications that present the data to the scientist. This feature makes it possible for software to

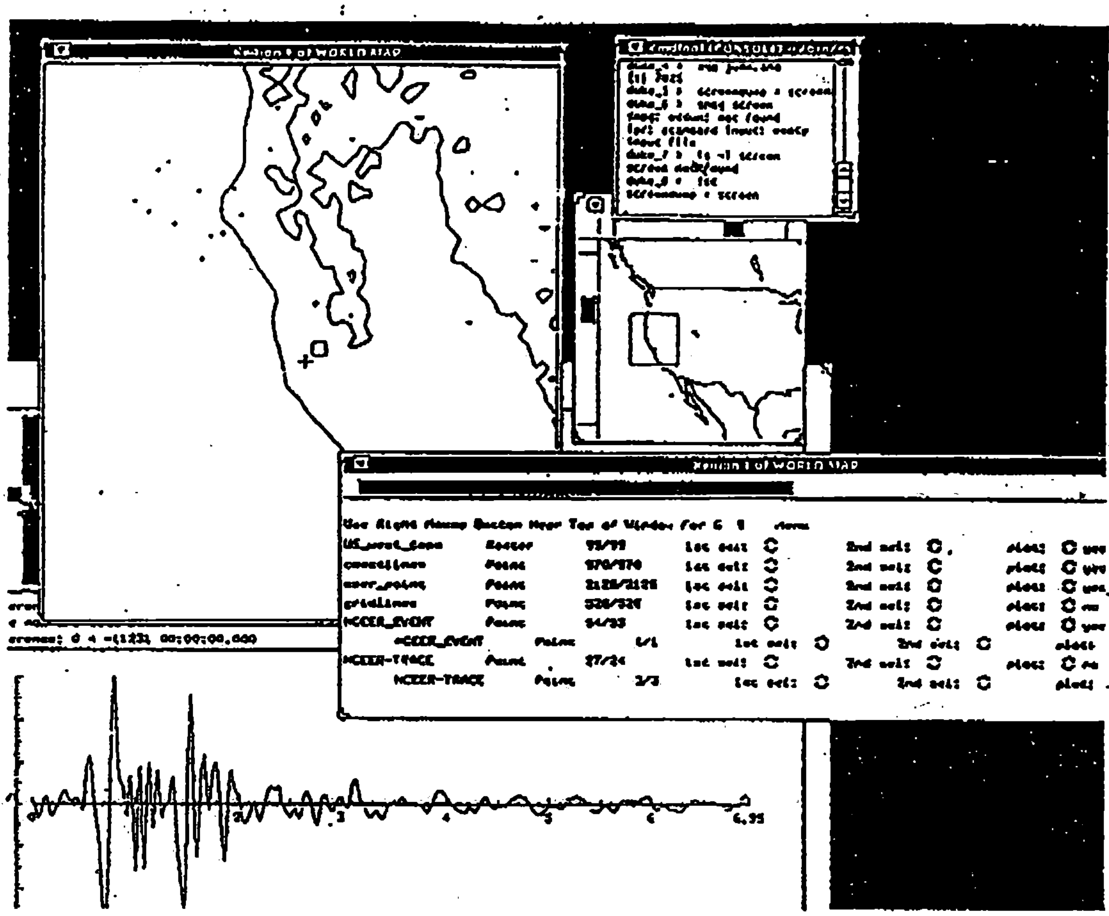

Fig. 2. Screen of tist's workstation typical usage of th ont Geographical base Browser. The tist is displaying o of western North A ica. Coast lines an meter topographic files are shown fo orientation. Eartha hypocenters from NCEER_EVENT vie (crosses) have bee trieved from the vi server on the comp duke.ldgo.columbi maintained by the tional Center for E quake Engineering search. The scienti selected one of the events (large cross retrieved records fr NCEER_TRACE vie that earthquake. O record has been se that corresponds to seismic station loc near the hypocente (square). One of th fields of this view tains the pathname the strong motion erogram recorded station. This time s is displayed using arate program.

simultaneously display a very wide variety of data.

The protocol is simple enough to implement a view-server in a few days of modest programming effort. It uses widely available UNIX subroutines, such as Berkeley sockets and External Data Representation. Special purpose view-servers can be written to provide a network interface even to one-of-a-kind databases. For instance, Lamont has a view-server for its "GMT" marine geophysical database. We are currently providing view-server software for four different database management systems: an ASCII-view-server for databases based on simple text files; the "dm-view-server" and "sdm-view-server" for two very fast binary database managers written at Lamont; and the "sql-view-server" for relational DBMs based on the popular SQL database language (for example, UNIFY and SYBASE).

Simple Access to View-Servers

A "user-interface" program provides access to data made available by the view-servers. The simplest user-interface that we provide is a set of command-line oriented programs that can be run on a simple, non-graphical terminal connected to a UNIX computer. Since the connection might be made through a telephone modem, this simple user-interface makes the entire distributed database accessible to a scientist having an account with any computer on Internet. Information about the views made available by the view-server running on a given computer can be obtained with the command "rshowviews hostname", where "hostname" is the Internet name of the computer running the view-server. Once the scientist is aware of an interesting view, data from that view for a particular part of the world can be obtained with the command "rviewsdm host view_name query left right bottom top"

Here "query" is a logical expression (in a C-like syntax) operating on the fields of a single record of the view, and "left," "right," "bottom," and "top" are the longitude and latitude bounds of a rectangular region on the Earth. For instance, if the view "ISC_hypocenters" contained a field "magnitude," the scientist could recover all hypocenters from a given region with the query "magnitude>5.5". The data retrieved by this command are in a simple, ASCII "spreadsheet" format.

The scientist can then search for other views related to a particular view with the command "rassocviews host view_name". Perhaps, following the example above, the "ISC_hypocenters" view is associated with an "ISC_arrival_time" view. Then the scientist could recover the arrival times associated with a particular earthquake with the co mand "rviewsdm host view_name query get_id", with "target_id" being the ID of hypocenter of interest.

High Performance Map-based Use Interface

The Lamont Geographical Database Browser (GB) is a GIS application basec X-Windows and SunView, which can di data in the form of symbols on maps (F 2). This application learns from networ view-servers which types of data are ava able anywhere on Internet and determin their schema. The user can retrieve thes data and manipulate them graphically a symbolically. This software employs a p erful mathematical expression interprete that allows the user to query from the d base, perform sorting and arithmetic fu tions and control symbol attributes, all through symbolic expressions operating the fields of the views. The user can ca any number of views, and plot them on base map (either as discrete symbols fo parameters or by contouring images). C can also be used to transfer data to oth programs, including spreadsheets, time-ries analysis programs, and two- and th dimensional plotting programs, all of w use common data formats.

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Table 1. Compressed UNIX TAR Files with Contents

gb.lic.ps	License agreement (PostScript format)
gb.tar.Z	GB geographical browser, and manual for entire system, gb/doc/gb.inst.ps (PostScript format)
dm.tar.Z	DM database manager and view-server
ascii.tar.Z	ASCII database manager and view-server
sdm.tar.Z	SDM database manager and view-server, and rshowview, rviewsdm, rassocviews commands
sql.tar.Z	SYBASE and UNIFY sql-view-servers
parse.tar.Z	mathematical expression parser subroutines
lxt.tar.Z	Lamont X-Toolkit subroutine library

Table 2. Public View-Servers at the Lamont-Doherty Geological Observatory

Name	Number	Type	Contents
miles.ldgo.columbia.edu	129.236.10.70	DM	miscellaneous geophysical
duke.ldgo.columbia.edu	129.236.10.50	SYBASE	NCEER strong motion
trane.ldgo.columbia.edu	129.236.10.90	SDM	miscellaneous seismic
chaos.ldgo.columbia.edu	129.236.10.20	ASCII	miscellaneous geophysical
clipper.ldgo.columbia.edu	129.236.20.90	GMT	marine geophysical ship data
ocean.ldgo.columbia.edu	129.236.20.71	GMT	marine geophysical ship data

Currently Available Data

Lamont currently makes the following kinds of parametric data available through its view-servers:

Geodetic: Vector coastlines at a variety of resolutions; rivers, lakes, political boundaries, and so on for selected parts of the world.

Seismological data: earthquake hypocentral catalogs, including the International Seismological Centre and Preliminary Determination of Epicenter global catalogs, and local catalogs such as Lamont's New York State and Aleutian catalogs, the California Division of Mines and Geology's California catalog, the Decade of North American Geology's U.S. catalog, the Electric Power Research Institute's eastern U.S. catalog.; centroid moment tensors, mapped faults for selected regions of the world; strong motion accelerogram from the U.S.; and locations of seismological observatories.

Geophysical data: Along-track measurements of gravity anomalies, magnetic anomalies and bathymetry for Universities National Oceanographic Laboratory Systems research ships; global land gravity stations; satellite geoid, seafloor magnetic anomalies, and isochrons; and marine heat flow measurements.

Geological: Deep Sea Drilling Program and Ocean Drilling Program drill sites; the Lamont and Oregon State University piston core catalogs.

We expect the list of available data to grow as other institutions contribute data. We provide a directory service for view-servers at other institutions through the view named "view_servers" on chaos.ldgo.columbia.edu. E-Mail should be addressed to menke@lamont.ldgo.columbia.edu to announce the introduction of view-servers.

Software and Access to View-Servers

We encourage interested scientists and data management staff to consider running view-servers on their institution's computers. Such an effort will be particularly easy given access to Sun workstations, since recompilation of the software will not be necessary. First transfer the manual, gb.inst.ps, and the rshowviews, rviewsdm, and rassocviews programs to your computer (see Table 1). You will then be able to access view inform[illegible] and data from view-servers (see Table [illegible] Then transfer and install GB, which re[illegible] data and displays them on maps. Finally, pick one of the simpler view-servers (such as ASCII or DM), install it on your computer and build some of your own databases. Unfortunately, because of limited resources, w[illegible] cannot provide technical support.

License to use the software described in this article is granted free of charge to non-profit educational institutions and U.S. government agencies, simply by completing an[illegible] returning the license agreement in the docu[illegible]ment gb.lic.ps (see Table 1). All material can be obtained by anonymous FTP to lamont.ldgo.columbia.edu (129.236.10.30) and consists of compressed UNIX "tar" files in the directory ~ftp/pub (see Table 2). In return for using this software, we request that host institutions maintain databases diligently and make them publicly available. Some interesting time-series and raster data are available on the public NFS-mountable file system duke.ldgo.columbia.edu:/duke/nceer_data.

Acknowledgments

We thank all those who contributed to Lamont's database development efforts over the years. Programmers Roger Davis and Ke[illegible] Howard helped develop the GB application. Other staff members (past and present)—including programmers Richard Boaz, [illegible] Liu, Brenda Murphy, Suzanne O'Hara, Doug Shearer; engineers Dale Chayes, Davi[illegible] Lentrichia, and Larry Shengold; and scientists Dallas Abbott, Tom Boyd, Alberto Mali[illegible]verno, Walter Smith, Jeffrey Weissel, Paul Wessel, and Dean Witte—have made many important contributions to our overall data collection and archiving projects. We also thank those from other institutions who pro[illegible]vided comments and assistance, including Bill Leith and Janet Walz of the U.S. Geolog[illegible]cal Survey. Part of this research was funded by the National Science Foundation under grants EAR87–96177 and IRI90–13126. Lamont-Doherty Contribution Number 4832.

LeRoy W. Collins, Jr.
Manager
Government Sales

COMSAT
Maritime Services

Communications
Satellite Corporation
950 L'Enfant Plaza, SW
Washington, DC 20024
Telephone 202-863-6725
Telex 197800
Fax 202-488-3814/3819

COMSAT

December 30, 1991

Ms. Katherine Rodway
Lamont Doherty Geological Institute
Borehole Research Group
Palisades, NY 10964

Dear Katherine:

Since the RVOC meeting in early September, I have been working to ease the enrollment procedures in our INMARSAT discount plan to accommodate the UNOLS fleet. Because the Defense Commercial Communications Office (DECCO), the agency which acts as the accounting organisation for the government, is unable to ease the enrollment restrictions and the National Science Foundation's (NSF) accounting system cannot easily accommodate DECCO's central billing requirement, I am recommending that you consider our commercial discount program, the Volume Incentive Plan (VIP).

Details of the VIP are attached. The VIP is a discount program with no downside, offering several ways to obtain significant discounts and refunds based on traffic volume over time. You may enroll your vessel and any other INMARSAT terminals that are owned or controlled by your university.

To participate in the VIP, complete and sign the registration agreement for the INMARSAT terminals you control. To be eligible for the annual refund and commitment incentive payment, complete the section in the registration agreement indicating your traffic commitment for the next twelve months. Should your university find it difficult to absorb a refund check at the end of the year, we will gladly credit your refund to the next year's billing statement.

I have also included information on the Volume Subscription Plan (VSP) which is available for our US Government users.

Please let me know if you have any questions.

Sincerely,

LeRoy W. Collins, Jr.

Enclosure

000384

Volume Incentive Plan

The Volume Incentive Plan (VIP) offers discounts in the following 3 ways:

1) Initial rate reductions
2) Annual rate reductions
3) Commitment Incentive Payments

1) Initial rate reductions are made to incremental peak traffic as the customer's total ship originated traffic exceeds certain thresholds which are indicated below:

Customer's Total Traffic	Reduction	Net Initial Rate
3,000 - 5,999 min.	$0.25/min.	$9.75/min.
6,000 - 11,999 min.	$0.75/min.	$9.25/min.
12,000 - 23,999 min.	$1.00/min.	$9.00/min.
24,000 - 47,999 min.	$1.25/min.	$8.75/min.
More than 48,000 min.	$1.50/min.	$8.50/min.

These reductions apply equally to all VIP enrollees regardless of their enrollment level, which is discussed below.

2) Annual Refunds apply to all ship-originated traffic (both peak and off-peak), and are made at each year-end if the customer's year-end total ship-originated traffic meets or exceeds their selected enrollment level. Each successive enrollment level has a higher Annual Refund amount. So, it's in the customer's interest to select and achieve the highest level possible since the Annual Refund is paid at the corresponding amount for all traffic (i.e., these are not incremental).

Customer's Enrollment Level	Annual Refund Amount
3,000 - 5,999 min.	$0.15/min.
6,000 - 11,999 min.	$0.25/min.
12,000 - 23,999 min.	$0.50/min.
24,000 - 47,999 min.	$0.70/min.
More than 48,000 min.	$0.90/min.

3) Commitment Incentive Payments are paid at the end of either 3, 4 or 5 years on cumulative total ship-originated traffic since plan inception, if the customer selects and achieves the same or higher enrollment level in each successive year of the plan, without withdrawing. The customer decides when to be paid the Commitment Incentive Payment based on the following:

Plan Year of Payment	Commitment Incentive Payment
3 or 4	$0.30/min.
5	$0.50/min.

In order to help better understand COMSAT's VIP Program, a simple example is presented below:

Example:
In Plan Year 1, a customer enrolls at the 24,000 minute level and actually utilizes a total of 36,000 peak ship-originated minutes. For this example, all of the customer's traffic is peak. The effects of off-peak traffic will be discussed in the comparison section which follows later.

This customer would be invoiced at the basic rate of $10.00 per minute less the applicable Initial Rate Reductions as follows:

Traffic Range	Initial Rate Reduction	Net Rate	Amount
0- 2,999	None	$10.00	$ 29,990
3,000- 5,999	$0.25	$ 9.75	$ 29,250
6,000-11,999	$0.75	$ 9.25	$ 55,500
12,000-23,999	$1.00	$ 9.00	$108,000
24,000-36,000	$1.25	$ 8.75	$105,009
Total Initial Cost for 36,000 Peak Minutes:			$327,749

Average Initial Cost per Minute: $9.10

Because the customer enrolled in the 24,000 minute level of the program, and exceeded that amount, he is entitled to an Annual Refund at the end of the year of $0.70 per minute, or $25,200. This reduces the customer's net cost per minute to $8.40.

Finally, if the customer should enroll at the 24,000 minute level or higher in each of years 2 and 3, and achieve this level or higher, he would be entitled to a commitment Incentive Payment at the end of year 3 of $0.30 per minute, reducing his net cost per minute for year one traffic to $8.10. Alternatively, the customer may remain in the program for 5 years using the seme criteria and instead receive $0.50 per minute, further reducing net average cost to $7.90.

000386

COMSAT

COMSAT
Mobile Communications

Communications
Satellite Corporation
950 L'Enfant Plaza, SW
Washington, DC 20024
Telephone 202-863-6000
Telex 197800
Fax 202-488-3814/3819

November 1991

INFORMATION BULLETIN ON COMSAT's U.S. GOVERNMENT VOLUME SUBSCRIPTION PLAN (VSP) FOR INMARSAT SERVICES

General Provisions:

COMSAT is pleased to announce to all U.S. government customers of COMSAT's INMARSAT satellite service, the implementation of a new reduced government tariff program. This tariff provides a substantial reduction in COMSAT's rates for ship (or transportable unit) originated voice traffic.

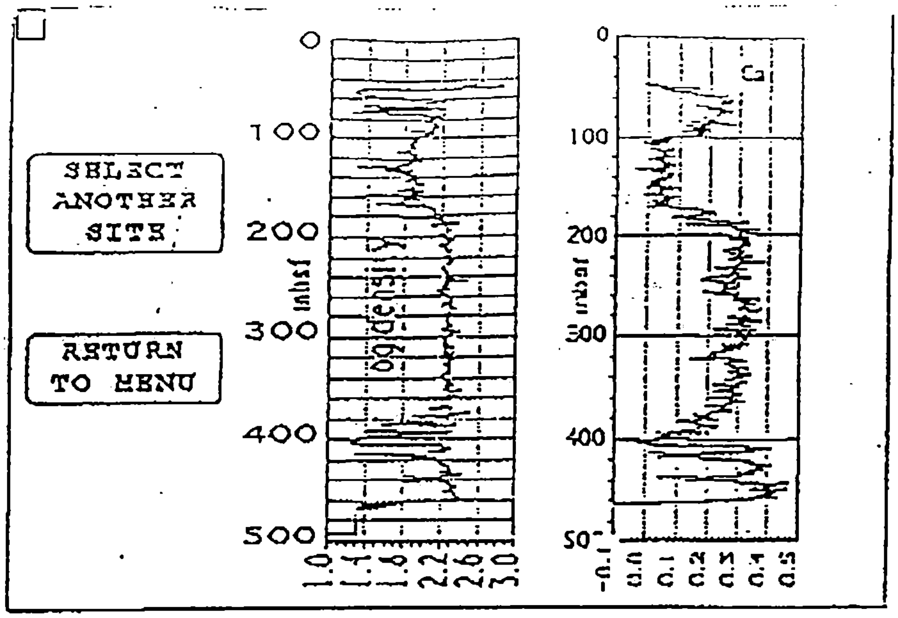
The new program is identified as the U.S. Government Volume Subscription Plan (VSP) and became effective January 1, 1991. Service will be billed at the new rate at the end of the month following that in which new subscribers become enrolled in the program. A key element in the new tariff is central billing through the Defense Commercial Communications Office (DECCO) at Scott Air Force Base. DECCO serves as the accounting organization for all Defense Department users and will also provide billing service for other federal government agencies and certain foreign organizations on request.

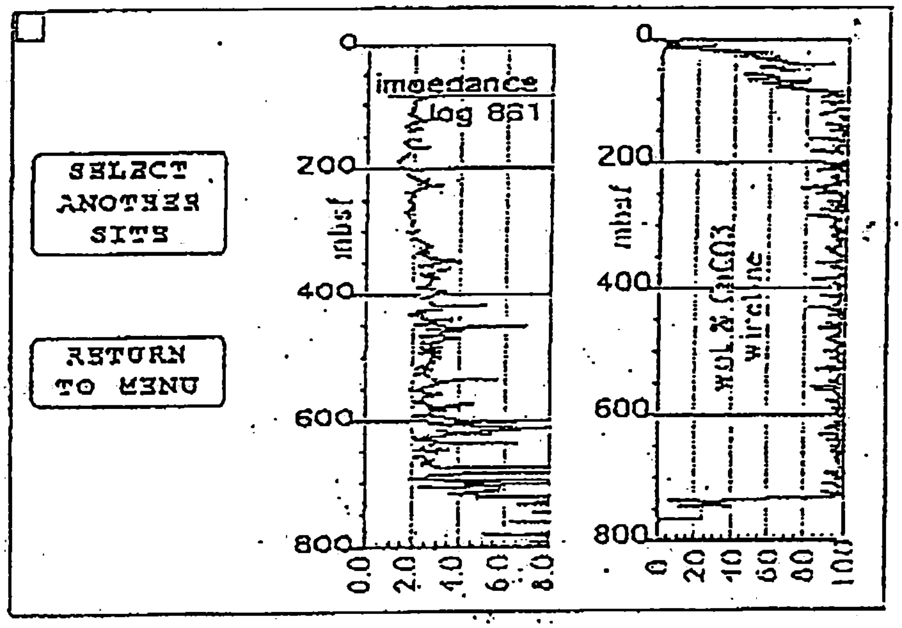
The new VSP tariff brings benefits to both COMSAT and its customers through lower rates and prompt central payment. There are also provisions for further reductions in the rate as the aggregate service volume increases over a ten year period. The tariff specifies that all ship originated telephone traffic will initially be billed at $7.70 per minute in lieu of the usual $10.00 provided that the customer is enrolled with DECCO for central bill payment.

Enrollment in the VSP program is very beneficial to low volume users who will enjoy the volume based discount even though their usage is low, and is also beneficial to high volume users who can reach deeper discount plateaus sooner since all government traffic for enrolled users is aggregated for purposes of determining the discount levels.

DECCO has committed to VSP as a ten (10) year program commencing 1 January 1991 under which U.S. government customers who enroll with DECCO will receive a discount on their ship (or transportable) originated telephone traffic routed through COMSAT Coast Earth Stations at Southbury, CT and Santa Paula, CA. VSP enrollees agree to route all their traffic though a COMSAT Coast Earth Station unless one is not available. COMSAT Earth Stations presently serve the Atlantic East (AOR-E), Atlantic West (AOR-W), and Pacific Ocean Regions (POR). The VSP discount will also be available in the Indian Ocean Region (IOR) when COMSAT's direct IOR service via the Turkish Coast Earth Station is inaugurated early in 1992.

000387





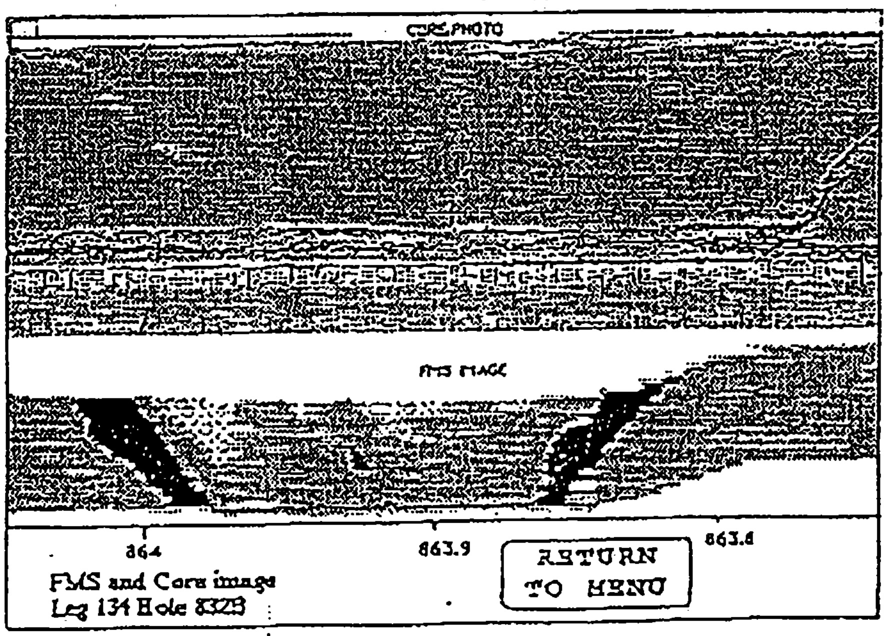


Figure 4 . Other comparisons of data that could be included in the ODP database carried on the ODP DataNet.

000388

VSP Rates and Billing Procedures:

The discounted rates begin at $7.70 per minute for ship-to-shore traffic (usually $10.00 per minute) and $15.40 for ship-to-ship traffic (usually $20.00 per minute). Both rates are bundled including land line charges when terminated in the U.S. The applicable rates are based on cumulative government traffic of enrolled users and will be further reduced for all subscribers as cumulative VSP minutes reach new levels as follows:

CUMULATIVE VSP MINUTES	RATE PER MINUTE SHIP-TO-SHORE	SHIP-TO-SHIP
0-124,999	$7.70	$15.40
125,000-249,999	7.20	14.40
250,000-499,999	6.80	13.60
500,000-999,999	6.50	13.00
1,000,000 & UP	6.25	12.50

A. The new tariff does not include traffic originated by telephone subscribers ashore since that service is billed by AT&T or other telephone carriers under their own tariffs. The existing telex tariff is not affected by this program.

B. VSP traffic that terminates outside the U.S. will be billed at the above rates plus the applicable land line rates. Telephone company credit card calls are billed at existing shore-originated rates. Commercial credit card calls are billed at VSP rates. Collect calls in the shore-to-ship direction are eligible for VSP rates but not in the ship-to-shore direction.

C. Each month COMSAT will furnish DECCO with a master billing diskette and a paper invoice covering all enrolled users by Ship Earth Station (SES) Identification Number (I.D.) number. DECCO pays the bill on receipt and debits the established accounts by program designator code. The service charges are marked up by DECCO about 1.5% to cover handling costs. COMSAT separately furnishes paper invoices to enrolled customers through their respective agencies which can be used to comply with certification rules, if prescribed. Any discrepancies are adjudicated with COMSAT in the usual fashion and credit as appropriate is rendered on a subsequent invoice.

Enrollment Procedures:

The VSP tariff provides that DECCO notify COMSAT by the 20th of each month for each new subscriber to be enrolled commencing the first of the following month. The following procedures and terminology are based on U.S. Navy instructions and could vary somewhat for other agencies.

A. The user/customer submits a Feeder Telecommunications Service Request (FTSR) to the serving agency Telecommunications Certification Office (TCO). The FTSR should contain the compleaccounting classification code for DECCO to cross-disburse against. Pursuant to Contract No. DCA 200-91-D-0020, the user should also provide a mailing address for paper copies of invoices which will be provided by COMSAT for certification.

B. The Agency TCO will then transmit a Telecommunications Service Request (TSR) to DECCO and will assign a Program Designator Code (PDC) for each new customer within that agency.

C. Upon receipt of the TSR, DECCO issues a Delivery Order to COMSAT on form DD-1155. This also constitutes DECCO's enrollment notification to COMSAT.

D. COMSAT bills DECCO monthly and DECCO pays COMSAT on receipt from their Communication Service Industrial Fund (CSIF). DECCO then reimburses the CSIF using the customer's accounting classification codes.

E. COMSAT will arrange to change the registered billing address on file at INMARSAT to show COMSAT Mobile Communications as the international billing address for all customers who enroll with DECCO. However, the tariff specifies use of the COMSAT Coast Earth Stations and the government discount is not available on traffic routed through foreign stations such as Japan's KDD Earth Station covering the Indian Ocean. These bills will be passed through to DECCO by COMSAT without discount or mark-up on an interim basis until COMSAT's new direct IOR service via Turkey is available in 1992.

F. New government INMARSAT customers may submit a TSR to DECCO prior to receiving the SES I.D. number. Once the SES I.D. number has been assigned by INMARSAT Headquarters in London, the user must notify DECCO of the SES I.D. number and associated commissioning date. The I.D. number is obtained by submitting a Commissing Application to COMSAT in accordance with Agency procedures. The I.D. number is the basis for the billing process and must be provided to DECCO.

<u>For Further Information</u>:
For further information you may wish to contact one of the following:

<u>DECCO</u>	<u>COMMERCIAL</u>	<u>AUTOVON</u>
Bonnie Griffith, Finance	618-256-9215	576-9215
Karen Keller, Contracts	618-256-9483	576-9483
<u>COMSAT</u>	<u>COMMERCIAL</u>	<u>TOLL FREE</u>
Katy Ackland, Program Mgmt	202-863-6097	1-800-424-9152
Roy Collins, Govt Sales	202-863-6725	1-800-424-9152
Jack Fuechsel,Govt Sales	202-863-6539	1-800-424-9152
John Rasmussen, Govt Sales	202-863-6847	1-800-424-9152
<u>NAVY</u>	<u>COMMERCIAL</u>	<u>AUTOVON</u>
Hank Adams, PDC	202-282-2450/2455	292-2450/2455
Cathy Green, TCO	202-282-2450	292-2450
Doug Jackson, TSR	202-282-0573/2455	292-0573/2455

000390

RECEIVED 000391

MAR 3 0 1992

Ans'd............

July 22, 1991

Dr. William Erb
Director
Office of Marine Science and
Technology Affairs
U.S. Department of State
Washington, DC 20520

Dear Bill:

It was a pleasure to meet you on board the *JOIDES Resolution* at the San Diego port call earlier this month. Perhaps you could help me with the following query which came up at the last Planning Committee: What are the prospects for getting clearance to operate in the Red Sea? Has Operation Desert Storm changed things?

You may recall that early on in the life of ODP, the Planning Committee was hoping to schedule a drilling leg in the Red Sea. If the clearance situation had been very good, the leg would have happened in mid-1987. But the advice we were given was not encouraging, so it never got into the program.

The scientific interest in Red Sea drilling remains strong. If given encouragement, a Red Sea leg might get into the program in 1994 or '95. Should we encourage the scientific community in this quest?

Yours sincerely,

Tim Francis

Timothy J.G. Francis
Deputy Director

TJGF:hk

Ocean Drilling Program
Office of the Director
Texas A&M University Research Park
1000 Discovery Drive
College Station, Texas 77845-9547 USA
...345-8480
... Number: 62760290
FAX Number: (409) 845-4857

000392

United States Department of State

Bureau of Oceans and International Environmental and Scientific Affairs

Washington, D.C. 20520

RECEIVED
MAR 3 0 1992
Ans'd............

July 31, 1991

Timothy J.G. Francis
Deputy Director
Ocean Drilling Program
Texas A&M University
College Station, Texas 77845-9547

Dear Tim:

I believe the answer to your query on Red Sea drilling is yes. Prospects there are imporved since 1987 especially with regard to Saudi Arabia. Egypt is likely to cooperate as I believe they were in 1987. Of course, all could change by 1995 but if you begin laying the groundwork now you could establish support within the countries.

I enjoyed meeting you as well and appreciate the kind hospitality aboard the vessel.

Best regards,

Bill

William Erb

February 27, 1992 **000393**

Mr. Vernon Greif
Overseas Drilling Limited
707 Texas Avenue South
Suite 103D
College Station, TX 77840

RECEIVED
APR 0 8 1992
Ans'd............

Dear Vernon:

As we discussed on the phone, we would very much appreciate it if you could provide cost information on drilling/coring at the following sites with appropriate alternative platforms to the 471.

	Water Depth	Penetration Required	Environment
1. New Jersey Margin (Examples)			
MAT 1	29 m	647 m	Exposed to Atlantic weather
MAT 6	60 m	868 m	
2. Anewetak Atoll			
ANE-1	30 m	1000 m	Sheltered waters of lagoon
3. MIT Guyot			
MIT-1 (E)	1400 m	850 m	Open ocean

I assume that an appropriate jack-up would be used for 1 & 2, and a drillship for 3.

Please provide a breakdown of costs in the following categories:

(a) Commissioning the rig and getting it to the site.
(b) Day rate of rig on site.
(c) Approximate cost of site investigation work prior to any jack-up operations.
(d) Cost of coring equipment if not already on the rig. Barry can provide this information for an ODP wireline set up.
(e) Decommissioning costs of rig.
(f) Supply vessel costs -- commissioning/decommissioning/day rate.

Assume that ODP can provide the drill pipe needed for the operation.

I enclose details of the four sites mentioned above to assist you. Barry Harding will also be happy to assist you. What we are after is a fairly broad brush picture of the costs of alternative platforms.

Yours sincerely,

Tim

Timothy J.G. Francis
Deputy Director

Ocean Drilling Program
Office of the Director
Texas A&M University Research Park
1000 Discovery Drive
College Station, Texas 77845-9547 USA
(409) 845-8480
Telex Number: 62760290
FAX Number: (409) 845-4857

TJGF:hk

xc: Barry Harding, ODP

Schlumberger Sedco Forex

March 31, 1992
CVG/M04/053

RECEIVED
APR 0 8 1992
Ans'd...........

Dr. Timothy J. G. Francis
Deputy Director
Ocean Drilling Program
Texas A&M University Research Park
1000 Discovery Drive
College Station, Texas 77845

Dear Tim:

The information below is for the New Jersey Margin sites. Barry Harding has the contact for a more mobile coring vessel that could move from the Gulf. Other more suitable and possibly less expensive units could be available at the time approval to core is given, and all these rates would be somewhat negotiable.

Mob/Demob Rig	$15,000 x 28 days = $420,000
Tow Boats Mob/Demob	$28,800 x 28 days = $806,400
Rig Onsite Time	$19,500 x 17 days = $331,500
Tow Boat Standby (assumed cost)	$14,400 x 17 days = $244,800
	$1,802,700

The above numbers could be used to calculate the cost for Enewetak Atoll work, mobilizing a rig out of Singapore.

With respect to MIT Guyot work, the water depth puts it into a range where only a few deepwater units could handle it. In Brazil, for example, the DP ships are currently going for over 60,000/day with very little reduction or cost savings for mobilization. In our case, the additional cost burden to bring the 472 out of mothballs and restore the unit's certification and to refurbish the equipment would be a prohibitive expense for a short-term project like this. We estimate having to spend in the order of $4 to $6 million dollars for this effort.

Regards,

Vernon

Vernon Greif
District Manager

CVG/hsp
cc Ken Mielke

SEDCO / BP 471
SEDCO FOREX • 707 TEXAS AVE. SOUTH • SUITE 103-D • COLLEGE STATION, TEXAS 77840-1917 • 409-696-7955 • FAX 409-693-3482 • TELEX 168743

NOBLE DRILLING (U.S.) INC.

PHONE: (713) 974-3131
TELEX: 4620104

10370 RICHMOND AVE., SUITE 400 • HOUSTON, TEXAS 77042

FAX: (713) 974-3181
FAX: (713) 974-6237

L. L. WERTS
VICE PRESIDENT - MARKETING

March 26, 1992

Overseas Drilling Limited
707 Texas Avenue South, Suite 103D
College Station, TX 77840

Attention: Mr. Vernon Greif

RE: Cost Estimate
Ocean Drilling Program
New Jersey Margin
Noble Jim Bawcom

Gentlemen:

Noble Drilling (U.S.) Inc. is pleased to provide costs estimates for coring operations under the Ocean Drilling Program, offshore the state of New Jersey.

The Noble Jim Bawcom is a mat-supported jack-up drilling unit capable of drilling to 25,000 feet in water depths ranging from 25 to 250 feet. The rig is equipped with 3000 horsepower drawworks, 1600 horsepower triplex mud pumps, a cascade shaker system and an 1,000,000 pound hook load capacity derrick. Rig power is provided by three 1650 horsepower diesel engines through an SCR rig drive system. Exhibit "A", attached, gives a complete description of the rig and its equipment.

The blowout prevention and well control equipment on the Noble Jim Bawcom including the BOP stack, choke manifold, and associated valves, kelly valves, and safety valves are rated for sour gas service under 30 CFR 250.67. The hydraulically activated diverter is equipped with ten-inch lines to port and starboard.

We propose to furnish the Jim Bawcom to Overseas Drilling Limited at an Operating Rate of $19,500 per day including the crew complement as set forth in the attached Attachment "C". The Operating Rate will commence when the rig is jacked up on the first location and will terminate when the rig is released and floated clear of the last location.

The Jim Bawcom is available in Eugene Island Block 113 offshore the state of Louisiana and is ready for immediate inspection.

It is estimated that mobilization to the general area of the drilling locations will require approximately 14 days utilizing two 6000 HP tugs at $1,200 per hour ($28,800 per day) and with a rig moving rate of $15,000 per day. Demobilization is estimated to require the same time at the same moving rate.

Due to the short time the rig is forecasted to be on the East Coast, significant savings in tug mobilization and demobilization may be achieved by holding the tugs on standby near the location. The standby rate would be negotiated prior to mobilization and would range between $500 and $1,000 per day.

It should be noted that Noble, unlike many other contractors, has not reduced salaries and has maintained all benefit plans intact, resulting in an unusually high level of rig personnel loyalty and dedication. In addition, Noble's Safety Incentive Program provides gift certificate awards to each individual crew member based upon the individual's safety performance. The Safety Incentive Program has been in place for over a decade and has achieved measurable positive results.

This proposal is submitted subject to the availability of the Jim Bawcom and execution of a mutually agreeable contract. Additionally, this proposal shall remain valid for thirty days unless extended by Noble Drilling (U.S.) Inc.

We appreciate the opportunity to submit this proposal and look forward to your response. Please call me at 713/974-3131, extension 293, if you require additional information.

Sincerely yours,

NOBLE DRILLING (U.S.) INC.

L. L. Werts
Vice President - Marketing

LLW/nc

Enclosures

Lehigh University

Department of Earth and Environmental Sciences
telephone (215) 758-3660

Williams Hall 31
Bethlehem, Pennsylvania 18015-3188

30 March 1992

Dr. James A. Austin, Jr.
Senior Research Scientist
Chair, JOIDES Planning Committee
The University of Texas at Austin
Institute for Geophysics
8701 Mopac Boulevard
Austin, TX 78759-8345

RECEIVED
APR 0 2 1992
Ans'd...........

Dear Jamie:

Your 3 February letter requested reaction and comment regarding the impact on Leg 146 of GEOPROPS testing and deployment of a thermistor string in Site 857D. We have conferred on these matters, and this letter comprises our joint response, despite the single signature.

As you know, I am not happy with the revised GEOPROPS testing schedule, but the decision has set the present course and there is no point in revisiting my past outrage and disappointment. Work on the GEOPROPS continues apace and we will endeavor to give it a thorough test on Leg 146. Let me simply respond to the statement in the PCOM minutes that "perhaps tools should be tested on legs whose co-chiefs had a strong interest in those tools". If followed to its logical conclusion, this argument would imply that instruments should get *tested* on the legs on which they are required, by the people who need them, and become routinely available only to later legs and co-chiefs who may not use them. Seems crazy to me, but then I may not have PCOMs larger perspective.

Of immediate consequence to Leg 146, Graham and I agree that it is important to revisit Site 857D on Juan de Fuca Ridge, and we will devote up to 1.5 days to replacing the thermistor string. Since we will deploy two borehole seal assemblies on the Cascadia Margin, the appropriate personnel will be on board and there is little transit time involved. If it is going to be done, this is clearly the leg on which to do it. Because we have not yet laid out the scientific prospectus or determined detailed drilling, logging, and downhole experiment times, it is somewhat premature to specify the precise impact of the loss of 1.5 days of operations. Nevertheless, we are agreed that 0.75 days will come from each of the Vancouver Island and Oregon segments, and that the time will be deducted from the lowest priority holes drilled on each segment, rather than compromising other holes. We are confident that the remaining 48.5 days of operations will be sufficient to achieve most of the objectives of the leg.

cc Graham Westbrook
Keir Becker
Earl Davis

Sincerely,

Bobb

Bobb Carson
Professor

000398

Lamont-Doherty Geological Observatory of Columbia University | Palisades, N.Y. 10964

Cable: LAMONTGEO
Palisades New York State
TWX-710-576-2653

Telephone: Code 914, 359-2900

February 10, 1992

Dr. James Austin Jr.
University of Texas
Institute for Geophysics
8701 Mopac Boulevard
Austin TX 78759-8345

RECEIVED
FEB 1 8 1992
Ans'd............

Dear Jamie,

Following up on the Offset Drilling Group meeting in Miami, I am sending you some material concerning drilling at the Vema FZ. I am enclosing a copy of my original Vema proposal, which included drilling into mantle peridotites. I hope this proposal stays in the ODP system, although I am afraid it might have been swept out after the Woods Hole Offset Group meeting. In any case, I am writing a revised Vema proposal, that will take into account the results of the Miami deliberations.

Concerning the possibility that the engineering leg will be done on the Vema Transverse ridge: I would appreciate it if you would let me know if and when this possibility becomes "robust". This will help me convince the Italians to broaden a seismic reflection survey of the transverse ridge, to be carried out next April when the Italian ship comes back from Antarctica. Incidentally, I would not be surprised if drilling through the limestone cap would end up directly in peridotite. (I noted that in transform transverse ridges morphological highs frequently expose mantle peridotite.) If it were so, this would open new vistas on mantle drilling.

I will send you a revised Vema proposal in a few weeks.

Good regards,

Enrico

Enrico Bonatti

P.S. → I will be in Italy up to the Summer

EB:db
encl.

FAX # → 39-51-243117

Department of Geological Sciences
Rutgers, The State University
New Brunswick, NJ 08903
(908) 932-3622 FAX 932-3374

Lamont-Doherty Geological Observatory
Palisades, NY 10964
(914) 359-2900 x540

March 10, 1992

Dr. James A. Austin
Institute for Geophysics, University of Texas at Austin
8701 Mopac Blvd.
Austin, TX 78759-8345

Dear Jamie:

As we wrote to you in Oct. 1991, the drilling transect of the middle Atlantic continental shelf and slope offshore New Jersey (Leg 150) represents an integrated program of offshore ODP, nearshore, and onshore drilling. We will submit a mature proposal to NSF-EAR/ODP on June 1, 1992 to drill three boreholes of the onshore component on the adjacent coastal plain in Nov. 1992-Sept. 1993. We request that the cores and logs obtained (target recovery 4200'; 1200 m) be viewed as ODP material directly related to Leg 150. To this end, we request that PCOM consider endorsing the following at its next meeting:

1) The onshore boreholes will be archived with Leg 150 ODP boreholes at the ECR. We will co-ordinate core transferral with ODP in order to ensure that ODP conventions are followed wherever possible. Sampling procedures will follow ODP conventions, including making the cores available to all Leg 150 participants immediately and to the general scientific community after the standard 1 year sampling moratorium.

2) The basic descriptions of the onshore boreholes obtained in 1993 will be published as an appendix of Leg 150. This would include operational summary, lithologic descriptions, biostratigraphy, logs, photographs, and barrel sheets in standard ODP format.

Although there are other archiving alternatives, the rationale for keeping this body of data together and making it available to the international community is clear: 1) the onshore boreholes are a direct continuation of the offshore ODP boreholes; and 2) archiving with other ODP cores provides the most direct access for the international community including Leg 150 scientists. Only by integrating the onshore and offshore efforts can the pieces of the global sea-level puzzle be assembled.

Sincerely yours,

Kenneth G. Miller

Gregory S. Mountain

x/c D.V. Kent, B. Malfait, T. Pyle, R. Merrill

000400

Copy for all Research staff
OK 2/24/92

February 21, 1992

Dr. James A. Austin
Institute for Geophysics
University of Texas at Austin
8701 Mopac Boulevard
Austin, TX 78759-8345

Dear Jamie:

Science Opportunities on the Ice Support-Vessel for
ODP Leg 151 - Greenland Sea, Summer 1993

Leg 151 of the Ocean Drilling Program is scheduled to conduct a program of drilling in the Greenland Sea, with many sites being located in the Fram Strait region between Svalbard (Spitsbergen) and Greenland close to the edge of the permanent ice pack. The leg is scheduled to start from St. John s, Newfoundland on 28 July and to end in Reykjavik, Iceland on 22 September 1993. If ice conditions permit, drilling will be conducted up to about 80 N latitude. An ice support vessel will be chartered to accompany the drillship during these operations.

The prime purpose of the ice support vessel will be to ensure the safety of the drillship. The vessel will have an ice-rating sufficient to allow her to maneuver in the pack ice of the marginal ice zone. When drilling is taking place close to the ice edge, she will need to remain close to the drillship. However, it is likely that substantial periods of time will be available during which scientific work could be carried out. In this respect the ice support vessel to be employed on Leg 151 will provide an opportunity similar to that provided on Leg 119, when biological sampling and physical oceanographic measurements were made from the support vessel *Maersk Master* on the Antarctic margin.

The purpose of this letter is to determine whether there is any interest among the oceanographic community in this opportunity and, if so, what type of work might be carried out. The letter is being sent to addressees in all of the countries supporting the Ocean Drilling Program. Any scientist sailing with the support vessel would be responsible for finding his/her own research funding, but the cost of the vessel would be paid for with ODP funds. A substantial interest in a particular type of work might influence the choice of the ship we eventually charter.

Please could you circulate this letter among appropriate people in your organization/country in order to help us elicit whether there is any interest in this opportunity.

Interested scientists should write directly to:

Dr. Timothy J.G. Francis
Deputy Director
Ocean Drilling Program
1000 Discovery Drive
College Station, TX 77845-9547

briefly outlining the nature of the work proposed and the facilities needed on the ship (winches, laboratory space, etc.). A reply by 15 April 1992 would be appreciated.

Sincerely,

Tim

Timothy J.G. Francis
Deputy Director

TJGF:hk

OCEAN DRILLING PROGRAM

Ocean Drilling Program
Office of the Director
Texas A&M University Research Park
1000 Discovery Drive
College Station, Texas 77845-9547 USA
(409) 845-8480
Telex Number: 62760290
FAX Number: (409) 845-4857

Institute of Arctic and Alpine Research
Box 450, University of Colorado,
Boulder, Colorado 80309, USA

Phone. 303-492-5183; Fax. 303-492-6388
E-Mail: Internet "ANDREWS_JT@CUBLDR.COLORADO.EDU'
OMNET:INSTAAR.Library

Re: ODP LEG ~~151~~ 152, East Greenland Margin

03/18/92

JOI/US Science Advisory Committee

To Whom it May Concern,

A group of us at the University of Colorado have been working on the late Quaternary paleoceanography and sediment history of the East Greenland margin since 1988. This research has been funded by ONR (1989-1991) and by NSF/ONR for the period 1991-1993.

For the first two years we were partners in a WHOI/Geomar/INSTAAR research effort using first the Icelandic vessel Bjarni Saemundsson and then the Poseidon. In 1991 we had a 2-week cruise onto the inner shelf and fjords in the vicinity of the Kangerdlugssuaq Fjord and Trough. Canadian participation will commence in 1993 when we plan to use CSS Hudson for a research cruise with J. Syvitksi, Geological Survey of Canada/BIO, as Chief Scientist.

The purpose of this letter is to bring our current research effort to your attention and to seek further information on the plans for Leg 152, which we believe could benefit from our current knowledge and data. Our research efforts include studies of foraminifera (with the Marine Research Institute, Iceland), diatoms, sedimentation rates, stratigraphy, and provenance studies. We are commencing studies on the stable isotopic composition of both benthic and planktonic forams from the middle and inner shelf. Over the last 3 years we have obtained approximately 30 radiocarbon dates from our cores--these are, to our knowledge, the first dated cores from the shelf region.

Thank you in advance,

John Andrews, Professor Geological Sciences

cc J. Syvistki, A.E. Jennings and K.M. Williams

Ocean Drilling Program Sets FY 1993 Schedule

At its December 1991 meeting in Austin, Tex., the Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES) Planning Committee of the Ocean Drilling Program (ODP) established its plan for fiscal year 1993 in association with chairpersons of ODP's scientific advisory panel. The budget covers late November 1992 through late November 1993.

ODP, successor to the Deep Sea Drilling Project (DSDP) and the International Phase of Ocean Drilling, is a consortium of countries led by the United States with a broad mandate to conduct scientific drilling in the world's ocean basins. ODP reviews and ranks drilling programs proposed by an international community of Earth scientists according to priorities established by ODP's Long Range Plan. Using those rankings as primary input, the planning committee has placed six 56-day drilling legs on the fiscal 1993 schedule, beginning with Leg 147. ODP's Long Range Plan is available from the Joint Oceanographic Institutions, Inc., in Washington, D.C., and from JOIDES thematic panels.

The new schedule is generally consistent with long-term ODP planning, which has stipulated that operations of the ODP drill ship *JOIDES Resolution* will be concentrated north of the equator until approximately April 1994 in the Atlantic Ocean, the Gulf of Mexico, and in the Caribbean, Mediterranean, Norwegian, and Labrador seas. Each program to be held in 1993 is briefly summarized below and in Figure 1 to alert the international Earth science community to future opportunities for direct participation aboard the drill ship and to facilitate planning for necessary ancillary activities, such as geophysical and geological surveys in the vicinity of prospective drill sites.

- Leg 147 (late November 1992 to late January 1993): Scientific drilling operations at the beginning of fiscal 1993 will attempt to sample lower oceanic crust and, if possible, sample upper mantle at Hess Deep, where 1.2 m.y. East Pacific Rise (EPR) crust has been exposed in the wake of a propagating rift. Hess Deep represents an inaugural program to implement a general strategy of drilling offset sections of oceanic crust exposed at "tectonic windows." The ultimate goal is to put together composite sections that are representative of crustal generation processes at both fast- and slow-spreading mid-ocean ridges. These sections can then be compared with both ophiolites on land and with results from existing efforts to sample oceanic lithosphere in-situ, like Hole 504B (see below).
- Leg 148 (late January to late March 1993): At present, Leg 148 is scheduled as a further engineering test of ODP's evolving Diamond Coring System (DCS) capability, a follow-up to earlier tests conducted during legs 124 (Western Pacific), 132 (Western Pacific), and 142 (EPR at 9°30′ N). The DCS is ODP's adaptation of mining technology to the marine realm, with the goal of sampling more effectively several geological environments difficult to penetrate in the oceans: young fractured basalts, chert/chalk sequences, and shallow-water carbonates. Leading candidates for the North Atlantic DCS test site are the carbonate-capped transverse ridge at the Vema Fracture Zone and the Mid-Atlantic Ridge–Kane Fracture Zone area.
- If for some reason the DCS does not perform as anticipated at EPR (Leg 142), the planning committee has stipulated that Leg 148 will be a return to Hole 504B on the southern flank of the Costa Rica Rift. Hole 504B is the deepest hole ever drilled into oceanic crust—2000.4 m below seafloor—and is the only hole thus far that unequivocally penetrates through extrusive lavas into underlying sheeted dikes that constitute the foundation of upper oceanic crust formed at a mid-ocean ridge. ODP anticipates that one more leg of drilling at Hole 504B will recover the contact between sheeted dikes and gabbros believed to represent the transition from seismic layer 2 to layer 3 in the world's oceans. The planning committee will make the final decision on Leg 148 at its next meeting, which is to be held in April 1992.
- Leg 149 (late March to late May 1993): NARM / n.v. I will conduct a drilling transect across the Iberian Abyssal Plain (IAP) to

Ocean Drilling (cont. on page 118)

Ocean Drilling (cont. from page 117)

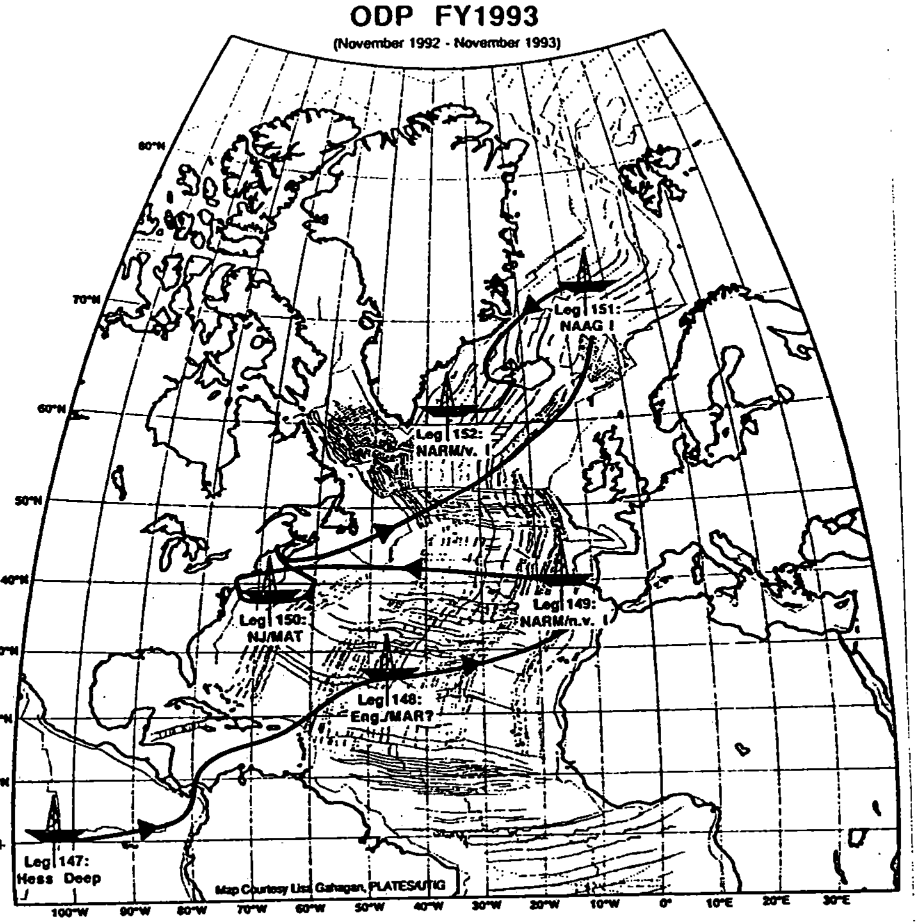
study a suspected nonvolcanic, oceanic-continental crustal transition there. This is the first leg of a long-term drilling initiative on both nonvolcanic and volcanic passive continental margins mandated by a committee of specialists convened by the planning committee called the North Atlantic Rifted Margins Detailed Planning Group (NARM-DPG). The NARM-DPG distilled a coherent, multi-leg drilling program for JOIDES from more than a dozen highly ranked proposals considering this general class of geologic problem. A follow-up NARM/nonvolcanic effort anticipated for fiscal 1994 will consider the conjugate margin to the IAP, the northern Newfoundland Basin off eastern Canada.

- Leg 150 (late May to late July 1993): The New Jersey sea-level/Middle Atlantic Transect program, NJ/MAT, will drill a series of holes across the shelf and slope off New Jersey to estimate amplitudes of late Paleogene–early Neogene fluctuations of relative sea-level and to assess their effects on development of the margin's seismic stratigraphy. NJ/MAT is intended to document the response of one passive continental margin's sedimentation to glacio-eustatic changes during the late Oligocene to Miocene "ice-house world." This program should complement upcoming ODP drilling on Western Pacific atolls and guyots (legs 143 and 144), as both are parts of a global strategy to study the history of sea-level changes in order to understand their potential future impact on human activities.
- Leg 151 (late July to late September 1993): The Noth Atlantic–Arctic Gateway I program will consider paleoceanographic history of the North Atlantic–Arctic Gateway, deep water connections between the Arctic Ocean and northernmost North Atlantic basins. Once again, the planning committee has relied on a group of experts, the NAAG-DPG, to crystallize a two-leg effort from several highly ranked proposals. The second leg of NAAG may be scheduled in fiscal 1995. For NAAG I, which will take the drill ship to the fringes of pack ice in the near-Arctic, *JOIDES Resolution* will require an ice-support vessel similar to the one used for ODP

000404

ODP FY1993

(November 1992 - November 1993)



Magnetic anomaly map of the North Atlantic on which the ODP fiscal 1993 schedule has been superimposed. Designated ports-of-call are preliminary, and ship track and drilling locations are schematic. For more detailed information, contact the JOIDES Office. A key to drilling program abbreviations can be found in the accompanying text. Courtesy of L. Gahagan, Project PLATES, University of Texas Institute for Geophysics.

drilling in the Weddell Sea during ODP Leg 113.

- Leg 152 (late September to late November 1993): NARM / v. I will begin a systematic examination of volcanic passive margins which characterize the northeastern North Atlantic. As mandated by the NARM-DPG and endorsed by the planning committee, Leg 152 will drill two holes on the seaward-dipping reflector sequence (SDRS) off southeast Greenland in an attempt to understand its geologic evolution and relationship to Iceland plume volcanism. SDRSs are located at margins worldwide and have already been shown to be volcanic expressions by previous scientific ocean drilling programs, such as DSDP Leg 81, Rockall Plateau and ODP Leg 104 V ring Plateau. Future NARM / volcanic legs may address similar phenomena recognized along other parts of the southeast Greenland margin and off Norway.

Opportunities exist for shipboard participation in all of these legs. Interested scientists are urged to contact ODP headquarters at Texas A&M University, 1000 Discovery Dr., College Station, TX 77840; tel. 409-845-2673. For additional information on the fiscal 1993 schedule, contact the JOIDES Office, University of Texas Institute for Geophysics, 8701 North Mopac Blvd., Austin, TX 78759–8397; tel. 512-471-0471.—*James A. Austin, Jr., JOIDES Planning Committee*

EOS MARCH 24, 1992

Fund for Lev Zonenshain

Lev Pavlovich Zonenshain, a Russian geophysicist well-known for his expertise and great contributions to both global geology and plate tectonics, underwent brain surgery to remove a malignant tumor in November 1991. He now needs expert medical attention, chemotherapy, and some convalescence to recover his strength and hopefully resume his scientific work. Dr. James A. McFarland, of the University of South Carolina School of Medicine and Richland Cancer and Treatment Center, has agreed to treat Zonenshain and has made arrangements for his medical expenses. The U.S. Geological Survey is paying for his airfare to the United States. Donations are being accepted to help defray living expenses for Zonenshain and his wife, Irina, during their 3-month stay in Columbia, S.C. If you would like to make a contribution, no matter how small, please send a check to the Lev Zonenshain Fund, c/o Douglas F. Williams, Dept. of Geological Sciences, University of South Carolina, Columbia, SC 29208; tel. 803-777-7738; fax 803-777-6839.

Active ODP proposals, April 1992

JOIDES Office, UTIG

(Sorted by "Date received")

Ref.No	Received	Key Title	Contact	Re-viewed	* Globally Ranked	Drilled or Scheduled
265----	12/04/86	Woodlark Basin	Scott, S.D.		1992, 1991	
319----	02/21/89	Extinct hydroth.	Jonasson, I.R.	•		
322----	03/28/89	Ontong Java Kimberl.	Nixon, P.H.	•		
142-Rev	04/05/89	Ontong Java Plateau	Mayer, L.		1991	Leg 130
324----	04/20/89	Med tectonic evol.	Cita-Sironi, M.B.	•		
325----	05/09/89	Endeavour Ridge	Johnson, H.P.		1992, 1991, 1990	
326----	05/11/89	NW Africa margin	Hinz, K.	•		
327----	05/24/89	Argentine cont. rise	Hinz, K.		1991	
329-Rev	07/14/89	Formation of Atlantic	Herbin, J.P.	•		
330----	07/17/89	Med. Ridge	Cita-Sironi, M.B.		1992, 1991	
331----	07/25/89	Aegir Ridge	Whitmarsh, R.B.	•		
333----	07/27/89	Cayman Trough	Mann, P.		1992, 1991, 1990	
337----	07/31/89	New Zealand sea level	Carter, R.M.		1992, 1991, 1990	
338----	08/03/89	Marion Pl. sea level	Pigram, C.J.		1992	
340----	08/07/89	N Australian margin	Symonds, P.		1991, 1990	
341----	08/08/89	E Canada Wisc. climate	Syvitski, J.P.M.	•		
343----	08/08/89	Caribbean crust	Mauffret, A.		1991, 1990	
344----	08/08/89	NW Atl JMQZ	Sheridan, R.E.	•		
345----	08/11/89	West Florida sea level	Joyce, J.E.		1992, 1991, 1990	
347----	08/15/89	South-eq. Atl. paleo.	Wefer, G.		1992, 1991, 1990	
351----	09/06/89	Bransfield Strait	Storey, B.C.	•		
352----	09/13/89	Mathematician Ridge	Stakes, D.S.	•		
353-Rev	09/13/89	Antarctic Peninsula	Barker, P.F.	•		
271-Rev2	09/22/89	California Current	Barron, J.A.		1990	
SR	10/30/89	Sedimented Ridges	Detrick, R.S.		1992, 1991, 1990	Leg 139
360----	12/06/89	Valu Fa hydro.	Von Stackelberg, U.		1992, 1991, 1990	
363----	01/18/90	GB-Iberia plume volc.	Tucholke, B.E.		1992, 1991	
364----	01/22/90	Sardinian-African Str.	Torelli, L.	•		
367----	02/07/90	S Australia margin	James, N.P.		1991	
368----	02/12/90	Hole 801C return	Larson, R.L.		1992, 1991, 1990	
370----	02/22/90	MAR magmatism	Dick, H.J.B.	•		
372----	02/26/90	N Atl. paleo.	Zahn, R.		1991	
373----	03/01/90	Site 505 Return	Zoback, M.D.		1991, 1990	
374----	03/06/90	Oceanographer FZ	Dick, H.J.B.		1992, 1991	
378-Rev	03/12/90	Barbados acc. prism	Westbrook, G.K.		1991, 1990	
379----	03/12/90	Med. drilling	Mascle, J.		1991	
381----	03/19/90	Argentina shelf/slope	Huber, B.T.	•		
383----	05/22/90	Aegean Sea	Kastens, K.A.	•		
265-Add	06/04/90	Woodlark Basin	Scott, S.D.		1992, 1991	
384-Rev	07/18/90	Caribbean crust	Mauffret, A.	•		
386-Rev	08/10/90	California Current	Lyle, M.		1992, 1991	
Cascadia	08/14/90	Cascadia margin	Cathles, L.M.		1992, 1991, 1990	Leg 146
355-Rev2	08/30/90	Gas hydrate	Von Huene, R.		1991	
387-Rev	09/04/90	Hess Deep	Gillis, K.		1992, 1991, 1990	Leg 147
Bering	09/07/90	Bering Sea history	CEPAC		1992, 1991, 1990	
388----	10/01/90	Ceara Rise	Curry, W.B.		1992, 1991	
345-Add	10/05/90	W Florida sea level	Joyce, J.E.		1992, 1991, 1990	
389----	10/29/90	SW Atl. traverse	Malmgren, B.A.	•		
362-Rev3	11/08/90	Chile Triple Junction	Cande, S.C.		1992, 1991, 1990	Leg 141
390----	11/12/90	Shirshov Ridge	Milanovsky, V.E.		1992, 1991	
391----	01/02/91	Med. sapropels	Zahn, R.		1992, 1991	
EPR	01/09/91	East Pacific Rise	Davis, E.E.		1992, 1991, 1990	Legs 142/147

IR In review (for fall 1992 meetings)

* No. of global ranks for 1990, 1991 and 1992, resp.: LITHP 15, 20, 15; OHP 12, 12, 14; SGPP 14, 20, 16; TECP 15, 20, 21.

000408

Active ODP proposals, April 1992

JOIDES Office, UTIG

(Sorted by "Date received")

Ref.No	Received	Key Title	Contact	Re-viewed	* Globally Ranked	Drilled or Scheduled
392----	01/29/91	Labrador Sea volc.	Larsen, H.C.		1991	
394----	02/04/91	N Atl. volc. margins	Kiørboe, L.V.		1991	
323-Rev	02/11/91	Alboran Sea/gateway	Comas, M.C.		1992, 1991, 1990	
395----	02/11/91	Volc. passive m. comp.	Boldreel, L.O.		1991	
363-Add	02/18/91	Grand Banks paleo.	Tucholke, B.E.		1992, 1991	
397----	02/20/91	N Atl. multiple rifting	Gudlaugsson, S.T.	•		
398----	02/22/91	Grand Banks paleo.	Piper, D.J.W.	•		
361-Rev	03/01/91	TAG hydro.	Thompson, G.		1992, 1991, 1990	
NAAG	04/11/91	N Atl./Arctic gateways	Ruddiman, W.F.		1992, 1991, 1990	Leg 151
356-Rev	05/01/91	NGS Paleo.	Smolka, P.P.	•		
399----	05/03/91	Alboran Sea evolution	Watts, A.B.		1992	
253-Rev	06/19/91	Pac. black shales	Sliter, W.V.		1992, 1991, 1990	
346-Rev2	08/14/91	E eq. Atl. transform	Mascle, J.		1992, 1991, 1990	
400----	09/03/91	Costa Rica acc. wedge	Silver, E.A.		1992	
401----	09/05/91	Jurassic Golf of Mexico	Buffler, R.T.	•		
388-Add	09/06/91	Ceara Rise	Curry, W.B.		1992, 1991	
369-Rev	09/09/91	MARK lithosphere	Casey, J.F.		1992, 1991, 1990	
402----	09/09/91	MAR basalts	Sobolev, A.V.	•		
330-Add2	09/10/91	Med. Ridge	Cita-Sironi, M.B.		1992, 1991	
NARM	09/10/91	N Atl. rifted margins	Larsen, H.C.		1992, 1991, 1990	Legs 149/152
404----	09/11/91	NW Atl. sed. drifts	Keigwin, L.D.		1992	
380-Rev2	09/12/91	VICAP, Gran Canaria	Bednarz, U.		1991	
391-Add	09/12/91	Med. sapropels	Zahn, R.		1992, 1991	
405----	09/12/91	Amazon fan	Flood, R.D.		1992	
369-Add	09/16/91	MARK lithosphere	Mevel, C.		1992, 1991, 1990	
376-Rev	09/16/91	Vema FZ: layer 2/3	Mevel, C.		1992, 1991, 1990	
406----	09/16/91	N Atl. climatic var.	Oppo, D.		1992	
407----	09/16/91	15°20'N shallow mantle	Dick, H.J.B.		1992	
408----	09/16/91	N Nicaragua Rise	Droxler, A.W.	•		
409----	10/04/91	Santa Barbara Basin	Kennett, J.P.		1992	
361-Add	10/25/91	TAG hydro.	Thompson, G.		1992, 1991, 1990	
410----	12/02/91	Deepening 504B	Erzinger, J.		1992	
411----	12/09/91	Caribbean Basalt Prov.	Donnelly, T.W.		1992	
412----	01/28/92	Bahamas transect	Eberli, G.P.		1992	
354-Rev	01/30/92	Benguela Current	Wefer, G.		1992, 1991	
059-Rev3	01/30/92	MAP/Sed. instability	Weaver, P.P.E.		1992, 1991	
413----	02/03/92	Reykjanes Ridge	Murton, B.J.		1992	
414----	02/03/92	N Barbados Ridge	Moore, J.C.		1992	
415----	02/03/92	K/T-boundary, Caribb.	Sigurdsson, H.		1992	
403-Rev	02/03/92	KT bound., G/Mexico	Alvarez, W.		1992	
332-Rev3	02/04/92	Florida Escarpment	Paull, C.K.	•		
333-Add	02/04/92	Cayman Trough	Mann, P.	•	1992, 1991, 1990	
386-Rev2	02/10/92	California margin	Lyle, M.	IR	1992, 1991	
416----	03/11/92	Svalbard margin	Solheim, A.	IR		
365-Add2	03/20/92	N Atl. geothermal	Louden, K.E.	IR		

IR In review (for fall 1992 meetings)

* No. of global ranks for 1990, 1991 and 1992, resp.: LITHP 15, 20, 15; OHP 12, 12, 14; SGPP 14, 20, 16; TECP 15, 20, 21.

Proposals Globally Ranked by Thematic Panels, March 1992

(Sorted by "Date Received")

Prop.No	Date rec.	Short Title	Proponents	PCOM
265----	12/04/86	Woodlark Basin	S.D. Scott, R.L. Chase, R.A. Binns and E. Finlayson	
325----	05/09/89	Endeavour Ridge	H.P. Johnson, J.M. Franklin, J.R. Cann and R.P. Von Herzen	
330----	07/17/89	Med. Ridge	M.B. Cita, A. Camerlenghi, L. Mirabile, G. Pellis, B. Della Vedova, W. Hieke, S. Nuti and M. Croce	
333----	07/27/89	Cayman Trough	B. Mercier de Lepinay, E. Calais, P. Mann, E. Rosencrantz, M.R. Perfit and T Juteau	
337----	07/31/89	New Zealand sea level	R.M. Carter, C.S. Fulthorpe, L. Carter, J.M. Beggs, K.G. Miller and G. Mountain	
338----	08/03/89	Marion Pl. sea level	C.J. Pigram, P.J. Davies, D.A. Feary, P.A. Wymonds and G.C.H. Chaproniere	
345----	08/11/89	West Florida sea level	J.E. Joyce, H.T. Mullins, R.C. Tjalsma and S.W. Wise	
347----	08/15/89	South-eq. Atl. paleo.	G. Wefer and W.H. Berger	check
SR	10/30/89	Sedimented Ridges	SR-DPG members: H. Baecker, K. Becker, J. Boulègue, E.E. Davis, R. Detrick (chairman), C. Forster, J.M. Franklin, J Francheteau, J. Hertogen, M. Lyle, M. Mottl, T. Nagao, B. Simoneit and R. Zierenberg	check
360----	12/06/89	Valu Fa hydro.	U. von Stackelberg, J. Erzinger, Y. Fouquet, P. Herzig, J. Morton and S. Scott	
363----	01/18/90	GB-Iberia plume volc.	B.E. Tucholke, J.A. Austin, L.F. Jansa and A.S. Edwards	check
368----	02/12/90	Hole 801C return	R.L. Larson, P.R. Castillo, P.A. Floyd, A. Fisher, R.D. Jarrard and R.A. Stephen	
374----	03/06/90	Oceanographer FZ	H.J.B. Dick and J. Quick	
386-Rev	08/10/90	California Current	M. Lyle, J. Barron, R. Jarrard, S. Halgedahl, J. Gardner, R. Karlin and J. Kennet	
Cascadia	08/14/90	Cascadia margin	Cascadia DPG members: M. Brandon, A. Camerlenghi, B. Carson, L. Cathles (chairman), E. Davis, S. Dreiss, R. Hyndman, L. Kulm, M. Langseth, M. Lyle, J.C. Moore, G. Moore, M. von Breymann, R. von Huene and G. Westbrook	check
387-Rev	09/04/90	Hess Deep	Gillis, K., Lonsdale, P., Dick, H.J.B., Natland, J.	
Bering	09/07/90	Bering Sea history	CEPAC members	
388----	10/01/90	Ceara Rise	W.B. Curry, J. Backman, and N.J. Shackleton	
362-Rev3	11/08/90	Chile Triple Junction	S.C. Cande, S.D. Lewis, and G. Westbrook	
391----	01/02/91	Med. sapropels	R. Zahn, E.A. Boyle, S.E. Calvert, F.G. Prahl, and R.C. Thunell	
EPR	01/09/91	East Pacific Rise	EPR-DPG members: J. Bender, E.E. Davis (chairman), J. Delaney, D.J. Fornari, J. Fox, J. Francheteau, R. Hékinian, M. Purdy, K. Von Damm and R. Von Herzen	check
323-Rev	02/11/91	Alboran Sea/gateway	M.C. Comas, J.C. Faugère, J.A. Flores, V. Garcia-Dueñas, M.J. Jurado, R. Kidd, J. Mackris, A. Maldonado, A.G. Megias, H. Nelson, F.J. Sierro, D.A.V. Stow, R. Stephenson, C. Vergnaud-Grazzini and J. Woodside	check
363-Add	02/18/91	Grand Banks paleo.	B. Tucholke	check

361-Rev	03/01/91	TAG hydro.	G. Thompson, S.E. Humphris, M.K. Tivey, K.M. Gillis, W.B. Bryan, R.P. Von Herzen, M.C. Kleinrock, M.A. Tivey, H. Schouten, P.A. Rona, J.R. Cann, J. Honnorez, M. Hannington, J. Franklin, S. Scott and P. Herzig	
NAAG	04/11/91	N Atl./Arctic gateways	NAAG-DPG: W. Berggren, R. Heinrich, E. Jansen, L. Mayer, P.J. Mudie, W. Ruddiman (chairman) and T. Vorren	
399----	05/03/91	Alboran Sea evolution	A.B. Watts, J.P. Platt and B.C. Schreiber	
253-Rev	06/19/91	Pac. black shales	W.V. Sliter, G.R. Brown, M.A. Arthur, R. Larson and G.W. Brass	
346-Rev2	08/14/91	E eq. Atl. transform	J. Mascle, C. Basile, M. Moullade and F. Sage	
400----	09/03/91	Costa Rica acc. wedge	E.A. Silver, T.H. Shipley and K.D. McIntosh	
369-Rev	09/09/91	MARK lithosphere	C. Mevel, M. Cannat, J.F. Casey, J.A. Karson	
NARM	09/10/91	N Atl. rifted margins	NARM-DPG members: G. Boillot, R. Buck, M.F. Coffin, M.C. Comas, O. Eldholm, G. Fitton, J. Hall, J. Hertogen, K. Hinz, D.R. Hutchinson, E.M. Klein, H.C. Larsen (co-chair), K.G. Miller, A.C. Morton, A. Saunders, D.S. Sawyer, S.P Srivastava, and R.B. Whitmarsh.	
404----	09/11/91	NW Atl. sed. drifts	L.D. Keigwin and E.A. Boyle	
405----	09/12/91	Amazon fan	R.D. Flood, C. Pirmez, W. Showers, J.E. Damuth, P.L. Manley, R.O. Kowsmann and D. Peteet	
376-Rev	09/16/91	Vema FZ: layer 2/3	J.M. Auzende, D. Bideau, E. Bonatti, M. Cannat, J. Honnorez, T. Juteau. V. Mamaloukas-Frangoulis, C. Mevel and H.D. Needham	
406----	09/16/91	N Atl. climatic var.	W. Broecker, G. Bond, D. Oppo, S. Lehmann, M. Raymo and T. van Weering	
407----	09/16/91	15°20'N shallow mantle	H.J.B. Dick, L. Dmitriev, H. Bougault, G. Thompson, M. Tivey, P. Kelemen, J. Casey, S. Silantiev	
409----	10/04/91	Santa Barbara Basin	J.P. Kennett	
410----	12/02/91	Deepening 504B	J. Erzinger, J. Alt, and K. Becker	check
411----	12/09/91	Caribbean Basalt Prov.	T.W. Donnelly, R. Duncan and C. Sinton	check
412----	01/28/92	Bahamas transect	G.P. Eberli, D.F. McNeill and P.K. Swart	
354-Rev	01/30/92	Benguela Current	G. Wefer, W.H. Berger, L. Diester-Haass, W.W. Hay, P.A.Meyers and H. Oberhänsli	check
059-Rev3	01/30/92	MAP/Sed. instability	P.P.E. Weaver, R.B. Kidd, J. Thompson, S. Colley, I. Jarvis, R.T.E. Schuttenhelm, G. de Lange, R.E. Cranston and D.E. Buckley	check
413----	02/03/92	Reykjanes Ridge	J. Cann, C. German, B.J. Murton, L.M. Parson, R.C. Searle, M. Sinha and S. Spencer	
414----	02/03/92	N Barbados Ridge	J.C. Moore, B. Carson, M. Kastner, X. Le Pichon, G. Moore and G. Westbrook	
415----	02/03/92	K/T-boundary, Caribb.	H. Sigurdsson, S. Carey and S. D'Hondt	
403-Rev	02/03/92	KT bound., G/Mexico	W. Alvarez, J. Smit, E.M. Shoemaker, A. Montanari, R.T. Buffler, A.R. Hildebrand, S.V. Margolis, and Mexican proponent(s)	

000411

ODP Proposal Log Sheet **410----**

Proposal received: Dec 2, 1991

☒ New proposal ☐ *Revised proposal* ☐ *Addendum to proposal* ☐ *Other*

A Proposal for deepening Hole 504B to core and log the dike/gabbro, layer 2/3 boundary

J. Erzinger, J. Alt, and K. Becker

Abbrev. Title: Deepening Hole 504B, core/log dike/gabbro boundary	Key: Deepening 504B	Area: Eq Pac

Contact:

Dr. Jörg Erzinger
Inst. f. Geowiss. und Lithosphärenforschung
Universität Giessen
Senckenbergstrasse 13
D-6300 Giessen (G)

Tel: 49 (641) 702-8390
FAX: 49 (641) 39-265

Objectives:

Structure, tectonics, petrology and chemical alteration processes in the oceanic crust: deepening Hole 504B into, or possibly through, the dike/gabbro transition.

LRP
1
1

Specific area: Costa Rica Rift flank

Proposed Sites:

Site Name	Position	Water depth	Penetration Sed	Bsmt	Total	Brief site-specific objectives
504B*	1°13.61'N; 83°43.82'W	3460	0	500	500	Core and log dike/gabbro (layer 2/3) transition

Proposal acknowledged by JOIDES Office:	12/12/91	to:	Erzinger, J.
Proposal forwarded for review:	02/04/92	to:	LITHP, OHP, SGPP, TECP
Proposal copies:	Feb 4, 1992	to:	JOI, SO, SSDB
Proposal forwarded to DPG:	00/00/00	to:	

000412

Proposal Reference No.: **410----**

Title: "A Proposal for Deepening Hole 504B to Core and Log the Dike/Gabbro, Layer 2/3 Transition"

Proponents: J. Erzinger, J. Alt, K. Becker and the Shipboard Scientific Crew of Leg 140

Summary

During Leg 140 the JOIDES RESOLUTION achieved the deepest hole ever drilled by DSDP/ODP by deepening Hole 504B 379 m to a total depth of 2000.4 m below seafloor. Hole 504B now penetrates almost three times as far into oceanic crust as any other borehole, and is the only hole that clearly penetrates the lower sheeted dike complex of Layer 2C. Thus, Hole 504B represents 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 I & II, and JOIDES Ocean Crust and Lithosphere Panels.

A strong seismic reflector has been identified 50-350 m beneath the bottom of Hole 504B by a VSP run during Leg 111, and this may be the transition from sheeted dikes of Layer 2C to gabbros in Layer 3.

At the end of Leg 140 RCB coring was at 2 m/hr with normal torque, the hole remains stable with negligible evidence of hole ellipticity and backfill problems, and was left open and clean. It is proposed to revisit Site 504 to deepen Hole 504B into or through the dike/gabbro or Layer 2/3 transition.

000413

ODP Proposal Log Sheet 411----

Proposal received: Dec 9, 1991

☒ New proposal ☐ *Revised proposal* ☐ *Addendum to proposal* ☐ *Other*

Proposal for drilling the Caribbean Basalt Province - an oceanic basalt plateau

T.W. Donnelly, R. Duncan and C. Sinton

Abbrev. Title: The Caribbean Basalt Province - an oceanic basalt plateau	Key: Caribbean Basalt Prov.	Area: N Atl

Contact:

Dr. Thomas W. Donnelly
Dept. of Geological Sciences
State University of New York
Binghampton, NY 13902-6000 (US)

Tel: 1 (607) 777-2323
FAX: 1 (607) 777-2288

Objectives:

LRP: 3

Investigation of a large igneous province (LIP): the Caribbean Cretaceous Basalt Province (CCBP)

- Test blob-and-tail model for a major LIP: blob = Venezuela/?Colombia Basin, tail = W of Beata Ridge
- Stratigraphic/temporal relation of two major magma types (MORB-like basalt and LIL-enriched basalt)
- Lithofacies of the CCBP: massive basalt/hyalocl. > "normal" crust ?
- Estimate eruption rates through precise radiometric dating
- Estimate subsidence history of LIP from sediment paleodepth information
- Investigate volcano-like features on carapace of CCBP

Specific area: Caribbean: Beata Ridge, Mono Rise, Venezuela Basin, Nicaragua Rise

Proposed Sites:

Site Name	Position	Water depth	Penetration Sed	Bsmt	Total	Brief site-specific objectives
CCBP-1A	15°01'N; 73°25'W	2030	380	220	600	Lithology/chemistry of basalt; paleodepth history from sed.
CCBP-1B	14°52'N; 73°24'W	3800	700	0	700	Stratigraphy: paleodepth and history of faulting
CCBP-1C	16°41'N; 72°27'W	4200	100	200	300	Chemistry/lithology of basalt (lower than CCBP carapace?)
CCBP-2	12°?'N; 80°?'W	3000	1000	50	1050	Age, lithology, chemistry of basalts; paleodepth from sed.
CCBP-3	15°?'N; 66°?'W	4500	750	250	1000	As CCBP-2; possible find of intercalated PIA volcanics
CCBP-4A	16°45'N; 64°55'W	3950	200	300	500	Volcano-like feature: lith./chem.; paleodepth from sed.
CCBP-4B	16°45'N; 69°55'W	4200	700	100	800	Paleodepth from sed.; off-axis lith./chem. of basalt bsmt.
CCBP-5	15°?'N; 78°?'W	2250	850	150	1000	As CCBP-2; K/T contact in carbonate section

Proposal acknowledged by JOIDES Office:	12/12/91	to:	Donnelly, T.W.
Proposal forwarded for review:	02/04/92	to:	LITHP, OHP, SGPP, TECP
Proposal copies:	02/04/92	to:	JOI, SO, SSDB
Proposal forwarded to DPG:	00/00/00	to:	

Proposal Reference No.: 411----

Title: "Proposal for Drilling the Caribbean Basalt Province - An Oceanic Basalt Plateau"

Proponents: T.W. Donnelly, R. Duncan and C. Sinton

Summary

We propose the Caribbean Cretaceous Basalt Province (CCBP) as a site for a drilling investigation of Large Igneous Provinces (LIPS). This province is an oceanic basalt plateau which is widely known through tectonically obducted fragments found around the Caribbean (Most notable and thoroughly studied occurrences: Costa Rica, Hispaniola, Curaçao; Less studied, or more poorly exposed or preserved occurrences: northern Venezuela, Puerto Rico, Jamaica, Trinidad, Guatemala, Panama, Colombia). The central portion was penetrated in five sites of DSDP Leg 15. The remaining contiguous oceanic portion is about 600,000 km^2; the original size was far larger. The province appears to consist of a huge, early "blob" followed by a thinner tail which extends to the west. "Ordinary" ridge-generated crust has not been identified in the Caribbean; it may be present beneath the basalt province.

Stratigraphic information shows that the province has an eruptive history from approximately 100 to 85 m.y., with a tailing out to the west of minor eruptives to about 50 m.y. The earlier ages are not well established; the initiation of magmatism may be as early as 115 m.y. The Galapagos Islands may be the present site of the remnant hot spot.

Seismic refraction shows a depth to the MOHO between 6 and 20 km, with an identifiable thinner portion to the east and the maximum thickness at the Beata Ridge, in the center of the Caribbean. With the possible exception of the eastern edge, the boundaries of the province have been subducted or covered by very thick sediments (carbonate platforms, hemipelagics). The central portion is covered by 300-800 m of pelagic sediment; on a fault scarp rock has been dredged.

There are three well defined magma types: the major composition is similar to MORB, except for Nd and Pb isotopes in the OIB field. The second type is LIL enriched and belongs to the category of P-MORB or OIB, and may be stratigraphically younger. The third category, known only from on-land occurrences, is a picrite-komatiite, and arguably lies at the base of the igneous mass. The lithologies are dominantly pillow basalt, but with a higher fraction of massive basalt and hyaloclastic than encountered in ridge-generated crust. There are volcano-like features on the carapace. Obducted slices also contain gabbros and ultramafics; sheeted dikes have not been found.

The prime objectives would be (1) to test a blob-and-tail model for a major LIP; (2) obtain ages within drilled sections to estimate rates of magma eruption; (3) find the eruptive history of two of the magma types (presuming that the komatiite-picrite will probably not be accessible to the drill); (4) find the lithologic character of the upper few hundred meters of the plateau; (5) investigate the volcano-like features; (6) find the subsidence history of the carapace through analysis of the superincumbent sediment cover.

The Beata escarpment, in the center of the CCBP, provides a potential target of unusual opportunity: a vertical interval of 1700-1800 m over which igneous rocks representing different levels of the body can be spudded into, achieving an important objective without the use of reentry techniques.

ODP Proposal Log Sheet 412----

Proposal received: Jan 28, 1992

☒ New proposal ☐ *Revised proposal* ☐ *Addendum to proposal* ☐ *Other*

The Bahamas Transect: Neogene/Quaternary Sea-Level Fluctuations and Fluid Flow in a Carbonate Platform

G.P. Eberli, D.F. McNeill and P.K. Swart

Abbrev. Title: Bahamas transect: Neogene/Quat. sea level and fluid flow	Key: Bahamas transect	Area: N Atl

Contact:

Dr. Gregor P. Eberli
Rosenstiel School of Marine & Atm. Sci.
University of Miami
4600 Rickenbacker Causeway
Miami, FL 33149 (US)
Tel: 1 (305) 361-4678
FAX: 1 (305) 361-4632

Objectives:

Objective	LRP
1. Amplitude/timing of Neogene and Quaternary sea level changes and their record in carbonate depos. sequences	14

- refine timing of sequence boundaries
- determine facies of stacked depositional sequences, especially carbonate lowstand deposits
- retrieve low-latitude isotope signals of the Ice House World in the Neogene and Quaternary
- Gulf Stream history and its relationship top sea level fluctuations

Objective	LRP
2. Fluid flow in platform margins	11
3. Biological evolution of shallow water biota	16
4. Quaternary high-resolution climate and sedimentation record	12/13

Specific area: Great Bahama Bank

Proposed Sites:

Site Name	Position	Water depth	Penetration Sed	Bsmt	Total	Brief site-specific objectives
BT-1	24°33'N; 79°10'W	170	560	0	560	Quaternary facies, boundary ages in carbonate sequences
BT-2	24°31'N; 79°14'W	338	755	0	755	L. Mioc.-Recent lowstand facies; isotope strat.; fluid flow
BT-3	24°30'N; 79°18.5'W	525	950	0	950	Neogene O-18 record, sequ. bound.; fluid flow; Gulf Stream
BT-4	24°28'N; 79°21.5'W	600	860	0	860	Basinal facies of prograding sequ.; Gulf Stream deposits

Proposal acknowledged by JOIDES Office:	01/31/92	to:	Eberli, G.P.
Proposal forwarded for review:	02/04/92	to:	LITHP, OHP, SGPP, TECP
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Proposal forwarded to DPG:	00/00/00	to:	

Proposal Reference No.: **412----**

Title: "The Bahamas Transect: Neogene/Quaternary Sea-Level Fluctuations and Fluid Flow in a Carbonate Platform"

Proponents: G.P. Eberli, D.F. McNeill and P.K. Swart

Summary

Carbonate platforms and reef complexes that maintain their surfaces near sea level are sensitive archives of both timing and amplitude of sea level fluctuations. The prograding western Great Bahama Bank is especially suitable to evaluate global sea-level change because laterally stacked prograding sequences with a high sedimentation rate provide a high-resolution record of Neogene and Quaternary sea-level fluctuations. In 1990, two continuous cores through the Neogene-Quaternary margin of Great Bahama Bank were drilled on the platform top from a jack-up barge along one of the existing high-quality multi-channel seismic lines. The objective of this shallow-water drilling was to evaluate several fundamental problems of carbonate platforms, notably margin progradation, records of sea level, burial diagenesis, and seismic signatures within carbonate sequences. With the results from these two shallow-water core borings in hand, there is now an unique opportunity to tie the shallow-water to the deep-water record and to retrieve the record of sea-level changes along a complete platform-basin transect.

In order to complete this platform-basin transect, we propose to drill four sites in the Straits of Florida along the same seismic line used for the shallow drilling. In addition, one or two sites may be added through sections with thin sediment cover. These sites will specifically address the fluid flow system of the platform. The objectives of this drilling program are to enhance our knowledge in the following areas:

1) Amplitude and timing of Neogene and Quaternary changes of sea-level and their record in carbonate depositional sequences,
2) fluid flow in platform margins,
3) biological evolution of shallow-water biota,
4) Quaternary high resolution climate and sedimentation record, and
5) the Gulf Stream history and its relationship to sea-level fluctuations.

ODP Proposal Log Sheet 354-Rev

Proposal received: Jan 30, 1992

☐ *New proposal* ☒ **Revised proposal** ☐ *Addendum to proposal* ☐ *Other*

Neogene History of the Bengueala Current and Angola/Namibia Upwelling System

G. Wefer, W.H. Berger, L. Diester-Haass, W.W. Hay, P.A.Meyers and H. Oberhänsli

Abbrev. Title: Benguela Current and Angola/Namibia upwelling	Key: Benguela Current	Area: S Atl

Contact:

Dr. Gerold Wefer
Fachbereich Geowissenschaften
Universität Bremen
Bibliothekstrasse
D-2800 Bremen 33 (G)
Tel: 49 (421) 218-3389

Objectives:

LRP 12/13

Histories of Benguela Current and coastal upwell. between 5°S and 32°S since Miocene/middle Oligocene

- history and early evolution of the Benguela Current
- history of product.: factors related to upwelling (wind field, water quality, climate, sea level, Zaire river)
- Atlantic surface circulation patterns changing simultaneously with shifting of the Benguela Current
- relation of SW African continental climates with changes in upwelling patterns
- how and to what degree has the Benguela Current been reoriented as a result of sea level changes?
- early diagenesis of sediment from high-productivity areas (high in org. C and Opal)

Specific area: N/mid/S Angola Basin, Walvis Ridge, N/S Cape Basin

Proposed Sites:

Site Name	Position	Water depth	Penetration Sed	Bsmt	Total	Brief site-specific objectives
MAB 1		500	200	0	200	Paleoprod. and devel. of currents in relative low-prod. area
MAB 2		850	200	0	200	As MAB 1
MAB 3		1500	200	0	200	As MAB 1
MAB 4		3600	600	0	600	As MAB 1
NAB 1		800	200	0	200	Paleoprod. of Congo fan area (river input, seaonal upwell.)
NAB 2		1500	200	0	200	As NAB 1
NAB 3		2200	200	0	200	As NAB 1
NAB 4		3000	600	0	600	As NAB 1
NAB 5		4000	200	0	200	As NAB 1
NCB 1	25°00'S; 14°00'E	300	1200	0	1200	As WR 1
NCB 2	25°00'S; 13°40'E	800	1200	0	1200	As WR 1
NCB 3	25°28'S; 13°05'E	2070	1610	0	1610	As WR 1
SAB 1		1200	300	0	300	History of upwelling rel. to current, Angola/Namibia region
SAB 2		2200	300	0	300	As SAB 1
SAB 3		3000	300	0	300	As SAB 1
SAB 4		4500	600	0	600	As SAB 1
SCB 1	31°30'S; 16°40'E	300	1200	0	1200	As WR 1
SCB 2	31°40'S; 16°00'E	600	1200	0	1200	As WR 1
SCB 3	31°25'S; 15°17'E	1350	1300	0	1300	As WR 1
WR 1	19°25'S; 12°00'E	280	600	0	600	First app. Benguela C.; position/intensity fluct.; paleo cond
WR 2	19°25'S; 12°00'E	280	600	0	600	As WR 1
WR 4	20°06'S; 09°11'E	2200	200	0	200	As WR 1

Proposal acknowledged by JOIDES Office:	01/31/92	to:	Wefer, G.
Proposal forwarded for review:	02/04/92	to:	LITHP, OHP, SGPP, TECP
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000418

Proposal Reference No.: 354-Rev

Title: "Neogene History of the Benguela Current and Angola/Namibia Upwelling System"

Proponents: G. Wefer, W.H. Berger, L. Diester-Haass, W.W. Hay, P.A. Meyers and H. Oberhänsli

Summary

We propose to drill six transects totalling 23 APC/XCB sites off Angola and Namibia, in order to reconstruct the histories of the Benguela Current and the coastal upwelling of the region between 5°S and 32°S. Of principal interest is the period since the Miocene, when something like the modern circulation became established in the Atlantic. Selected sites will trance paleoceanographic history since the middle Oligocene. These sites will expand and refine the partial record provided by DSDP Site 362/532 of the paleoceanographic and paleoclimatic changes of the area since the early Miocene. The region represents one of the most important upwelling systems in the ocean. The northernmost transect is to recover the record of productivity variations in a complex area, dominated by river input (Zaire), seasonal upwelling, pelagic offshore divergence, and upwelling related to the Angola Thermal Dome. The transect off mid-Angola provides a "low-productivity' standard for comparison, with the possibility of detailed correlation between the margin record and the pelagic record. The transect off southern Angola targets the northern end of the continuous, high productivity portion of the Angola/Namibia upwelling system. The transect off Walvis Bay is to provide the record of the fluctuations of maximum upwelling in this region.

The southern transects are chosen to recover the record of the development of the Benguela Current system. The results from DSDP Sites 362/532 give indications that the current has increased its northward extension across the Cape Basin and into the Angola Basin since early Miocene time, partially due to strengthening of the Agulhas Current and partially due to changes in the Antarctic polar front. As the Benguela Current moved northward and intensified, the zone of coastward upwelling and associated high productivity shifted and potentially expanded. Another explanation for the long transient response is that it reflects changes in intensity of upwelling from the Angola Thermal Dome.

The extent and intensity of the Benguela Current directly influence the South Atlantic Equatorial current and its transport of heat from the South Atlantic to the North Atlantic. At DSDP Site 362-532, the effects of southern hemisphere glacial-interglacial cycles appear as carbonate dissolution cycles, productivity cycles, and continental sedimentation cycles. Both sealevel changes and climatic changes are recorded in these cycles. The proposed transects, located above the CCD in a passive margin area of high sedimentation rates, can provide high-resolution records of these important processes, and they add important new dimensions to the single-site record not available. Furthermore, the proposed sites are well-suited for the study of early diagenetic processes in organic rich sediments, e.g., dolomite, phosphorite and chert formation, and will contribute to a better understanding of the composition and origin of organic matter sedimented in high production areas.

000419

ODP Proposal Log Sheet 059-Rev3

Proposal received: Jan 30, 1992

☐ *New proposal* ☒ **Revised proposal** ☐ *Addendum to proposal* ☐ *Other*

Continental Margin Sediment Instability: Global Sealevel History and Basinal Analysis Through Drilling Abyssal Plains

P.P.E. Weaver, R.B. Kidd, J. Thompson, S. Colley, I. Jarvis, R.T.E. Schuttenhelm, G. de Lange, R.E. Cranston and D.E. Buckley

Abbrev. Title: Cont. margin sed. instability: sea level & basinal analysis	Key: MAP/Sed. instability	Area: N Atl

Contact:

Dr. Philip P.E. Weaver
Institute of Oceanographic Sciences
Deacon Laboratory
Brook Rd., Wormley, Godalming
Surrey GU8 5UB (UK)
Tel: 44 (428) 684-141
FAX: 44 (428) 683-066

Objectives:

LRP: 14, 14

To drill the Madeira Abyssal Plain (MAP) to establish principles of using its record of turbidite sedimentation to interpret the global sea level story and the erosional history of the Canary Basin

- stratigraphy of turbidites and interbedded hemipelagic deposits, frequency and emplacement
- provenance of sed. and changes in source area/composition from geochemistry and micropaleontology
- sediment budgets, incl. organic carbon
- quantify long-term effects of sediment burial and diagenesis in mixed organic-poor and organic-rich sed.

Specific area: Madeira Abyssal Plain

Proposed Sites:

Site Name	Position	Water depth	Penetration Sed	Bsmt	Total	Brief site-specific objectives
MAP-1	31°09'N; 25°36.2'W	5440	400	0	400	Plio-Quat. high-res. turbidite strat.; diagenetic history
MAP-2	31°56'N; 24°05'W	5430	300	0	300	As MAP-1
MAP-3	30°47'N; 24°24'W	5430	300	0	300	As MAP-1
MAP-4	31°59'N; 25°02'W	5440	300	0	300	As MAP-1

Proposal acknowledged by JOIDES Office:	01/31/92	to:	Weaver, P.P.E.
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Proposal forwarded to DPG:	00/00/00	to:	

000420

Proposal Reference No.: 059-Rev3

Title: "Continental Margin Sediment Instability: Global Sealevel History and Basinal Analysis Through Drilling Abyssal Plains"

Proponents: P.P.E. Weaver, R.B. Kidd, J. Thomson, S. Colley, I. Jarvis, R.T.E. Schuttenhelm, G. deLange, R.E. Cranston and D.E. Buckley

Abstract

This proposal sets out to test the hypothesis that ocean basin sedimentation is controlled by sealevel changes which affect the stability of sediments on continental margins. The products of mass wasting events accumulate on the continental slope and on the abyssal plains but the abyssal plain is the only place in any given basin where a complete record can be obtained in one drillsite. Our hypothesis predicts that most sealevel changes, both rises and falls, will be associated with mass wasting events. Thus periods of oscillating sealevels, such as the last 2.5 Ma, will be represented on the abyssal plains by sequences of turbidites, and periods of stable sealevels will be represented by continuous hemipelagic accumulation. Our evidence suggests that the abyssal plain is a young feature with the whole 350m thick turbidite sequence (20,000 km^3) being deposited in just a few million years. The drilling of 4 sites on the Madeira Abyssal plain will allow mass balance calculations of sediment transported from the continental margins to the deep-sea, and in the Canary Basin this will include mass balances for volcanogenic sediments derived from Madeira and the Canary Islands. The frequency of turbidite input and composition of the units on the Madeira Abyssal Plain is ideal for studies of long term diagenesis and sediment burial.

000421

ODP Proposal Log Sheet 413----

Proposal received: Feb 3, 1992

☒ New proposal ☐ *Revised proposal* ☐ *Addendum to proposal* ☐ *Other*

Magmatic and Tectonic Evolution of Oceanic Crust: the Reykjanes Ridge

J. Cann, C. German, B.J. Murton, L.M. Parson, R.C. Searle, M. Sinha and S. Spencer

Abbrev. Title: Magmatic/tectonic evol. of oceanic crust: Reykjanes Ridge	Key: Reykjanes Ridge	Area: N Atl

Contact:

Dr. B.J. Murton
Institute of Oceanographic Sciences
Deacon Laboratory
Brook Road, Wormley, Godalming
Surrey, GU8 5UB (UK)
Tel: 44 (428) 684-141
FAX: 44 (428) 683-066

Objectives:

LRP: 2

Volc. processes involved in evol. of extrusive layer; structure/stress variations with volc. proc. and with age

- structure and evolution of axial volcanic segments
- along- and across-axis variations of in-situ stress
- effects of variations in mantle temperature on processes of oceanic crustal formation
- structure and thickness of a mature oceanic extrusive layer
- temporal variability of the Icelandic mantle plume
- implications of crustal structure and evolution for hydrothermal processes

Specific area: Reykjanes Ridge

Proposed Sites:

Site Name	Position	Water depth	Penetration Sed	Bsmt	Total	Brief site-specific objectives
RR1	61°50.0'N; 26°43.0'W	650	0	350	350	Structure/evolution of axial volc. segment; stress var.; etc.
RR2	58°00.9'N; 32°20.0'W	1550	0	400	400	As RR1; implications for hydrothermal processes
RR3	57°56.9'N; 32°21.5'W	1750	0	200	200	As RR2
RR4	57°57.9'N; 32°22.6'W	1875	25	125	150	As RR2
RR5	58°01.8'N; 32°27.7'W	1375	30	870	900	Stress var.; structure/thickness of layer 2A; hydro. proc.
RR6	62°12.0'N; 27°00.0'W	1400	400	100	500	Temporal var. of Icelandic hotspot, crustal evol.; stress var.
RR7	61°12.0'N; 27°45.0'W	1600	50	50	100	As RR6

Proposal acknowledged by JOIDES Office:	02/03/92	to:	Murton, B.J.
Proposal forwarded for review:	02/04/92	to:	LITHP, OHP, SGPP, TECP
Proposal copies:	02/04/92	to:	JOI, SO, SSDB
Proposal forwarded to DPG:	00/00/00	to:	

000422

Proposal Reference No.: 413----

Title: "Magmatic and Tectonic Evolution of Oceanic Crust: The Reykjanes Ridge"

Proponents: J. Cann, C. German, B.J. Murton, L.M. Parson, R.C. Searle, M. Sinha and S. Spencer

Abstract

COSOD II identified bare-rock drilling of a mid-ocean ridge (MOR) as a high priority among its long range planning themes. Only deep ocean drilling can reveal the detailed, three dimensional, nature of volcanism and tectonism. Drilling at the Reykjanes Ridge aims to address two specific scientific themes: (i) what are the volcanic processes involved in the evolution of extrusive layer?; and (ii) how does the structure and stress vary, both with these volcanic processes, and with age? The orthogonal orientation of most MORs to the plate separation direction results in a poor distinction of volcanic segments, and a merger between deformation occuring within the axial-zone and at the axial-shoulders. In contrast, these processes are separated on the Reykjanes Ridge by its oblique orientation to the plate-separation direction. Volcanic segmentation is enhanced by being forced in to an en echelon arrangement; and axial-zone deformation which is orthogonal to the plate separation direction is oblique to and hence distinct from, plate-boundary-parallel deformation in the axial-shoulders. Furthermore, by its proximity to the Icelandic hotspot, the Reykjanes Ridge provides an exemplary natural-laboratory in which to investigate the effects of changes in mantle temperature on oceanic crustal formation, that is independent of spreading rate.

This proposal addresses six specific objectives: (1) a determination of the structure and evolution of axial volcanic segments; (2) the variation both along- and across-axis of in-situ stress; (3) the effects of variations in mantle temperature on the processes of oceanic crustal formation; (4) the structure and thickness of a mature oceanic extrusive layer; (5) the temporal variability of the Icelandic mantle plume, and its relation to crustal evolution and structure; and (6) the implications of crustal structure and evolution for hydrothermal processes. We propose to drill seven holes; five will involve bare-rock drilling; three penetrating an axial volcanic ridge (AVR), and one inter-AVR crust. The fifth bare-rock hole, on the axial-shoulder, will penetrate the entire thickness of volcanic layer, estimated to be about 800m thick. A further two holes will involve conventional sediment-hosted spud-ins, located at off-axis sites in 4.5 Ma and 7 Ma age crust. Achievement of these ambitious targets is greatly enhanced by the shallow depth (below sea-level) of the Reykjanes Ridge. This has two principal effects; (i) greatly reducing the two-way trip time of the drill-string, and (ii) enhancing the resultant vesicularity of the basalts, thereby substantially increasing penetration rates compared with drilling less vesicular volcanic rocks.

000423

ODP Proposal Log Sheet **414----**

Proposal received: Feb 3, 1992

☒ New proposal ☐ *Revised proposal* ☐ *Addendum to proposal* ☐ *Other*

Rates, Effects, and Episodicity of Structural and Fluid Processes, Northern Barbados Ridge Accretionary Prism

J.C. Moore, B. Carson, M. Kastner, X. Le Pichon, G. Moore and G. Westbrook

Abbrev. Title: Structural and fluid proc., N Barbados Ridge acc. prism	Key: N Barbados Ridge	Area: N Atl

Contact:

Dr. J. Casey Moore
Earth Sciences Board of Studies
University of California, Santa Cruz
Santa Cruz, CA 95064 (US)

Tel: 1 (408) 459-2574
FAX: 1 (408) 426-0146
Bitnet: Casey@ucsc

Objectives:

LRP 11

Effects, rates, and episodicity of fluid flow in accretionary prism environment, focused on decollement zone

- fluid pressure in and around the decollement zone
- permeabilities of prism sediments and associated fault zones at the scale of flow system
- episodicity of flow: temporal and spacial variability of fluid flow along decollement zone
- space/time var. in fluid composition, comparison with compos. of veins and authigenic mineral phases
- origin of ampl. anomalies or "bright spots" along faults (dilatant strain waves vs. pulses of migr. fluid)

Specific area: Northern Barbados Ridge, Lesser Antilles Forearc

Proposed Sites:

Site Name	Position	Water depth	Penetration Sed	Bsmt	Total	Brief site-specific objectives
NBR1	15°32.4'N; 58°38.5'W	5477	800	0	800	Oceanic reference for seaward flowing fluid
NBR2	15°31.7'N; 58°44.0'W	4915	950	0	950	Profile of fluid pressure, permeability, temp., phys. prop.
NBR3	15°31.7'N; 58°46.1'W	4725	990	0	990	Hydrogeol. conditions, structural features downdip, etc.

Proposal acknowledged by JOIDES Office:	Feb 3, 1992	to:	Moore, J.C.
Proposal forwarded for review:	02/04/92	to:	LITHP, OHP, SGPP, TECP
Proposal copies:	02/04/92	to:	JOI, SO, SSDB
Proposal forwarded to DPG:	00/00/00	to:	

000424

Proposal Reference No.: **414----**

Title: "Rates, Effects, and Episodicity of Structural and Fluid Processes — Northern Barbados Ridge Accretionary Prism"

Proponents: J.C. Moore, B. Carson, M. Kastner, X. Le Pichon, G. Moore and G. Westbrook

Abstract

We propose three instrumented holes penetrating the decollement zone and spanning the deformation front of the Northern Barbados Ridge along a predicted fluid flow line. These sites will define the interrelationship of the dynamics of deeply sourced fluids, tectonic features, and geochemical signatures in the decollement zone. Monitoring by instrumentation packages atop borehole seals should provide a continuous long-term record of fluid pressure and temperature, and the option of fluid sampling and permeability determinations during revisitation of the sites with a submersible. We particularly wish to test for the episodicity of the fluid flow as related to various observed geologic, geochemical, and geophysical features of the holes. Results should be of interest not only to the traditional drilling constituency but to sedimentary and metamorphic petrologists, geochemists, and structural and petroleum geologists seeking to understand complex fluid-rock systems at depth in the earth.

000425

ODP Proposal Log Sheet 415----

Proposal received: Feb 3, 1992

☒ New proposal ☐ *Revised proposal* ☐ *Addendum to proposal* ☐ *Other*

Proposal for Drilling the Cretaceous-Tertiary Boundary in the Caribbean Sea

H. Sigurdsson, S. Carey and S. D'Hondt

Abbrev. Title: Cretaceous-Tertiary boundary in the Caribbean Sea	Key: K/T-boundary, Caribb.	Area: N Atl

Contact:

Dr. H. Sigurdsson
Graduate School of Oceanography
University of Rhode Island
Narragansett, RI 02882 (US)

Tel: 1 (401) 792-6596
FAX: 1 (401) 792-6811

Objectives: LRP

1. Investigation of the Cretaceaous-Tertiary (KT) boundary — X
   - distribution of KT boundary impact ejecta in the Caribbean region
   - evaluation of the Chicxulub impact structure as the source of Haiti KT boundary impact glasses
   - nature of depos. mechanisms of impact layer: ballistic fallout, turbidites, atmosph. plume fallout
   - climatic and other environmental effects at the KT boundary
2. Study of the Caribbean Cretaceous Basalt Province — 3
3. Reconstr. of Caribbean Late Cret. paleoceanography, and refinement of Late Cret. low-lat. magnetobiostrat. — 13

Specific area: Yucatan B., Clombian B., Venezuela B., lower Nicaragua Rise, and Mono Rise

Proposed Sites:

Site Name	Position	Water depth	Penetration Sed	Bsmt	Total	Brief site-specific objectives
415-1	20°19.5'N; 86°25.0'W	1200	500	0	500	Proximal section of KT sequence
415-2	20°10.0'N; 81°07.5'W	3000	900	50	950	Relatively proximal section of KT sequence (500 paleo-km)
415-3	15°07.0'N; 74°35.5'W	4125	1000	50	1050	High-resol. deep-water KT sequence; Colombian B. crust
415-4	14°22.0'N; 67°06.0'W	5000	1400	50	1450	Distal section of KT sequence; E Venezuelan B. crust
415-5	15°00.0'N; 77°57.0'W	2000	600	50	650	SW KT sequence; age/evol. of lower Nicaraguan Rise
415-6	12°35.0'N; 78°58.0'W	3000	1000	50	1050	W-most KT sequence; SW Colombian B. crust

Proposal acknowledged by JOIDES Office:	02/03/92	to:	Sigurdsson, H.
Proposal forwarded for review:	Feb 4, 1992	to:	LITHP, OHP, SGPP, TECP
Proposal copies:	02/04/92	to:	JOI, SO, SSDB
Proposal forwarded to DPG:	00/00/00	to:	

000426

Proposal Reference No.: 415----

Title: "Proposal for Drilling the Cretaceous-Tertiary Boundary in the Caribbean Sea"

Proponents: H. Sigurdsson, S. Carey and S. D'Hondt

Abstract

A major objective of ODP drilling is the study of global environmental change as recorded in ocean sediments. The sudden extinctions at the Cretaceous-Tertiary boundary represent one of the most profound global change events in the geologic record. New geochemical studies of glass spherules at the KT boundary in Haiti provide evidence of a major bolide impact on continental terrain overlain by evaporite-rich sediments. The impact produced unique high-Ca glasses with up to 1 wt.% SO_3, formed by fusion of anhydrite or gypsum in presence of crustal melt. The Haiti glass geochemistry is fully consistent with the source of these glasses from the 180 km Chicxulub impact structure in the Yucatan (Mexico). The glass geochemical studies imply emission of a large mass of sulfur gases to the stratosphere upon impact. We estimate minimum sulfuric ac id stratospheric aerosol mass of the order 10^{16} g and possibly as high as 10^{19} g due to impact degassing of evaporites, suggesting sudden and severe decline in global surface temperatures, as supported by stable isotope data and paleobotanical evidence. Further understanding of the KT boundary impact, its environmental effects, and the distribution and depositional processes of the impact ejecta can only be gained by recovery of well-preserved sediment sections from the ocean floor. We propose drilling of six sites in the Caribbean and Yucatan Basin where the KT boundary sequence should be well preserved. One of these sites is located east of the Yucatan platform and will serve as a critical test of the hypothesis that the Chicxulub structure is the KT boundary impact site and source of the Haiti impact glasses. We anticipate that well preserved boundary sections from coring in the Caribbean and Yucatan basins will provide material for detailed study of paleoclimatic events, and evaluation of dispersal mechanisms of the impact ejecta.

000427

ODP Proposal Log Sheet **403-Rev**

Proposal received: Feb 3, 1992

☐ *New proposal* ☒ **Revised proposal** ☐ *Addendum to proposal* ☐ *Other*

Revised Proposal to Drill the KT Boundary, Gulf of Mexico Basin

W. Alvarez, J. Smit, E.M. Shoemaker, A. Montanari, R.T. Buffler, A.R. Hildebrand, S.V. Margolis, and Mexican proponent(s)

Abbrev. Title: KT boundary, Gulf of Mexico	Key: KT bound., G/Mexico	Area: N Atl

Contact:

Dr. Walter Alvarez
Department of Geology and Geophysics
University of California
Berkeley, CA 94720 (US)

Tel: 1 (415) 642-3993
FAX: 1 (415) 643-9980

Objectives:

LRP: X

Test whether buried circular structure at Chicxulub is KT impact crater

- redrill for full recovery in the area of previous sites 536 and 540
- attempt to recover coarse ejecta close to Chicxulub crater
- drill a radial transect across the Campeche Escarpment

Specific area: Gulf of Mexico

Proposed Sites:

Site Name	Position	Water depth	Penetration Sed	Bsmt	Total	Brief site-specific objectives
GMKT-1	23°49.73'N; 84°22.25'W	2926	350	0	350	Full strat. sequencedrilled at Site 540
GMKT-2	23°29.39'N; 85°12.58'W	2790	100	0	100	Full strat. sequence drilled at Site 536
GMKT-3	22°36'N; 90°19'W	150	1200	0	1200	Sample KT ejecta blanket ~100km N of impact structure
GMKT-4	22°59'N; 90°38'W	900	855	0	855	Sample KT ejecta blanket ~150km N of impact structure
GMKT-5	22°06'N; 90°43'W	2740	555	0	555	Sample and date poss. KT erosional channeling and slump
GMKT-6	23°09'N; 90°46'W	3150	760	0	760	Sample and date possible KT slump block

Proposal acknowledged by JOIDES Office:	02/03/92	to:	Alvarez, W.
Proposal forwarded for review:	Feb 4, 1992	to:	LITHP, OHP, SGPP, TECP
Proposal copies:	Feb 4, 1992	to:	JOI, SO, SSDB
Proposal forwarded to DPG:	00/00/00	to:	

000428

Proposal Reference No.: 403-Rev

Title: "Revised Proposal to Drill the KT Boundary — Gulf of Mexico Basin"

Proponents: W. Alvarez, J. Smit, E.M. Shoemaker, A. Montanari, R.T. Buffler, A.R. Hildebrand, S.V. Margolis and Mexican proponent(s) (to be appointed)

Summary

A preliminary proposal to drill the KT boundary in the southern Gulf of Mexico region was submitted to the ODP in September, 1991 and was subsequently reviewed by the ODP panels during their fall meetings. Since then the overall scientific objectives, the relation to COSOD themes, the background, etc. for the drilling have not changed from the original proposal and are not repeated here. A copy of the original proposal is included as Appendix I for anyone wanting to review these items.

This current revised proposal is submitted at this time to provide some additional information and to respond to the comments made by the various panels. A copy of these panel comments are attached here as Appendix II. This revision is also submitted to let ODP know that the proponents are continuing to work on the proposal, are adding more proponents, are working on ties with the Mexicans and land drilling, and are designing a site survey program, and have suggested other sedimentary drilling objectives in the area.

ODP Proposal Log Sheet 332-Rev3

Proposal received: Feb 4, 1992

☐ *New proposal* ☒ **Revised proposal** ☐ *Addendum to proposal* ☐ *Other*

Florida Escarpment Drilling Transect

C.K. Paull, M. Kastner and D.Twichell

Abbrev. Title: Florida Escarpment drilling transect	Key: Florida Escarpment	Area: N.Atl

Contact:

Dr. Charles K. Paull
Department of Geology
University of North Carolina
213 Mitchell Hall
Chapel Hill, NC 27599-3315 (US)

Tel: 1 (919) 966-4516
FAX: 1 (919) 966-4519

Objectives: LRP

1. Fluid circulation in continental margins: the Florida Escarpment (FE) — 11
   - patterns of fluid circulation through platform and extent of lateral exchange with seawater
   - diagenetic history of platform edge as related to fluid circulation pattern
   - on-going microbial processes on the fluids and solids within these Mesozoic strata
   - effects and geol. rec. of seafloor brine seeps rel. to the FE's erosional history, sulfides, org.-rich layers
   - stratigraphic development and facies succession across carbonate margin
2. Paleoceanographic history of the Gulf of Mexico — 13
3. Facies pattern in a distal submarine fan — Y

Specific area: Florida Escarpment, Gulf of Mexico

Proposed Sites:

Site Name	Position	Water depth	Penetration Sed	Bsmt	Total	Brief site-specific objectives
FE-1	26°02'N; 84°54.5'W	3120	300	0	300	Fluids, basal org.-rich sed., buried limestone at base of FE
FE-2	26°01'N; 84°56'W	3150	600	0	600	Sulfide seepages and assoc. org.-rich sed.; facies; fluids
FE-3	26°01'N; 84°55.2'W	2400	1200	0	1200	Entire section windowing at face of FE: fluid circ etc.

Proposal acknowledged by JOIDES Office:	02/04/92	to: Paull, C.K.
Proposal forwarded for review:	Feb 4, 1992	to: LITHP, OHP, SGPP, TECP
Proposal copies:	Feb 4, 1992	to: JOI, SO, SSDB
Proposal forwarded to DPG:	00/00/00	to:

000430

Proposal Reference No.: 332-Rev3

Title: "Florida Escarpment Drilling Transect"

Proponents: C.K. Paull, M. Kastner and D. Twichell

Summary

The drilling of a three-site east-west transect across the western edge of the Florida-Bahama Platform at 26°01'N is proposed. The objectives of the transect are to determine: 1) patterns of fluid circulation through the platform and extent of lateral exchange with seawater, 2) the diagenetic history of the platform edge as it relates to the patterns of fluid circulation, 3) the importance of on-going microbial processes on the fluids and the solids within these Mesozoic strata, 4) the effects and geologic record of seafloor brine seeps with respect to the escarpment's erosional history, sulfide mineralization, and deposition of chemosynthetically produced organic carbon rich layers, 5) the stratigraphic development and facies succession across a carbonate continental margin, 6) the paleoceanographic history of the Gulf of Mexico, and 7) the facies patterns in a distal submarine fan. The proposed sites are: FE-1, about 50-100 meters away from the escarpment's base to 300 m penetration depth; FE-2, about 1.5 km west of the escarpment's base on the abyssal floor to 600 m penetration depth; and FE-3, a deep re-entry hole behind the exposed face of the escarpment to >1200 m. This drilling program was recommended by the COSOD II report and the ODP working group on Carbonate Banks and Atolls.

000431

ODP Proposal Log Sheet 333-Add

Proposal received: Feb 4, 1992

☐ *New proposal* ☐ *Revised proposal* ☒ **Addendum to proposal** ☐ *Other*

Update to: Tectonic and Magmatic Evolution of a Pull-Apart Basin: A Drilling Transect across the Cayman Trough, Caribbean Sea

P. Mann

Abbrev. Title: Update to Cayman Trough transect	Key: Cayman Trough	Area: N Atl

Contact:

Dr. Paul Mann
Institute for Geophysics
University of Texas at Austin
8701 Mopac Boulevard
Austin, TX 78759 (US)

Objectives: See 333----.

LRP

Specific area: Cayman Trough

Proposed Sites: See 333----

Site Name	Position	Water depth	Penetration Sed Bsmt Total	Brief site-specific objectives

Proposal acknowledged by JOIDES Office:	02/04/92	to:	Mann, P.
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000432