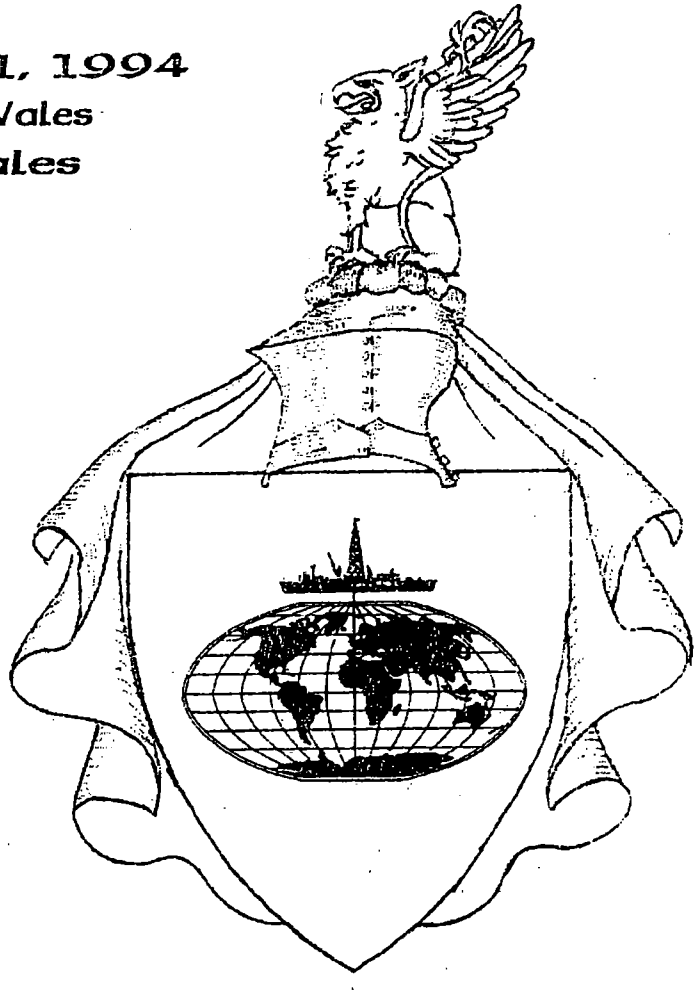
JOIDES PCOM

April 18 - 21, 1994
University of Wales
Cardiff, Wales



AGENDA BOOK

Joint Oceanographic Institutions for Deep Earth Sampling

· University of California, San Diego, Scripps Institution of Oceanography · Canada-Australia Consortium · Columbia University, Lamont-Doherty Earth Observatory · European Science Foundation: Belgium, Denmark, Finland, Greece, Iceland, Italy, The Netherlands, Norway, Spain, Sweden, Switzerland, and Turkey · France: Institut Francais de Recherche pour l Exploitation de la Mer · Germany: Bundesanstalt fur Geowissenschaften und Rohstoffe · University of Hawaii, School of Ocean and Earth Science and Technology · Japan: Ocean Research Institute, University of Tokyo · University of Miami, Rosenstiel School of Marine and Atmospheric Science · Oregon State University, College of Oceanic and Atmospheric Sciences · University of Rhode Island, Graduate School of Oceanography · Texas A&M University, College of Geosciences and Maritime Studies · University of Texas at Austin, Institute for Geophysics · United Kingdom: Natural Environment Research Council · University of Washington, College of Ocean and Fishery Sciences · Woods Hole Oceanographic Institution ·

JOIDES Planning Committee
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PARTICIPANT LIST

JOIDES Planning Committee

Richard Arculus - Australian National University, Canberra, Canada-Australia Consortium
Keir Becker - University of Miami, Rosenstiel School of Marine and Atmospheric Science
Wolfgang Berger - University of California, San Diego, Scripps Institution of Oceanography
Henry Dick - Woods Hole Oceanographic Institution
Jeff Fox - University of Rhode Island, Graduate School of Oceanography
Robert Kidd - Dept. of Geology, University of Wales, Cardiff, Wales, UK
Hermann Kudrass - Bundesanstalt für Geowissenschaften und Rohstoffe, Germany
Brian Lewis - University of Washington, College of Ocean and Fishery Sciences
Hans-Christian Larsen - Geol. Survey of Greenland, Copenhagen, Denmark, ESF Consortium
Catherine Mével - Laboratoire de Pétrologie, Université Pierre et Marie Curie, France
Alan Mix - Oregon State University, College of Oceanic and Atmospheric Sciences
Marcus Langseth - Columbia University, Lamont-Doherty Geological Observatory
William Sager - Texas A&M University, College of Geosciences
Thomas Shipley - University of Texas at Austin, Institute for Geophysics
Kiyoshi Suyehiro - Ocean Research Institute, Japan
Brian Taylor - University of Hawaii, School of Ocean and Earth Science and Technology

Liaisons

Jamie Austin - Joint Oceanographic Institutions, Inc.
Timothy Francis - Science Operator (ODP-TAMU)
David Goldberg - Wireline Logging Services (ODP-LDEO)
Bruce Malfait - National Science Foundation

JOIDES Panel Chairs

Pamela Kempton - LITHP - Kingsley Dunham Centre, British Geological Survey, Nottingham
Judith McKenzie - SGPP Chair - Geologisches Institut, ETH-Zentrum, Zürich
Alastair Robertson - TECP Chair - University of Edinburgh, Edinburgh, Scotland
Mark Leckie - OHP - University of Massachusetts, Amherst, Massachusetts
Charles Sparks - TEDCOM Chair - Institut Français du Petrole, Rueil-Malmaison, France

JOIDES Office

William Collins - Executive Assistant and Non-US Liaison
Karen Schmitt - Science Coordinator

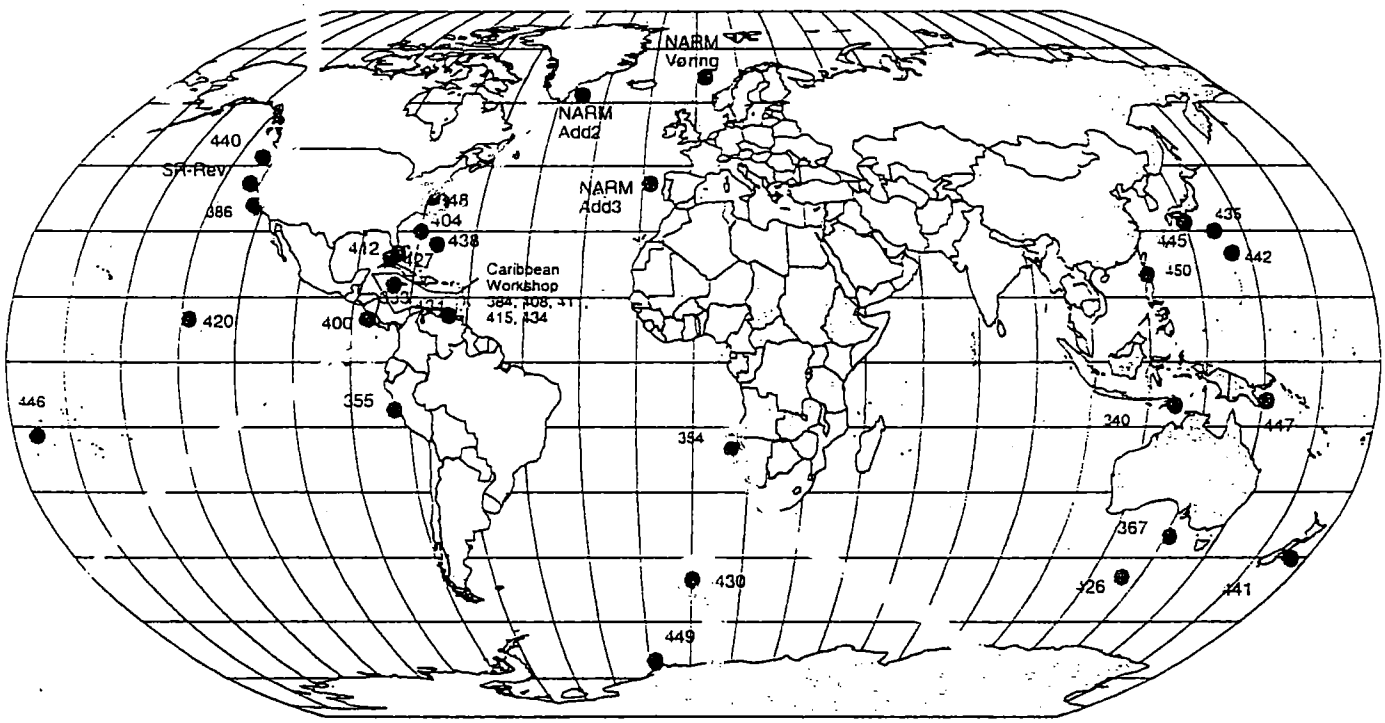
Guests and Observers

James Briden - Natural Environment Research Council (UK EXCOM Member)
Mathilde Cannat or Jeffrey Karson (Leg 153 Co-Chief)
Cathy Ellins - University of Florida (JOI)
Lin Kay - Natural Environment Research Council (UK)
Julian Pearce - Department of Geology, Durham (UK PCOM Alternate)
Nicholas Shackleton (Leg 154 Co-Chief)
Alexander Shor - National Science Foundation
Steve Strength - National Science Foundation (Contracts)

JOIDES Spring (global) Ranking 1994

Rank	LITHP	OHP	SGPP	TECP
1	Caribbean Workshop* LIP's Objective	Caribbean Workshop* Ocean History Objective	348----/348-Add New Jersey Sea Level II	447---- W. Woodlark Basin
2	GENERIC Giant LIP	386-Add2 California margin	400-Rev/Add2 Costa Rica acc. wedge	400-Rev/Add2 Costa Rica acc. wedge
3	Tie SR-Rev2 Sedimented Ridges II	Tie 348-Add (shallow) NJ Margin II	412----/Add/Add2 Bahamas Transect	450---- Taiwan arc/con collision
4	440---- Tie E. J. de Fuca Hydr.	430---- Tie Sub-SAT	386-Rev2/Add2 California Margin	NARM-Add3 NARM IAP II
5	426---- Aus.-Antarctic discord.	441---- (1 OHP leg) SW Pacific Gateway	SR-Rev2 Sed. Ridges II	442---- Mariana back-arc basin
6	400-Add2 Costa Rica acc. wedge	354-Rev2 Benguela Current	434---- Caribbean Quat. climate	340-Rev N Australian margin
7	NARM-DPG NARM Vol. II Vøring	404---- NW Atl. sed. drifts	354-Rev2 Benguela Current	NARM-Add2 E Greenland Trans. Ext.
8	446----, 451---- combo. Tonga Arc/Forearc	427-Add South Florida sea level	440---- E Juan de Fuca Hydroth.	333-Rev2 Cayman Trough
9	420---- Oceanic crust evol.	367-Rev + LOI 21 GAB Cool water carbs.	355-Rev3 Gas Hydrates (Peru)	445---- Nankai deformation/fluid
10	435-Rev2 Mariana Mass Balance	449---- Mesozoic Weddell Basin	435-Rev2 Mariana Mass Balance	438---- Ocean crust reflectors

* Based on the result of a workshop on Caribbean Ocean drilling and includes protions of proposals 384, 408, 411, 415, and 434


NARM
Vøring
NARM
Add2
NARM
Add3
440
SR-Rev
386
448
404
438
412
427
Caribbean
Workshop
384, 408, 41
415, 434
420
400
355
446
394
435
445
442
450
340
447
367
426
441
430
449

JOIDES RESOLUTION OPERATIONS SCHEDULE

Leg	Destination	Cruise Dates*	Port of Origin †	Total days	Transit	On Site
155	Amazon Fan	Mar. 29 - May 24, 1994	Barbados, Mar. 25 - 28, 1994	56	7	49
156	N. Barbados Ridge	May 29 - July 24, 1994	Barbados, May 24 - 28, 1994	56	1	55
157	VICAP/MAP	July 29- Sept. 23, 1994	Barbados, July 24 - 28, 1994	56	12	44
158	TAG	Sept. 28- Nov. 23, 1994	Las Palmas, Sept. 23-27, 1994	56		
	Transit and drydock					
159	Site 735	Jan. - Feb. 1995	Capetown	56	16	40
160	Eq. Atlantic Transform	March - April 1995	Capetown	56	15	41
161	Mediterranean I	May - June 1995	Dakar	56	18	38
162	Mediterranean II	July - August 1995	Napoli	56	11	45
163	Atl. Arctic Gate. II ø	Sept. - Oct. 1995	Aberdeen	56	15	41
164	Gas Hydrates	Nov. - Dec. 1995	Reykjavik	56	13	43
165	DCS Engineering	Jan. - Feb. 1996	Miami	56		

† *Although five day port calls are generally scheduled, the ship sails when ready.*

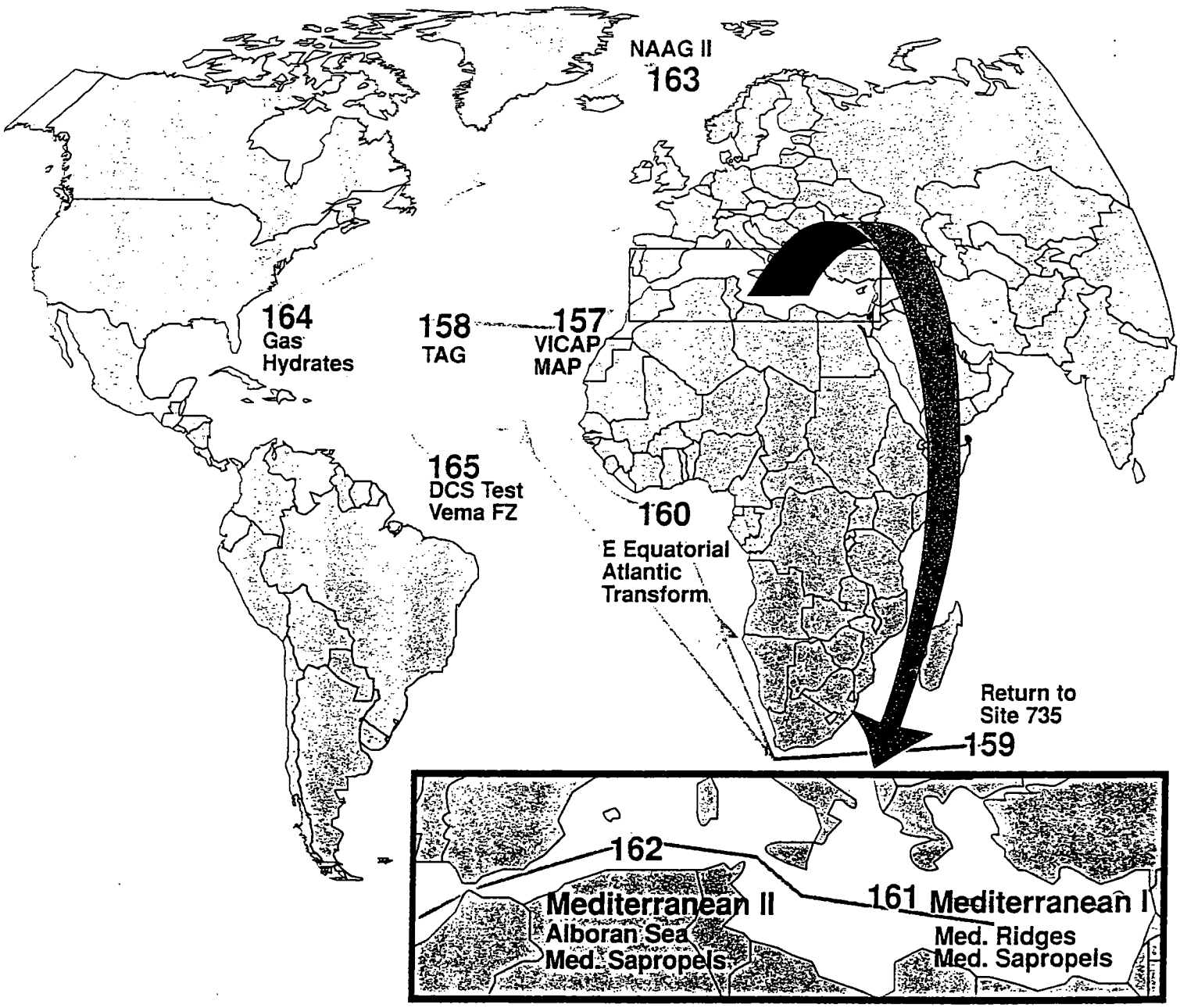
* *The precise dates of Legs 159 - 165 cannot be determined until the drydock port has been fixed.*

ø *The Arctic Gateways leg may be inserted between the Mediterranean legs if that gives a better ice/weather window.*

Operations Schedule date: 16 December 1993

JOIDES MEETING SCHEDULE

Dates	Location	Panel/Committee
May 17 - 19, 1994	Uppsala, Sweden	DMP
May 18 - 19, 1994	College Station, Texas	Com. RFP Eval.
June 27 - 30, 1994	Washington, D.C.	EXCOM
* July 1994	Palisades, New York	SSP
August 9 - 12, 1994	Reykjavik	PCOM
* September 1994	Las Palmas, The Canaries	SMP
* Sept. 27- 29, 1994	Townsville, Australia	OHP
* October 1994	Fukuoka, Japan	SGPP
* October 3 - 5, 1994	Windisch-Eschenbach, Germany	TEDCOM
* October 20 - 22, 1994	Cyprus	TECP
October 3 - 5, 1994	Canada	LITHP
* November 1994	Palisades, New York	SSP
Jan. 30 - Feb. 1, 1995	Hawaii	EXCOM
* March 2 - 4, 1995	Miami, Florida	OHP
Spring 1995	San Luis Obispo, California	TECP


NAAG II
163
164
Gas
Hydrates
158
TAG
157
VICAP
MAP
165
DCS Test
Vema FZ
160
E Equatorial
Atlantic
Transform
Return to
Site 735
159
162
Mediterranean II
Alboran Sea
Med. Sapropels
161 Mediterranean I
Med. Ridges
Med. Sapropels

PLANNING COMMITTEE MEETING SCHEDULE

Monday, April 18 ..... **9:00 AM**

A. Initial Business (10 minutes)
   1. Introductions
   2. Approval of the Agenda for the Meeting
   3. Approval of the Minutes from the December 1994 PCOM Meeting
   4. Review of Action Items From the December PCOM Meeting

B. ODP Liaison Reports
   1. NSF (Bruce Malfait - 15 minutes)
   2. JOI (Jamie Austin - 15 minutes)
   3. TAMU (Tim Francis - 40 minutes)

Coffee and Tea Break ..... *10:20- 10:35 AM*

   4. LDEO (Dave Goldberg - 30 minutes)

C. Reports from Partners (10 minutes each)
   1. Can-Aus (Richard Arculus)
   2. ESF (Hans-Christian Larsen)
   3. France (Catherine Mével)
   4. Germany (Hermann Kudrass)
   5. Japan (Kiyoshi Suyehiro)
   6. UK (Rob Kidd)
   7. USA (Jamie Austin)

Lunch Break ..... *12:30 - 1:30 PM*

D. Reports by PCOM Liaisons (15 minutes each)
   1. EXCOM (Brian Lewis)
   2. BCOM (Brian Lewis)
   3. LITHP (Catherine Mével)
   4. OHP (Alan Mix)
   5. TECP (Brian Taylor)
   6. SGPP (Wolf Berger)
   7. SSP (Rob Kidd)
   8. TEDCOM (Tom Shipley)

Coffee and Tea Break ..... *3:00 - 3:15 PM*

   9. SMP (Jeff Fox)
   10. IHP (Will Sager)
   11. PPSP (Brian Lewis)

E. Liaison Group Report
   1. InterRidge (Roger Searle - 45 minutes)

End of Day 1 ..... *5:00 PM*

NERC/University Dinner. 7:00 for 7:30 pm Welsh Theme Dinner. Partners invited. Drinks, reception, open cash bar from 9z;00 pm available for instrumentalists - to be joined by University of Cardiff graduate students.

Tuesday, April 19 ..... **8:30 AM**

F. Updating the Long Range Plan
   1. The Process (Brian Lewis - 30 minutes)
   2. Thematic Panel White Papers (Panel Chairs - 30 minutes each)
      a) SGPP (Judy McKenzie)
      b) TECP (Alastair Robertson)

Coffee and Tea Break ..... *10:00 - 10:15 AM*

c) LITHP (Pamela Kempton)
d) OHP (Mark Leckie)

3. Deep-Drilling Technology Issues (Charles Sparks - 30 minutes)

Lunch Break ..... *12:00 - 1:00 PM*

4. Life Extension and Enhancement of the *JOIDES Resolution* (Tim Francis - 30 minutes)
5. Status of Japanese proposal for a "New Era of Ocean Drilling" (Kiyoshi Suyehiro - 30 minutes)
6. PCOM Discussion of Long-Range Planning Issues

Coffee and Tea Break ..... *3:00 - 3:15 PM*

7. Setting Tasks and Timetables

End of Day 2 ..... *5:00 PM*

Evening free — selection of local restaurants and pubs, information will be available at meeting.

Wednesday, April 20 ..... **8:30 AM**

G. Current Operations

1. Leg 153 (Matilde Cannat - 1 hour)
2. Leg 154 (Nick Shackleton - 1 hour)

Coffee and Tea Break ..... *10:30 - 10:45 AM*

3. DCS Status (Tim Francis - 45 minutes)
4. Shallow Water Hazard Surveys (Brian Lewis - 30 minutes)

Lunch Break ..... *12:00 - 1:00 PM*

H. 4 Year Plan FY1993 — 1996

1. Thematic Panel Global Rankings (15 minutes each)
   a) TECP (Brian Taylor)
   b) SGPP (Wolf Berger)
   c) OHP (Alan Mix)
   d) LITHP (Catherine Mével)
2. 4 -Year Plan
   a) Reaffirm 1994 Program (15 minutes)
   b) Review and Reaffirm 1995 Program (15 minutes)
   c) 1996 - 1997 Area of Science Operations (1 hour)

Coffee and Tea Break (during discussion) ..... *3:00 - 3:15 PM*

d) Technology goals (1 hour)

End of Day 3 ..... *4:45 PM*

Theatre visit: performance begins at 7:30 PM.

Thursday, April 21 ..... **8:30 AM**

I. Action on Panel Recommendations (2 hours)

Coffee and Tea Break ..... *10:30 - 10:45 AM*

J. Old Business

1. Basement Sampling Policy (30 minutes)
2. Less-Than-A-Leg Science (30 minutes)

Lunch Break ..... *12:00 - 1:00 PM*

K. New Business

1. 1994-95 Meeting Schedule (15 minutes)
2. Membership Actions—Executive Session (1 hour)

L. Other Business

M. Review of Motions, Consensuses and Action Items from the Meeting (1 hour)

Adjourn ..... *3:00 PM*

PLANNING COMMITTEE FIELD EXCURSION TO WEST WALES

Saturday, April 16 ..... **3:30 PM**

The field trip will be led by Tony Ramsay to North Pembrokeshire, departing from Park Hotel, Cardiff, at approx. 3:30 pm and spending overnight in St Davids, and Sunday in the field. Returning to Cardiff Sunday evening. The costs will be minimized by hire of minibuses and a block booking at a small St Davids hotel. To include a packed lunch on the Sunday, the cost is estimated at around £40 sterling but you would be responsible separately for your evening meal in St Davids and any(?) sampling of the local ales! People arriving from airports will be able to leave luggage and freshen up in a room I will reserve for Saturday night at the Park Hotel in Cardiff Sunday.

1st Stop	Haverfordwest	(historical)
2nd Stop	St. Davids	Cathedral/St. Nons (historical)

Sunday, April 17 .....

1st Stop	Porth Clais	Precambrian/Cambrian Igneous & Sedimentary rocks (historical)
2nd Stop	Abereiddy	Ordovician Black Shales & Volcanics (aesthetic)
3rd Stop	Strumble	Ordovician Pillow Lavas + Black Shales (aesthetic)
4th Stop	Lower Fishguard	Ordovician Sediments + Pub stop (cultural)
5th Stop	Prescelly Hills	Ordovician Intrusives (historical/mystical)

PLANNING COMMITTEE AGENDA NOTES

Monday, April 18, 1993	*9:00 AM*

A. Initial Business (10 minutes)

1. Introductions

a) Introduction of PCOM Members, Liaisons and Guests

b) Meeting Logistics (Rob Kidd)

2. Approval of the Agenda for the Meeting

Motion

3. Approval of the Minutes from the December 1994 PCOM Meeting

- *The Revised Draft Minutes of the December 1 - 4, 1993 PCOM meeting in Miami, Florida are included in the Agenda Book on p. 66 and contain all revisions received in the JOIDES Office as of April 1, 1994.*

4. Review of Motions and Action Items From the December PCOM Meeting (Brian Lewis)

a) PCOM Motion - FY95 Science Plan

The schedule for ODP Legs 157 through 165 will be as follows

157 - VICAP/MAP (380-Rev3/Add3)

158 - TAG

— Drydock - South Africa

159 - Return to Site 735 (300-Rev)

160 - Equatorial Atlantic Transforms (346-Rev4)

161 - Mediterranean I

162 - Mediterranean II

163 - North Atlantic Arctic Gateways II

164 - Gas Hydrate Sampling (423-Rev/Add)

165 - DCS Sea Test

Addenda

- *The FY95 Science Plan will be reaffirmed during discussion of the Four-Year Plan, Agenda Item H-2.*

1. This schedule presumes the drydock to occur in South Africa. Should this prove unacceptable to SEDCO/FOREX, and the drydock be scheduled elsewhere, PCOM should re-examine the schedule at the earliest opportunity.

2. The two Mediterranean legs will consist of elements of the following three proposals (in alphabetical order) - (1) Alboran Sea (323-Rev3), (2) Mediterranean Ridge (330-Rev/Add3), and (3) Mediterranean Sapropels (391-Rev).

3. The stated order of Mediterranean legs is preferred, but may be changed to accommodate the necessary weather window for the North Atlantic Arctic Gateways II leg.

4. The preferred location for the DCS sea test is on the Vema Transverse Ridge.

- *PCOM will consider its position on funding of Shallow Water Hazard Surveys under Agenda Item G-4.*

b) PCOM Motion - Shallow Water Drilling Working Group Report

PCOM approves the Shallow Water Drilling Working Group Report, subject to minor editorial revisions and the addition of wording that states that funding will be from ODP commingled funds and that ODP-TAMU will be responsible for contracts and quality control. PCOM thanks and disbands the Shallow Water Drilling Working Group.

c) JOIDES Office Action (December 1993) - Shallow Water Drilling Working Group Report

The JOIDES Office will prepare a policy paper for presentation in April 1994 on PCOM's implementation of the hazard surveys recommended by the Shallow Water Drilling Working Group Report.

- *Funds for a hazard survey for NJ-MAT were not identified in the FY95 ODP-TAMU budget (see BCOM Minutes, p. 145).*

d) PCOM Motion (December 1993) - Hazard Survey for the NJ-MAT Program

Given the high priority of the New Jersey Mid-Atlantic Transect sites 4 through 9a by the relevant panels, PCOM places a high priority for drilling these sites at the earliest possible date commensurate with completion of the required surveys, processing and interpretation as outlined in the Shallow Water Drilling Guidelines. PCOM therefore requests JOI to investigate ways of obtaining operational funds for ODP-TAMU to contract for these surveys and services.

e) PCOM Consensus (December 1993) - FY94 Budget Priorities

After extensive discussion, PCOM identifies two important priorities for additional expenditure of FY94 "funds":

- *J. Austin will update PCOM on the status of these FY94 budget items under Agenda Item B-2-b.*

1. a broad review of engineering development within ODP, per ASRC Proposal 10 (estimate $50-100K), and
2. logging-while-drilling (LWD) as part of Leg 156 (estimate $200K). As a consequence, PCOM recommends that JOI, Inc.
    a. support initiation of the engineering review as soon as possible (subject to EXCOM approval), and
    b. endeavor to locate LWD funds for Leg 156 prior to the ODP-TAMU operational deadline of 15 January 1994.

Regardless of the outcome of LWD for Leg 156, PCOM recognizes the potential scientific importance of LWD for ODP, and encourages proponents to incorporate this technology, as required, into their future proposals to the program.

- *B. Lewis will review the status of the FY95 budget in the BCOM report, Agenda Item D-2.*

f) PCOM Consensus (December 1993) - FY95 Budget Prioritization

Priority 1

The computer and data base upgrades are of the highest priority. PCOM endorses the PANCH recommendation that the Computer RFP Evaluation

Committee continue to work closely and frequently with ODP-TAMU to monitor and advise on the implementation of the upgrades.

Priority 2

DCS. PCOM endorses the continued testing of DCS through 1995.

Priority 3

- Downhole measurements lab. PCOM supports ODP-TAMU's proposal to upgrade the downhole measurements facility expansion on the *JOIDES Resolution*, ($400K)
- Shallow water gas hazards surveys. PCOM recommends to JOI that ODP-TAMU include funds in the FY95 budget for shallow water gas hazards surveys.

Priority 4

BHTV (≈$100K). By consensus, PCOM endorses the PANCH recommendation that DMP explore the most efficient means of maintaining the capability to measure in situ stress on a routine basis, in appropriate holes, and return a recommendation to PCOM in April 1994.

SMP equipment list, progress as feasible.

g) PCOM Motion (December 1993) - Computer RFP

- *B. Lewis will present an update on the status of the computer RFP evaluation process under Agenda Item H-2-d-3.*

- PCOM reaffirms its commitment to upgrade ODP computer and information systems.
- PCOM recognizes that this will entail significant expenditure of funds during FY94, FY95, FY96.
- PCOM advises JOI to continue a computer database upgrade advisory committee to advise ODP-TAMU and monitor progress on a regular basis during the entire project.
- PCOM is concerned that end-user input be sought to insure timely and appropriate development of suitable products.

- *PCS/PPCS development will be discussed in the context of technology development and the Four-Year Plan, Agenda Item H-2-d-2.*

h) PCOM Consensus (December 1993) - PCS/PPCS - SGPP/C. Paull/J. Geiskes Action Item

PCOM recommends that C. Paull and other SGPP members and J. Geiskes work with ODP-TAMU, TEDCOM and G. Brass to develop a plan to modify the existing PCS system and/or construct a new one (PPCS) to meet the needs of the scheduled gas hydrate leg and future legs that must recover gases and gassy sediments. The plan, together with a cost estimate, should be presented to PCOM in April 1994.

- *OHP's recommendation regarding the proposed policy will be taken up under Agenda Item I-4.*

i) SGPP and OHP Action Item (December 1993) - Proposed Hydraulic Piston Coring Policy

PCOM asks that SGPP and OHP evaluate ODP-TAMU's proposal for revising the ODP hydraulic piston coring policy and make a recommendation on it for the April PCOM meeting.

- *CLI will be discussed in the context of technology development and the Four-Year Plan, Agenda Item H-2-d-1.*

j) PCOM Consensus (December 1993) - Core-Log Integration White Paper

PCOM agrees to institute the CLI advisory panel (CLIPAN) and recommends that BRG do everything possible to rearrange their budget to accommodate the need for CLIP on Leg 154.

l) PCOM Consensus - BHTV - DMP Action Item

PCOM endorses the PANCH recommendation that DMP explore the most efficient means of maintaining the capability to measure in situ stress on a routine basis, in appropriate holes, and return a recommendation to PCOM in April 1994.

- *DMP will discuss these two items (l & m) at their May meeting and report to PCOM in August.*

m) PCOM Consensus - GEOPROPS Development - DMP Action Item

PCOM endorses the DMP recommendation that GEOPROPS not be supported, but in light of the fact that this type of sampling is important to the program, PCOM would like DMP to consider alternate ways of implementing measurement of the parameters that would have been measured by GEOPROPS.

- *IHP discussed* Rocky *at their meeting (p. 168) a review will be presented in the IHP Report, Agenda Item D-10.*

n) IHP Action Item - New Petrology Program Evaluation: *Rocky*

PCOM requests that IHP evaluate the results of the new petrology program, *Rocky*, being tested on Leg 153 and to report to PCOM in time for the April PCOM meeting.

o) PCOM Consensus - JOIDES Thematic Panel White Papers

- ¥ *Thematic Panel White Papers will be presented by the panel Chairs or representatives under Agenda Item F-2.*

After review of the process of White Paper revisions, PCOM requests that thematic panels, at their next meetings:

a) concentrate on sections identifying succinctly major results to-date and how they relate to stated thematic objectives

b) prioritize major themes for drilling utilizing realistic time estimates in the two periods FY1995-1998 and FY1999-2003

In addition, PCOM requests the thematic panels to provide a vision of science objectives beyond FY2003

p) PCOM Motion - ASRC Proposal 4

- *EXCOM's final actions on the ASRC Proposals will be presented by B. Lewis in the EXCOM Report, Agenda Item D-1. See also the EXCOM minutes, p. 134 in the Agenda Book.*

PCOM adopts the revised JOIDES Proposal Submission Guidelines, JOIDES Panel Meeting Schedule, and Proposal Review Guidelines endorsed by the PANCH at the PCOM December Annual Meeting.

q) PCOM Consensus - ASRC Proposal 8

PCOM's consensus was that the thematic panel Chairs not attend the April or August PCOM meetings except on a case-by-case basis as determined by the PCOM Chair.

r) PCOM Motion (December 1993) - ASRC Proposal 10

PCOM acknowledges and applauds the continuing and growing role of TEDCOM in helping the JOIDES Advisory Structure evaluate major engineering development programs like DCS and retractable-bit technologies.

In reference to ASRC's Proposal 10, and in recognition of the continuing importance of such engineering development to both the present and future of ODP, PCOM recommends to EXCOM that an external group be designated to review the role of engineering development within ODP, including the relationship between ODP-TAMU, TEDCOM, PCOM, and the Advisory Structure, and that this review occur as soon as possible.

B. ODP Liaison Reports

1. NSF (Bruce Malfait - 15 minutes)

2. JOI (Jamie Austin - 15 minutes)

a) **Personnel Changes**

b) **FY94 Budget Issues**

1) **LWD/Leg 156**

2) **Engineering Development Review Committee (EDRC)**

c) **FY95 Budget Issues**

1) **BCOM**

2) **Performance Evaluation Committee**

3. TAMU (Tim Francis - 40 minutes)

Coffee and Tea Break ..... *10:20- 10:35 AM*

4. LDEO (Dave Goldberg - 30 minutes)

- *Hezhu Yin has accepted the project scientist position in the Borehole Research Group. Dr. Yin comes from the Stanford Rock and Borehole Geophysics group under the direction of Amos Nur. He also has 5 years of experience and a degree in well logging from the Daqing Institute in China. His appointment will begin in April.*

C. Reports from Partners (10 minutes each)

1. Can-Aus (Richard Arculus)

2. ESF (Hans-Christian Larsen)

3. France (Catherine Mével)

4. Germany (Hermann Kudrass)

5. Japan (Kiyoshi Suyehiro)

6. UK (Rob Kidd)

7. USA (Jamie Austin)

Lunch Break ..... *12:30 - 1:30 PM*

D. Reports by PCOM Liaisons (15 minutes each)

1. EXCOM (Brian Lewis)

- *The EXCOM minutes are included in the Agenda Book, p. 123.*

a) Advisory Structure Review Committee Report Recommendations

1) EXCOM Motion (February 1994) — ASRC Proposal 1

EXCOM endorses the PCOM motion but recommends that broad review of the White Papers be achieved though e-mail or other widely advertised mechanisms. EXCOM interprets White Paper to mean a JOIDES planning document.

2) EXCOM Motion (February 1994) — ASRC Proposals 2, 3, 4, 5, 6, 9, 11

EXCOM endorses the PCOM motion(s).

3) EXCOM Motion (February 1994) — ASRC Proposal 7

EXCOM notes that the item should have come under the purview of EXCOM, and EXCOM reaffirms the alternation of the JOIDES Office between US and non-US partner. For the period 1996 - 1998 the US partner will submit one nomination to JOI Inc. The procedure for selecting the next non-US partner will be determined by 1996.

4) EXCOM Motion (February 1994) — ASRC Proposal 8

EXCOM endorses the PCOM motion, noting that the ASRC points out the heavy load that panel chairs already have in executing their tasks and that requiring additional meetings for them to attend would be burdensome. EXCOM notes that PCOM has the option to invite panel chairs as necessary.

5) EXCOM Motion (February 1994) — ASRC Proposal 10

EXCOM endorses the PCOM motion and will develop mandates, Terms of Reference and a schedule for an engineering review.

6) **EXCOM Motion (February 1994) — ASRC Proposal 12**

EXCOM endorses the PCOM motion and encourages the JOIDES Office to supply as much help to the panel chairs as is feasible within the present budget and personnel.

b) **Engineering Development Review Committee (EDRC)**

1) **EXCOM Motion (February 1994) — Terms of Reference for the Engineering Development Review Committee (EDRC)**

The Engineering Development Review Committee, EDRC, should review two components of engineering development in JOIDES and at ODP

1. Engineering development has been a key component of ODP. New technologies developed during ODP, including APC, HRB, free-fall reentry cones, etc., have greatly added to the program's ability to attain its scientific goals. However, a specific review of the engineering development program has not been conducted. With a greater dependency on new technological advances, it is appropriate that such a review be completed.

   The Engineering Development Review Committee, EDRC, is asked to review and comment on the engineering development program within ODP and if necessary, recommend changes in the program structure used for engineering development.

2. The mandate of TEDCOM, as recommended by the ASRC, and approved by EXCOM in February 1994, is

   The Technology and Engineering Development Committee (TEDCOM) is responsible for recommending to PCOM drilling tools and techniques to meet the objectives of the scientific plan and for monitoring the progress of their development through liaison with the ODP/TAMU Engineering development department.

   The EDRC is asked to review the TEDCOM/ODP-TAMU/PCOM interaction in the context of this mandate.

- *Members of the EDRC are:*
  - *Keir Becker (Chair)*
  - *Jacques Delacour*
  - *Dieter Eickelberg*
  - *Lawrence Leung*
  - *William Martinovich*
  - *~~Alastair~~ Skinner* Alister

Liaisons to the EDRC:
- *James Austin (JOI)*
- *Timothy Francis (ODP-TAMU)*
- *Brian Lewis (PCOM)*
- *Earl Shanks (TEDCOM)*

c) **Membership and International Development**

1) **EXCOM Motion (February 1994) — International Development**

EXCOM endorses an international development strategy through the appointment of an Associate Director for ODP International Relations in the JOI office and the establishment of an International Partnership Advisory Committee (Malpas, Raleigh, Beiersdorf).

EXCOM further recommends the allocation of commingled funds for this purpose covering salary, travel and office services. IPAC should be established immediately as an ad hoc committee, and work with JOI to develop a budget and detailed operating plan.

d) Workshop on Ocean Drilling in the 21st Century

- *Preliminary copies of the Report of the Workshop on Ocean Drilling in the 21st Century was included in the Agenda Book mailing. The report is being published by STA/JAMSTEC in Japan. The results of the workshop will be discussed in detail during the long-range planning session.*

2. BCOM (Brian Lewis)

- *The BCOM minutes are included in the Agenda Book, p. 145.*

3. TECP (Brian Taylor)

- *The TECP minutes are included in the Agenda Book, p. 172*

4. OHP (Alan Mix)

- *The OHP minutes are included in the Agenda Book, p. 205.*

5. LITHP (Catherine Mével)

- *The LITHP minutes are included in the Agenda Book, p. 226.*

6. SGPP (Wolf Berger)

- *The SGPP minutes were not received in time to be included in the Agenda Book and, if possible, will be made available at the meeting.*

7. SSP (Rob Kidd)

8. TEDCOM (Tom Shipley)

- *The Executive Summary of the TEDCOM minutes are included in the Agenda Book, p. 152*

Coffee and Tea Break ..... *3:00 - 3:15 PM*

9. IHP (Will Sager)

- *The IHP minutes are included in the Agenda Book, p. 165.*

10. SMP (Jeff Fox)

- *The SMP minutes were not received in time to be included in the Agenda Book and, if possible, will be made available at the meeting.*

11. PPSP (Brian Lewis)

- *The PPSP minutes were not received in time to be included in the Agenda Book and, if possible, will be made available at the meeting.*

E. Liaison Group Report

1. InterRidge (Roger Searle - 45 minutes)

- *See correspondence regarding ODP and InterRidge, p. 38.*

InterRidge Office
Department of Geological Sciences
University of Durham
South Road, Durham, DH1 3LE, UK

tel: (091) 374 2532
fax: (091) 374 2510
Internet: intridge@durham.ac.uk

Upcoming 1994 InterRidge meetings (most dates are tentative).

Active Processes Workshop - Woods Hole, MA, USA June 6-8

Convener: Joe Cann, University of Leeds

4-D Architecture of the Oceanic Lithosphere (Part 1) USA? Mid-September 94

Objectives: Design experiments, establish implementation plans and designate experiment site(s) for investigation into the 4-D architecture of the Oceanic Lithosphere at the second-order spreading segment scale. (This is likely to be the most interesting of the planned meeting to you. We would certainly appreciate ODP input on this topic at this level.)

General InterRidge Meeting - Kiel, Germany Mid-Autumn 1994

Objectives: This will be a general InterRidge planning meeting concerning policy for the most part. However, we are planning to include 'state-of-InterRidge' science presentations as updates on the working groups' progress during the past 2 years.

Biological Studies Working Group Initial Meeting - late 1994

Convener: Daniel Desbruyeres

Fluxes on the Segment Scale, under discussion.

End of Day 1 ..... *5:00 PM*

NERC/University Dinner. 7:00 for 7:30 pm Welsh Theme Dinner. Partners invited. Drinks, reception, open cash bar from 9:00 pm available for instrumentalists - to be joined by University of Cardiff graduate students.

Tuesday, April 19, 1993	*8:30 AM*

F. Updating the *Long Range Plan*

1. The Process (Brian Lewis - 30 minutes)

The following steps are suggested to guide the PCOM discussion.

- *For more details on the plan to update the LRP, see also the discussion by B. Lewis in the* Report of the Workshop on Ocean Drilling in the 21st Century, *p. 9 (separate from Agenda Book).*

Step 1. Agree on the process of updating the Long Range Plan.

The following process is suggested:

1. **Agree to adjust the timing of the Phases to fit with MOU's and other known timelines. Therefore:**

   Phase I = FY1989-1993

   Phase II = FY1994-1998

   Phase III = FY1999-2002

   Phase IV = FY2003-2008

2. **Solicit input from TEDCOM, DMP, IHP, SMP**

   - review of technology development in Phase I
   - projection of technology developments for Phases II-IV

3. **Solicit input from Thematic panels**

   - review of accomplishments to present
   - scientific foci based on technological feasibility

     —Phase II FY1993-1998

     —Phase III FY1999-2002

     —Phase IV FY 2003-2008

4. **Solicit input from other programs, e.g., NAD, PAGES, INTER-RIDGE, ION**

5. **Solicit input from JOIDES partners**

6. **PCOM's job**

   Based on 1-5, PCOM to formulate an updated LRP, including:

   - science focus in each phase
   - phased technology development plan
   - budget projections

Step 2. **Identify Key Issues Relating to Long-Range Planning.**

For example:

1. **Definition of the base program, in terms of its functions, priorities and budget. (examples are shipboard science, data archiving and analysis, publications, core repository, engineering development)**

2. **Technology development:**

   - DCS development
   - Riser development
   - Deep drilling
   - Data integration and analysis

3. **Focusing of science**

   - Focusing the science for maximum impact with current technology.

Step 3. **Identify small subset of PCOM to draft an updated LRP**

2. Thematic Panel White Papers (Panel Chairs - 30 minutes each)

- *Reports given by the panels at the OD21 Workshop are included in the Workshop Report sent to you with the Agenda Book.*

a) **SGPP (Judy McKenzie; OD21, p. 103)**

b) **TECP (Alastair Robertson; OD21, p. 72)**

Coffee and Tea Break ..... *10:00 - 10:15 AM*

c) **LITHP (Pamela Kempton; OD21, p. 45)**

d) **OHP (Mark Leckie; OD21, p. 35)**

3. Deep-Drilling Technology Issues (Charles Sparks - 30 minutes; OD21, p. 117)

Lunch Break ..... *12:00 - 1:00 PM*

4. **Life Extension and Enhancement of the *JOIDES Resolution***
   (Tim Francis - 30 minutes)

5. **Status of Japanese proposal for a "New Era of Ocean Drilling"**
   (Kiyoshi Suyehiro - 30 minutes; OD21, p. 210)

6. **PCOM Discussion of Long-Range Planning Issues**

Coffee and Tea Break ..... *3:00 - 3:15 PM*

7. **Setting Tasks and Timetables**

Action

End of Day 2 ..... *5:00 PM*

Evening free — selection of local restaurants and pubs, information will be available at meeting.

Wednesday, April 20, 1993 *8:30 AM*

G. Current Operations

1. Leg 153 (Matilde Cannat - 1 hour)

- *See also the PCOM correspondence regarding Leg 153 and the offset drilling strategy on p. 39 - 44. ODP-TAMU plans a workshop on Offset Drilling in early September 1994 (see p. 42).*

2. Leg 154 (Nick Shackleton - 1 hour)

Coffee and Tea Break ..... *10:30 - 10:45 AM*

3. DCS Status (Tim Francis - 45 minutes)

4. Shallow Water Hazard Surveys (Brian Lewis - 30 minutes)

At the December PCOM meeting in Miami, PCOM decided that the funding for shallow water hazards surveys would come from commingled ODP funds. In addition, ODP-TAMU would be responsible for contracting the surveys and all other aspects relating to the surveys (quality control, safety interpretation, etc.).

In the 1995 program plan, ODP- TAMU did not include funds for the New Jersey shelf hazards survey because of budget limitations. This, of course, means that no survey will be undertaken in 1995 and this clearly delays shelf drilling well into the future. Furthermore, this situation does not guarantee that a hazard survey will ever be done.

I would like to suggest that, given the present budget constraints, PCOM reconsider its position on this issue. Given the present circumstances PCOM may wish to adopt a more flexible attitude to the funding of these surveys by allowing moneys from other sources to be used for the surveys. A further possibility is for PCOM to allow hazard survey data to be contracted out by the proponents provided that the surveys are in conformity with the guidelines and that quality control resides with ODP-TAMU or its designee.

If PCOM changes its position this will require appropriate modification of the *Guidelines*.

Lunch Break ..... *12:00 - 1:00 PM*

H. 4 Year Plan FY94 — FY97

1. Thematic Panel Global Rankings (PCOM Liaisons - 15 minutes each)

- *For a listing of the global rankings and a map of the location of highly-ranked proposals* *see p. 5 - 6.*

a) TECP (Brian Taylor)

b) SGPP (Wolf Berger)

c) OHP (Alan Mix)

d) LITHP (Catherine Mével)

2. FY94 - FY97 Four -Year Plan

As a reminder, last year in April 1993, PCOM passed the following motion:

PCOM Motion 1993A-1: Four Year Plan FY93 - FY 96

The Ocean Drilling Program is thematically driven, as generally detailed in the Long-Range Plan and White Papers presented by the program's thematic panels. In order to address some of those themes which are considered of high priority by the advisory panels, and to provide for the development of necessary technology to achieve drilling targets, PCOM sets the direction of the drilling vessel for the next four years as follows:

a) In the remainder of FY93, confirmed as the current program plan (PCOM winter 91).

b) In FY94, confirmed as the program plan approved at the December 1992 PCOM meeting in Bermuda, noting that the precise location of the DCS test leg (157) may change and that, if the DCS testing is eliminated from the FY1994 schedule, drilling at TAG (Leg 158) will occur as Leg 157. This program plan is designed to address aspects of rifted margin evolution, the development of oceanic lithosphere at ocean ridges, Neogene paleoceanography, and the evolution of deep sea fans and accretionary prisms.

c) The further investigation of these and other high priority themes including, but not confined to, sea-level change, high-latitude paleoceanography, fluid circulation in the lithosphere, carbon cycle will continue to define the track of the drillship. At present, highly ranked and drillable proposals which address such themes exist for the North and South Atlantic Oceans, the Caribbean, the Gulf of Mexico, the Mediterranean, Norwegian, Labrador and the Red Seas, the SW Indian Ocean and the East Pacific. These, at present, confine the likely operational areas of the drillship for FY95 and FY96.

d) PCOM encourages the submission of proposals for any ocean which address those high priority themes appropriately investigated by ocean drilling.

Proposals received before 1 January 1994 that are subsequently highly ranked have the potential to modify the FY1996 and subsequent ship track.

The FY94 - FY97 Four-Year Plan will require PCOM to:

a) **Reaffirm 1994 Program (15 minutes)**

b) **Review and Reaffirm 1995 Program (15 minutes)**

In December 1993, PCOM passed the following motion:

> The schedule for ODP Legs 157 through 165 will be as follows
> 157 - VICAP/MAP (380-Rev3/Add3)
> 158 - TAG
> — Drydock - South Africa
> 159 - Return to Site 735 (300-Rev)
> 160 - Equatorial Atlantic Transforms (346-Rev4)
> 161 - Mediterranean I
> 162 - Mediterranean II
> 163 - North Atlantic Arctic Gateways II
> 164 - Gas Hydrate Sampling (423-Rev/Add)
> 165 - DCS Sea Test
> Addenda
> 1. This schedule presumes the drydock to occur in South Africa. Should this prove unacceptable to SEDCO/FOREX, and the drydock be scheduled elsewhere, PCOM should re-examine the schedule at the earliest opportunity.
> 2. The two Mediterranean legs will consist of elements of the following three proposals (in alphabetical order) - (1) Alboran Sea (323-Rev3), (2) Mediterranean Ridge (330-Rev/Add3), and (3) Mediterranean Sapropels (391-Rev).
> 3. The stated order of Mediterranean legs is preferred, but may be changed to accommodate the necessary weather window for the North Atlantic Arctic Gateways II leg.
> 4. The preferred location for the DCS sea test is on the Vema Transverse Ridge.

Leg 159 — 735B

- *Note that the motion reads "This schedule presumes the drydock to occur in South Africa. Should this prove unacceptable to SEDCO/FOREX, and the drydock be scheduled elsewhere, PCOM should re-examine the schedule at the earliest opportunity." PCOM should consider whether or not a contingency plan needs to be drawn up at this time or set up a timeline for when a decision on whether or not to do this contingency planning should be made.*

Leg 163 — NAAG II

- *Please note the correspondence to Anders Solheim from ODP-TAMU about the ice scouting vessel, p. 45.*

Motion on the FY94-FY96 Four-Year Plan

c) **Plan the 1996 - 1997 Area of Science Operations (1 hour)**

Coffee and Tea Break (during discussion) ..... *3:00 - 3:15 PM*

d) **Technology Goals for FY94 - FY96 (1 hour)**

1) **CLIPAN Report**

- *A written report from Joris Gieskes will be distributed at the meeting.*

2) **PCS Report**

- *A written report from Charles Paull and SGPP will be distributed at the meeting.*

3) **Computer RFP Evaluation Committee Report**

- *Negotiations with the remaining vendors continue and the closing date for best and final offers is April 29, 1994. The Computer RFP Evaluation Committee will meet May 18 - 19, 1994 in College Station.*

4) **Other Technology Goals**

End of Day 3 ..... *4:45 PM*

Theatre visit: performance begins at 7:30 PM, The Royal Shakespeare Company will perform at the "New Theatre" across the road from the Park Hotel. This is not their traditional Shakespeare, but "Shakespeare's romantic comedy The Two Gentlemen of Verona set in the 1930's and featuring the music of Gershwin and Cole Porter"! (An undoubted hit - Daily Telegraph.) Tickets £12.50 each.

Thursday, April 21, 1994 *8:30 AM*

I. Action on Panel Recommendations (2 hours)

- *The following committee and panel recommendations were extracted from the minutes and summaries of the meetings. When the Agenda Book was prepared not all of the panel minutes were available (missing are SMP, SSP, PPSP, SGPP) so there may be additional recommendations from these panels brought up at the meeting.*

1. TEDCOM ..... March 7 - 8, 1994

TEDCOM Recommendations: A. DCS Review

3. The TEDCOM recommends to PCOM that representatives of the above SC [SC = Schuh, Shanks (chair), Shatto, Svendsen, Zinkgraf] be allowed to assist at the following events and meetings, with associated expenses paid by JOI:
   - Fluctuating W.O.B. tests of diamond bits (Salt Lake City),
   - Mechanical simulator tests with new controls (Salt Lake City),
   - Meetings with SES and TAMU,
   - Visit land tests when initiated.
7. The TEDCOM again recommends to PCOM that two HRBs be pre-set on VEMA (in about 600 m and 1300 m of water) prior to the next DCS test (L165). This would require about 7 days ship's time and would appear to be possible following L158. The bases could be set testing Russian retractable tricone bits or using other existing technology.

TEDCOM Recommendations: B. Tools for SGPP (PCS, VPC)

12. TEDCOM recommends to PCOM that the PCS cutting shoe/core entry design be modified and the tool be tested together with the unmodified version, for comparison. The cost of the additional testing will be estimated by TAMU.
13. TEDCOM recommends to PCOM that the TEDCOM coring specialist (SVENDSEN) be used by TAMU to follow the modifications/testing of the PCS and that he be invited to witness the tests (with his associated expenses paid by JOI.).
14. If the above modifications/testing of the PCS are successful, TEDCOM recommends to PCOM that the modified tool be retested at sea before the L164 Gas Hydrates Leg, (L161, or 162 might be suitable occasions).

2. IHP ..... March 9 - 11, 1994

*** IHP First Priority:**

Archiving of old data sets (resources required):

IHP recommends to PCOM that the ODP Operator prepare a detailed evaluation of the commitment in time and resources that would be required to revise the old data sets and incorporate them in the new database. IHP further recommends that an effort to incorporate the old data be carried out in parallel with the upgrade and RFPs to the scientific community be made for this task.

Computer Upgrade:

IHP is in favor of continuing with the computer upgrade despite the lack of consideration of the inclusion of older data sets and despite reservations with regard to potential underestimates of costs to be incurred.

*** IHP Second Priority:**

1. Data and Software Development (resources required):

1. IHP recommends that the ODP RAWHIDE programmer go to Scripps as soon as possible to test the program in consultation with W. Riedel and A. Sanfilippo.

2. IHP recommends the Operator capture paleo data also from IR volume range charts not superseded by SR charts and from text information in both SR and IR volumes.

3. IHP recommends ODP issue the new CD-ROM in the most expedient manner and not worry at this time about making a sophisticated, clean data set.

2. Publications:

1. IHP comments that the pressure to reduce the volume size was recommended by IHP for the IR, but not for the SR volume and is another factor that may dissuade scientists from putting their best work into the SR volumes. IHP recommends PCOM drop the volume size reduction request for SR volumes.

2. The IHP recommends that PCOM add the name of the outside ERB member to the citation, that it drops the "et al." in reference to the scientific party (they play no part in editing the volume), and that the term "Eds." be added after the names of the four ERB members. That is, the reference should be changed to : ..."In Proc. ODP, Sci. Res., ERB1, ERB2, ERB3, ERB4 (Eds.) ..."

3. After discussion of problems relating to the 18 month post-cruise deadline for submission of manuscripts to the SR volumes, IHP recommends that rare extenuating circumstances be considered, with R. Merrill given final authority regarding exceptions, and that the deadline remain fixed for now.

3. TECP ..... March 10 - 12, 1994

TECP Recommendation 1: Shipboard Structural Science

Recommendation 1.1..... Shipboard Structural Science

TECP recommends to PCOM that PCOM recommend to JOI Inc. that ODP-TAMU be directed to immediately implement the collection and archiving of structural data on the *JOIDES Resolution* and that it should be made a responsibility of the Co-chiefs and the TAMU staff scientist to ensure that these data are collected whenever features of structural interest are noted by the shipboard scientists.

Recommendation 1.2... Shipboard Structural Geologist Staffing

TECP recommends to PCOM that PCOM recommend to JOI Inc. that ODP-TAMU be directed to ensure that a minimum of two shipboard scientists with structural capabilities are included on every leg that was globally ranked as a proposal within the top-four by TECP.

Recommendation 1.3..... Publication of Structural Data

TECP recommends to PCOM that PCOM recommend to JOI Inc. that ODP-TAMU be directed to ensure that all structural data collected on a leg be routinely published in both the Initial Reports and Scientific Results volumes. Specifically, TECP recommends that the structural logs for Leg 153 be published with their respective volumes.

Recommendation 1.4.....Salvage of Recorded Structural Data

TECP recommends to PCOM that PCOM recommend to JOI Inc. that ODP-TAMU be directed to ensure that TAMU devise a means for collating and formally archiving structural data, initially to be made available in a written format as an ODP Technical Note.

TECP Recommendation 2: Computing

2A. TECP recommends that PCOM endorse TECP's establishment of a liaison between TECP and SMP and IHP to facilitate communication on the issue of structural data collection, processing, archiving and salvage.

2B. TECP recommends that PCOM endorse TECP's establishment of a Tectonics Panel Working Group on Structural Measurements with the mandate to: (a) review computing requirements for structural data collection, processing, archiving and salvage, and (b) to communicate these requirements to SMP, IHP, and the Computer RFP Evaluation Committee.

TECP Recommendation 3: Equipment Development

TECP recommends to PCOM the following engineering development priorities:

a. recovery of fluids and gases (i.e., Pressure Core Sampler)

b. recording stress and strain in formation (e.g., Borehole Televiewer, Orientation Tool, Lateral Stress Tool, P/S Wave Tool,)

TECP Recommendation 4: Equipment Deployment

TECP recommends to PCOM that PCOM recommend to JOI Inc. that ODP-TAMU be directed to generate without delay a comprehensive guidebook dealing with capabilities and limitations of equipment (onboard and downhole) to be available primarily to Co-Chiefs to assist planning of legs and science operations at sea.

4. OHP ..... March 29-31. 1994

OHP Recommendation 1: APC coring policy.

- *In December 1993, ODP-TAMU proposed the following wording for the APC Coring Policy: "At every site where hydraulic piston coring is possible, an extra APC hole recovering cores 1H to 3H should be routinely undertaken, in order to acquire additional near-mudline cores."*

In response to ODP/TAMU's proposal revising the APC coring policy, OHP recommends to PCOM that the policy should read:

> At the discretion of the co-chief scientists for a given leg, an additional APC hole of 3 to 4 cores (from the mudline) should be drilled at every appropriate site.

OHP Recommendation 2: longer term of panel service.

OHP recommends that PCOM consider a longer term of panel service (perhaps 4 years rather than 3 years), given the time between the first submission of a proposal and its appearance on the drilling schedule under optimum conditions and the effect on "corporate memory" of the current system. We recognize that implementing such a change might pose difficulties for some non-U.S. member nations.

OHP Recommendation 3: Shallow Water Drilling Working Group Report

OHP recommends to PCOM that the Shallow Water Drilling Working Group Report be rapidly disseminated to the community via publication in the *JOIDES Journal*, distribution to proponents and panel members, and other appropriate avenues.

OHP Recommendation 4: joint meeting of OHP & SGPP members with sea-level interests.

OHP recommends to PCOM that a joint meeting of the panel members with sea level interests on OHP (Blake, Carter, and Moore) and SGPP (Hiscott, Garrison, Sarg, Surlyk, Underwood) be arranged prior to or in conjunction with the fall panel meetings to discuss the coordination of sea level efforts in the program and other aspects of mutual concern about sea level (such as the role of alternate platforms in future drilling efforts). This one-day meeting should be scheduled by mutual consent of the individuals involved; Delaney would be willing to host this at UC Santa Cruz, if this is most convenient.

5. LITHP ..... March 28 - 30, 1994

LITHP Recommendation 1: Red Sea

LITHP has asked a three-person subcommittee (Ludden, Zierenberg, Rihm) to prepare a list of likely drilling areas within the Red Sea by July 1.

LITHP recommends to PCOM that they direct ODP-TAMU to submit that list to Thomas Cocke at the U.S. Department of State so that he can explore the possibility of getting clearance to drill in those areas.

Explanatory notes: John Ludden had asked Tim Francis what the clearance situation in the Red Sea was, and he in turn had talked to Thomas Cocke in the U.S. Department of State. It was Cocke's suggestion that the process of clearance be initiated by using a "straw" list of sites (see attached correspondence, Appendix 1).

LITHP Recommendation 2: Red Sea

LITHP recommends to PCOM that they endorse an international meeting to assemble and synthesize the available geological and geophysical data in the Red Sea, as a prelude to the submission of one or more new Red Sea drilling proposals.

Explanatory notes: LITHP believes that an endorsement from PCOM will aid some of the national and international groups working in the Red Sea in securing funds to support the type of meeting described in the recommendation. Note that no commingled funds are needed nor requested for this meeting.

LITHP Recommendation 3: advisory committee — software development

LITHP recommends to PCOM that they form a 6-8 person (about 2 per thematic area) person advisory committee to provide specific input to the vendor designated to develop software modules for the new computer system and that funds be allocated for that group to meet with software developers as necessary. Members of the group should all have sailed aboard the Resolution and have had some experience with database use or management.

Explanatory notes: Shipboard experience of the user community from recent hardrock legs (e.g. 118, 147, 153) has highlighted the inadequacy of the computer system for current and future data handling needs. It is the opinion of this panel that effective design of some modules of the data

handling system (e.g. ROCKY, HRTHIN) will require, at the earliest stages of the design process, extensive communication between the scientists collecting these data and software engineers who will design the system. Identification of the types of data and information that should be recorded can only be accurately done by the scientific community. Furthermore, an effective system must allow extraction and utilization of the data in addition to data archiving. Therefore, LITHP encourages the formation of a multidisciplinary working group who could advise the software engineers in these and other equally important aspects of the system. This panel is interested in coordinating that effort and is willing to identify scientists who 1) have experience with the types of data that are required, 2) who have extensive experience with the current procedures on the drillship, 3) and who are knowledgeable in basic data management systems. We would also be willing to facilitate testing of the software as it is designed by distributing working versions to appropriate scientists, including co-chiefs or scientists scheduled for legs where the software will be used so that 1) major problems can be identified before the software is used at sea, 2) training of the shipboard party will be more efficient, and 3) shipboard experience will be gained as early in the design stage as possible, allowing fine-tuning of programs to meet the needs of the community. We further suggest that PCOM request the other thematic panels adapt similar roles so that IHP will have the guidance of the end users of the system during redesign of the shipboard data handling system. The computer upgrade will have a tremendous financial impact on the program and LITHP is concerned that the benefits of this investment may not be available until near the end of the program. We further would hope that a very modest amount of the total cost of the system be available to assist those scientists volunteering to help this effort attend meetings with the software engineers paid to design the computer upgrade.

LITHP Recommendation 4: funding for site-surveys for shallow water drillsites

LITHP recommends to PCOM that they reconsider their decision to fund site-surveys for shallow water drillsites from operational funds. As we move into more complex drilling experiments, site survey requirements for a variety of programs are becoming more complex. Surveys which include, for example, mapping potential sites for hard-rock guidebases, placing transponders, siting experiments around hydrothermal fields, or doing small-scale photo surveys are proving important to some LITHP sites and such surveys are moving farther from what can be viewed as stand-alone science. We recognize a fiscal gradation in this site-survey problem, from doing a few extra camera tows, as at the Vema transverse ridge, to doing a shallow-water seismic survey, as would be required at the New Jersey margin transect. We are concerned about the problems a precedent for supporting site-survey work from the operational budget may lead to, given the inevitable pressures it will place on an already strained operational budget.

LITHP Recommendation 5:

Nonetheless, the panel's highest priority remains the recovery of long sections (>300 m) of lower crustal rocks, in Phase 1 (1993-98) from the principal layers of the upper lithosphere and in Phase 2 (1998-2003) through the transitions between those layers. We recognize that our difficulty in obtaining such sections from some of our offset-section locales requires that we examine whether that

difficulty stems from solvable technological problems or from more fundamental geologic conditions. To aid us in that evaluation, LITHP recommends to PCOM that a small group be convened at College Station to review the science operations at 735B, Hess Deep and MARK. That group should include the co-chiefs of those legs or their designees, the staff scientists and operations superintendents (as possible) and the chairs of LITHP and TECP. We recommend that such a meeting be convened as soon as possible.

LITHP Recommendation 6: digital BHTV

LITHP recommends to PCOM that they take appropriate action to see that the digital BHTV is tested at the earliest possible opportunity.

Explanatory notes: The measurement of in-situ borehole stresses remains a capability critical to a number of LITHP's thematic objectives. We understand that the BHTV is the most appropriate tool to accomplish those measurements. The rebuilt BHTV was to be tested during Leg 153, but no hole of sufficient depth to allow that test was made during the leg. LITHP would like to see sufficient financial support (which we understand to be minimal) and direction given to allow a test of the rebuilt digital BHTV as the earliest possible time so that we can determine if the BHTV can meet our needs for reliable borehole stress measurements or if we need to investigate alternate technologies.

Coffee and Tea Break ..... *10:30 - 10:45 AM*

J. Old Business

1. Basement Sampling Policy (30 minutes)

- *Due to time constraints, this item of business was tabled at the December 1993 meeting. PCOM should be prepared to discuss what, if any, action needs to be taken on this issue.*

The following request was made by LITHP in the minutes of their October 1993 meeting:

The Panel (LITHP) would like some clarification on what the present policy about sampling basement, if it is reached, is to be. The objectives of many sites seem to require APC/XCB to basement. What basement penetration should be required at sites whose principal goal is sampling of the sedimentary section?

2. Less-Than-A-Leg Science (30 minutes)

- *Due to time constraints, this item of business was tabled at the December 1993 meeting. PCOM should be prepared to discuss what, if any, action needs to be taken on this issue.*

The following request was made by OHP in the minutes of their October 1993 meeting:

The panel (OHP) reiterated its belief that exciting, topical targets of opportunity may present themselves for less-than-one-leg drilling. We have reviewed a number of excellent proposals that are mature scientifically, but fall well short of the 56 days that make an ODP leg. The panel feels that the present inflexible system stifles exciting science. **OHP therefore seeks a further guidance from PCOM on how well-constructed, highly rated proposals for less-than-one-leg science can be most effectively handled by the Ocean Drilling Program and its advisory structure.**

Lunch Break ..... *12:00 - 1:00 PM*

K. New Business

1. 1994-95 PCOM Meeting Schedule (15 minutes)

a) **August Meeting — Iceland, August 9 - 12, 1994**

field trip to Greenland — August 14 - 19; cost ≈ US$ 3000

b) **December Meeting — ODP-TAMU, College Station**

dates to be determined

c) **April 1995 Meeting — Japan**

dates to be determined

2. Membership Actions—Executive Session (1 hour)

a) **Panels and Panel Chairs**

- *PCOM liaisons should be prepared to discuss panel membership issues.*

1) **SGPP**

- *minutes not available*

2) **TECP**

- none required

3) **LITHP**

- Nominated to replacement John Bender:
  1. Pat Castillo
  2. Dave Christie
  3. Peter Michael

- Non-US

  Matilde Cannat is rotating off the panel for France

  Pamela Kempton is rotating off the panel for the United Kingdom

4) OHP

- Margaret Delaney, panel Chair, will be rotating off at the end of the calendar year 1994. Nominations for the Chair are:
  1. Tim Herbert, SIO (to be moving to Brown University in 1995)
  2. Tom Loutit, Australian Geological Survey
  3. Ted Moore, University of Michigan
- UK activity: Philip Weaver to be replaced by Alan Kemp

5) SGPP

- *minutes not available*

7) IHP

1. Recent co-chiefs that have left the panel should be replaced. Recent co-chiefs suggested for the IHP are: Annik Myhre (Leg 151), Bill Curry (Leg 154), Roger Flood (Leg 155), Y. Ogawa (Leg 156).
2. There is a need to replace T. Saito, A. Richards, but these replacements will be chosen by member countries.
3. Industry contacts on the IHP would be useful. L. Whatney suggested John Petzlaff of Texaco, Paul Yarka of Marathon research as industry people with computing expertise.

8) SMP

- *minutes not available*

11) SSP

- *minutes not available*

9) TEDCOM

- none required

10) PPSP

- Joel Watkins has been recommended to PCOM as a new member for the panel—see correspondence from ODP-TAMU, p. 65.

b) PCOM Membership and Liaisons

- *Please review these liaison assignments for addition or correction.*

	EXCOM	LITHP	OHP	SGPP	TECP	DMP	IHP	PPSP	SMP	SSP	TEDCOM
Arculus				X							
Becker						X					
Berger				X							
Dick										X	
Fox									X		
Kidd										X	
Kudrass			X								
Larsen					X						
Lewis	X							X			
Mével		X									
Mix			X								
Mutter		X									
Sager							X				
Shipley											X
Suyehiro						X					
Taylor					X						

L. Other business

1.

2.

3.

M. Review of Motions, Consensuses and Action Items from the Meeting (1 hour)

Adjourn ..... *3:00 PM*

NATIONAL SCIENCE FOUNDATION
4201 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22230

10 January 1994

Dr. Thomas Pyle
Joint Oceanographic Institutions, Inc.
Suite 800
1755 Massachusetts Ave., NW
Washington, D.C. 20036

Dear Tom:

This letter provides the NSF budget target to be used in developing the ODP Program Plan for FY 1995. At the present time, there is considerable uncertainty in estimating the level of resources that might be available to support Program Operations and Management in FY 1995. As you know, we have formal commitments from only five international partners, with the future status of the CANAUS consortium still uncertain. Additionally, although the overall NSF FY 1995 budget has yet to be finalized, I am not optimistic about significant growth in the ODP Program budget. Finally, in resolving FY 1994 financial problems, the NSF share of ODP funding has risen to 63% of total Program costs.

With the above points in mind, the following assumptions and projections were used to develop the target number for the 1995 Program Plan:

* The contribution level for each full international partner will remain at the level of $2,950,000 per year.

* In addition to the U.S., six full international partners are anticipated.

* NSF will provide at least 52 percent of joint program costs.

* The target figure includes a 4% allowance for Special Operating Expenses.

* Total Management and Administrative costs charged by JOI and its subcontractors remain at their FY 1994 levels.

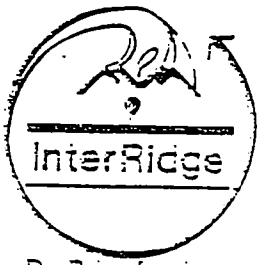
Based on the above, the FY 1995 Program Plan should address all Program activities within a target figure of $44.9 million, an increase of $600,000 over the presently approved FY 1994 level of $44.3 million.

Would you please send me your timetable/schedule of activities for development of the 1995 Program Plan and if you have any questions concerning the above points please let me know.

Sincerely yours,

Bruce Malfait

Bruce Malfait
Program Director
Ocean Drilling Program



Initiative for international cooperation in ridge-crest studies

Dr. Brian Lewis
(Chairman, ODP - Pcom.)
JOIDES Planning Office
University of Washington
Seattle, Washington 98195
USA

15th March 1994

Dear Brian

ODP and InterRidge

As you are no doubt aware, the international mid-ocean ridge research programme InterRidge is now fully functional, and I took over as its Chairman at the beginning of this year.

The InterRidge Science Plan incorporates studies that range from dealing with the whole global ridge system as a single entity, to detailed investigation of single hydrothermal vent fields. Over the past year we have held a number of workshops to further define the science plan. Reports of these are now in the final stages of editing, and should be published within the next month or so.

One of the recurrent themes in these workshops has been a strongly perceived need for drilling at mid-ocean ridges to further many of our scientific objectives. Just to take one example, it is becoming clear that,at least on slow spreading ridges, there must considerable variation in the structure, rheology and deformation of the oceanic crust in all three dimensions (four if we include time) within a single spreading segment. We are now actively planning a programme of studies to address this issue, and it is clear that ultimately a number of deep boreholes will be required to confirm, calibrate, and extend the predictions of our geophysical and geochemical studies. There is a need not only to determine structure and lithology, but also to measure e.g. stress, and strain, and temperature, and to use boreholes for the emplacement of seismic and other monitoring packages.

We would very much like to explore with you ways in which we can most effectively inform ODP of our needs and plans, and equally learn of facilities, perhaps not yet widely known or appreciated, that ODP could offer for the furtherance of our science. One possibility might be to convene a workshop or symposium on drilling and ridge studies

However, perhaps an appropriate initial step would be for me to present the work of InterRidge to the ODP planning committee at a convenient time? I understand that it is customary for PCOM to receive presentations from ancillary programmes such as InterRidge at its summer meeting, which I believe this year will be in Reykjavik from 9-12 August? I would be happy to attend part of that meeting if that is acceptable to PCOM. However, Rob Kidd recently told me that PCOM will also be meeting in Cardiff from April 18-21 this year. It would clearly be much easier (and cheaper!) for me to visit Cardiff than Reykjavik so, although I realise it is rather short notice, I wonder whether that would be a possible alternative?

In any event, I hope it may be possible for me to speak to PCOM before too long, and I look forward to your response.

Yours Sincerely,

Roger C. Searle
InterRidge Chairman

Date: Tue, 18 Jan 1994 08:51:36 -0800 (PST)
From: JOIDES Office <joides@ocean.washington.edu>
Subject: Re: Next tedcom meeting
To: Sherman Bloomer <bloomer@crsa.bu.edu>
cc: Charles Sparks <sparks@c1.ifp.fr>

Sherm,

Thanks for your comments. I am copying them to Charles Sparks as well. I think we would be very prudent to review the hard rock drilling. I suggest the three of us get together for 1/2 hour or so at Kyoto to discuss the objectives of a review and how it is coordinated.

Brian

On Mon, 17 Jan 1994, Sherman Bloomer wrote:

Brian:

I share your concern about the current progress at MARK. I have in fact intended to review the results of the offset-section drilling legs to date at the Spring meeting and to see if we can assess where we are going with it. I think it would be an excellent idea to have TEDCOM review some of the technical problems with our current approach.

I do think that we need to assess the Hess Deep and MARK legs (the ones I assume you're refering to as not going well) in a couple of ways. The sections at Hess were actually a substantial success in terms of the petrologic, structural, and metamorphic picture they supplied of that part of the crust. The same is true of the first site (peridotite) at MARK, if I've read the reports right. That level of success however (over 50% recovery in 100m to 200 m sections) does not seem to be happening at the gabbro site in MARK and all of those holes are well shy of their stated objectives of 500 m or so. Clearly if these are the typical conditions this strategy is not going to buy us long sections of the crust, only vertical yardticks to calibrate some of our other work. Important enough to justify some legs, but not a reasonable approach to constructing composite sections.

Both of the last two hard rock legs have been using true tectonic windows- -relatively recently unroofed exposures, with demonstrable active faulting. This contrasts to 735B, where we've used a 10 Ma, wavecut exposure—the extreme flatness of that surface clearly was a bigger factor than we appreciated.

I would judge the problems here to be largely tectonic—both gabbroic and peridotitic lithologies have been drilled well, but here it appears from the core descriptions that the difficult zones are highly sheared, fragmented, fault zones. In effect, the tectonics (drilling on or a near a detachment surface) are creating the same kind of technical/drilling problems that lithology creates at the East Pacific Rise--highly fractured, unstable holes.

If that is the case, DCS would be as big an improvement here as it hsould be at the EPR—smaller holes, better controlled circulation, cutting rather than crushing drilling. We do have, however, some problems with the approach we're using now. At both Hess and MARK there were substantial problems setting the HRGB. I gather at MARK that those problens have been due to terrane roughness--despite the fact that this was probably as well surveyed an area as we've found on the sea floor, the inherent roughness of the setting has, apparently, made it nearly impossible to set the guidebase (haven't seen the last week report). Jeff has suggested that beacons may have to be set prior to legs in adequately flat places.

Anyway, there are some thoughts. Yes, I do think we need to evaluate the present approach. I do think we've had substantial success on these legs. We may be finding however that the number of suitable tectonic windows is much smaller than we think--the transverse ridge, old wavecut platforms may be the most workable site. I will put this on our agenda (late March because of my shipboard schedule) and would be pleased to hear TEDCOM's opinion about what's been happening. I understand that there was a technical report on the HRGB sent back to the beach (Jeff mentioned it to me) is that floating around somewhere where we could see it?

Sherm

From: Henry Dick <hdick@cliff.whoi.edu>
Date: Wed, 23 Feb 94 11:14:01 est
To: blewis@ocean.washington.edu, sglrbk@cardiff.ac.uk, bmalfait@nsf.gov
Subject: MARK/SSP

Brian,

Kim asked me for my comments on the MARK leg, and in the course of preparing them, I realized that they should be useful for you and PCOM as well. Accordingly, if you agree, could you forward them to the rest of PCOM as well for me.

Thanks - Henry

To: Kim Kastens, SSP, Brian Lewis, Rob Kidd, PCOMM, Bruce Malfait,

Hard rock drilling must always be viewed in terms of what was accomplished, not what was promised. No hard rock leg has ever met it's full objectives, to my knowledge, but some have accomplished far more than was planned.

The MARK leg drilled the deepest hole in mantle peridotite yet in the oceans (200 m) with the highest recovery ever (50%). These rocks apparently include a suite of harzburgites and lherzolites cut by dunites which enclose melt segregations similar to those found in the mantle section at Hess Deep. Thus, we now have complementary sections of the shallow mantle from both fast and slow spreading ridges, with the key stratigraphic relationships. This in turn will allow the geologic community to directly assess the composition and evolution of primary magmas as they aggregated and were transported out of the shallow mantle. Combined, Hess Deep and MARK provide a major triumph for ocean drilling and marine geology and geophysics. In addition, using the default POGO strategy used at Hess Deep, they recovered a large number of short gabbro sections (25-80 m) along the face of the inside-corner high. These rocks give the best picture ever of a section of the lower ocean crust at a slow-spreading ridge. While the latter does not provide the downward continuation of the section like 735B, it does provide the lateral dimension missing from 735B. In addition, the drilling provides the first systematic investigation of a "detachment" fault surface at an oceanic spreading center. From what I understand from conversations with Debra Kelley, the alteration on the fault surface is skin deep with respect to the greenschist facies, and extends much deeper in the amphibolite. This is what is seen on detachment faults seen on- land and thus provides a major new insight into tectonic processes at mid-ocean ridges.

There is a great desire for the silver bullet leg, with many deep holes, which would solve all the problems of the lower ocean crust in one magnificent effort. This is unlikely to happen, and in fact, given the complexity of the ocean crust, won't. Offset drilling is in its beginning stages, and with the MARK leg, has only now explored the limits of the technology in all three major tectonic settings exposing plutonic rock in the oceans: propagating amagmatic rift tips; rift valley walls and inside-corner highs; crests of transverse ridges. Thus, we now have an actualistic basis for planning future offset- drilling legs. All three legs (118, 147, and 153) fell short of their stated objectives - all three were enormous scientific successes.

The major problem preventing a deeper hole at MARK was clearly the inability to successfully emplace a bare-rock guide base on a sloping hillside. ODP previously had stated that they had the capability of emplacing a guide base on up to a 20? slope. MARK and Hess Deep both showed that the capability for doing this was much less. Probably 10-15? maximum slope can be accomodated without the guidebase moving. So much for optimisim. It is clear that the next technological advance needed for offset drilling is a drill-in casing to provide re-entry capability for sloping bare-rock sites. This would require minor modification of technology already in hand. A drill-in guidebase, capable of hanging multiple casing strings would be a technological developement on the order of the DCS - forget it.

With respect to finding flat sites for deploying the existing guidebase technology. It would appear to me from the MARK results that this was not done adequately, and may be dificult to do

without ODP-dedicated dives not directed at geologically surveying a region, but only for finding drill locations, and beacons accompanying them for deployment once a site is found. Flat targets on the walls of rift valleys and transforms are usually small, and even where identified by previous dives, aren't easily reoccupied by the drill ship. This was evidently the case during the MARK leg. There were more than enough dives and surveys in the area, but no beacons to home in on.

It would be nice if we could require the sun and the moon for offset drilling legs: ideally Seabeam, gravity, magnetics, deep-towed sidescan, ROV, Alvin, etc. Realistically, however, these site surveys are very expensive and are unlikely to happen together in many suitable places. Thus, in evaluating site survey requirements for offset-drilling, one must balance potential scientific return for a less than ideal survey situation versus the ideal. The fact is every offset-drilling leg has been an enormous scientific success to date. This means that less than ideal situations should be considered for drilling. There is a minimum however.

The success of the POGO offset-drilling at Hess and MARK, however, make it clear that a lot of science can be done without re-entry capability in tectonic windows into the lower ocean crust. That makes it imperative for future legs that they are planned on this basis, or that such a plan for offset holes is presented along with plans for any re-entry site, and that the scientific justification for the offset series be strong. In addition, both the MARK and the Hess Deep legs were successful because dive programs in the region had defined the nature and lateral extent of the principle lithologies so that successful offset drilling strategies could be developed on site. Without this crucial local-scale geologic information, such drilling would be ad-hoc based on using the inneficient and extremely expensive surveying capability of the drill ship to try and define the nature and extent of the relevant outcrops in a region. This had already been done by Alvin and Nautile at both Hess and MARK and, thus, the co-chiefs were able to rapidly develope an alternate strategy to the deep holes originally planned. It is clear that deep-towed camera surveys ROV, or Alvin sampling program(s) should precede any off-set drilling strategy.

Even 735B would be a better bet if these surveys had occurred prior to Leg 159. It would be nice if a backup site has to be drilled there, if the new hole could be planned in the context of the known distribution of plutonic rocks on the platform. While it is very unlikely that the first leg of this drilling could be a catastrophe given its location on a wave-cut terrace, this is more by grace of the fact that any additional penetrations into any plutonic rock type at this time will be of great value, and if, Heaven forbid, 735B craters, pretty much any offset hole there will be a success. This is not a strategy for backup for future legs, however, particularly anywhere where there isn't a flat bare-rock platform, and where sloping walls and limited exposure are a problem.

Best Wishes - Henry

MEMORANDUM

March 22, 1994

To: Invitation List
ODP Managers
Brian Lewis (Chair, JOIDES PCOM)

From: Tim Francis

Offset Drilling Workshop at ODP-TAMU

We have now completed 2 legs of the "Offset Drilling" strategy to sample the lower oceanic crust and mantle. Leg 147 focussed on the rift valley of Hess Deep, Leg 153 on the MARK area in the Atlantic. The rocks recovered on these two legs were remarkable in many ways and of great scientific interest. However, neither leg progressed anything like as planned and the maximum penetrations achieved (154 m at Hole 894G on Leg 147, 201 m at Hole 920D on Leg 153) fell short of what had been hoped. Both legs finished up drilling a large number of unsupported, single-bit holes and operations with the hard-rock guidebases (HRBs) were repeatedly frustrated. Neither leg left behind a cased re-entry hole which could be deepened on a subsequent leg (such as Hole 735B).

At ODP-TAMU we feel that it would now be useful to hold a workshop to discuss the problems encountered on Leg 147 and 153 and how the objectives of the Offset Drilling strategy might be better achieved in the future. Among the questions which need to be discussed are:

- Are the pre-leg site surveys providing adequate information for drilling operations?
- What sort of site characterization do ODP engineers need?
- What are the limitations of site surveys carried out by surface vessels or submersibles?
- How many sites should be defined in advance of the drilling leg?
- Can drillable sites be identified in advance on the basis of research vessel/submersible data or, in tectonically active areas like Hess Deep and Mark, can they only be found by actual drilling?
- What engineering/operational lessons has ODP learned from Leg 147 and 153?

We plan a full 2-day meeting to be held in College Station in early September 1994. Because of the participation of either Gene Pollard or Tom Pettigrew on Legs 155, 156 and 158, the meeting must be held during the Leg 157 slot. ODP-TAMU will pay the travel and subsistence costs for all outside participants that we invite.

Ocean Drilling Program
Office of the Director
Texas A&M University Research Park
1000 Discovery Drive
College Station, Texas 77845-9547 USA
(409) 845-3480
Telex Number: 62760290
FAX Number: (409) 845-1026

Offset Drilling Workshop at ODP-TAMU
March 22, 1994
Page 2

The objective of the meeting will be to produce a written report, which can be published in the ODP Technical Note Series. In order to facilitate discussion and to keep the costs down, the number of people involved will be restricted to 15-20 people, roughly half from the scientific community and half from ODP-TAMU. Ideally, everyone on the attached invitation list will be able to attend.

Please complete the attached sheet and return it to Agatha Moy at ODP-TAMU as soon as possible. I hope to firm up on the time of the meeting before the end of April.

TJGF:am

Attachments

Invitation List

Kathryn Gillis	Co-Chief Scientist	
Catherine Mevel	Co-Chief Scientist	
Gene Pollard	ODP Operations Superintendent	Leg 147
Mike Storms	ODP Development Engineer	
James Allan	ODP Staff Scientist	
Mathilde Cannat	Co-Chief Scientist	
Jeffrey Karson	Co-Chief Scientist	
Tom Pettigrew	ODP Operations Superintendent	Leg 153
Leon Holloway	ODP Development Engineer	
Jay Miller	ODP Staff Scientist	
Kim Kastens	Chair, Site Survey Panel	
Sherman Bloomer	Chair, Lithosphere Panel	
Rodey Batiza	Co-Chief Scientist, Leg 142	
Adam Klaus	ODP Staff Scientist	

February 15, 1994

Dr. Anders Solheim
Norsk Polarinstitult
Middelthuns gate 29
Postboks 5072 Majorstua
N-0301 Oslo
Norway

Dear Dr. Solheim,

Your letter to the JOIDES Office of January 27, 1994 has been forwarded to us as the Science Operator of ODP.

We much appreciate your offer of the *M/S Lance* as an ice scouting vessel for ODP Leg 163 in 1995. At present the leg is only roughly scheduled for September-October 1995, because the location of the ship's five-yearly drydocking in December 1994 is still unknown. As soon as we have a firm schedule I will inform you.

Because the number of sites close to the margin of the polar ice pack is much less on NAAG-2 than on Leg 151 (NAAG-1), we are not budgeting any funds for an ice-support vessel for Leg 163 (NAAG-2). Furthermore, following our experience of the polar ice pack on Leg 151, we would not be prepared to allow the drillship to operate at YERM-1 or YERM-5 without an ice scouting vessel. So the possibility of *M/S Lance* providing this support at no cost is much appreciated.

I enclose a copy of our most recent Operations Schedule.

Yours Sincerely,

Timothy J.G. Francis
Deputy Director

TJGF:am

xc: Dr. Brian Lewis (Chair, JOIDES PCOM)
Dr. Jack Baldauf (ODP-TAMU)

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: 52760290
FAX Number: (409) 845-1026

ODP DEVELOPMENT ENGINEERING
NON-DCS HISTORICAL PROJECTS LIST

STATISTICAL SUMMARY
(Revised September 1993)

- TOTAL NO. OF PROJECTS STARTED: 66 (100 %)
- NO. PROJECTS FINISHED SUCCESSFULLY: 48 (73 %)
- NO. PROJECTS UNDER DEVELOPMENT: 11 (17 %)
- NO. PROJECTS DROPPED / UNSUCCESSFUL: 7 (10 %)

ODP DEVELOPMENT ENGINEERING
HISTORICAL PROJECT STATUS LIST
(September 1993 D. Huey)

PROJECT -- Description	Initiated	Benefit*	Current Status
XCB - Extended Core Barrel system Major Upgrades:	DSDP	SCI	Operational for ODP since Leg 101
V.101B,C - Minor upgrades over DSDP models	4/84	OPS	Used during Legs 101-120
V.108 - Incorporated first venturi vent system and reduced-cost cutting shoes	11/85	SCI, COST	Did not pass sea trials tests during Leg 108 but venturi vent and smaller cutting shoes were added to later XCB versions
V.121 - Added improved cutting shoes, variable extension options, sealed flow sleeves, bit seal, removable venturi vent, lower back-pressure flow regime, and improved threaded connections with better over-torque resistance	1/88	SCI, OPS, EFFIC	Very successful upgrade modified slightly to become version 124E
V. 124E - Improved cutting shoe flow resistance and strength	8/88	EFFIC, OPS	Current operational version of XCB thru Leg 149
XCB/FC - Extended Core Barrel Flow Control system	4/91	SCI	Prototype versions tested but results inconclusive. Further testing planned when possible

* SCI - Designed to produce more or better science data, RANGE - Intended to expand range of possible drilling operations (seafloor types, water depths, etc), OPS - Intended to help alleviate serious existing operational problems, COST - Allowed cost reductions in either hardware or operations, EFFIC - Intended to increase drill rig or downhole efficiency, especially better use of limited time

APC - Advanced Piston Corer system	DSDP	SCI	Operational for ODP since Leg 101
Major upgrades:			
V.101 - Minor upgrades over DSDP models	4/84	OPS	Used successfully for Legs 101-103
V.104 - Added shear pin stub exclusion features	4/85	OPS	Very successful version used Legs 104-128
V.129 - General design overhaul including balanced strengthening to maximize overpull for extracting stuck barrels and lock-open feature for improved wash-over capabilities	1/90	OPS, EFFIC, COST	Significantly upgraded version used for Legs 129-149
V.150 - Modification of v.129 to optimize strength and ruggedness for use of washover technique in extending operational depth capabilities	1/93	SCI, OPS	Successfully introduced for Leg 150
HBR - Hydraulic Bit Release	DSDP	OPS	Obsoleted ~ Leg 130 in favor or more reliable MBR
APC/HF - APC cutting shoe developed for miniaturized heat flow/temperature probe	DSDP	SCI	Used until Von Herzen/WHOI electronics exhausted; ultimately replaced by ADARA tool after lengthy development/litigation with Bowmar-White failed
Logging winch	DSDP	SCI, OPS	Redesigned and rebuilt Mohole/DSDP logging winch and installed on ship; converted from diesel to electric/hydraulic power. In continuous use from Leg 101 until replaced by MAXIS winch after Leg 148.

Engineering database: drilling supplies inventory, shipping, engineering documentation, CAD	DSDP	COST, EFFIC	Developed and continuously upgraded since Leg 101
DIC - Drill-In Casing system	DSDP	RANGE	Revived/redesigned for possible use on Leg 110; used several times since with success
Major upgrade:			
General design overhaul for ease of manufacture and assembly, plus added FFF option for re-enterable surface installations in sandy zones	9/90	OPS	In service and available since Leg 135
Core bit development: roller cone, PDC, hybrid	DSDP	OPS, RANGE	Continuous, ongoing developments and testing in cooperation with bit manufacturers to upgrade various sized bits and optimize for cost and effectiveness in diverse lithologies
Hard rock spud system(s) - Leg 106/109/118 type	3/84	RANGE	Successfully used for assigned legs then obsoleted in favor of mini-guidebases
Drill string analysis computer program - by TAMU Ocean Engr. Dept. consultant	4/84	OPS, RANGE	Eventually delivered but never routinely used in ODP
APC core orientation system(s)	5/84	SCI	Used routinely and upgraded since Leg 101
Colmek underwater TV system	6/84	OPS, EFFIC	In use since Leg 106
Drill string care and protection: design, analysis, anti-corrosion coatings, drillpipe inspection, failure analyses, capability optimizations, "Wear-knots", guidehorn study, pipe rubber analysis/optimization	6/84	OPS, EFFIC	Continuous effort to date
NCB - "Navidrill" Core Barrel	6/84	SCI	Brought to prototype level and tested until Leg 124E then obsoleted in favor of MDCB

Pipe severing system (HEE)	8/84	OPS	Developed and used successfully until replaced by Schlumberger severing and back-off services at Leg 128
Re-entry cone redesign(s)	10/84	COST, EFFIC	Continuous ODP use and upgrades since Leg 106
TV vibration isolation frame (VIT)	2/85	OPS	In use with upgrades since Leg 106
PDCM - Positive Displacement Coring Motor	2/85	RANGE	Developed and used for Legs 106/109/118, still operational
Upper guidehorn redesign (removable insert)	6/85	OPS, EFFIC	Developed to replace original upper guidehorn and used successfully since Leg 104
TDP - "TAM" open hole drilling packer	9/85	SCI	Developed and deployed but never successfully, later obsoleted
FFF - Free Fall Funnel	10/85	OPS, EFFIC	Developed and deployed many times successfully since Leg 108. Added to Drill-In casing system for special near-surface DIC applications.
Drill-In liner	1/86	RANGE	Developed for Leg 110 but never used then or since; still viable
SES - Side Entry Sub (Hydrolex)	3/86	OPS	Developed and used in limited cases until replaced by CSES on Leg 133
LFV - Lockable Flapper Float Valve	3/86	OPS	Developed and used routinely since Leg 113 with minor upgrades

Core Liners - Development of high temp, hard rock, split metal, low temp	7/86	OPS	Different varieties developed and in use as needed, still available
High Temp/H2S drilling/coring equipment modifications	11/86	OPS, RANGE	Special bits, seals, and other components developed for Leg 139 and still available
Line Cutter/Crimper (Kinley)	11/86	OPS	Developed and used frequently since Leg 113
Drilling Jars (Hydrolex)	2/87	OPS	Developed and used to date but currently being phased out
PWS colleted delivery system	3/87	OPS, EFFIC	Developed and used successfully with upgrades to present
Drill pipe bending stress measurements	6/87	OPS, EFFIC	Shipboard roll tests successfully conducted and reported
PCS - Pressure Core Sampler	7/87	SCI	Developed and currently operational as downhole tool but lacks mating on-deck hyperbaric chamber
Drilling recorder system	8/87	OPS, EFFIC	Procured custom system from Totco and installed on ship. Currently not fully functional
Investment cast core catchers	3/88	COST	Developed investment casting techniques to produce finger and flapper core catchers at significant savings per part; currently in use
VPC - Vibro-Corer	4/88	SCI	Initial design failed, follow-up analysis and design efforts currently in progress
SCM - Sonic Core Monitor	12/88	SCI, OPS	Successfully developed, currently operational for use with XCB and RCB systems

CSES - Conical Side Entry Sub	4/89	OPS	Developed and successfully used since Leg 133
HRO - Hard Rock Orientation system	6/89	SCI	Various subsystems have been successfully developed and tested but overall system is still unproven
Mini-HRB - Hard rock guide bases	8/89	RANGE	Successfully developed and deployed in various forms on Legs 132, 142, 144, 147
TSP - "TAM" Straddle Packer	9/89	SCI	Responsibility for this tool assumed from 3rd party developer
BPH - Breakaway Piston Head (for APC)	10/89	OPS	Three design attempts have failed. Currently a dormant project awaiting adequate priority
Cork - Reentry cone plug and instrument feedthru	10/89	SCI	Successfully developed and tested. Four installations emplaced to date.
MDCB - Motor Driven Core Barrel	12/89	SCI, EFFIC	Follow-on tool to failed NCB. Currently operational
No-pulse go-devil for "TAM" drilling packer	2/90	OPS	Developed and used successfully on Leg 139. Obsoleted with TDP but concept was used in design of downhole flow meter and TAM Straddle Packer no-pulse go-devils
Commandable-retrievable beacons	10/90	COST	Successfully developed and used routinely since Leg 138
DCB - Diamond Core Barrel system	12/90	SCI, OPS, RANGE	Developed and deployed on two legs with marginal success. DCB development funding limited for FY94.

"Tensor" electronic core orientation system	2/91	OPS, EFFIC	Developed through two phases, currently operational
Temperature tabs and sinker bar sub	4/91	OPS	Adapted industrial temperature tabs to indicate downhole operating temperatures in high temperature environments
Geoprops probe	6/86, 10/91	SCI	Assumed partial responsibility within ODP for stalled 3rd party development. Tested unsuccessfully on Leg 146. Currently awaiting new principal investigator and funding
Mechanical Drilling Jars (McCullough/Texas LongLife)	1/92	OPS, COST	On board but lost in hole during Leg 146, development continues
4" bore air jet line wiper	1/92	EFFIC	Developed in cooperation with Sedco and used successfully since Leg 144.
Drill string deployment/optimization computer program	4/92	OPS, EFFIC, RANGE	Under development, preliminary usage for Legs 148 and 150
Perforated liner hanger and running tool for Cork	4/92	SCI	Developed and deployed with marginal success on Leg 146
"Dril-Quip" quad casing system	4/92	OPS, RANGE	Developed and portions tested successfully, currently operational
SSR - Subsea Release cementing system for casing	6/92	EFFIC	Developed and sent to ship but not yet tested at sea
Hole openers/under-reamers/stabilizers	4/93	RANGE	Under development, scheduled for first use on Leg 153

DCS HISTORICAL DEVELOPMENT LIST

Platforms & platform personnel safety systems

Tubing strings, options, threaded connection fatigue testing

Secondary Heave Comp

Pump systems and mods to rig pumps

Wireline winch

Drill-in BHA & and back-off systems

Guidebases & self-righting R/E cones

Ballasting options

Flex joint

Tension safety joint

Bits & center bits

Latch and recovery systems

DAS work on primary heave comp

Third party analyses of DCS heave comp systems

ODP DEVELOPMENT ENGINEERING SUPPORT FUNCTIONS/HISTORICAL LISTING

3RD PARTY SUPPORT

LAST-1 -- Lateral Stress Tool (passive)

Principal Investigator: Kate Moran, Bedford Inst. of Oceanography

Assisted in the conceptualization of the LAST-1 instrument. Developed a short-stroke APC for "shooting" the instrument into soft sediments. Helped in deployment during Legs 131 and 146. Still in hands of 3rd party scientist.

LAST-2 -- Lateral Stress Tool (pressuremeter)

Principal Investigator: Kate Moran, Bedford Inst. of Oceanography

Assisted in conceptualization and vendor-testing. Help develop delivery mechanism based on WSTP colleted delivery system. Assisted in deployments on Leg 146. Still in hands of 3rd party scientist.

Downhole Flowmeter Go-devil

Principal Investigator: Roger Morin, USGS, Denver

In cooperation with PI modified existing go-devil type for flow measurement in holes using TSP packer. Deployed with some science success during Legs 137 & 139. Still viable.

TSP -- TAM Straddle Packer

Principal Investigator: Keir Becker, Univ. of Miami

Coordinated with P.I. during development and subsequently accepted as mature operational tool. Many successful deployments. Now fully supported by ODP including periodic upgrades, design improvements, operation and maintenance manuals.

Geoprops Probe

Principal Investigators: Dan Karig, Cornell Univ. & Bobb Carson, Lehigh

Helped in original conceptualization, deployment technique determination, vendor testing and quality assurance of vendor-produced tool. Later took over responsibility for modifications required before first sea trials on Leg 146. Currently unproven and not yet

accepted as mature operational ODP tool.

CORK – Reentry Cone Seal and Instrument Feed-thru

Principal Investigators: Earl Davis, Pacific Geoscience Center (Canada),
Bobb Carson, Lehigh & Keir Becker, Univ. of Miami

Liaisoned with PI's to integrate third party development of data logger, thermistor strin and fluid sampling elements with CORK mechanical systems designed at TAMU.

OTHER ENGINEERING FUNCTIONS SUPPORTING ODP OBJECTIVES

Drillship Support and Upgrades

Lab Stack HVAC Modifications
Cyberex and motor-generator computer back-up modifications
Drydock support efforts
Ventilation and personnel safety systems for H2S hazards
ODP Intra-departmental engineering support: Technical Services, Repository and Science Operations

Continuing Technical Interface with Worldwide Scientific Drilling Efforts

DOSECC (U.S. Continental)
KTB (Germany)
VNIIBT (Russia)
IFP (France)
Vattenfall Deep Gas Exploration Drilling (Sweden)
British Geological Survey (UK)
International Continental Scientific Drilling (ICSD)
Nansen Arctic Drilling Program
Polar Ice Coring Office (U.S.)
Wireline Reentry Projects (U.S. & France)
Sandia/LANL Drilling Projects (Western U.S.)
Lake Baikal Drilling Project (Russia/U.S.)
Yucca Mtn. Site Characterization Project (U.S.)
"Godzilla Maru" (Proposed) Deep-sea Drilling Program (Japan)
General Oil Industry and Mining "Slimhole" Research Initiatives

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January 14, 1994

To: Dr. Charles Paull
Dept of Geology
Univ of North Carolina
213 Mitchell Hall
Chapel Hill, N.C 27599-3315

From: Brian Lewis

Subject: PCS/PPCS

Charles,
This is a follow-up to our last telephone conversation on Jan 14 about PCS. The next section, in quotation marks, is excerpted from the PCOM Minutes, December, 1993:

"PANCH recommended that Charles Paull and other SGPP members work with TEDCOM and ODP-TAMU to try either to modify the existing PCS system or develop a new one (PPCS) to meet the needs for a gas hydrate leg. PCOM added Joris Gieskes to the list of people to advise on the PCS/PPCS development plan and requested that the group work on producing a plan to present to PCOM at the April meeting. After discussion, PCOM adopted the following consensus statement:

PCOM Consensus - PCS/PPCS

PCOM recommends that C. Paull and other SGPP members and J. Gieskes work with ODP-TAMU, TEDCOM and G. Brass to develop a plan to modify the existing PCS system and/or construct a new one (PPCS) to meet the needs of the scheduled gas hydrate leg and future legs that must recover gases and gassy sediments. The plan, together with a cost estimate, should be presented to PCOM in April 1994. "

JOIDES is clearly looking to you to pick up this ball. Can you do this? If it is not too great an imposition could you let me know if you will do this and, if so, outline your plan of action. PCOM would like your advice by April, so that we can provide budgetary direction to ODP and others.

Sincerely,

Brian

Brian T. R. Lewis
Chair, Planning Committee

BL/rsc

March 11, 1994

Dr. Miriam Kastner
Scripps Institution of Oceanography
University of California, San Diego
Geological Research Division
La Jolla, CA 92093-0212

Dear Miriam,

In-Situ Borehole Fluid Samplers - Leg 156

We have been discussing the borehole fluid samplers, which you hope to deploy on Leg 156, here at ODP-TAMU. Conceptually, these are very interesting devices and we understand the scientific value of sampling in-situ pore waters from the décollement zone. But we are concerned about the limited time that you have to develop the tools, whether you will be able to test them adequately before the leg, and their possible impact on the other equipment with which they will be deployed.

Our understanding of your proposal is as follows: you plan to build two samplers, a Mechanically controlled Continuous Sampler (MCS) and an Electronically controlled Discrete Sampler (EDS). Both the MCS and the EDS would be attached to one of the thermistor strings, which have already been engineered for deployment on Leg 156, so as to finish up close to the décollement zone in one of the cased, CORKed holes.

Your borehole fluid samplers are clearly "Development Tools" as defined in the guidelines in Third Party Tool Development, published in the February 1991 JOIDES Journal (attached). As such they need to be properly tested and approved by both DMP and ODP-TAMU before we can deploy them on Leg 156. DMP is scheduled to meet on 17-19 May 1994, which conveniently is only a week before Leg 156 is scheduled to begin.

The following requirements need to be satisfied for the fluid samplers to be deployed on Leg 156:

1. Engineering drawings of both the samplers must be provided to Tom Pettigrew at ODP-TAMU. These need to reach us by 13 May 1994 at the latest. Tom will need to decide whether the samplers would interfere with the deployment of the cable.

2. Both the MCS and the EDS must be tested as follows
(a) to determine that they function as designed.

Ocean Drilling Program
of the Director
A&M University Research Park
[illegible] Discovery Drive
College Station, Texas 77845-9547 USA
(409) 845-8480
Telex Number: 62760290
FAX Number: (409) 845-1026

(b) to determine that they would not damage the electrical and mechanical integrity of the cable to which they are attached.

A written report on these tests must be available for the next DMP meeting and at ODP-TAMU prior to that meeting.

3. The P.I. s of the thermistor strings must consent to your samplers being attached to their cables.

I know that this is a very tight schedule for you to keep to but it is essential that all these issues be resolved before the leg starts. I am alerting Keir Becker, Jean-Paul Foucher and Peter Lysne to the situation by copying this letter to them.

I tried to call you on the phone yesterday but could not get a reply. Please give me a call if you want to discuss this further.

Best Regards,

Tim

Timothy J.G. Francis
Deputy Director

cc: B. Lewis (PCOM)
P. Lysne (DMP)
T. Shipley (Leg 156 Co-Chief)
Y. Ogawa (Leg 156 Co-Chief)
K. Becker (Miami)
J.P. Foucher (IFREMER)
J. Austin (JOI)
B. Malfait (NSF)
J. Baldauf (ODP)
P. Blum (ODP)
G. Foss (ODP)
T. Pettigrew (ODP)

tjgf:dp

JOIDES Journal Feb. '91

56 Vol. XVII, No. 1

Third Party Tool Development

Introduction

Because of the complexity of downhole measurements required by scientific ocean drilling, ODP has historically relied in part on outside (i.e., "third party") development of various borehole devices. Some examples are the drillstring saddle packer, the Lateral Stress Tool (LAST), GEOPROPS (for measuring *in situ* physical properties), and the borehole seal. Support for such development comes from a variety of sources. In the U.S., third party tool development has generally been supported by the National Science Foundation, using funds earmarked for ODP and allocated to highly ranked, unsolicited proposals.

Because these tools must eventually make the transition from a developmental stage to actual deployment downhole, which puts them under the management and operation auspices either of the Borehole Research Group at LDGO (for wireline devices) or of ODP-TAMU (for all others), PCOM authorized DMP in 1988 to develop a set of guidelines for the overall process of monitoring third party tool development. The goal is to improve communications between cognizant management entities within ODP and outside investigators/agencies with interests in downhole measurements.

DMP completed its guidelines in January 1989, and PCOM approved those guidelines in May 1989. At DMP's request, and with the approval of the PCOM chair, those guidelines are reproduced here so that both their existence and general applicability will be clear to all concerned parties.

Guidelines for the Monitoring of Third Party Tools

There are two types of third party tools: Development Tools (instruments under development) and Mature Tools (established tools).

A.) For a tool to be considered an ODP Development Tool, and thereby scheduled for deployment, several criteria should be satisfied.

(a) There must be an identified principal investigator.

(b) LDGO (for wireline tools) or TAMU (for all others) should formulate a development plan in conjunction with the principal investigator, and then inform DMP of this plan.

(c) The development plan should:

- indicate the acceptance, desirability, financial and technical feasibility, and the usefulness of the measurements;
- identify development milestones;
- make provision for initial testing on land;
- satisfy safety considerations;
- specify shipboard requirements such as the data processing necessary to make the information accessible on board ship, any special facilities (emphasising areas where the tool is not compatible with existing hardware/software), and appropriate technical support;
- contain a statement of intent that the tool would be available for post-development deployment in ODP.

If DMP endorse the development plan, and subject to PCOM approval, the Panel will appoint a coordinator to monitor on behalf of the Panel the tool's progress through the development plan. The Panel monitor will receive reports from the Principal investigator on request and will present these to DMP. DMP will review progress at regular intervals and will evaluate tool performance after each deployment. Day-to-day monitoring will be the responsibility of TAMU and LDGO. A tool cannot be regarded as an ODP Development Tool, and therefore cannot be scheduled for future legs, if it has not undergone the above procedure. All tools that are currently scheduled must have a

development plan formulated as soon as possible. Once a tool has been accepted by DMP as a Development Tool, the Principal Investigator will be required to co-sign the development plan with TAMU or LDGO as appropriate as a visible accedence to the provisions of the plan. A Development Tool cannot be deployed on an ODP leg unless TAMU/LDGO and DMP are fully satisfied that the terms of the development plan have been fully met.

B.) For an ODP Development Tool to undergo the transition to an ODP Mature Tool, i.e. an established tool operated by TAMU or LDGO, there must be DMP endorsement. This endorsement will be given after Panel review of a proposal prepared by TAMU and/or LDGO and submitted to DMP. This proposal must satisfy DMP on the following counts:

- cost of routine operations including shipboard data processing;
- requirements for routine operations/processing;
- availability of spare components;
- facilities for maintenance;
- existence of an operating/maintenance manual;
- safety considerations;
- long-term usefulness of data;
- established track record both in land tests and shipboard deployment.

Where several Development Tools are competing for the same Mature Tool slot, DMP will require tha appropriate contractor to evaluate all tools and submit their multiple-tool evaluations to DMP for Panel consideration.

C.) Where an established third party tool is loaned for use in ODP, this tool will have to satisfy the criteria in paragraph B in order to be accepted as the technical equivalent of an ODP Mature Tool. Tools which do not satisfy these criteria cannot be programmed for future ODP legs.

D.) Last-minute requests to include an unproven third party tool within an ODP leg will not be accepted.

Proposal News

CALL FOR ODP PROPOSALS FOR SUPPLEMENTAL SCIENCE

From now until June 1 1991, JOIDES (Joint Oceanographic Institutions for Deep Earth Sampling) will accept proposals for drilling-related science to be included as part of scheduled legs 141 to 147. The JOIDES Planning Committee (PCOM) may schedule as many as 10 days of such science during the FY 1992 ODP Program.

"Supplemental science" proposals to ODP must have the following characteristics:

1.) *They must involve exciting science which is consistent with thematic documents produced by ODP*, particularly COSODs I and II and the Long Range Plan (all of which are available from Joint Oceanographic Institutions, Inc., Suite 800, 1755 Massachusetts Ave., N.W., Washington, D.C. 20036-2102). Proponents are also referred to position papers produced by ODP's thematic panels, all of which have appeared in recent issues of the *JOIDES Journal*.

2.) *They must be "mature"*, containing all information pertinent for their thematic and safety review by ODP's scientific advisory structure. Guidelines for submitting a mature proposal have

Pages 63 and 64 – N/A

February 9, 1994

Dr. Brian Lewis
Chair, JOIDES PCOM
JOIDES Planning Office
3731 University Way N.E., Rm. 104
Seattle, WA 98195

Dear Brian,

JOIDES Pollution Prevention and Safety Panel

PPSP currently has twelve members, but two or three are irregular in their attendance, so that only 9 or 10 members usually attend.

I would like to recommend Dr. Joel S. Watkins as a new member of the panel. As you know, Joel is well known to the ODP community and served as a member of the Planning Committee until 1992. In 1988 he was one of the conveners of the JOI/USSAC Workshop on "The Role of ODP Drilling in the Investigation of Global Changes in Sea Level."

Joel has considerable experience both in the oil industry and academe, and many very useful contacts with industry. He is also very knowledgeable about the hydrocarbon prospects of many offshore parts of the world. These qualifications would make him a valuable addition to PPSP.

An added advantage to Joel joining PPSP is that he lives and works here in College Station. From time to time safety questions crop up at short notice and it is useful for me to be able to discuss them with a panel member over good quality seismic records. Lou Garrison has helped me in this capacity several times over the past few years. Unfortunately Lou is ill at the moment and not available for this task. I hope that he will soon return to full health and be able to continue with this service. Meanwhile, it would be very helpful to have the benefit of Joel's knowledge.

I have discussed this with Mahlon Ball and he enthusiastically endorses this recommendation.

Yours sincerely,

Timothy J.G. Francis
Deputy Director

TJGF:am

xc: Dr. Mahlon Ball

RECEIVED
FEB 17 1994
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Table of Contents

Revised Draft Minutes of the JOIDES Planning Committee Annual Meeting

December 1 - 4, 1993 — Miami, Florida

The Revised Draft Minutes contain all corrections received by the JOIDES Office as of April 1, 1994. Corrections to the Draft Minutes are shown in Italics

Table of Contents continued

PCOM Annual Meeting Participant List

Planning Committee - PCOM

Richard Arculus	University of New England (Canada - Australia Consortium)
Jamie Austin	University of Texas at Austin, Institute for Geophysics
Keir Becker	University of Miami, Rosenstiel School of Marine and Atmospheric Science
Wolfgang Berger	University of California, San Diego, Scripps Institution of Oceanography
Henry Dick	Woods Hole Oceanographic Institution
Jeff Fox	University of Rhode Island, Graduate School of Oceanography
Robert Kidd	Dept. of Geology, University of Wales, Cardiff
Hermann Kudrass	Bundesanstalt für Geowissenschaften und Rohstoffe (Germany)
Brian Lewis	University of Washington, College of Ocean and Fishery Sciences
Hans-Christian Larsen	Geological Survey of Greenland, Copenhagen (ESF Consortium)
Catherine Mével	Laboratoire de Pétrologie, Université Pierre et Marie Curie (France)
Alan Mix	Oregon State University, College of Oceanic and Atmospheric Sciences
John Mutter	Columbia University, Lamont-Doherty Geological Observatory
William Sager	Texas A&M University, College of Geosciences
Kiyoshi Suyehiro	Ocean Research Institute (Japan)
Brian Taylor	University of Hawaii, School of Ocean and Earth Science and Technology

Liaisons

Timothy Francis	Science Operator (ODP-TAMU)
David Goldberg	Wireline Logging Services (ODP-LDEO)
Bruce Malfait	National Science Foundation
Thomas Pyle	Joint Oceanographic Institutions, Inc.

Guests and Observers

Jamie Allan	Science Operator (ODP-TAMU)
Jack Baldauf	Science Operator (ODP-TAMU)
Gary Brass	Nansen Arctic Drilling Program Liaison Group
John Coyne	Supervisor of Database Group, ODP-TAMU
Greg Mountain	Lamont-Doherty Earth Observatory, New York, Leg 150 Co-Chief
Atsushi Omata	Deputy Director, Science and Technology Agency (STA), Japan
Daniel Quoidbach	ODP Data Bank, LDEO
Alastair Robertson	incoming TECP Chair, Unversity of Edinburgh, Scotland
Dan Reudelhuber	Science Operator (ODP-TAMU)
Jörn Thiede	GEOMAR, Germany, Leg 151 Co-Chief
James Watkins	Joint Oceanographic Institutions, Inc.

Panel Chairs

Mahlon Ball Denver	PPSP	Petroleum Geology Branch, U.S. Geological Survey,
Sherm Bloomer	LITHP	Department of Geology, Boston University
Kim Kastens	SSP	Lamont-Doherty Earth Observatory
Peter Lysne Mexico	DMP	Sandia National Laboratories, Albuquerque, New
Judy McKenzie	SGPP	Geologisches Institut, ETH-Zentrum, Zürich
Eldridge Moores	TECP	Geology Dept., Univ. California, Davis
Maureen Raymo	OHP	Dept. of Earth and Atmospheric Science, MIT
Charles Sparks	TEDCOM	Institut Français du Petrole, France

JOIDES Office

William Collins	Executive Assistant and Non-US Liaison
Karen Schmitt	Science Coordinator

SUMMARY OF PCOM MOTIONS, CONSENSUSES AND ACTION ITEMS

FY95 SCIENCE PROGRAM PLAN

PCOM Motion - FY95 Science Plan

The schedule for ODP Legs 157 through 165 will be as follows

157 - VICAP/MAP (380-Rev3/Add3)

158 - TAG

— Drydock - South Africa

159 - Return to Site 735 (300-Rev)

160 - Equatorial Atlantic Transforms (346-Rev4)

161 - Mediterranean I

162 - Mediterranean II

163 - North Atlantic Arctic Gateways II

164 - Gas Hydrate Sampling (423-Rev/Add)

165 - DCS Sea Test

Addenda

1. This schedule presumes the drydock to occur in South Africa. Should this prove unacceptable to SEDCO/FOREX, and the drydock be scheduled elsewhere, PCOM should re-examine the schedule at the earliest opportunity.
2. The two Mediterranean legs will consist of elements of the following three proposals (in alphabetical order) - (1) Alboran Sea (323-Rev3), (2) Mediterranean Ridge (330-Rev/Add3), and (3) Mediterranean Sapropels (391-Rev).
3. The stated order of Mediterranean legs is preferred, but may be changed to accommodate the necessary weather window for the North Atlantic Arctic Gateways II leg.
4. The preferred location for the DCS sea test is on the Vema Transverse Ridge.

PCOM Motion - Mediterranean Program

The two Mediterranean drilling legs shall include

Med. I — MedSap 2B, 3, 4, Eratosthenes Seamount sites for sapropel and tectonic objectives, MedRidge (Ionian transect) 1, 2, 3 and the Mud Volcano 1.

Med. II — MedSap 5, 6, 7 and Alboran 2, 3,4

APPROVALS AND REPORTS

PCOM Motion - Approval of the Minutes

PCOM approves the Revised Draft Minutes of the August 10 - 13, 1993 PCOM meeting in Brisbane, Australia.

PCOM Motion - Shallow Water Drilling Working Group Report

PCOM approves the Shallow Water Drilling Working Group Report, subject to minor editorial revisions and the addition of wording that states that funding will be from ODP commingled funds and that ODP-TAMU will be responsible for contracts and quality control. PCOM thanks and disbands the Shallow Water Drilling Working Group.

JOIDES Office Action - Shallow Water Drilling Working Group Report

The JOIDES Office will prepare a policy paper for presentation in April 1994 on PCOM's implementation of the hazard surveys recommended by the Shallow Water Drilling Working Group Report.

BUDGETS

PCOM Consensus - FY94 Budget Priorities

After extensive discussion, PCOM identifies two important priorities for additional expenditure of FY94 "funds":

1. a broad review of engineering development within ODP, per ASRC Proposal 10 (estimate $50-100K), and
2. logging-while-drilling (LWD) as part of Leg 156 (estimate $200K). As a consequence, PCOM recommends that JOI, Inc.
   a. support initiation of the engineering review as soon as possible (subject to EXCOM approval), and
   b. endeavor to locate LWD funds for Leg 156 prior to the ODP-TAMU operational deadline of 15 January 1994.

Regardless of the outcome of LWD for Leg 156, PCOM recognizes the potential scientific importance of LWD for ODP, and encourages proponents to incorporate this technology, as required, into their future proposals to the program.

PCOM Consensus - FY95 Budget Prioritization

Priority 1

The computer and data base upgrades are of the highest priority. PCOM endorses the PANCH recommendation that the Computer RFP Evaluation Committee continue to work closely and frequently with ODP-TAMU to monitor and advise on the implementation of the upgrades.

Priority 2

DCS. PCOM endorses the continued testing of DCS through 1995.

Priority 3

- Downhole measurements lab. PCOM supports ODP-TAMU's proposal to upgrade the downhole measurements facility expansion on the JOIDES Resolution, ($400K)
- Shallow water gas hazards surveys. PCOM recommends to JOI that ODP-TAMU include funds in the FY95 budget for shallow water gas hazards surveys.

Priority 4

BHTV (≈$100K). By consensus, PCOM endorses the PANCH recommendation that DMP explore the most efficient means of maintaining the capability to measure in situ stress on a routine basis, in appropriate holes, and return a recommendation to PCOM in April 1994.

SMP equipment list, progress as feasible.

PCOM Motion - Computer RFP

- PCOM reaffirms its commitment to upgrade ODP computer and information systems.
- PCOM recognizes that this will entail significant expenditure of funds during FY94, FY95, FY96.
- PCOM advises JOI to continue a computer database upgrade advisory committee to advise ODP-TAMU and monitor progress on a regular basis during the entire project.

- PCOM is concerned that end-user input be sought to insure timely and appropriate development of suitable products.

PCOM Motion - Hazard Survey for the NJ-MAT Program

Given the high priority of the New Jersey Mid-Atlantic Transect sites 4 through 9a by the relevant panels, PCOM places a high priority for drilling these sites at the earliest possible date commensurate with completion of the required surveys, processing and interpretation as outlined in the Shallow Water Drilling Guidelines. PCOM therefore requests JOI to investigate ways of obtaining operational funds for ODP-TAMU to contract for these surveys and services.

JOIDES PANEL RECOMMENDATIONS

PCOM Consensus - NARM Nonvolcanic II (Iberia)

Results from drilling on Leg 149 recovered a suite of the most unusual and unexpected rock types yet to have been found in a passive margin setting. Far from allowing the continent-ocean boundary to be defined (the purpose of the leg) they have posed fundamental new questions about the nature of that boundary. Beyond that, they imply a profound orthogonality between inferences based on geophysical studies, predictions of models derived from those studies, and the actual results of the drilling - no current model for formation of passive margins adequately predicts the occurrence of rock types found in the drilling. The immediate continuation of drilling proposed by the TECP subcommittee, while likely providing a further documentation of the distribution of rock types on the Iberia margin, would not adequately address the problems raised by the results of Leg 149.

The PCOM therefore urges the proponents to thoroughly evaluate the impact that the Leg 149 drilling results imply for models of passive margin formation, especially the relationship of the geological evidence to that presented by geophysical studies, and develop a new proposal that will address these fundamental problems. We hope to see a new proposal for consideration by PCOM for scheduling in FY96.

PCOM Consensus - PCS/PPCS - SGPP/C. Paull/J. Geiskes Action Item

PCOM recommends that C. Paull and other SGPP members and J. Geiskes work with ODP-TAMU, TEDCOM and G. Brass to develop a plan to modify the existing PCS system and/or construct a new one (PPCS) to meet the needs of the scheduled gas hydrate leg and future legs that must recover gases and gassy sediments. The plan, together with a cost estimate, should be presented to PCOM in April 1994.

SGPP and OHP Action Item - Proposed Hydraulic Piston Coring Policy

PCOM asks that SGPP and OHP evaluate ODP-TAMU's proposal for revising the ODP hydraulic piston coring policy and make a recommendation on it for the April PCOM meeting.

PCOM Consensus - Core-Log Integration White Paper

PCOM agrees to institute the CLI advisory panel (CLIPAN) and recommends that BRG do everything possible to rearrange their budget to accommodate the need for CLIP on Leg 154.

PCOM Motion - Backup Drilling Sites

PCOM endorses the SSP recommendation that PCOM and ODP-TAMU require that all legs, including barerock and offset drilling legs, must plan appropriate contingency site(s) in addition to their primary sites, for drilling in the event of technical failure or other unforeseen problems

PCOM Consensus - VPC

PCOM endorses the PANCH and TEDCOM recommendation that the British Geological Survey (BGS) be allowed to test the ODP-TAMU VPC tool (at their expense) to see if it can work. BGS should be asked to maintain communications with OD-TAMU and TEDCOM on progress and developments.

PCOM Consensus - Leg 156 VSP Experiment

PCOM notes DMP's concerns about the technical issue raised for the Leg 156 VSP experiment. However, new information has been provided that indicates that the technical issues may be resolved and therefore that the decision on VSPs should be left to the Co-Chiefs.

PCOM Consensus - BHTV - DMP Action Item

PCOM endorses the PANCH recommendation that DMP explore the most efficient means of maintaining the capability to measure in situ stress on a routine basis, in appropriate holes, and return a recommendation to PCOM in April 1994.

PCOM Consensus - GEOPROPS Development - DMP Action Item

PCOM endorses the DMP recommendation that GEOPROPS not be supported, but in light of the fact that this type of sampling is important to the program, PCOM would like DMP to consider alternate ways of implementing measurement of the parameters that would have been measured by GEOPROPS.

PCOM Consensus - Technical Staff

PCOM has received advice from ODP-TAMU with respect to the technical staffing of the JOIDES Resolution, and believes that the problems identified by the SMP may have already been rectified by the formation of laboratory groups. PCOM suggests that ODP-TAMU pursue the recommendation to use students and others to alleviate staffing problems at no additional cost to the program.

PCOM Consensus - Software Priorities

PCOM endorses the SMP software prioritization list but, on the advice of ODP-TAMU, recommends that Corelog (depth) software be given a higher priority.

IHP Action Item - New Petrology Program Evaluation: *Rocky*

PCOM requests that IHP evaluate the results of the new petrology program, *Rocky*, being tested on Leg 153 and to report to PCOM in time for the April PCOM meeting.

PCOM Consensus - Marine Micropaleontology Database Center

PCOM endorses the PANCH recommendation that the Micropaleontology Data Base Center would be highly useful to the ODP program and we encourage the proponents to continue their efforts to make this facility accessible worldwide through the Internet. PCOM recommends that they interface with other international earth science communities to benefit from their experiences.

JOIDES THEMATIC PANEL WHITE PAPERS

PCOM Consensus - JOIDES Thematic Panel White Papers

After review of the process of White Paper revisions, PCOM requests that thematic panels, at their next meetings:

a) concentrate on sections identifying succinctly major results to-date and how they relate to stated thematic objectives

b) prioritize major themes for drilling utilizing realistic time estimates in the two periods FY1995-1998 and FY1999-2003

In addition, PCOM requests the thematic panels to provide a vision of science objectives beyond FY2003

ASRC REPORT

PCOM Motion - ASRC Proposal 4

PCOM adopts the revised JOIDES Proposal Submission Guidelines, JOIDES Panel Meeting Schedule, and Proposal Review Guidelines endorsed by the PANCH at the PCOM December Annual Meeting.

PCOM Consensus - ASRC Proposal 8

PCOM's consensus was that the thematic panel Chairs not attend the April or August PCOM meetings except on a case-by-case basis as determined by the PCOM Chair.

PCOM Motion - ASRC Proposal 10

PCOM acknowledges and applauds the continuing and growing role of TEDCOM in helping the JOIDES Advisory Structure evaluate major engineering development programs like DCS and retractable-bit technologies.

In reference to ASRC's Proposal 10, and in recognition of the continuing importance of such engineering development to both the present and future of ODP, PCOM recommends to EXCOM that an external group be designated to review the role of engineering development within ODP, including the relationship between ODP-TAMU, TEDCOM, PCOM, and the Advisory Structure, and that this review occur as soon as possible.

LIAISON GROUPS

PCOM Motion - NAD Design Study

PCOM heartily endorses the Nansen Arctic Drilling Program going ahead with a preliminary design study for an ice-strengthened drilling barge.

JOIDES COMMITTEE/PANEL MEMBERSHIP

PCOM Consensus - Borehole Research Group Liaison to JOIDES Thematic Panels

PCOM endorses the BRG liaison to one JOIDES thematic panel meeting per year.

PCOM Motion - Panel Membership

PCOM endorses all personnel changes in panel membership, panel Chairs and PCOM liaisons presented at the December meeting.

Special Thanks

Carl Brenner

PCOM notes the retirement of Carl Brenner as manager of the JOIDES Site Survey Data Bank at LDEO due to ill health. Carl has been one of the key support personnel in the program. A long succession of Co-Chief scientists and drilling proponents have cause to be grateful to Carl for his diligence and dedication in helping to assemble the necessary survey packages to ensure the success of numerous individual drilling legs. He will be severely missed by colleagues and friends in the program. PCOM wishes him increasingly good health in his retirement.

Eldridge Moores

PCOM thanks Eldridge Moores for his service and leadership as Chairman of TECP. Eldridge sensitized ODP to the need for routine structural data acquisition and 3-D geological sit survey information. He provided a classical and global perspective on tectonic issues and strong links to the land geological community. We wish him well in his future endeavors.

Jamie Austin

PCOM says good-bye to a great friend and servant to the ODP and its PCOM. Jamie has rendered long and staunch service in many different ways to the Program. His energy and spirit has permeated many levels of our activities and the Program's direction, especially during the critical renewal process. Jamie has been even-handed supporter of the diverse thematic interests that drive the ODP, and we thank him especially for his years at the Chairmanship helm. We say au revoir, but believe that like a perennial weed, Jamie will sprout again with impact in the program. We wish him well and continued success in his future plans.

Dave Huey

PCOM notes the contributions to ODP by Dave Huey, formerly of ODP-TAMU now at Stress Engineering, and thanks him for the incredible resourcefulness, skill and adventurous engineering that he has brought to the Program.

Kate Moran

With heartfelt thanks, PCOM acknowledges the rotation of Kate Moran from the Chair of the JOIDES Shipboard Measurements Panel. Kate has been a driving force in ensuring that ODP scientist have access to the best tools and techniques available when onboard the JOIDES Resolution. PCOM wishes her the best of luck in the future.

REVISED DRAFT MINUTES
JOIDES Planning Committee Annual Meeting, December 1 - 4, 1993, Miami, Florida

Wednesday, December 1, 1993 **9:00 am**

Item 1018. Welcome and Introduction

All PCOM members, liaisons and guests introduced themselves. Lewis and Becker (host) reviewed the logistics of the meeting.

1. Approval of the Agenda

A minor correction was made to the agenda to allow the panel membership issue to be discussed earlier on Saturday, prior to the departure of several PCOM members.

PCOM Motion - Approval of the Agenda

PCOM approves the revised Agenda for the Annual meeting.

Fox moved, Kidd seconded vote: 16 in favor, 0 opposed

2. Approval of the Minutes

There were no additions or corrections to the Revised Draft Minutes as presented in the Agenda Book.

PCOM Motion - Approval of the Minutes

PCOM approves the Revised Draft Minutes of the August 10 - 13, 1993 PCOM meeting in Brisbane, Australia.

Taylor moved, Arculus seconded vote: 16 in favor, 0 opposed

Item 1019. Reports of Liaisons

1. NSF

Malfait was happy to report that the total FY94 NSF budget had been increased by 11% and NSF-ODP's budget increase was 7% (Appendix 1.0). The only bad news was that the Senate Appropriations Committee had attached a report to the budget that made statements requesting NSF take a more applied approach to science funding. If NSF did not choose to follow this mandate, funds would be directed to other agencies.

Malfait reviewed the ODP budget (Appendix 1.1), noting that NSF was now providing 63% of the program budget. NSF had not approved Computer/Data Base funds ($600K) and were awaiting submission of a plan and budgets from ODP for this planned upgrade. NSF was awaiting a request from JOI to establish a new core repository in Bremen, the criteria for NSF's approval of the new repository was outlined.

Malfait reported that a new contract between NSF and JOI was signed in September (Appendix 1.2). The contract was for five years with options to extend for an additional five years, there were no significant changes in program operations. In September, JOI subcontracts with LDEO and ODP-TAMU were approved. NSF signed an MOU with Japan on September 21 and the extension of the existing Can-Aus MOU was signed on September 17, it was for a 7/12th membership for one year. Malfait outlined the wording in the MOUs regarding scientific participation (Appendix

1.3). Austin asked when the renewal activities would begin? Malfait said there would be a review around 1996, but he did not think that there would be a formal renegotiation of the MOU in 1998.

Malfait reviewed the US science activities, including a review of USSSP-USSAC, NSF grants program, and FY95 field programs.

2. JOI

Pyle reported on the status of the Atlantic core repository (Appendix 2.0). He explained that the FY94 budget was below the LRP by $ 3.4 M and there were many outstanding budget issues, including: (a) the $ 600 K withheld by NSF pending a computer upgrade plan, (b) the effect of the DCS delay and, (c) the need for additional funds for several important items. JOI was now administering funds for Russian scientists, the funds were made available by the UK from the Royal Society/NERC (Appendix 2.1). Pyle noted that USSAC had been reviewed by NSF and renewed for three years.

Pyle expressed concern that there was not a clear plan for the computer/database upgrade. In addition, he noted that there was not a clear picture of how the ad hoc subcommittee associated with the computer upgrade would interact with JOIDES and JOI.

3. ODP-TAMU

Francis reviewed the operations on Leg 151, highlighting the success of the ice monitoring procedures that were used (Appendices 3.0 - 3.5). He explained that one of the drawbacks of synthetic aperture radar (SAR) ice maps was that rotten ice could not be detected, therefore, a scouting vessel was critical. *The icebreaker* Fennica, *that ODP had contracted as the iceboat for Leg 151, was used mainly as a scouting vessel to detect ice rather than to protect the drillship from ice in its close vicinity.*

Francis explained that on Leg 151 alternative sites to YERM-1, sites in the vicinity of YERM-1 but outside the ice margin, had been requested during the leg (Appendix 3.6). However, the Norwegian Petroleum Directorate (NPD) had not approved all the sites requested during the leg. Francis stressed that there needed to be more sites approved ahead of time for these types of legs to avoid short-notice requests to NPD for clearance; Leg 151 was inadequately prepared in the number of approved sites close to the ice margin. ~~Francis concluded that the lessons learned from Leg 151 were: (1) more proposed sites and alternates need to be approved prior to drilling near ice pack, (2) ODP did not need a ship as powerful as the *Fennica* for working in the type of ice pack encountered on Leg 151~~.

Francis reviewed the weather conditions and science operations on Leg 152 (Appendices 3.7 - 3.10). Due to difficult weather and ice conditions, the Captain had called off drilling operations on November 15. Larsen wanted to make it clear that the leg did not loose too much drilling time due to poor weather, despite the bad conditions. *Francis concluded that the lessons learned from Leg 151 were: (1) when drilling near the edge of the polar ice pack several alternate sites need to be approved before the leg starts, e.g., every 10 n.m. down a seismic line from the anticipated ice edge, and (2) a single icebreaker such as* Fennica *cannot protect the drillship within a field of pack ice. A less capable vessel is sufficient for scouting purposes, but the drillship would stay clear of the pack ice.*

Francis discussed the schedule, operations and staffing for Legs 153 - 158 (Appendices 3.11 - 3.16). Francis explained that Leg 156 was still seeking funds for logging-while-drilling (LWD). ODP-TAMU felt that a decision on LWD funding was needed by January 15th to allow sufficient time to prepare for these operations. He noted that, due to the casing program, costs for Leg 156 would be higher-than-normal for a single leg ($ 514, K for casing and CORKing supplies) even without LWD.

Francis outlined the plans for the upcoming drydock period (Appendix 3.18). He explained that this drydock was required once every five years but that the location and dates were not set yet. During the drydock, ODP-TAMU was proposing to do an extension to the downhole measurements laboratory, the cost was estimated to be approximately $ 400 K (Appendix 3.19).

Francis reviewed the number of samples taken from the ship & shore from October 1984 - October 1993 (Appendix 3.20). He suggested that since the mudline cores were very heavily sampled (Appendix 3.21), ODP might want to change its policy to take more of them. ODP-TAMU wanted PCOM to consider adopting a new hydraulic piston coring policy (Appendix 3.22).

Francis reported that the staffing of science parties through Leg 156 was complete and, unfortunately, Dave Huey was moving from ODP-TAMU to Stress Engineering Services in Houston (Appendices 3.23 - 3.24).

4. ODP-LDEO

Goldberg reviewed the logging operations on Legs 151 - 152 (Appendices 4.0 - 4.1); both legs had encouraging results from BRG's core-log integration (CLI) efforts. Goldberg outlined the near-future logging operations planned for Legs 153 - 156 (Appendix 4.2).

Austin asked about why the BHTV was still being pursued after BCOM took it out of the FY94 budget? Goldberg said that BRG had taken BHTV out of the FY94 budget and explained that BHTVs, both the Schlumberger tool and a repaired BRG digital tool, were put on Leg 153 as per LITHP's recommendation at no cost to the program—as per BCOM recommendation. Leg 153 would be the last leg that the BHTV would be out on the ship. Austin thought that since the tool did not work it should be put onto the development prioritization list to be considered with all of the other developmental tools; there were explicit BCOM recommendations that this tool be dropped in FY94. Goldberg agreed and stressed that BRG had put developmental efforts into the tool through FY93 and these had stopped in FY94.

Goldberg reported on the status of downhole systems development (Appendix 4.3); the high temperature cable being developed by BRGM failed on its first test and was being redesigned. The high temperature resistivity tool being developed by CSM was completed and would be tested in the first quarter of 1994.

Recent post-cruise results were to be presented at the upcoming AGU meeting (Appendix 4.4). Goldberg reviewed the status of new initiatives (Appendix 4.5); the ODP field tape backup project was 100% complete, CD-ROMs were now being produced routinely and an interactive multimedia presentation of downhole tool information was being prepared to be put in the CD-ROMs. A logging school was planned for December 5th, before AGU in San Francisco.

Austin asked how the integration of the international partners into the logging operations was going? Goldberg thought it was going well, the largest start-up problems had been in the compatibility of systems; Leg 151 had a logging representative from the UK, Leg 152 had a French logging representative.

Taylor asked whether or not BRG had done a study where geochemical data from a core with 100% recovery had been compared with the data from the geochemical logging tool? Goldberg did not know of such *an ODP study, although industry comparisons exist,* and pointed out that it would be difficult to find such samples, sites with 100% core recovery were unusual. Taylor urged that since the geochemical tool often gave such variable results—some good and some bad—someone at BRG should look into quantifying how well this tool really performed.

Coffee break.....10:45 - 11:00 am

Item 1020. JOIDES Panel Reports

1. PANCH

Moores reviewed the consensus statements that the panel Chairs prepared at their annual PANCH meeting on November 30th (Appendix 5). Moores outlined the changes the PANCH made to the documents describing the JOIDES Proposal Submission Guidelines, Guidelines for Proposal Review, and JOIDES Panel Meeting Schedule (Appendices 5.5 - 5.8).

PCOM discussed the PANCH recommendation concerning the routine shipboard collection of structural data. Moores emphasized that important structural data was not being routinely collected and cited several examples of recent tectonics-oriented legs where structural geologists were not included in the shipboard party. PCOM agreed that ODP-TAMU should try to work to improve the structural geology staffing and data collection situation.

PCOM discussed the SMP/PANCH recommendation regarding potential sources of volunteer technicians for the ship. Austin stressed that if the option of using volunteers cost the program commingled funds it would not work. Allan agreed that using volunteers as technicians might not be a cost-saving option because of the training time involved. Francis explained that technical support staff had been cut back because BCOM had cut the base budget at ODP-TAMU in order to keep the funding levels for innovation high.

2. TECP

Moores reviewed the TECP activities for 1993 (Appendix 6.0). He explained that, after the results of the December 1992 PCOM meeting, TECP had appointed "heroes" to work with proponents of highly-ranked tectonics proposals to assist them in preparing drilling strategies and time estimates for their proposals. In answer to the PCOM motion requesting TECP to address how to attack tectonic themes with the drill, TECP had decided to revise its White Paper. Other TECP concerns that arose during 1993 were: (a) the lack of routine collection procedures for structural data from cores, (b) the need to get more structural geologists involved in ODP legs, and (c) the need for quantification of tectonic processes.

TECP's joint fall meeting with SGPP in Corner Brook, Newfoundland, was very successful. Moores reported on TECP's rankings of prospectus proposals, deep drilling recommendations, Leg 157 contingency recommendations, budget priorities, ASRC Report recommendations, and membership nominations (Appendices 6.1 - 6.2). Moores outlined TECP's plan to revise its White Paper (Appendices 6.3 - 6.4).

3. SGPP

McKenzie reviewed the SGPP activities for 1993 (Appendix 7.0). SGPP's spring 1994 meeting would be held at ODP-TAMU in order to interact with ODP engineers and TEDCOM. The SGPP global rankings identified gas hydrates and sea level themes as the most important SGPP interest in 1993 (Appendix 7.1). SGPP was revising its White Paper and had focused its thematic interests for 1994 - 1998 down to three: (1) sea level and facies architecture, (2) fluid flow and geochemical fluxes, and (3) geochemical budgets and carbon geodynamics. McKenzie reviewed each theme and explained where SGPP wanted to go with them; the rankings of the FY95 Prospectus reflected this new emphasis.

At its fall meeting, SGPP endorsed the PCS modifications, PPCS development, VPC development and efforts to evaluate tools for downhole in situ fluid sampling in lithified formations. SGPP supported the establishment of special core handling and sampling procedures for upcoming gas hydrate legs. SGPP also wanted better procedures established for how to deal with gas-rich cores—such as those encountered in the Santa Barbara cores. McKenzie outlined the SGPP membership nominations and indicated that SGPP wanted to have a liaison from BRG attend its meetings to inform them about logging plans and tool developments.

4. OHP

Raymo reviewed the OHP activities for 1993 (Appendix 8.0) and new member nominations for 1994. OHP was in the process of revising its White Paper and would have a draft ready by February 1994. Prior to the fall OHP meeting, a planning meeting for NAAG II was held. NAAG II continued to be the high priority for OHP was ranked number one by OHP in both the global and FY95 Prospectus rankings. Raymo outlined the upcoming proposals of high thematic interest for OHP. Raymo reported that proponents of Caribbean proposals with OHP objectives had been encouraged by OHP to combine their proposals and to a submit a revision. PCOM encouraged the panels in their proactive approach to developing the Caribbean proposals.

Raymo outlined the OHP requests to PCOM (Appendix 8.1) and stressed the importance of improving information handling capabilities, funding a micropaleontology data base program for the ship, supporting CLIP for Leg 154, and finalizing the shallow water drilling guidelines. OHP also requested that PCOM provide further guidance on less-than-a-leg-science proposals and endorse establishment of a liaison from BRG to attend one OHP meeting per year and to appoint a person with OHP interests to SSP.

Lunch break ..... *12:36 - 1:30 pm*

5. LITHP

Bloomer reviewed the LITHP activities for 1993 (Appendix 9.0). He outlined LITHP's global rankings for 1993 and indicated that LITHP had reevaluated the LIPS proposals, the Caribbean programs were maturing to a higher level of LITHP interest. Bloomer explained LITHP's thematic strategies for oceanic lithosphere, intraplate/LIP problems, and convergent margins. Bloomer noted that the interdisciplinary VICAP proposal had been reconsidered and did address objectives of interest to LITHP. Thematic objectives in young ocean cruse thematic objective still remained, LITHP was still very interested in young ocean crust but, lacking DCS and adequate proposals, had not been able to address it.

Bloomer outlined several items of concern for LITHP (Appendix 9.1). LITHP strongly endorsed the DCS development and was distressed by the slow progress toward its implementation. LITHP realized the ODP-TAMU engineers were trying to develop a complex tool with limited resources and strongly endorsed having TEDCOM help the ODP-TAMU engineers more directly. LITHP also supported the BHTV development because it was the best way to estimate stress directions in the lithosphere, something essential to LITHP and TECP objectives. LITHP identified interdisciplinary proposals as problematical for review because often several panels were interested but there was not a clear sponsorship by a single panel to develop the proposal to maturity. LITHP also wanted logging programs to be integrated as part of the science package so that it can be included in the proposal review process and evaluated by the panels.

LITHP requested from PCOM a clear direction on what type of document the revised LITHP White Paper should be. LITHP was planning to use it to generate proposals from the LITHP community. Bloomer stressed the revised LITHP White Paper would not be a document for a general audience. If PCOM wanted a general renewal document, PCOM should think about requesting two different products from the panels. LITHP requested that they be given permission to convene a half-day workshop at the spring LITHP meeting for a subcommittee of LITHP to meet with the Caribbean proponents to develop LITHP objectives in their proposals and to prepare a revised proposal for the July 1st deadline. Bloomer concluded with LITHP's membership requirements and nominations for 1994.

6. SSP

Kastens reviewed the SSP activities for 1993 (Appendices 10.0 - 10.2). Kastens explained why SSP now met three times a year, she outlined the annual cycle of information flow into and out of SSP and how the products of each SSP meeting fit into the annual JOIDES planning cycle. Kastens pointed out that this was the first year that the new system had actually been completely implemented. SSP had concluded that the system was successful and would result in better preparation of site survey data packages.

Kastens outlined the issues that SSP had considered during 1993 (Appendix 10.3). SSP was pleased with the PCOM response to ASRC's recommendations concerning SSP. SSP had concluded, based on Leg 150 experiences, that manmade hazards to drilling need to be evaluated by proponents in areas where they are likely. Concerning the shallow water drilling guidelines, SSP recommended a two-part implementation process for proposals that are identified as requiring a shallow water gas hazards survey: (1) the proposal must be very highly-ranked and have a complete site survey data package, so that (2) PCOM could commit to drilling the

program two years ahead—instead of one—so that there is sufficient time to contract for and carry out adequate hazard surveys. SSP also recommended that the guidelines be set up so that academic investigators weren't excluded from doing the surveys. SSP was concerned that funding sources for hazard surveys needed to be identified in national funding structures or else ODP would need to consider funding them as operational expenses.

SSP approved *Site Survey Guidelines for Tectonic Windows into Oceanic Crust* in November (Appendix 10.4). Kastens stressed that SSP was concerned that many legs with bare rock drilling sites did not go to sea with backup sites prepared ahead of time—a standard that sedimented legs were held to. To improve the situation in the future SSP recommended that PCOM and ODP-TAMU require that all legs, including barerock and offset drilling legs, plan appropriate contingency site(s) for drilling in the event of technical failure or other unforeseen problems, and deposit supporting data for those site(s) in the ODP Data Bank (Appendix 10.5).

7. IHP

Patricia Fryer, IHP Chair, was not able to attend the meeting to present the IHP report. Sager, PCOM liaison, reviewed some of the IHP activities for 1993 and noted the recommended IHP software priorities. Sager explained that IHP was frustrated that their recommendations to PCOM were not being acted on and he had some suggestions for how to deal with some of the issues IHP was concerned about, but he preferred to discuss them later in the meeting when the specific items were being addressed.

8. SMP

Kate Moran, SMP Chair, was not able to attend the meeting to present the SMP report, she provided a written report for distribution (Appendices 11.0 - 11.2). Fox, PCOM liaison, reported that SMP was frustrated and did not think that their recommendations were being acted on. He cited the micropaleontology software as an example of something that SMP had prioritized since 1990, yet there were no results from ODP-TAMU. SMP was now recommending continued development of the *Rawhide* package.

Baldauf addressed SMP's concerns about the paleontology program development by explaining the present paleontology program that ODP used (Appendix 11.3). Baldauf described the evolution of the paleontology program on the *JOIDES Resolution* (Appendix 11.4), the present *Rawhide* program was developed by ODP-TAMU during 1992-1993. A beta version would go out to sea for testing soon on Leg 154 (Appendix 11.5). Baldauf did not think that SMP's numbers on the cost of paleontology software development were accurate. Raymo asked if this *Rawhide* package would be compatible with the CLIP? Goldberg thought it would be.

Fox returned to the SMP Report and reiterated SMP's concern about the computing upgrade. SMP had recommended that PCOM prioritize the upgrade to the top of developmental engineering list. Another issue SMP wanted addressed was the need for an increase in the technical staff on the drillship, SMP did not want to see the current staffing numbers diminished. In addition, SMP recommended that the management of the technical staff be moved to the *Science Operations department* of ODP-TAMU. Francis stressed that ODP-TAMU did not accept SMP's criticism as valid and disagreed with this recommendation, he thought that SMP was misinformed about how ODP-TAMU was managed. Francis reminded PCOM that the consistent message that ODP-TAMU got from the scientific parties was that the quality of the technical support was good.

Dick objected to the wording of the SMP report in reference to hard rock petrology software requirements. He thought that SMP's comments reflected a profound lack of appreciation for the software requirements on petrology legs. He suggested that PCOM add a hard-rock geologist to the panel to educate them on the problems shipboard petrologists face.

9. DMP

Lysne reviewed the DMP membership, highlights and activities for 1993 (Appendices 12.0 - 12.1). DMP recognized that there were difficulties in communicating the status and usefulness of downhole measurements to the ODP community (Appendix 12.2). To combat this, DMP emphasized the role of liaisons at meetings, introduced a watchdog system, created an e-mail drop address, and started to create constructive brochures on logging technology. In addition, BRG would be providing logging schools and liaisons to thematic panels.

Lysne explained that DMP would need to become more efficient in view of its new two-meeting-per-year format (Appendix 12.3). This year DMP had reviewed the BRG's logging activities and concentrated attention on approved legs that presented downhole measurement challenges and/or had technology development requirements. After reviewing the past downhole measurement programs at accretionary prisms, DMP concluded that such programs had been disastrous and/or expensive (Appendix 12.4). DMP concluded that for logging at Barbados (Leg 156) it might be more cost-effective to employ a LWD program.

DMP had also reviewed the planned logging operations for the upcoming TAG leg (Leg 158) and concluded that *drilling* at TAG may induce a down flow in the hole, this would preclude *valid borehole* fluid sampling but would allow standard logging tools to be run (Appendix 12.5). If the holes were hot the use of the Schlumberger high-temperature tools would be required, and the use of ODP prototype tools would be restricted. DMP recommended that ODP investigate the possibility of deploying a high-temperature memory tools as a contingency item, the tool could be purchased for about $ 50 K and find use in legs other than TAG. In order to help PCOM prioritize these operations, DMP recommended that LWD be progressed for Barbados and a memory tool be purchased for TAG. However, if there was a financial conflict, DMP recommended that LWD be given higher priority than TAG tools (Appendix 12.6).

DMP recommended to PCOM that the enforcement of the third-party tool guidelines was absolutely necessary if investigators were to have confidence in data taken by third-party tools (Appendix 12.7). DMP acknowledged that the guidelines were expensive to implement but stressed that the cost of failure was deducted from good science. DMP recognized that the quality controls given in the *Guide to Third Party Tools* were the planks of bridges to other programs with testing facilities for such tools, the guidelines could lead to fruitful interactions with other programs.

Lysne noted that the magnetic susceptibility logging tool was now on the ship, DMP viewed this tool as an important component of core-log integration efforts. Taylor asked if DMP thought that the magnetic susceptibility logging tool was a routine tool or a special use tool since it was included in the FY95 Logging Prospectus for many of the programs? Lysne indicated that DMP did not know the extent to which this tool would become a routinely used tool and would have to get back to PCOM on this question. Lysne noted that it was on board the ship at no cost to the program, but to use the tool would cost ship's time. Goldberg explained that the magnetic susceptibility tool would be provided at no cost by Schlumberger for one year after it becomes available, BRG hoped this would be Leg 154. Therefore, BRG had included it in the prospectus as much as possible so that it would get used in that time frame and an evaluation of the tools effectiveness could be made.

Coffee break ..... *3:15 - 3:30 pm*

10. TEDCOM

Sparks reviewed TEDCOM's activities and membership changes for 1993 and reported that TEDCOM had been very successful at becoming more proactive (Appendix 13.0). At TEDCOM's meeting in March at ODP-TAMU, several members of TEDCOM participated in the Shallow Water Drilling Working Group and others submitted written material. One of the disappointments at the March meeting was the fact that TEDCOM was not allowed to participate

in the assessment of the responses the deep-drilling RFQ because of ODP-TAMU's judgment that there was a conflict of interest situation with TEDCOM members Zinkgraf and Sparks being involved in responses to the RFQ. As a result, TEDCOM could not report on the RFQ in time for PCOM's April meeting. For half-a-day of the March meeting TEDCOM met with the ASRC in a joint session—half an open session, half a closed session. TEDCOM also reviewed progress on DCS as well as on retractable tricone and diamond bits. The result of the March meeting was a list of 17 recommendations to PCOM, unfortunately not all of the recommendations were presented at PCOM's April meeting.

At the September TEDCOM meeting in Reykjavik, TEDCOM addressed DCS development and operational tool development—VPC and PPCS. Sparks reported that TEDCOM held a closed session to discuss what TEDCOM was really trying to do for ODP, the session included representatives of ODP-TAMU, PCOM and the ASRC—Dieter Eickelberg was an ASRC member who was now on TEDCOM. The result of the meeting were 14 recommendations to PCOM.

In 1993, TEDCOM had prioritized DCS and deep drilling in response to PCOM's April 1992 engineering priorities (Appendix 13.1). Sparks reviewed TEDCOM's March 1993 recommendations concerning deep drilling, DCS development in general, DCS sea testing, DCS retractable tricone bits and DCS retractable diamond bits (Appendix 13.2). At their September 1993 meeting, TEDCOM responded to PCOM's August 1993 motion on deep drilling (Appendix 13.3) by planning to hold a deep drilling working group at their February 1994 meeting to study the most highly ranked deep hole in the FY95 Prospectus (Appendix 13.4).

In August TEDCOM was asked by PCOM to review the status of operational tools and, in September, TEDCOM requested that ODP-TAMU produce spreadsheets with all the necessary information for TEDCOM to review. However, these spreadsheets had not been produced yet because ODP-TAMU had wanted authorization from JOI to do this and had requested Sparks write to JOI to request that JOI make the request to ODP-TAMU to produce this information. The communication delayed the go-ahead being given to ODP-TAMU engineers to produce this documentation until November 16th, therefore the material was not be available for PCOM's annual meeting.

Sparks was disappointed by the PCOM's responses to TEDCOM's September 1993 recommendations. After receiving the PCOM subcommittee's comments on the TEDCOM recommendations, Sparks had forwarded them to other TEDCOM members and concluded that the comments indicated that PCOM completely misunderstood what TEDCOM was trying to do, Many members were upset by the comments (Appendix 13.5), to the point that several wanted to resign and Sparks had to urge them to wait until after the December PCOM meeting so that the misunderstandings could be cleared up. Sparks discussed some of the comments that TEDCOM thought were inappropriate and he explained what TEDCOM's intentions were in making their September recommendations.

Sparks explained that one of the PCOM subcommittee's comments suggested that TEDCOM was trying to micromanage ODP-TAMU and their subcontractors—this was a misunderstanding. Sparks noted that the subcommittee's comments also contained a challenge that stated if TEDCOM was not happy with ODP-TAMU they should say so. Sparks thought that this was a very delicate point because TEDCOM did not want to criticize the ODP-TAMU engineers, TEDCOM wanted to give them a lot of credit for the work that they did. However, TEDCOM was not happy with the management at ODP-TAMU. Francis responded that ODP-TAMU was not happy with the way that TEDCOM was working. Sparks gave as an example the land test delays for the DCS, the culprit was a subcontractor named Paul Munroe who had given the excuse that they are taken up with more important projects as their reason for being seven months late. Sparks stressed that ODP-TAMU was responsible for managing this subcontractor and this problem needed to be looked at. Because of this situation, TEDCOM felt they were justified in strongly supporting the ASRC recommendation for a complete outside review of how technology development was managed for ODP by ODP-TAMU. TEDCOM thought that the review should include an examination of the interactions between ODP-TAMU, TEDCOM and PCOM. Sparks

thought that such a review would find that ODP-TAMU was grossly undermanned for the type of work that they were trying to do.

TEDCOM understood that an understaffed engineering department could not have all the expertise required for complicated developments like DCS; TEDCOM wanted to offer expertise that ODP-TAMU did not have, TEDCOM had industry people experienced with complicated engineering developments that wanted to help. However, despite good reasons for having the review, PCOM had passed a motion in August that recommended against the ASRC's proposed engineering review—even though ODP-TAMU was in favor of it (Appendix 13.6).

In the same motion, Sparks pointed out that PCOM had also recommended that more academic members be appointed to TEDCOM. Sparks did not think that this would have been endorsed by any ODP-TAMU engineers or TEDCOM members if they had been present because, in the past, academic members had been problematical. As for PCOM's recommendation that the next Chair be appointed, Sparks reminded PCOM that he had been unanimously reelected 18 months ago by TEDCOM. Sparks reviewed the membership of TEDCOM (Appendix 13.7) and stressed that there was an outstanding range of experience and expertise that existed within the panel. He did not think that PCOM should replace any of the current members. Sparks suggested that PCOM add alternates to the existing membership, possibly from academia, so that there would be access to more people at no extra cost.

11. PPSP

Ball was glad to report that there had been no safety problems through Leg 156. PPSP would meet again in March, only a few months ahead of the ship for Legs 157 - 158, and this was not the timetable that PPSP liked to work under, a two-year scheduling cycle was preferable. The safety pre-reviews done in 1993 had been useful for the Bahamas transect, Gas Hydrates, EAT and Alboran programs. This was a partial solution, but PPSP wanted PCOM to schedule programs two years in advance. Ball stressed that backup legs were very difficult to handle, as in the case of Leg 157, because they had very short lead times for safety review and tended to come up rather unexpectedly.

Taylor wanted PCOM to address PPSP's request for a two-year scheduling cycle because he did not think this was possible. Ball disagreed and thought that this type of scheduling could be possible. Austin stressed that the one-year budget cycles prohibited two-year planning. Taylor noted that there was also the science planning process to consider and that having programs ready for drilling two years ahead was unrealistic. Dick thought it would make PCOM more proactive to put up a tentative schedule for a second year, realizing some would not make final scheduling due to site survey deficiencies; having a tentative two-year schedule would also assist in budget planning.

Lewis proposed, as an alternative, that PCOM not put a proposal in the prospectus until the safety preview was complete. Ball felt that it was a step in the right direction and would not replace having more time. Kudrass asked why it required an extra year to consider safety problems. Ball said it was because if a leg is scheduled but some sites get denied because of safety there may not be enough sites to constitute a leg, this then becomes a very difficult problem for ODP to deal with on a short time schedule. Kudrass asked if more alternate sites would help resolve this problem. Ball agreed that this would help solve the problem.

Item 1021. Safety and Sea Level Studies Status of Shallow Water Drilling

1. Leg 150 Report — New Jersey Sea Level

Mountain outlined three strategies for approaching sea level studies: (1) atolls, guyots and platforms, (2) marine δO^{18}, and (3) passive margins. Mountain reviewed the sequence stratigraphic model for passive margin sedimentation and explained how a eustatic sea level signal could be extracted from this model. Leg 150 was designed to test the sequence

stratigraphic model and investigate changing eustatic sea level in the Neogene "Icehouse" interval off the New Jersey margin.

Mountain reviewed the concerns about shallow gas that were identified in the planning of Leg 150 and eliminated proposed sites 4 - 9a. Mountain explained that the scientific strategy for the New Jersey Mid-Atlantic transect (Appendices 14.0 - 14.5) had four objectives: (1) to date the unconformities, (2) to correlate unconformities with the O^{18}, record of the deep sea—a proxy signal for ice volume in the Neogene, (3) assess the amplitudes of the relative changes of sea level, and (4) evaluate if the sedimentary responses observed off New Jersey were due to glacial eustatic forcing—based on comparisons with other margins.

Another important part of the New Jersey Mid-Atlantic transect was the associated land-based drilling program, Leg 150X (Appendix 14.6), that cored sediments from sites along the New Jersey shore using funds from the ODP and the Continental Drilling Program of NSF, the NJGS and USGS also supported this effort. Cores from these sites would be critical to obtaining data on the shallow water portion of the transect, the cores would be archived in the same manner as ODP cores at the ECR at Lamont.

The highlights of Leg 150 results were summarized (Appendix 14.0), five sites were drilled—four on the slope, one on the rise. The Pleistocene provided one of the great surprises of the leg based on the fact that densities showed a correlation to the SPECMAP time scale. There appeared to be a relationship that suggested that during a glacial period there was a corresponding density increase in the sediments, the glacial periods also corresponded with the occurrence of 3-4 m thick slumps.

Logging took up a large part of operations on Leg 150; of the 39 operational days, 28 were devoted to coring with 11 given to logging. Hole conditions for logging were poor at 903 because the sidewall-entry sub (SES) was not used, after this site the SES was used exclusively. Mountain urged that this be considered the baseline type of logging operation and recommended that operations on a margin with similar types of sediments always use the SES.

Mountain outlined the reasons that more drilling on the New Jersey shelf was necessary (Appendix 14.7). Additional shelf drilling would make it possible to: (a) determine the stratigraphic record of base level changes, (b) determine the amplitudes and possible mechanisms of sea level change, (c) correlate the onshore wells with the slope and rise sites, and (d) make a meaningful link to the carbonate records on the Bahamas/Florida margin. The shelf is the area most impacted by sea level change and for the transect strategy to work it was essential to be able to complete the transect across the shelf.

An important result of Leg 150 drilling was the discovery that: (a) the Pleistocene sediments on the slope could be traced to excellent clinoform geometries on the outer shelf, (b) density or density proxies could provide ties to the SPECMAP time scale, and (c) sea level amplitudes could be calibrated to unequivocal glacioeustatic signals (Appendix 14.8). Mountain added that he had contacted the John E. Chance contractors about providing a high-resolution seismic hazard survey of the New Jersey shelf sites 4-9a that would meet the Shallow Water Drilling Working Group's requirements. The estimated cost was $ 252,000 for acquisition of the necessary data, not including sidescan data or processing of data.

To conclude, Mountain outlined the Leg 150 Co-Chiefs' recommendations to JOIDES for pursuing the completion of the New Jersey Mid-Atlantic transect (Appendix 14.9). The most important item was the necessity for JOIDES to evaluate the options and provide answers for the future of shallow water drilling. Apart from the need for shallow water hazards surveys, scientists need to know what the boundary conditions for operations on the shallow shelf, questions such as: is the *Resolution* capable, does it need to have a mini-riser system, or is an alternate platform the preferred way for shallow water targets to be drilled?

2. Shallow Water Drilling Working Group Report

Ball reviewed the history of the Shallow Water Drilling Working Group (SWDWG). He emphasized that the working group's goal was to consolidate information on all of the existing technology for shallow water hazard studies. The SWDWG had been very successful in doing this in combination with contributions from ODP-TAMU, TEDCOM and PPSP. The substance of the report had been approved by PPSP and was being presented to PCOM for final approval. However, Ball explained that there still remained the important issue of who would pay for these surveys—PPSP could not address this.

Lewis agreed that this issue was important and added that PCOM should also consider the question of who ultimately would be responsible for the quality control on these surveys. Lewis suggested SSP recommend someone to ODP-TAMU who would do the quality control on the ship while the data was being acquired or, alternatively, someone could be chosen by ODP-TAMU. Kastens stated that SSP preferred that ODP-TAMU supervise the quality control. As far as funding was concerned, Lewis thought that there were two options for ODP to consider : (1) using commingled funds to pay for the surveys, or (2) use funds secured by proponents from national funding agencies.

PCOM discussed whether or not a proponent could be convinced to write a proposal to get money to do surveys for data that would not be under their control and would not benefit the scientific objectives of their program. Austin thought it was unrealistic to ask proponents to do this. Mutter was skeptical that funding agencies would put money into surveys that were done for hazards and not of direct benefit to the science. Larsen did not want ODP to categorically commit to funding all hazard surveys because it would cut into ODP's already-tight budgets and would cut off all attempts by proponents to get other money. PCOM agreed the approximate cost of acquisition, processing and interpretation of a typical hazard survey would be on the order of $ 500 K total.

Francis pointed out that if ODP decided to fund these surveys it would require scheduling the leg at least two years ahead. Dick thought that this kind of problem required a longer term scheduling outlook and that could be beneficial for both science and budget planning. Taylor thought that PCOM did not need to say explicitly that a program was on the schedule to say that it needed a hazard survey, a commitment to a program to do the hazard survey was enough—particularly if the survey showed that the sites could not be drilled.

Lewis pointed out that for all sites proposed to ODP the proponents were required to provide site survey data to justify drilling and meet specific site survey criteria, he thought that it should be the proponents job to get the hazard surveys done. Kastens cautioned that the requirements were already very steep for proponents of continental margin drilling proposals, ODP should not ask more of proponents when there was no guarantee that the proponent would receive any direct benefits for the extra work—benefits such as being a Co-Chief or even sailing on the leg. Lewis stressed that the scientific value of the data from the surveys would justify the extra work. Mutter disagreed because of the low potential for scientific return from a hazards mitigation study.

Malfait pointed out that, in the past, when it came to issues of safety of the vessel ODP had taken responsibility for meeting the safety requirements. He did not see any way to accomplish the necessary hazard surveys outside the program because ODP-TAMU and SEDCO had to be involved due to the liabilities of the situation. After discussion, PCOM agreed that funds for hazard surveys would have to be provided from commingled ODP funds.

Lewis returned to the issue of quality control, noting that SSP had declined to be involved in supervising this for hazard surveys. Francis indicated that the ODP-TAMU had to be involved in the quality control process because ultimately safety was the operator's *responsibility*. PCOM agreed that the ODP-TAMU would be in charge of supervising quality control for the hazard surveys.

Lewis requested that PCOM adopt the Shallow Water Working Group's report, subject to inclusion of wording to reflect PCOM's consensuses on funding and quality control. Austin questioned the wording of the requirement that survey data must be interpreted by non-drilling proponents. He did not like the statement that proponents could not be involved. Ball stressed that it was only the hazard interpretation that the statement referred to and the wording would be changed in Recommendation 5 to reflect this.

PCOM Motion - Shallow Water Drilling Working Group Report

PCOM approves the Shallow Water Drilling Working Group Report, subject to minor editorial revisions and the addition of wording that states that funding will be from ODP commingled funds and that ODP-TAMU will be responsible for contracts and quality control. PCOM thanks and disbands the Shallow Water Drilling Working Group.

Fox moved, Dick seconded vote: 15 in favor, 1 abstention

Taylor asked to discuss when the implementation of a hazard survey would occur, specifically in reference to the New Jersey Mid-Atlantic Transect program, a program that had already been scheduled once? Lewis felt that since PCOM had decided to use ODP funds to pay for hazard surveys there needed to be some thought put into implementation of this policy, there were many issues raised. After discussion, Lewis agreed to prepare a position paper on the implementation of the Shallow Water Drilling Working Group Report to presentation and discussion at the April PCOM meeting.

JOIDES Office Action - Shallow Water Drilling Working Group Report

The JOIDES Office will prepare a policy paper for presentation in April 1994 on PCOM's implementation of the hazard surveys recommended by the Shallow Water Drilling Working Group Report.

end of day 1 ..... *5:30 pm*

Thursday, December 2, 1993 **9:00 am**

Item 1022. Conversations with the New JOI President

Lewis introduced Admiral James Watkins and Steve May from JOI. Lewis asked Watkins to give a presentation on JOI's new directions and answer questions from PCOM afterwards. Watkins began by reviewing the mandate for change that he had received from the JOI Board of Governors (JOIBOG) when he accepted the presidency of JOI. JOIBOG and Watkins agreed that JOI should be able to take advantage of the US National Academy's report *Oceanography in the Next Decade: Building New Partnerships*, as well as the major strategic objectives being articulated by the US Congress—such as strategic research vs. generic research, global change, economic competitiveness, national security and coastal hazards—to develop a national strategic objective for ocean sciences that was well coupled with the international community. Watkins cited the US participation in the Rio convention as evidence that the US was very interested in cooperating internationally to solve important global environmental problems. JOI's goal was to improve the recognition of the ocean sciences as a key contributor to these national and international efforts.

Watkins explained why he took the JOI presidency and stressed that it was because the JOIBOG was committed to taking JOI in a new direction, one that would increase the stature of the ocean science community. When he was a member of the Committee on Earth and Environmental Sciences in the White House, Watkins had been concerned that the ocean science community did

not have the voice that it needed within the national decision-making and planning processes. Watkins hoped to lead JOI's effort to elevate the effectiveness of the ocean sciences in securing funding for basic research. He noted that, in the near future, a major funding issue would be the identification of ocean sciences, and ODP in particular, as strategic research programs for NSF. Fortunately, ODP was in a good position to take advantage of the strategic global research initiatives because the ocean and earth sciences would be critical to the future of the global change debate.

Currently, JOI was moving toward building partnerships with the Council on Ocean Affairs (COA), University Corporation on Atmospheric Research (UCAR), and additional ocean science institutions. JOI was also drafting a proposal to NSF to develop an outreach and education program to educate other scientists and the public about ocean sciences. For ODP, JOI was working on identifying new international partners to expand the membership of the program. Watkins explained that the participation of a Latin American country was a high priority, as was bringing the Russians back into ODP. He stressed that he was dedicated to these new initiatives and intended to work to support and promote ODP—JOI's most important program.

Fox asked what techniques Watkins envisioned using to build these partnerships and focus the resources more effectively. Watkins answered that at present JOI was working with the US Navy and NOAA on partnerships that would benefit basic research in ocean sciences. Watkins thought that within six months there would be at least a skeletal structure of bilateral agreements between JOI and several agencies, he explained that these types of partnerships were now possible because of the tight budgets in overall science funding. JOI was trying to do what the National Academy had told it to do when they challenged the academic institutions to support national programs and build partnerships with national agencies. JOI was working to build relationships with national agencies as well as with other academic institutions to gain the trust that JOI must have in order to represent the broader ocean science community. JOI wanted to bring other institutions into the process so that JOI was not seen as just self-interested. Watkins stressed that the had built these types of interagency partnerships before and he was confident that it could be done in the ocean sciences, JOI was committed to this.

Mutter asked if it was wise for JOI to try to undertake such strategic planning in the absence of a coherent US science policy and he wondered if JOI should work to help formulate a policy for ocean science rather than react to the de facto policy articulated by Senator Mikulski and others in Congress? Watkins did not think it could be the first order of business because the reality was that the US President and Congress had agreed to take a new approach to science and technology, the focus had been put on applied research. In order to impact science policy, JOI must deal with this reality and try to package internationally important research programs, build partnerships and demonstrate that the ocean science community was united. Then the ocean science community would be in a position to define the ground rules for strategic research and could define it in such a way that it enhanced basic research.

Moores asked how non-JOI institutions would be included in the decision-making process? Watkins agreed that this was an important part of JOI's new direction and explained that JOI was working on developing an interactive relationship with COA—an organization that represents all 50 national institutions that deal with science in the ocean.

Item 1023. DPG Status Reports-- NARM and NAAG After One Leg of Drilling

1. NARM-DPG

NARM Volcanic Drilling –Leg 152 Report

Larsen related some of the weather conditions that had been encountered on Leg 152 off East Greenland in October and November. He illustrated with color slides of the East Greenland margin that there was only a narrow zone between the undeformed Greenland craton and the volcanic/deformation zone. Larsen explained that on the Greenland margin there was a large

amount of volcanism during breakup and on seismic lines the seaward-dipping reflectors were interpreted to be volcanic flows formed in a subaerial environment, probably close to sea level (Appendix 15.0).

Larsen outlined proposed model for the development of the seaward-dipping reflector series off East Greenland that were drilled on Leg 152 (Appendix 15.1); the question the leg tried to begin answer was why some of continental margins form with excessive volcanics and others do not? Larsen reviewed two tectonic models for the genesis of volcanic rifted margins (Appendix 15.2). One model required a mantle plume to pool under a continental block causing volcanism and extension, thus initiating rifting. The alternative model called for the existence of a thermal anomaly above a mantle plume to cause volcanism when rifting initiated extension in the overlying plate. The drilling on Leg 152 was designed to try to distinguish between these models. Larsen suggested that there was also a third model, enhanced mantle convention during early stages of continental rifting, that could be considered.

Larsen explained that one of the reasons that the North Atlantic margins were chosen by the NARM-DPG as the best places to begin to study volcanic rifted margin formation was that there was still an active plume beneath Iceland. As a result, the NARM-DPG proposed several transects across the Greenland margin and the EG-63 transect had been scheduled as the first of a multi-leg effort by ODP to drill a volcanic rifted margin (Appendix 15.3). Larsen described the location and penetration depths of the five sites on the Leg 152 transect (Appendix 15.4). He reported that the leg was very successful and that they had been able to penetrate more section than they had planned.

Larsen described the structure and stratigraphy of the EG-63 transect (Appendices 15.5 - 15.7). Using an offset drilling strategy the leg was able to penetrate basement and into the dipping reflectors (Appendix 15.8). Larsen reported that interesting observations were also made in the glacial sediments that were drilled. Highly consolidated sediment was encountered in the near-surface glacial deposits (Appendices 15.9 - 15.10), the overconsolidated sediment was very difficult to drill. The age of the glacial sediments suggested that the glaciation started in SE Greenland about 7 Ma and not at 3 Ma as in Iceland.

Larsen reviewed the penetration of the holes on the EG-63 transect relative to the structure on the margin (Appendix 15.11). The most landward site penetrated the breakup unconformity and drilled into steeply-dipping Paleocene sediments of distal turbidite lithology. The pre/syn rift section was rotated to nearly vertical and had contact metamorphic effects and no penetrative fabric. The geochemistry of the turbidites suggested a basaltic origin but there were no conclusions on provenance yet.

Larsen presented the revised model for the evolution of the Greenland margin from the Paleocene to the Early Eocene (Appendix 15.12) based on the early results of Leg 152. The preliminary results showed that the volcanic sequence consisted of three different units with distinctive characteristics of lithology and geochemistry. The Site 917 volcanic stratigraphy contained a distinctive Nickel content pattern that Larsen related to the evolution of the volcanism on the margin (Appendices 15.13 - 15.15). Barium and magnesium also show differences within the three volcanic units (Appendix 15.16 - 15.17). The volcanic pile had interbedded fluvial deposits throughout its thickness and the volcanics had a lower degree of alternation than the basement below the breakup unconformity.

Larsen described the magnetic anomaly map in the area of the EG-62 transect and interpreted variable rates of spreading, early rates were 7, slowing to 5 then 3 to present rates of 1 to 3 cm/yr. (Appendix 15.18). The early rates were high and this was an important factor to consider in the model for the formation of volcanic margins (Appendix 15.19).

NARM Nonvolcanic Overview

Moores reviewed the geologic context of the NARM investigation within the overall geologic history of the earth (Appendix 16.0). Moores stressed that the North Atlantic was still considered to be the best place for ODP to study rifted margins because of ODP's investment in the NARM

program, the availability of site survey data, accessibility, and the continuing development of proposals to test the rifting models for the region (Appendices 16.1 - 16.3). Moores pointed out that the North Atlantic had a complicated history of rifting and collision prior to the opening of the Atlantic and this had to be taken into consideration (Appendix 16.4). He used the NARM Newfoundland cross-section and compared it to the Lister et. al. simple shear model for asymmetric rifting event (Appendix 16.5).

Moores summarized the conclusions that could be drawn from the drilling results of the NARM program to-date (Appendix 16.6) and outlined TECP's recommended drilling strategy for the continuation of the NARM program (Appendix 16.7). Moores reviewed Iberian results to date and the simple model that had been proposed subsequent to Leg 149 (Appendices 16.8 - 16.9) and presented the TECP subcommittee report on the future of Iberian drilling. He explained that the Leg 149 results had led TECP to propose to PCOM that the next course of action, one that could be considered for FY95, was to finish the Iberian margin transect before moving to the Newfoundland side (Appendices 16.10 -16.11).

NARM Volcanic Overview

Bloomer reviewed the goals of the original NARM Volcanic transect strategy and updated PCOM on the status of the program after Leg 152 (Appendices 17.0 - 17.2). He outlined the NARM transect strategy that included the East Greenland EG-63 and EG-66 transects and the Vøring Margin (VM) transect (Appendix 17.3 - 17. 7). Bloomer put the preliminary results of Leg 152 in the context of the EG-63 transect (Appendix 17.8). He explained that the EG-63 sites drilled on Leg 152 were located to try to identify the geochemical gradient of the plume signature. However, the preliminary results indicated that the transition was very narrow and the gradient very steep on the landward portion of the transect. Bloomer noted that the NARM-Add2 strategy was to move inward and drill in the more landward sections of the EG-63 transect rather than fill in the seaward sites as originally proposed in the NARM-DPG, this would address some of the problems of magmatic evolution and tectonic timing of intrusions identified on Leg 152 (Appendix 17.9).

Fox asked if there was necessary to drill these near-shore holes if there were on-land exposures of correlative rocks in this part of the transect? Bloomer agreed that this was a possibility and was one of the reasons that LITHP had originally recommended to PCOM to move to the Vøring transect after the EG-63 drilling.

Bloomer reviewed what he thought would be LITHP's priorities for the NARM Volcanic margin program, based on recent discussions of Leg 152 results and Vøring margin site survey deficiencies (Appendix 17.10). He suggested possibilities for packaging legs of NARM Volcanic sites (Appendix 17.11), but cautioned that LITHP had not made any specific recommendation in light of the preliminary results of Leg 152 presented by Larsen—who had come directly to PCOM from the *JOIDES Resolution* after Leg 152. Bloomer concluded that the preliminary results of Leg 152 were a spectacular success, however, if PCOM wanted to proceed with a second NARM Volcanic leg based on the Leg 152 results it would have to construct a leg from sites without the help of any specific recommendations from LITHP.

Coffee break.....*10:30 - 10:45 am*

2. NAAG-DPG

a) NAAG Drilling -- Leg 151 Report

Thiede reviewed the evolution of knowledge about the Arctic Ocean (Appendices 18.0 - 18.1). He explained the significance of gateway evolution in the North Atlantic to the Arctic environment and global climate (Appendices 18.2 - 18.3). Thiede outlined the present Arctic Ocean circulation patterns and their significance for the variability of climate of the North Atlantic (Appendix 18.4).

Thiede gave an overview of the results of previous DSDP and ODP drilling in the North Atlantic, and the objectives of the proposed sites for Leg 151 (Appendices 18.5 - 18.6). The planning for Leg 151 had included consideration of the ice map and ability of the *JOIDES Resolution* to go to the ice margin (Appendix 18.7). An icebreaker, *Fennica*, was used to protect the ship and, having the icebreaker support, Leg 151concentrated on the northernmost sites of the NAAG (Appendix 18.8).

Thiede reported on the Leg 151 operations at Sites 907 - 913 and some of the difficulties that were experienced with the ice cover. One of the great successes of the leg was that enough section was collected to describe the complete paleoceanographic evolution of the NAAG area (Appendix 18.9). Thiede noted that they had experienced difficulty drilling in the overconsolidated glacial sediments encountered at Site 913 and, in general, drilling in this type of lithology was difficult (Appendix 18.10). He recommended that ODP investigate techniques that would improve drilling success in these problematical formations.

Preliminary results from Sites 907 - 913 were reviewed (Appendices 18.11 - 31). Thiede pointed out that the variations in organic carbon between sites were large and not well understood (Appendix 18.25). Due to the organic carbon content, the methane concentrations were high at the NAAG sites (Appendix 18.26). At Site 909 the high concentration of higher organic compounds required the abandonment of drilling (Appendix 18.27), the origin of the heavier hydrocarbons was also unknown.

Thiede explained how dropstones were key to understanding the onset of glaciation in the northern hemisphere and summarized the results from the NAAG cores (Appendices 18.28 - 18.30). Thiede reported that sites consistently indicated that the onset of ice-rafted material began about 2.5 Ma, younger than observed off Greenland and the Vøring Plateau. In addition, a somewhat surprising result of this analysis was that the age of onset of ice rafting seemed to be younger in the north than in the south (Appendix 18.31). Thiede noted that it was originally supposed that the Arctic Ocean was going to be the key for determining the age of the onset of glaciation in the northern hemisphere, these results suggested that the problem would have to be solved around southern Greenland. The composition and frequency of ice-rafted material indicated that Greenland was the major supplier of ice-rafted material. Thiede concluded that the results of Leg 151 would allow a description of the dynamic evolution of the ice sheets on Greenland and the eastern continental margin of northwestern Europe; the leg had been very successful both scientifically and operationally (Appendices 18.32 - 18.33).

NAAG Status and Recommendations

Raymo reported on the NAAG-DPG follow-up meeting held prior to OHP's fall meeting (Appendix 19). *After considering the preliminary results of Leg 151, the planning group formulated a program for the second leg of NAAG drilling, combining the original NAAG-DPG Report sites with some other appropriate, highly-ranked, less-than-a-leg proposals in the high-latitude North Atlantic to accommodate a new OHP focus on sub-Milankovitch frequency climatic signals.*

Raymo reviewed the important scientific objectives of the proposed NAAG II program and how the recent scientific results from Leg 151 influenced the NAAG II strategy (Appendix 19.1) including an exciting new interest in the investigation of millennial-scale climate changes. Raymo described the recent developments in the discovery and interpretation of millennial scale climate changes and their implications (Appendices 19.2 - 19.4). She then reviewed the specific sites in the proposed NAAG II program (Appendices 19.5 - 19.6).

Raymo noted that several new sites were added to the NAAG II program that were not in the original NAAG-DPG proposal (Appendix 19.7). She reviewed the objectives of the new sites: SVAL-1, NAMD-1, FENI-1 & 2, and GARDAR-1 (Appendices 19.8 - 19.9) and concluded with a summary of the scientific and operational conclusions of OHP and the NAAG II planning group (Appendices 19.10 - 19.11).

Item 1024. Science Group Liaison Reports

1. Nansen Arctic Drilling

Brass reviewed recent scientific developments in the Arctic and noted that the NAD Science Plan contained a list of potential drill sites in the Arctic basins—these were still a high-priority for NAD. Since the plan was written, the Canadians had begun McKenzie delta drilling, the Chukchi plateau was cored by a USCG icebreaker, and both of ODP's Legs 151 and 152 were successful. Brass stressed that the question of how to drill deep objectives in the high Arctic still remained, Leg 151 had shown that the *JOIDES Resolution* was operationally limited to 81°N. Brass reported on a NAD feasibility study of drilling in the Arctic that had recommended that the best way to drill was to use an icebreaker to tow an ice-strengthened barge with a drill rig on it to a site and then use the ship to hold the barge in place while drilling a deep hole.

Recognizing the 1998 would be a critical year for ODP, NAD wanted ODP to endorse an NAD's plan for a preliminary design study of an ice-strengthened drilling barge. The design study was a critical first step toward building a platform to be ready for the 1998-2000 time frame. NAD was asking for the endorsement of ODP because they wanted the vessel considered as a potential alternate platform in 1998. Brass estimated that such a study would cost NAD between $ 40 - 50 K and asked PCOM for an endorsement at this meeting. After discussion, PCOM passed the following motion:

> **PCOM Motion - NAD Design Study**
>
> PCOM heartily endorses the Nansen Arctic Drilling Program going ahead with a preliminary design study for an ice-strengthened drilling barge.

Dick moved, Berger seconded vote: 16 in favor, 0 opposed

Lunch break ..... *12:30 - 1:30 pm*

Item 1025. FY94 Program Operations

1. PCOM Service Panel Liaison Subcommittee Recommendations

Lewis reviewed activities of the PCOM Service Panel Liaison Subcommittee and presented the subcommittee's recommendations for PCOM approval (Appendix 20). PCOM agreed to discuss DCS and LWD recommendations separately.

High Temperature Tools

PCOM discussed high-temperature tools for TAG operations and DMP's Recommendation 93-4. Becker asked why it would cost more to operate the Schlumberger tools at the rated temperature range of the tools? Goldberg explained that the cost issue with Schlumberger was really more about shipping and the issue had been settled to BRG's satisfaction. Suyehiro explained that at the DMP meeting it was the Schlumberger people who had indicated that they would not run tools to their published temperature specifications. Becker confirmed that this had been his experience on Leg 139. Goldberg assured PCOM that BRG would be able to work with Schlumberger and run the tools within their entire specified temperature range.

Memory *Tool* for TAG

PCOM reviewed DMP Recommendation 93-7 regarding memory-temperature tool for TAG. Becker reported that he had investigated the possibility of borrowing the *Sandia Labs/DOE* high-temperature memory tool. Unfortunately, *DOE policies made it unlikely that ODP could* borrow or rent this tool so Becker had written a proposal in to NSF to purchase such a tool for operations on TAG.

VSP Experiment on Leg 156

PCOM discussed the DMP's lack of support for the Westbrook VSP experiment for Leg 156 based on the panel's concern about unresolved technical issues. Austin indicated that the Co-Chiefs supported the experiment and had put time in the leg schedule to do the VSP. Suyehiro explained DMP's reservations about the technical issues. Austin presented PCOM with a letter that he indicated presented new information that addressed and resolved the technical issues, he urged PCOM not to interfere with the Co-Chiefs. After discussion, PCOM adopted the following consensus statement:

PCOM Consensus - Leg 156 VSP Experiment

PCOM notes DMP's concerns about the technical issue raised for the Leg 156 VSP experiment. However, new information has been provided that indicates that the technical issues may be resolved and therefore that the decision on VSPs should be left to the Co-Chiefs.

GEOPROPS Development

PCOM discussed DMP's recommendation to terminate the GEOPROPS development because of a lack of support from the thematic panels. Bloomer clarified that LITHP, and the other thematic panels, wanted a tool that would do what the GEOPROPS was supposed to do. However, he stressed that the panels did not support this particular tool based on the negative review given by technical people on DMP qualified to make the judgment. PCOM agreed to endorse the DMP recommendation but wanted to send a message that a tool like this was important and should be developed, if possible. After discussion, PCOM adopted the following consensus statement:

PCOM Consensus - GEOPROPS Development

PCOM endorses the DMP recommendation that GEOPROPS not be supported, but in light of the fact that this type of sampling is important to the program, PCOM would like DMP to consider alternate ways of implementing measurement of the parameters that would have been measured by GEOPROPS.

LWD

Lewis presented information from the Co-Chiefs of Leg 156 asking for PCOM's support of LWD on Leg 156, the Co-Chiefs thought that LWD would greatly benefit the scientific program. All three sites on Leg 156 would have LWD programs, each LWD run would require that a separate hole be drilled to do the logging. LWD was proposed as a way to recover logs from holes that typically have bad conditions for conventional ODP logging, the dedicated holes for logging would be more likely to get good data. Austin reviewed the scientific objectives of the leg and noted that 5.5 days were planned by the Co-Chiefs for the LWD operations.

PCOM discussed the technical feasibility of the LWD at Barbados and the costs associated with it. Resistivity, *density*, neutron porosity and gamma ray logs would be obtained by LWD methods (Appendix 21.0 - 21.1). Examples of LWD data from wells in the Gulf of Mexico were reviewed (Appendices 21.1 - 21.3) and costs of the program were outlined by Goldberg (Appendices 21.4 - 21.5).

PCOM discussed where the necessary $ 195 K would come from. Francis thought that the top priority for Leg 156 was to get three CORKed holes. He added that the leg was very complicated already and he did not know if it would be wise to include more complications. Austin thought that the chances of drilling and logging three sites would be better with LWD than without it because of the inefficiency of standard logging in this environment. Taylor stressed that the porosity and permeability of the in situ strata was essential to understanding pressures and fluid movement so that obtaining this data from the logs would be critical to the objectives of the leg. PCOM agreed that, in addition to the scientific benefits, the time and safety factors also make this technique attractive for this program.

Pyle thought that LWD was a good idea for the program to pursue, he wanted to try to negotiate with Schlumberger to cut the costs. Pyle requested that PCOM prioritize LWD relative to other FY94 needs for funds that might become available in FY94 budgets, this would help JOI try to implement LWD. Lewis concluded the discussion by asking PCOM to endorse DMP's recommendation to pursue LWD subject to availability of funds. Pyle requested a prioritization list for any surplus FY94 funds. PCOM agreed that LWD needed to be considered after all the potential FY94 unbudgeted expenditures were identified, a decision on the science program for Leg 157 was also necessary before FY94 budget surplus priorities were finalized. PCOM tabled the LWD issue until after the Leg 157 discussion.

PPCS

Lewis asked Brass what the status of the PCS manifold sampling system was? Brass reported on the development of the sampling lab. He stressed that the question that still remained was whether or not samples could be successfully transferred to the sampling lab from the ODP-TAMU PCS device. He explained that a transfer system was still needed to move samples from the PCS to the sampling lab, that was not what he had developed. Lewis suggested that PCOM endorse the PANCH recommendation for Charles Paull to do a study and write up a plan of action on PCS/PPCS for the April PCOM meeting.

PCOM discussed whether or not the PPCS technology was necessary for the gas hydrates program and if ODP should pursue development of a transfer mechanism to get pressurized samples. McKenzie explained that SGPP wanted to see continued development of the PCS/PPCS tools but SGPP urged that ODP continue drilling gas hydrates even if the technology wasn't optimal. Because the development of the PPCS would require funds, PCOM tabled the issue until discussion of FY95 budget priorities.

Technical Staff

PCOM discussed the SMP recommendation to reorganize the management of the technical staff. Allan felt that there were problems in the past but he outlined recent management changes at ODP-TAMU that had helped to alleviate the problems (Appendix 22). PCOM concluded that SMP was misinformed about the management situation at ODP-TAMU and adopted the following consensus statement:

PCOM Consensus - Technical Staff

PCOM has received advice from ODP-TAMU with respect to the technical staffing of the *JOIDES Resolution*, and believes that the problems identified by the SMP may have already been rectified by the formation of laboratory groups. PCOM suggests that ODP-TAMU pursue the recommendation to use students and others to alleviate staffing problems at no additional cost to the program.

Software Priorities

PCOM reviewed the SMP/IHP software prioritization list. Baldauf requested that PCOM give the Corelog depth software a higher priority because of its global impact on the data curatorial process. After discussion, PCOM adopted the following consensus statement:

PCOM Consensus - Software Priorities

PCOM endorses the SMP software prioritization list but, on the advice of ODP-TAMU, recommends that Corelog (depth) software be given a higher priority.

Dick raised the issue of HRTHIN/HARVI. He did not mind if SMP/IHP ranked petrology software development low but he preferred that ODP-TAMU allow HARVI be used at the discretion of the Co-Chief scientist. Allan explained that there was a new replacement program, *Rocky*, for HARVI on the ship but stressed that the IHP data archiving priorities were what guided ODP-TAMU's data curation system and Co-Chief changes could not be allowed. Sager explained that IHP understood the frustrations of the scientists but that the standards were made

for the archiving of data and needed to be maintained. Mével agreed there were problems with the program but the data needed to be collected and she did not want PCOM to leave that decision up to the Co-Chiefs. After discussion, PCOM requested that IHP be tasked with evaluating the new petrology program and report back to PCOM for the April meeting.

IHP Action - New Petrology Program Evaluation: *Rocky*

PCOM requests that IHP evaluate the results of the new petrology program, *Rocky*, being tested on Leg 153 and to report to PCOM in time for the April PCOM meeting.

2. Diamond Coring System

ODP-TAMU Report on Land Test Status

Reudelhuber described how ODP-TAMU had approached solving the DCS operational problems since the failure of the last DCS sea test and outlined their plans for doing a land-based simulation test (Appendices 23.0 - 23.3). Reudelhuber explained that delays in the DCS land tests were due to subcontractor efforts being diluted by other projects and other reasons (Appendix 23.4). Unfortunately, the delay of the first subcontractor has delayed the rest of the process.

Pyle asked for a more in-depth analysis of why the DCS land test had gotten so far behind. Reudelhuber explained that ODP-TAMU had not been keeping on top of the problems with the subcontractor well enough to keep the system under control. He attributed this, in part, to a manpower shortage at ODP-TAMU as well as an underestimation of the amount of time this task would take. In addition, the expertise of the subcontractor was concentrated in a single individual and the subcontractor only notified ODP-TAMU two weeks in advance of the most critical deadlines that there were problems. Delivery dates had been missed by the subcontractor because they too had underestimated how much time it would take to do the redevelopment work.

Reudelhuber detailed the status of the land test program and technical aspects of the new heave compensation system being developed (Appendices 23.5 - 23.10). The land tests were scheduled for the end of January or early February and would last approximately 21-45 days. He explained that the DCS operation was not targeted for any particular water depth, although there was the restriction of maximum string length of 4500 m, and he then summarized the general considerations on water depth for testing (Appendix 23.11).

TEDCOM Recommendations

Sparks related that TEDCOM was extremely concerned about DCS and had reviewed it at the September 1993 TEDCOM meeting. Given the situation in September, TEDCOM could not make a recommendation on DCS because the land test had not been done. As a result, a subcommittee of TEDCOM was formed to review the results of the land tests when they were available (Appendices 24.0 - 24.1).

Sparks reviewed the other TEDCOM recommendations made at the September regarding DCS (Appendices 24.2 - 24.3). Concerning the recommendation of TEDCOM member Howard Shatto as a consultant to ODP-TAMU, Sparks defended the TEDCOM recommendation and indicated that the PCOM liaison, Austin, had endorsed this action at the TEDCOM meeting. Austin said that his endorsement of the recommendation was given at the request of the ODP-TAMU engineers and because he thought there was an emergency situation with the DCS. Sparks explained that TEDCOM now realized this recommendation was unacceptable.

Sparks reported that TEDCOM had made the recommendation to form the subcommittee to help ODP-TAMU come to grips with the Paul Munroe subcontractor problem, TEDCOM's intention was not to micromanage the subcontractor or ODP-TAMU as stated by the PCOM Service Panel Liaison subcommittee, TEDCOM only wanted to assist. Sparks reviewed the reasons behind each of the recommended responsibilities of the subcommittee, one of the main tasks was to help ODP-TAMU to define the result requirements for determining the success or failure of the land tests. Sparks noted that the subcommittee met on October 7th with ODP-TAMU and Paul Munroe. He stressed that this was an extremely successful meeting and lead to

ODP-TAMU taking action and recommending to PCOM that the sea test not occur on Leg 157 on October 11th. In addition, TEDCOM wanted the subcommittee to attend the land tests. Reudelhuber indicated that he had invited the Chair of the TEDCOM subcommittee to attend the land tests.

Sparks objected to the requirement that all recommendations from TEDCOM must be reviewed and approved by PCOM. To illustrate, he outlined the detailed technical recommendations that TEDCOM made in the executive summary of their minutes regarding DCS and Sparks asserted that PCOM did not have to be involved in reviewing these types of technical recommendations. Lewis explained that the recommendations that TEDCOM wants to see enacted within the program were required to be directed to PCOM in the proper format so that they could be acted upon, detailed technical recommendations that did not go through PCOM could be made but there was no requirement that ODP-TAMU had to follow them. After discussion, Sparks agreed to separate TEDCOM's recommendations into groups within the executive summary, one group that PCOM was to be involved with and another group that were advice-only for ODP-TAMU. Lewis acknowledged that this would streamline the process and eliminate misunderstandings in the future.

Sparks noted that, although told not to by PCOM's Service Panel Liaison subcommittee, the TEDCOM subcommittee had gone ahead and held a meeting and produced a set of milestones for evaluating the DCS land test results. TEDCOM wants to these milestones met before the next sea test of the DCS. Sparks urged PCOM not to discourage the TEDCOM subcommittee's efforts to be proactive.

Lewis asked what TEDCOM's recommendation was concerning scheduling of the next DCS sea test? Sparks thought that the DCS sea test should be put back to Leg 160 or 162 but before the decision could be made, successful land test results were necessary. Francis wanted to keep the DCS in the FY95 schedule, ODP-TAMU viewed this as an important goal for the project development. Austin thought that DCS could be put in the schedule if a staffed backup leg was prepared and ready to go in case the DCS leg was canceled. PCOM agreed that DCS should be considered for the FY95 schedule, but no sooner than Leg 160 and only with appropriate backup contingency plans.

DCS Sea Test Siting

Lewis thanked Kastens for her report on the recent site survey cruise to the Vema FZ. PCOM discussed whether or not the Vema FZ was still the preferred site for the DCS sea test now that the testing had been postponed. Taylor asked if there were other sites where this test could be done? Bloomer reported that LITHP thought that Vema was still the best site because there was good science to be done there. Taylor pointed out that the reason Vema was chosen was because of its operations area, he thought that there might be a new scenario in the FY95 schedule. After discussion, PCOM tabled this issue until after FY95 scheduling was complete.

Coffee break ..... *3:15 - 3:30 pm*

Item 1026. FY95 Science Program

1. Thematic Panel Chair Presentation of Prospectus Rankings

300-Rev Return to Site 735B

Bloomer presented a summary of the scientific objectives and drilling strategy for the Return to 735B program. Lewis reviewed the DRILLOPTS conclusions about the program (Appendix 25.0).

NARM-DPG NARM Volcanic II (East Greenland)

Bloomer presented a summary of the scientific objectives and drilling strategy for the NARM Volcanic II (East Greenland) program. LITHP's recommendation, made prior to Leg 152, was to follow the drilling strategy recommended by the NARM-DPG and proceed with the Vøring transect. Therefore, LITHP would recommend waiting because the site survey data for Vøring was not ready. He stressed that LITHP's recommendation was made without the results of Leg 152, PCOM would have to decide it wanted to package a leg based on the preliminary results of Leg 152. Austin agreed that scheduling a leg based on science that was just off the ship should be avoided, he urged PCOM to follow the original NARM-DPG recommendations. Lewis reviewed the DRILLOPTS conclusions about the program (Appendix 25.1).

SR-Rev2 Sedimented Ridges II

Bloomer presented a summary of the scientific objectives and drilling strategy for the Sedimented Ridges II program. Lewis reviewed the DRILLOPTS conclusions about the program (Appendix 25.2). Mutter asked if there was still a safety problem with H_2S ? Francis explained that this problem had been solved. Bloomer added that the need for DCS on the leg had also been resolved, the leg had been reconfigured to be a non-DCS leg. Austin suggested that ODP approach InterRidge to consider setting up a pre-drilling monitoring effort, similar to TAG efforts.

Lewis asserted that, as a single program, the location of Sedimented Ridges II was too far afield to send the ship to the Pacific, he thought that if California were ready the two would justify it but, by itself, it would be hard to justify. Austin countered that the wording of PCOM's Four Year Plan motion regarding area of operations did not preclude this option.

NAAG-DPG NAAG II

Raymo presented a summary of the scientific objectives and drilling strategy for the NAAG II program. Mix asked about potential safety problems with the SVAL-1 site? Raymo said that the whole SVAL-1 area was heavily surveyed and that, because of the large amount of data available, there would be other sites that could be identified as backups for SVAL-1.

Lewis reviewed the DRILLOPTS conclusions about the program (Appendix 25.3). Arculus asked if this was a program that would be based heavily on science that was just off the boat? Raymo agreed that this was true in part but pointed out that the NAAG II program also included sites from proposals that had been in the system and were ranked highly by OHP, independent of the Leg 151 results.

Austin asked if OHP would endorse the NAAG II program if the YERM-1 site did not get drilled? Raymo thought that OHP would rank the NAAG II program just as highly without YERM-1. Mix agreed that OHP was very excited by NAAG II sites, OHP's understanding had always been that the NAAG would get two legs and would have to take their chances with the weather.

(386/422) 386-Add California Margin

Raymo presented a summary of the scientific objectives and drilling strategy for the California Margin program. Lewis reviewed the DRILLOPTS conclusions about the program (Appendix 25.4). DRILLOPTS had concluded that the program would not be considered for FY95 drilling because of the site survey deficiencies; site surveys were planned for early 1995, so the program might be ready for FY97 scheduling. Taylor objected to PCOM linking the Sedimented Ridges II drilling to the California margin program when it was clear that the California program could not even be considered for scheduling for two more years.

423 /-Add Gas Hydrates

McKenzie presented a summary of the scientific objectives and drilling strategy for the Gas Hydrates program. She addressed the question of what objectives could be achieved without the PCS (Appendices 25.5 - 25.6) and emphasized that SGPP did not want to delay this program to

wait for the continuing development of PCS technology. Lewis reviewed the DRILLOPTS conclusions about the program (Appendix 25.7). PCOM discussed the technological requirements for doing gas hydrate studies and the status of ODP technology development in this area.

391-Rev 2 Mediterranean Sapropels

Raymo presented a summary of the scientific objectives and drilling strategy for the Mediterranean Sapropels program (Appendices 25.8 - 25.9). She explained that during the fall ranking there was an attempt by OHP to combine the half a leg of Mediterranean Sapropels with other programs but these options were no longer relevant. Lewis reviewed the DRILLOPTS conclusions about the program (Appendix 25.10).

380-Rev 3 VICAP/MAP

Bloomer presented a summary of the scientific objectives and drilling strategy for the VICAP/MAP program. He explained that the proposal was very interdisciplinary and its rise in LITHP's ranking reflected the increased enlightenment of the panel on this type of study and the responsiveness of the proponents to panel comments. Bloomer admitted that LITHP's previous criticism had been wrong and explained that LITHP now considered the VICAP/MAP area to be the best place to address the early phase of evolution of intraplate volcanism. If drilled, this would be the first time this LITHP thematic objective would have been addressed.

Lewis reviewed the DRILLOPTS conclusions about the program (Appendix 25.11). Fox asked how the lithologic components of the various islands in the complex would be separated? Bloomer indicated that this question had been addressed by the proponents in the proposal, he explained that there was an age separation between the potential sediment sources.

323-Rev 3 Alboran Sea

Robertson presented a summary of the scientific objectives and drilling strategy for the Alboran Sea program (Appendices 25.12 - 25.14). Taylor noted PPSP's prereview recommendations and clarified for PCOM that there was data available for the proponents to undertake the safety panel's recommended velocity study; the critical PPSP recommendation was that the ALB2 site be drilled and evaluated before the ALB1 site to determine if there were any hydrocarbon indicators.

PCOM debated the viability of the science without an ALB1 deep hole. Taylor stressed that the proponents should not be penalized by having a safety prereview, they were moving to address the safety concerns. Lewis reviewed the DRILLOPTS conclusions about the program (Appendix 25.15). PCOM's consensus was to do the two parts of Alboran drilling—shallow holes and deep hole—in two separate years.

NARM-DPG NARM Non-Volcanic II (Iberia)

Moores presented a summary of the scientific objectives and drilling strategy for the NARM Non-Volcanic II program. He explained that TECP proposed that the follow-up program be a continuation of the Iberian transect designed to resolve ambiguities in Leg 149 results (Appendices 25.16 - 25.17). Mutter wanted to know why the geophysical data did not predict some of the results obtained on Leg 149? Moores indicated that there would be much more site characterization planned in recognition of this problem, he thought that the reality was that the margin had very complex geology and this made interpretation very difficult. Lewis reviewed the DRILLOPTS conclusions about the program (Appendix 25.18).

346-Rev 4 E. Equatorial Atlantic Transform

Moores presented a summary of the scientific objectives and drilling strategy for the E. Equatorial Atlantic Transform program (Appendices 25.19 - 25.21). He pointed out that this program would be the first attempt by ODP to drill a transform continental margin. Austin asked if the drilling strategy would achieve the proposed scientific objectives? Robertson thought that it would and explained the drilling strategy in detail. Fox agreed that the proposal had been much improved by the proponents in response to JOIDES panel reviews. Lewis reviewed the DRILLOPTS conclusions about the program (Appendix 25.22).

330-Rev/ -Add3 Mediterranean Ridge I (shallow holes)

Robertson noted that he was one of the proponents on the Mediterranean Ridge proposal but that Lewis had requested that he present the summary of the scientific objectives and drilling strategy for the Mediterranean Ridge I (shallow holes) program (Appendices 25.23 - 25.25). Robertson explained that several sites in the program were affected by the problem of Libyan clearances but he stressed that the remaining sites were still a viable science program. Lewis reviewed the DRILLOPTS conclusions about the program (Appendix 25.26).

412 Add2 Bahamas Transect

McKenzie presented a brief summary of the scientific objectives and drilling strategy for the Bahamas Transect program. Lewis reviewed the DRILLOPTS conclusions about the program (Appendix 25.27).

2. DRILLOPTS Meeting Report

Lewis reported on the DRILLOPTS meeting and the review procedure used to evaluate each proposal. The DRILLOPTS committee had formulated several scheduling options that were presented to PCOM to consider overnight and be used for discussion in the morning.

end of day 2 ..... *7:30 pm*

Friday, December 3, 1993 **8:30 am**

3. FY95 Science Program Plan

Lewis reviewed each of the five most highly ranked proposals for each thematic panel. Based on the presentations of the thematic panel Chairs and the DRILLOPTS conclusions, PCOM decided that the following FY95 Prospectus proposals would be considered for the FY95 schedule: Return to 735B, Sedimented Ridges II, VICAP/MAP, NAAG II, Mediterranean Sapropels, Gas Hydrates, Eastern Equatorial Atlantic Transform, Mediterranean Ridge, Alboran Sea (shallow holes), and DCS. PCOM agreed to discuss these proposals in detail before making a final decision on the FY95 program. By agreement, proponents were allowed to stay in the room during discussion of their proposal but were not be allowed to participate in the discussion.

NARM Nonvolcanic II (Iberia)

PCOM discussed the TECP subcommittee's proposal for a second leg of Iberia margin drilling. Mutter did not think that the TECP proposal demonstrated that it would solve the problems raised by Leg 149 and he urged PCOM to wait for more results from Leg 149 work before continuing with Iberian drilling. Kidd wanted PCOM to commit to a second NARM Nonvolcanic leg now because of the size of the NARM program, PCOM needed to try to schedule enough legs to adequately begin to solve the NARM problems before the ship moved out of the Atlantic. Kidd asked if TECP would support drilling a second Iberia leg over going to Newfoundland if this second Iberian leg did not get drilled in FY95? Moores agreed that TECP would support finishing the Iberian transect before moving to the Newfoundland side, where a two-leg commitment would also be necessary.

At the conclusion of the discussion a straw vote was taken on whether or not to include NARM Nonvolcanic II in the FY95 schedule; the results were: 3 in favor, 8 opposed, 4 abstentions. PCOM agreed not to put the second NARM Nonvolcanic leg on the FY95 schedule. PCOM supported the NARM Nonvolcanic program but wanted to see more integration of the results of Leg 149 into the proposal for the next Iberian drilling leg. PCOM wanted the NARM Nonvolcanic proponents to know that there was still interest in this program and encouraged them to formulate a revised program. PCOM thanked the TECP subcommittee for the work that they did to develop a plan for the NARM Nonvolcanic II leg in time for the PCOM meeting.

After discussion, PCOM adopted the following consensus statement on NARM Nonvolcanic drilling:

PCOM Consensus - NARM Nonvolcanic II (Iberia)

Results from drilling on Leg 149 recovered a suite of the most unusual and unexpected rock types yet to have been found in a passive margin setting. Far from allowing the continent-ocean boundary to be defined (the purpose of the leg) they have posed fundamental new questions about the nature of that boundary. Beyond that, they imply a profound orthogonality between inferences based on geophysical studies, predictions of models derived from those studies, and the actual results of the drilling - no current model for formation of passive margins adequately predicts the occurrence of rock types found in the drilling. The immediate continuation of drilling proposed by the TECP subcommittee, while likely providing a further documentation of the distribution of rock types on the Iberia margin, would not adequately address the problems raised by the results of Leg 149.

The PCOM therefore urges the proponents to thoroughly evaluate the impact that the Leg 149 drilling results imply for models of passive margin formation, especially the relationship of the geological evidence to that presented by geophysical studies, and develop a new proposal that will address these fundamental problems. We hope to see a new proposal for consideration by PCOM for scheduling in FY96.

Mediterranean Programs

PCOM discussed the three Mediterranean programs, noting that each was approximately two-thirds of a leg. Kidd advocated that the Mediterranean Sapropels and Mediterranean Ridge programs should not be combined into a single leg. He explained that the Mediterranean Sapropels program could not be cut without significant damage to the science. Larsen agreed that the Mediterranean programs should be addressed properly if PCOM wanted significant results. PCOM agreed that two legs were necessary if these three proposals were to be combined.

Logistic Considerations

Mix brought up the 735B site survey deficiencies that SSP had identified and asked if PCOM was going to ignore SSP's recommendation that such types of programs be required to have backup sites? Bloomer explained that the 735B region was well enough characterized to find alternate sites if it was not possible to deepen the existing hole, he thought that SSP's recommendation may not have been applicable to 735B.

Kudrass did not think that it was valid to use such a large amount of ship time for transit to the 735B area. Arculus countered that PCOM could defend this decision because it was necessary to be able to do the best science as indicated by LITHP's ranking. Fox agreed that the 735B program was a great scientific opportunity for spectacular results and would go a long way to help the program as it looks toward the renewal. Berger advocated that the 735B program would be better scheduled in FY96 when there would be other mature programs in the South Atlantic region that could be used to help justify the move south. Kidd wanted PCOM to schedule 735B at the end of the FY95 program so it would be in a position to schedule anticipated South Atlantic or adjacent legs in FY96. Austin advocated that the best strategic move was to end the FY95 schedule in the equatorial Atlantic, this gave PCOM the most flexibility without predetermining the FY96 schedule.

After discussion, two schedules emerged and were discussed at length:

A.	B.
EAT	VICAP/MAP
TAG	TAG
VICAP/MAP	735
MED I	EAT
MED II	MED I
NAAG II	MED II
Gas Hydrates	NAAG II
DCS	Gas Hydrates
	DCS

PCOM discussed having one primary schedule and the other being an alternate backup schedule to be substituted based on a non-South African drydock location. Francis indicated that since the drydock decision would not be available until April or later this would not be possible because the Leg 157 options in each schedule were different and a decision on Leg 157 was needed at this meeting.

PCOM discussed the weather window flexibility for the NAAG II program. Schedule B was preferred because it gave more flexibility to move NAAG II to hit the optimal weather window that would be shaped by the dry-docking dates.

Coffee break ..... *10:30 - 10:45 am*

After break, the following schedule was adopted as a motion by PCOM (Appendix 26) :

PCOM Motion - FY95 Science Plan

The schedule for ODP Legs 157 through 165 will be as follows:

157 - VICAP/MAP (380-Rev3/Add3)
158 - TAG
— Drydock - South Africa
159 - Return to Site 735 (300-Rev)
160 - Equatorial Atlantic Transforms (346-Rev4)
161 - Mediterranean I
162 - Mediterranean II
163 - North Atlantic Arctic Gateways II
164 - Gas Hydrate Sampling (423-Rev/Add)
165 - DCS Sea Test

Addenda :

1. This schedule presumes the drydock to occur in South Africa. Should this prove unacceptable to SEDCO/FOREX, and the drydock be scheduled elsewhere, PCOM should re-examine the schedule at the earliest opportunity.
2. The two Mediterranean legs will consist of elements of the following three proposals (in alphabetical order) - (1) Alboran Sea (323-Rev3), (2) Mediterranean Ridge (330-Rev/Add3), and (3) Mediterranean Sapropels (391-Rev).
3. The stated order of Mediterranean legs is preferred, but may be changed to accommodate the necessary weather window for the North Atlantic Arctic Gateways II leg.
4. The preferred location for the DCS sea test is on the Vema Transverse Ridge.

Sager moved, Austin seconded vote: 13 in favor, 1 opposed, 2 abstentions (proponents)

Mediterranean Program

Lewis asked a PCOM subcommittee consisting of Taylor, Kidd, and Mix to work with Panel Chairs McKenzie and Robertson to formulate the details of the two-leg Mediterranean program over lunch. Taylor thought that it would be most appropriate to have eastern and western Mediterranean legs. Kudrass objected to splitting the Mediterranean Sapropels program into east and west because of the need to have a consistent comparison of eastern and western sapropels. Kidd didn't think that the split would be a problem because similar divisions of labor had been done before in the Mediterranean and, since the interested science community was so large, a split of sites between two legs would give more opportunities for scientists to be involved in the legs.

After lunch, Taylor presented the subcommittee's two leg plan that combined the shallow Alboran Sea sites, the cleared Mediterranean Ridge sites and the Mediterranean Sapropels sites. Eastern and western Mediterranean programs were formulated, with the eastern leg to go first—at ODP-TAMU's discretion. PCOM passed the following motion:

PCOM Motion - Mediterranean Program

The two Mediterranean drilling legs shall include:

Med. I — MedSap 2B, 3, 4, Eratosthenes Seamount sites for sapropel and tectonic objectives, MedRidge (Ionian transect) 1, 2, 3 and the Mud Volcano 1.

Med. II — MedSap 5, 6, 7 and Alboran 2, 3,4

Taylor moved, Fox seconded vote: 14 in favor, 0 opposed, 2 absent

Item 1027. FY95 Budget Prioritization

1. Equipment Prioritization for FY95 Program Plan

PCOM reviewed the items that needed to be prioritized for the FY95 Program Plan.

DCS

Lewis reviewed the equipment prioritization list for FY95 that was discussed at PANCH (Appendix 5.2) and read the PANCH consensus on DCS (Appendix 5.1). PANCH recommended to PCOM that there be a reappraisal of DCS if the land test failed. After discussion, PCOM agreed and advised ODP-TAMU to prepare a contingency plan for their program plan budgets in the case that the land tests were not successful.

Computer and Software

PANCH's consensus was that the computer upgrade was the most important single item of equipment development because of its potential for immediate benefit. PCOM tabled discussion of the upgrade until the presentation by Coyne on this issue.

PCS/PPCS

PANCH recommended that Charles Paull and other SGPP members work with TEDCOM and ODP-TAMU to try either to modify the existing PCS system or develop a new one (PPCS) to meet the needs for a gas hydrate leg. PCOM added Joris Geiskes to the list of people to advise on the PCS/PPCS development plan and requested that the group work on producing a plan to present to PCOM at the April meeting. After discussion, PCOM adopted the following consensus statement:

PCOM Consensus - PCS/PPCS

PCOM recommends that C. Paull and other SGPP members and J. Geiskes work with ODP-TAMU, TEDCOM and G. Brass to develop a plan to modify the existing PCS system and/or construct a new one (PPCS) to meet the needs of the scheduled gas hydrate leg and future legs that must recover gases and gassy sediments. The plan, together with a cost estimate, should be presented to PCOM in April 1994.

VPC

PANCH recommended that the British Geological Survey (BGS) be allowed to test the ODP-TAMU VPC tool to see if it can work and that, in addition, ODP-TAMU should proceed to identify any available systems that work. Kidd noted that the BGS thought that the VPC could work, he advised PCOM to ask for BGS's advice on the future development process at ODP-TAMU. PCOM agreed that the BGS should be allowed to evaluate the tool but wanted to wait to find out the results of this evaluation before advising ODP-TAMU to look into developing a new VPC tool. After discussion, PCOM adopted the following consensus statement:

PCOM Consensus - VPC

PCOM endorses the PANCH and TEDCOM recommendation that the British Geological Survey (BGS) be allowed to test the ODP-TAMU VPC tool (at their expense) to see if it can work. BGS should be asked to maintain communications with OD-TAMU and TEDCOM on progress and developments.

GEOPROPS

PCOM affirmed its previous endorsement of the DMP recommendation that GEOPROPS not be supported In light of the fact that this type of sampling was important to the program, PCOM requested that DMP look into alternate ways of implementing measurement of the parameters that GEOPROPS attempted to measure.

BHTV

PANCH's consensus was that BHTV was important to both LITHP and TECP to measure in situ stress on a routine basis, in appropriate holes. PANCH also recommended that DMP should explore the most efficient means of maintaining this capability, and return a recommendation to PCOM. PCOM endorsed the PANCH recommendation and adopted the following consensus statement:

PCOM Consensus - BHTV

PCOM endorses the PANCH recommendation that DMP explore the most efficient means of maintaining the capability to measure in situ stress on a routine basis, in appropriate holes, and return a recommendation to PCOM in April 1994.

Goldberg explained that BRG needed a decision by PCOM at this meeting on deploying the BHTV in FY95, because if PCOM wanted BHTV to be used BRG needed to put funds to support it in the FY95 budget in time for BCOM in March. Goldberg pointed out that DMP would not be able to advise PCOM prior to the BCOM meeting. Austin advocated that PCOM wait for the results of testing of the BHTV on Leg 153 before making a decision for BHTV funding. He stressed that the BRG BHTV tool had not worked under sea conditions and this test was critical for making a decision on its use in the future. After discussion, PCOM agreed that Goldberg could write the BHTV into the FY95 budget if the Leg 153 test was successful. PCOM also recommended to JOI that ODP-TAMU send a message to the Co-Chiefs of Leg 153 that the test of the German BHTV should be carried out at the first possible opportunity.

Potential Expansion of the DM Lab

Francis requested that ODP-TAMU's proposed expansion of the downhole measurements lab during the upcoming drydock be added to the FY95 budget prioritization list. He indicated that the cost was approximately $ 400 K and the opportunity to do this much needed work would only be available at the drydock in FY95.

Safety Survey

Based on the discussion of the Shallow Water Drilling Working Group Report, PCOM agreed that it needed to add funding a hazard survey to complete the NJ-MAT sealevel program to the budget prioritization list for FY95.

SMP Equipment List

PCOM endorsed the SMP equipment list, with an understanding that the costs of these items were on the order of $ 200 K. Allan reviewed the items that were 1993 SMP recommendations that ODP-TAMU had been able to accomplish (Appendix 27).

PCOM tabled further discussion on FY95 budget prioritization until after the presentation by Coyne on the proposed computing upgrade.

Item 1028. FY94 Budget Priorities

PCOM discussed the prioritization of items that would require identification of noncommitted funds in the FY94 budget, the two most important items were LWD for Leg 156 (cost estimated at $ 200 K) and a review of ODP engineering development (cost estimated at $ 50 - 100 K). Taylor advocated that the LWD was scientifically critical to the Leg 156 program's success in advancing the fluid flow investigation at Barbados. Mix asked why this request for funds was coming so late, why hadn't LWD been proposed earlier as part of the proposal and identified as a cost when the leg was originally scheduled? Taylor explained that LWD was identified as a priority by the Co-Chiefs as soon as they were named, however, that wasn't until after the BCOM meeting last March.

Pyle thought that the money for an engineering review could be found but that the amount necessary for the LWD was much larger and was unlikely to be found within the FY94 budget. PCOM discussed the prioritization of these items and, following a straw vote, PCOM adopted the following consensus statement:

PCOM Consensus - FY94 Budget Priorities

After extensive discussion, PCOM identifies two important priorities for additional expenditure of FY94 "funds":

1 a broad review of engineering development within ODP, per ASRC Proposal 10 (estimate: $ 50-100 K), and

2. logging-while-drilling (LWD) as part of Leg 156 (estimate: $ 200 K). As a consequence, PCOM recommends that JOI, Inc.:

   a. support initiation of the engineering review as soon as possible (subject to EXCOM approval), and

   b. endeavor to locate LWD funds for Leg 156 prior to the ODP-TAMU operational deadline of 15 January 1994.

Regardless of the outcome of LWD for Leg 156, PCOM recognizes the potential scientific importance of LWD for ODP, and encourages proponents to incorporate this technology, as required, into their future proposals to the program.

Francis asked if PCOM thought that ODP-TAMU should go ahead and take steps to prepare for a LWD program so that, if the money becomes available, then the needed engineering preparation would be ready? PCOM discussed the likelihood of LWD funds becoming available

and agreed that Goldberg and Francis should go forward with planning for LWD, including looking into the engineering requirements necessary to implement the LWD if the funds become available.

Lunch break ..... *12:15 - 1:30 pm*

Item 1029. Long-Range Planning

1. Platforms

Joint EXCOM --STA/JAMSTEC Workshop

Lewis updated PCOM on the status of planning for the joint EXCOM—STA/JAMSTEC Workshop on *Ocean Drilling in the 21st Century -- Scientific Visions and Technological Opportunities* in Kyoto, February 3 - 4, 1994. He reported that he, Pyle and Arthur Nowell (EXCOM Chair) had attended a planning meeting in Tokyo during November with STA/JAMSTEC representatives to formulate an agenda for the two-day workshop. Lewis explained that on the first day of the workshop would include presentations by the JOIDES thematic panel Chairs and the TEDCOM Chair. Presentations would include a summary of the scientific and technological accomplishments of ODP as well as the future plans for ODP science, the material presented on the first day would be published in a report.

"New Era of Ocean Drilling" Proposal

Omata introduced himself to PCOM as the administrative contact for ODP at STA. Omata presented his report on the STA/JAMSTEC proposal for the "New Era of Ocean Drilling" that had been presented to EXCOM in June 1993 (Appendix 28). He explained that STA/JAMSTEC was seeking international endorsement for their proposal. Omata outlined the high-priority scientific objectives that the program would address (Appendix 28.2). STA/JAMSTEC wanted to work with JOIDES to refine the scientific objectives of the new program and to bring them in line with the ODP Long Range Plan (Appendix 28.3). The technical capabilities of drilling systems required to achieve these scientific objectives would then be used by STA/JAMSTEC to begin the design of the new vessel that they would construct for the "New Era of Ocean Drilling" program. In addition to input on the scientific capabilities and technical requirements for the new vessel, STA/JAMSTEC wanted to work with the international scientific community to develop a management and financial framework of support for the "New Era of Ocean Drilling" plan. Omata reviewed the action plan that STA/JAMSTEC had presented at EXCOM (Appendix 28.2) and stressed that the main purpose of the joint EXCOM - STA/JAMSTEC workshop in Kyoto was to discuss the scientific goals for the "New Era of Ocean Drilling" plan.

Taylor recommended that DMP be included in discussion for the second part of the STA/JAMSTEC action program regarding the technical discussions for the design of the new vessel. Noting that both TEDCOM and DMP should be involved in technical discussions, he asked if DMP had been purposely left out of Agenda Item 2 for the Kyoto workshop and, if so, why? Lewis answered that the subject of including DMP was discussed at the workshop planning meeting that he, Pyle and Nowell had in November with STA/JAMSTEC on the workshop agenda. The group had decided that, due to time restrictions and the drilling technology focus of the workshop program, the agenda would be restricted to the scientific goals and drilling technologies. Lewis explained that the group had worked out the workshop agenda at great length, they had discussed the issue of whether or not to include downhole measurements and decided not to include it—this was not an oversight it was specifically planned that way. Goldberg thought that not including downhole measurements in the workshop discussions was short-sighted, he wanted to make the point made that the logging technology impacted the drilling technology. He noted that a choice between a four-inch drillpipe—which ODP currently used—or a five-inch drillpipe would significantly impact the downhole measurements technology. He wanted to see this type of issue brought up early in the planning stages.

Dick asked what percentage of the ship time would the ship be used in Japanese waters, or would the ship be scheduled on a global basis? Omata did not know the details of the ship's operation, he thought that this issue was still open for discussion and he stressed that STA/JAMSTEC was very open to how the international community felt about this. Lewis added that this would be the subject of much of the discussion on the second day of the Kyoto workshop.

Larsen asked how much of the planning for "New Era of Ocean Drilling" was a US-Japan endeavor and how much was the international community outside of the US involved? Lewis said that, so far, the planning was a joint JOIDES-STA/JAMSTEC undertaking, it was not a US-Japan project.

Austin asked Lewis what his vision was for the publication of the workshop report? Lewis replied that he thought that the White Papers would be the substance of the reports that the panel Chairs would give at the workshop. He explained that the report of the workshop would be published in 1994 and this report could be a significant document in terms of JOIDES long-range planning, if PCOM wanted it to be so. Lewis thought that this report was an excellent opportunity for JOIDES to produce a first-rate planning document but he acknowledged that this would require some work. The White Papers, as they were written, would require some massaging to make them what was needed for this purpose—this issue would be taken up by PCOM in the next agenda item. Austin thought that the LRP needed to be replaced or superseded, but if this workshop document was going to replace the LRP he thought it was important to announce PCOM's intentions for replacing the LRP to the community as early as possible.

Fox did not think that the workshop report would be as successful as a COSOD-type of document because it would lack a broad constituency. He thought that even though the panel Chairs would draw on their White Papers, which were rich documents that had gone through considerable analysis, they would be representing a selected group. Fox explained that the COSOD processes tried to build consensus and focus through particpation of a large constituency. In contrast, this workshop would involve a small and select group of people and Fox did not know how this would be received in the community. Lewis stressed that the panel Chairs represented a very large community of scientists who were in the JOIDES Advisory Structure and a great deal of work had gone into the White Papers. In terms of long-range planning, Lewis thought that there was still work to be done to make the White Papers useful and this was where he wanted the workshop report to go. Fox agreed that the White Papers were templates but they did not answer the big questions about how the program should be structured—does the program want one ship to do everything, two ships or three? Fox thought that if the answers to these important questions would not be supported by the community if they came from such a small group. Lewis thought that this situation required that PCOM insure the White Papers addressed these questions. Fox did not agree that PCOM should dictate a plan without proper input from the community, he saw PCOM's role as providing a strategy to implement a long-range plan not to dictate the plan. Omata stressed that the workshop was intended only as a starting point in the international contact between JOIDES and STA/JAMSTEC. Fox agreed that if the workshop was used as a starting point for the first international contacts between the two groups he would withdraw his reservations about the need to have broader community input.

Dick asserted that the Kyoto workshop would have to lead to a much broader international meeting. He explained that the agenda and planning for this broader meeting would have to be divorced from PCOM, much like the COSOD II was. He stressed that the planning for this type of international undertaking would require a much broader international mandate for acceptance and support. He agreed with Fox that PCOM could not provide this level of representation, the White Papers were not enough because they represented the ideas of the people on the committee who wrote it, a little corporate memory of the panel, plus some minor inputs by people from

outside JOIDES. Dick supported the STA/JAMSTEC proposal but he thought it would require a much broader international mandate than PCOM and the panels could provide.

Kidd was encouraged by that fact that the Japanese had approached JOIDES to work with them to plan for their proposed program. He thought that the most important thing that would occur at the Kyoto workshop was the initiation of discussions by the funding agencies on what type of budgets they were prepared to support and what the realistic financial constraints on the future of ocean drilling were.

Austin related that he had asked EXCOM about convening a COSOD III, EXCOM had turned down the idea of a COSOD in favor of holding smaller workshops and conferences during the process of writing new White Papers—LITHP had tried to do this. Austin thought that the White Papers, as wish lists, did not create an implementation plan which was what was really needed. He wanted PCOM to create documents that people could believe, this would require integrating thematic planning with the nuts-and-bolts of getting there. Austin recommended that PCOM identify action groups, separate from the thematic panels, to write White Papers that integrated technology development with the thematic panel wish lists to develop realistic implementation strategies. He explained that if PCOM instituted this type of planning it would allow JOIDES to go to partner countries and let them know that ODP needed a technology that a partner country could provide and then show them an implementation strategy on how the technology would be incorporated into the program.

2. JOIDES Thematic Panel White Papers

TECP

Moores reviewed the accomplishments section of the TECP White Paper (Appendix 29.0) and TECP's philosophical view of using the drill to address tectonic themes. Moores explained that TECP was focusing on the themes of: (a) quantification of tectonic processes using a historical approach and (b) the characterization of active and recently active processes in real time. Moores highlighted the active proposals that addressed these themes (Appendix 29.1).

Moores reviewed TECP's progress toward the phased implementation plan for drilling to 1998 outlined in the TECP White Paper (Appendix 29.2). TECP also identified their science and technology requirements for drilling tectonic objectives in the 1998 - 2003 time frame (Appendix 29.3). Moores presented the revised TECP White Paper plan to apply new technologies in drilling to tectonic studies (Appendix 29.4). In addition, TECP had identified linkages with other projects and global hazard assessment as strategic considerations that would be incorporated into their phased implementation plan (Appendix 29.5).

LITHP

Bloomer reviewed the revision process that LITHP had used to revise their White Paper (Appendix 30.0). Funding for LITHP's proposed workshop had been turned down by USSAC so the public review was completed via personal and e-mail contacts. Unfortunately, the response from this type of distribution had been small. Bloomer reviewed the progress that ODP had made toward achieving LITHP objectives (Appendix 30.1).

LITHP's revised White Paper outlined the Phase I scientific objectives that LITHP wanted to progress during the next five years, 1993 - 1998 (Appendix 30.2). Phase 2 scientific objectives for 1998-2003 were outlined and Bloomer explained that these objectives included those that the panel did not think would be accomplished by 1998 and that required technology that would not be developed until this phase (Appendix 30.3).

Bloomer noted that LITHP had not addressed the future planning needs for their program beyond 2003. He explained that the White Paper was a document that LITHP wanted to use to generate proposals and was written to focus the proponents on important LITHP themes. He pointed out that the White Paper was a very different type of document than the renewal-type general science document that PCOM was asking for at this meeting. He thought that LITHP

could contribute to such a renewal-type document but he stressed that the requirements were very different than those of the White Paper and suggested two be kept separate.

OHP

Raymo reviewed the major OHP drilling accomplishments on important OHP themes and outlined the future directions that OHP would be pursuing in the near future (Appendices 31.0 - 31.1). OHP had identified DCS, for coring cherts, and larger diameter cores as technology developments that would improve progress on OHP science objectives.

Kidd asked whether or not OHP saw their thematic focus moving toward paleoceanographic studies back into the Jurassic or Cretaceous? Raymo thought that OHP's interests would eventually move into the pre-Cenozoic but that there was still a lot of work to do in the Neogene and Paleogene.

SGPP

McKenzie noted that SGPP's White Paper was only three years old and when PCOM asked them to revise it the panel had decided they would concentrate on focusing the existing White Paper on three themes. McKenzie reviewed the accomplishments, direction and technology needs in the areas of: (1) sea level and facies architecture, (2) fluid flow and geochemical fluxes, and (3) geochemical budgets and carbon geodynamics (Appendices (32.0 - 32.4).

Publication of the White Papers

Lewis was worried about what he had heard on the White Paper revisions. He explained that the partners in ODP had agreed to continue their memberships through 1998 but some wanted to review the program in 1996 to decide if they wanted to continue post-1998; the renewal for ODP post-1998 would probably start in 1995. This meant that PCOM needed to get organized in 1994 and decide the direction of the program beyond 1998. Lewis felt that the purpose of White Paper revision was to produce documents that would allow PCOM to sell the program downstream and not to produce documents that were wish-lists for our peer groups—the direction that he saw the panel Chairs outlining in their talks. In particular, for long-range planning, he wanted to see documents with a vision for a future beyond 2000, beyond the present program.

McKenzie stressed that this was not what PCOM had told the panels to do. Lewis thought that it was. Bloomer thought that what Lewis was describing would really require two different documents, one with ODP science in the 1995-2003 time frame for the renewal and a second document for the post-2003 time frame that the "New Era of Ocean Drilling" was looking toward. He agreed with McKenzie that the panels were trying to write a document that would carry the program to 2003 by revising the White Papers to be much more specific.

Lewis pointed out that PCOM and the panels had obviously not been on the same wavelength and this meeting was an opportunity to get there. Lewis wanted to clarify the timetable for the panels, it is now clear that if there was to be an additional platform in the system it would not appear until 2002 - 2003. He stressed that there was a period of time from 1998 - 2003 where PCOM had to worry about continuing drilling with the platform and technology that existed, probably without significant augmentation. So, Lewis saw three phases that would be important: (1) next five years, (2) 1998 - 2003, and (3) beyond 2003. Bloomer thought that LITHP had accomplished the first of the two tasks by revising their White Paper to give PCOM milestones to monitor progress toward their thematic objectives through 2003. He wanted to approach writing a document about the phase beyond 2003 with a clean slate since the panels had not really addressed that period yet.

Robertson supported Bloomer's suggestion and stressed that all of the panels had gotten the same message and had put in an great deal of work to produce a document to provide program guidance through 2003. Robertson wanted to see these documents completed and published as soon as possible. He thought that the panels, on their own, were not really the best bodies to be doing the long-range, post-2003 time frame because even the panel Chairs did not have a great deal of understanding of the technological development aspects—the panel members had even

less information because they were not involved in the discussions of technology development at the PCOM level. He suggested that the task of writing the document that Lewis described for the third phase of post-2003 planning be assigned to a new group that would consist of panel Chairs, some key people brought in to provide expertise on the technology development and a professional science writer to gel it all into a marketable document.

Fox offered his view that if, for the 1998 - 2003 time period, the program was planned to be just a linear extrapolation of what ODP had been doing, then it would be dead post-2003—whether or not that linear extrapolation took the program into areas of good science or not, this approach would probably not sell the program. Fox thought that the program should continue to look toward new technologies, these would make some incremental differences in how ODP operates, but the program could make a bigger difference in how it operated by outlining a new investigative paradigm. He thought that many investigators were frustrated by the misfit of the use of the drill and the network of data into which the drill was placed. He suggested that what would be better would be to define a theme and then create an integrated investigative strategy that was nested in nature and into which the drilling was placed to test the hypotheses and refine thinking. Currently, investigators were still siting holes on single seismic lines that, more often than not, lead to more questions because of inadequate data. Fox thought that a larger community could be pulled into the program if ODP began to push on a new, more complete, way to prepare for the use of the drillbit—this required integrating the whole drilling strategy into an investigative program. Fox asserted that if PCOM wanted to sell drilling in a new, more productive way and to address themes that had eluded ODP—and would continue to elude ODP without better preparation for the use of drilling technology—PCOM needed to design and accept a new investigative strategy.

Kudrass thought that PCOM was heading in the wrong direction and pointed out that each panel had expressed a need for more drilling time each year to address their objectives. He stressed that there were so many new methods and tools that had become available in recent years that scientists could barely digest and use all of what was available now. Kudrass wanted ODP to get a second platform or more funding for sites surveys, he did not see the need for ODP to make a big jump into an expanded, high-technology program. Austin agreed that for post-2003 the quantity and quality of proposals would require a multiple platform program. He asserted that many of the problems with the White Papers could be solved by getting thematic panels together with technology people and asking each panel to design an experiment that would answer the major questions for their top-priority thematic priorities—take the technology available and do one experiment for 1995-1998 and one for 1998-2003 assuming increased technology in each period. Austin explained that the advantage of this approach would be that it would produce a complete plan that focused the science and would force the program to think differently about how to use the drill. In addition, he thought that it would show that the program required more platforms and technology than was currently available; the types of platforms and technology required would be defined by the experimental approach.

PCOM discussed the ramifications of taking a more comprehensive, integrated approach to the use of the drill in addressing thematic priorities of the panels. Arculus pointed out that if this approach was adopted by ODP, the advisory panels necessary to develop the science could not be as thematically compartmentalized as the current panels. Bloomer thought that if the panels were to write theme experiments each panel should pick one or two themes that other panels had an interest in. Mutter noted that taking this approach would require the panels to focus on a smaller number of themes, this situation was a microcosm of the problems facing science in society today—there was too much science for the dollars available and choices must be made. Mutter stressed that making choices on what themes would be pursued with this type of program required PCOM to have an agreed upon framework within which to make choices—PCOM did not have that. He saw it as PCOM's role to take what the panels had done with their White Papers and to begin to make hard choices about priorities and to be prepared to defend these choices in the face of potential criticism. Kidd agreed that PCOM then needed to sort through this material before deciding what else was needed so that they could be more specific.

Lewis pointed out that alternate platforms for the post-2003 time frame need funding commitments in 1995 so that there was sufficient lead time for the design and construction of new vessels. Therefore, he stressed that he funding agencies would want to know by 1994 what the program plans to do with a new vessel before making the commitment to fund it. Lewis thought that if ODP could not be ready with a vision of the future in that time frame it would miss out on this opportunity. Raymo and Moores both felt that their panels did not have enough technical knowledge about the possibilities for future of technology development to make these type of post-2003 planning recommendations. Raymo suggested that if PCOM wanted this type of advice someone should be sent to the spring meetings to make a presentation on possible future technologies and how they could impact drilling.

After discussion, PCOM agreed that all of the panels should complete their revision of their White Papers so as to provide "A" and "B" from the August PCOM Motion (1993B-34). In addition, PCOM requested that the thematic panels provide at least an initial discussion of their vision for the post-2003 time frame. Lewis proposed that PCOM review the revised White Papers at the April PCOM meeting and decide how to meld them into a package that reflected the ideas that had just been discussed. Taylor suggested that PCOM set a day aside at the spring meeting for a think-tank type of meeting with the thematic panel Chairs, the TEDCOM Chair and the DMP Chair to address this topic. Lewis agreed that this was a good suggestion and would take into consideration when putting together the agenda for the April 1994 meeting.

At the conclusion of discussion, PCOM adopted the following consensus statement:

PCOM Consensus - JOIDES Thematic Panel White Papers

After review of the process of White Paper revisions, PCOM requests that thematic panels, at their next meetings:

a) concentrate on sections identifying succinctly major results to-date and how they relate to stated thematic objectives

b) prioritize major themes for drilling utilizing realistic time estimates in the two periods FY1995-1998 and FY1999-2003

In addition, PCOM requests the thematic panels to provide a vision of science objectives beyond FY2003

Coffee break ..... *3:15 - 3:30 pm*

3. Deep Drilling

Francis explained that ODP-TAMU recently had a doctoral student in engineering analyze the feasibility of the deep-drilling proposals in the JOIDES system (Appendices 33.0 - 33.1). Francis reviewed the present ODP drilling records for longest drill string, longest casing string set, heaviest load on the derrick, maximum penetration depth and maximum water depth (Appendix 33.2). He explained that very deep holes needed quadruple casing (Appendix 33.3). The total length of a quadruple casing string was 1500-2000 m and ODP-TAMU had not calculated the costs for this type of casing program.

Based on a study of stresses and loads on the derrick (Appendix 33.4), ODP-TAMU had concluded that the Newfoundland Basin (NB4A) and Somali Basin (WSB-1) deep holes were feasible but the Galicia deep hole was not. Austin agreed and recounted that, in the past, SEDCO had reported to PCOM that the limit of the drillship was 7.3 km and the ODP-TAMU estimate agreed with this. Francis stressed that the part of the operation that was critical for the success of a deep hole was setting the casing.

Francis outlined ODP-TAMU's two-leg plan endorsed by the ODP-TAMU engineers for the deep drilling at Somali Basin WSB-1 (Appendix 33.5). For quadruple casing, he explained that only 50% of the total operation time could be spent on science coring (Appendix 33.6). ODP-

TAMU had concluded that both the NB4A or WSB-1 were feasible projects that would require two legs, given anticipated weather and operational delays (Appendix 33.7). Francis stressed that the deep hole needed a two-leg commitment.

TEDCOM had proposed to convene a deep-drilling working group at their spring 1994 meeting to study drilling methods for deep holes in the FY95 science program. Sparks noted that since there was no deep hole scheduled in FY95, TEDCOM would concentrate on the DCS and the joint SGPP meeting instead.

Item 1030. Advisory Structure Review Report

Lewis reviewed the PCOM motions from the August 1993 PCOM meeting (Appendix 34), PCOM reviewed the business that remained for proposals 4, 8, and 10.

1. ASRC Proposal 4

Lewis outlined the Proposal Submission Guidelines, JOIDES Panel Meeting Schedule and Proposal Review Guidelines that the PANCH had endorsed (Appendices 5.5 - 5.8). Lewis explained that the changes would streamline the proposal review system and clarify procedures for proponents. After discussion, PCOM passed the following motion:

> **PCOM Motion - ASRC Proposal 4**
>
> PCOM adopts the revised JOIDES Proposal Submission Guidelines, JOIDES Panel Meeting Schedule, and Proposal Review Guidelines endorsed by the PANCH at the PCOM December Annual Meeting.

Taylor moved, Austin seconded vote: 15 in favor, 1 absent

2. ASRC Proposal 8

PCOM discussed whether or not the thematic panel Chairs should be invited to all of the PCOM meetings as suggested by the ASRC Proposal 8. PCOM's discussion in August had concluded that thematic panel Chairs should not be invited to all of the PCOM meetings, but the PANCH had recommended that thematic panel Chairs attend the spring PCOM meetings to: (1) present and discuss multidisciplinary proposals that are perceived to be "slipping through the cracks", (2) be involved in discussion of the global rankings and to participate in the long-range planning discussions at the spring PCOM meeting in April. PCOM discussed this option and agreed that having the PANCH at the spring PCOM meeting would be a positive step. PCOM debated the necessity of a PCOM liaison attending the fall thematic panel meetings if the panel Chair had attended the spring PCOM meeting. Panel Chairs agreed that having the input of a PCOM member at their meetings was valuable and did not want to see the PCOM liaison ended.

Larsen noted that if the PCOM liaison to the panels remained and panel Chairs were required to attend an additional PCOM meeting it would increase the costs of the advisory structure and he was not in favor of that given the present budget situation. Kidd agreed that there would be questions about PCOM increasing the number of meetings that the panel Chairs were required to attend, and therefore increasing the time they had to give to the program, as well as potential increases in travel costs.

The thematic panel Chairs were in favor of attending the portion of the spring PCOM meeting that dealt with science planning, both for the opportunity to interact with the other panel Chairs as well as to work with PCOM on planning. PCOM agreed that there was a need for the thematic panel Chairs to be invited to the April 1994 PCOM meeting to conclude discussions on revisions to the White Papers. After discussion of the advantages for panel Chairs to attend additional PCOM meetings, PCOM took a straw vote on keeping the system as it was, where the thematic panel Chairs attend only the annual PCOM meeting on a routine basis; the results were: 12 in favor, 1 opposed, 1 abstention, 2 absent. However, PCOM agreed that the thematic panel Chairs

should be invited whenever necessary and that this should be evaluated on a case-by-case basis by the PCOM Chair. PCOM adopted the following consensus statement:

PCOM Consensus - ASRC Proposal 8

PCOM's consensus was that the thematic panel Chairs not attend the April or August PCOM meetings except on a case-by-case basis as determined by the PCOM Chair.

3. ASRC Proposal 10

Lewis explained that, after the August PCOM meeting, TEDCOM had recommended PCOM reconsider the ASRC Proposal 10 and adopt the ASRC recommendation for an engineering development review. Berger asked what such an evaluation committee could recommend? Sparks said that it could recommend staffing and management changes to ODP-TAMU to improve their engineering and technology development. PCOM discussed what products would be expected from this type of review committee and the necessity for this review at this time. PCOM concluded the discussion by amending its August motion to the following:

PCOM Motion - ASRC Proposal 10

PCOM acknowledges and applauds the continuing and growing role of TEDCOM in helping the JOIDES Advisory Structure evaluate major engineering development programs like DCS and retractable-bit technologies.

In reference to ASRC's Proposal 10, and in recognition of the continuing importance of such engineering development to both the present and future of ODP, PCOM recommends to EXCOM that an external group be designated to review the role of engineering development within ODP, including the relationship between ODP-TAMU, TEDCOM, PCOM, and the Advisory Structure, and that this review occur as soon as possible.

Austin moved, Mével seconded vote: 15 in favor, 1 absent

end of day 3 ..... *5:45 pm*

Saturday, December 4, 1993 **8:30 am**

Item 1031. Old Business

1. Computer RFP Status

Coyne outlined the features and drawbacks of the current computing environment (Appendices 35.0 - 35.1). He explained that the central VAX cluster was now obsolete and had high maintenance costs. Coyne reviewed the history of the computing upgrade effort since 1992 (Appendix 35.2): ODP-TAMU's plan was to have a budget for BCOM in March and to begin a subcontract in April 1994. He then presented the objectives that ODP-TAMU was attempting to achieve by undertaking this RFP (Appendix 35.3). Coyne compared and contrasted the ODP computing environment with present-day information management systems (Appendix 35.4) and related it to the history of the ODP computing environment (Appendix 35.5). Coyne explained what types of database software systems were available in the market today for relational database management (Appendix 35.6).

Coyne described ODP-TAMU's proposed new hardware system and explained how the old system would interface with the new one (Appendix 35.7). Coyne noted that the cross-over and migration of all of the ODP data to the new system would take several years and he related how ODP-TAMU planned to manage the implementation of the new system (Appendix 35.8). A key

aspect of their plan was to develop a science user feedback group that was outside of the JOIDES panel system to allow for a more rapid response to user needs (Appendix 35.9). Coyne concluded with a review of the benefits of the new computing environment (Appendix 35.10) and the planned timeline for its implementations (Appendix 35.11), he encouraged PCOM to endorse the funding for this project.

Pyle asked how the already-existing Computer RFP Evaluation Committee would be incorporated in the implementation system? Lewis explained that there would be two advisory groups, the Computer RFP Evaluation Committee that would provide input to ODP-TAMU and, a second advisory group that provided input directly to the vendor. Francis did not think that the Computer RFP Evaluation Committee could be committed enough to be involved in directing and overseeing the process of implementation for the new system. Pyle agreed that it was unlikely that PCOM's group would be able to provide this level of oversight. Lewis thought that Computer RFP Evaluation Committee had been very effective in monitoring the RFP development and in helping ODP-TAMU stay headed in the right direction. Lewis agreed that JOIDES needed to maintain constant dialog with ODP-TAMU on this matter to adequately monitor the process, he thought that this level of monitoring would probably require that the Computer RFP Evaluation Committee meet very frequently—on the order of every two months.

Francis wanted to see more people with user-level experience and familiarity on the Computer RFP Evaluation Committee if they were going to provide ODP-TAMU *with advice* on implementation. He recommended that the JOIDES structure appoint an independent user's group to advise ODP-TAMU and not rely on the contractors to gather this kind of information. Kidd agreed and pointed out that there were many types of end-users of ODP data and not all of these groups of data users were represented in the vendor's users group. PCOM agreed that it was critical that input from users be incorporated in the initial setup and implementation period.

PCOM discussed the timeline for implementation of the new system on the ship. Austin stressed that ODP-TAMU needed to insure that the implementation on the ship was a seamless operation, that there was always a working system both on the ship and on the shore while the changeover occurred. Dick asked that ODP-TAMU try to work with the Co-Chiefs that would be working with the new system to train and prepare them for its implementation. Larsen asked Coyne how realistic the implementation timeline really was? Coyne thought that the timetable was realistic if the budgets that were planned and used by the vendors to construct timetables were maintained.

PCOM discussed their endorsement of the budgetary commitment required for the computer/database upgrade, noting that NSF required assurance that there would be adequate advisory oversight of its development and implementation in order to commit the funds. To meet this requirement, Lewis asked PCOM endorse his plan for the Computer RFP Evaluation Committee to continue its advisory role in the RFP process and to monitor the contract implementation process.

At this point, representatives from institutions associated with the RFP bidders left the room and aspects of the bids, including costs, were discussed by PCOM. At the conclusion of the discussion, PCOM passed the following motion:

PCOM Motion - Computer RFP

PCOM reaffirms its commitment to upgrade ODP computer and information systems.

PCOM recognizes that this will entail significant expenditure of funds during FY94, FY95, FY96.

PCOM advises JOI to continue a computer database upgrade advisory committee to advise ODP-TAMU and monitor progress on a regular basis during the entire project.

PCOM is concerned that end-user input be sought to insure timely and appropriate development of suitable products.

Mix moved, Berger seconded vote: 13 in favor, 2 abstain, 1 absent

At this point PCOM moved to the new business of panel membership actions so that PCOM members who had to leave early could participate in membership discussions.

Item 1032. New Business

1. Panel Membership Actions

TECP

US membership changes: An Yin to replace Eldridge Moores, Jian Lin to replace Jeff Karson, Kevin Brown to replace Mark Zoback, Steve Hurst to replace Steve Cande.

OHP

Non-US membership changes: Anne-Marie Karpoff replaced Edith Vincent as the French member on OHP, Rainer Gersonde replaced Gerold Wefer as the German member on OHP.

US membership changes: Brad Clement to replace Jon Barron, Ted Moore, to replace James Channell, Dave Hodell to replace Albert Hine, Warren Prell to replace Lisa Pratt, Tim Herbert was asked to stay on for another year.

SGPP

Next Chair: Bill Hay will replace McKenzie as Chair at the Fall 1994 meeting.

US membership changes: Pat Shanks to replace Jeff Alt, Paul Baker to replace Fred Sayles, Steve Mako to replace Peter Swart.

Non-US membership changes: Christian Lamord replaced Jacques Bouléque as the French member on SGPP.

LITHP

US membership changes: Rob Zierenberg was reappointed for a second three-year term, Jill Karsten to replace John Bender.

DMP

US membership changes: Philip Nelson to replace Roger Morin.

SSP

US membership changes: Larry Peterson to replace Richard von Herzen.

IHP

Non-US membership changes: Gilbert Maudire replaced Catherine Millard as the French member on IHP.

2. Co-Chief Nominations

PCOM presented ODP-TAMU with nominations for Co-Chiefs for Legs 157 - 164

3. Borehole Research Group Liaison to JOIDES Thematic Panels

SGPP, LITHP and OHP had all requested that PCOM endorse the establishment of a liaison between BRG and the thematic panels. Goldberg proposed that the BRG liaisons attend the spring and fall thematic panel meetings in FY95 to help develop a logging prospectus and disseminate tool information to the panels (Appendix 36). PCOM discussed the panel recommendations for this liaison and concluded that BRG attendance was appropriate but should only be supported for one meeting per year. After discussion, PCOM adopted the following consensus statement:

PCOM Consensus - Borehole Research Group Liaison to JOIDES Thematic Panels

PCOM endorses the BRG liaison to one JOIDES thematic panel meeting per year.

4. PCOM Membership and Liaisons

US membership changes: Tom Shipley would replace Jamie Austin on PCOM effective January 1, 1994.

PCOM liaison assignments for 1994:

	EXCOM	LITHP	OHP	SGPP	TECP	DMP	IHP	PPSP	SMP	SSP	TEDCOM
Arculus				X							
Becker						X					
Berger				X							
Dick										X	
Fox									X		
Kidd										X	
Kudrass			X								
Larsen					X						
Lewis	X							X			
Mével		X									
Mix			X								
Mutter		X									
Sager							X				
Shipley											X
Suyehiro						X					
Taylor					X						

At the conclusion of the panel membership actions, PCOM passed the following motion:

PCOM Motion - Panel Membership

PCOM endorses all personnel changes in panel membership, panel Chairs and PCOM liaisons presented at the December meeting.

Sager moved, Kidd seconded vote: 14 in favor, 2 absent

5. Future PCOM Meetings

a) April 18 - 21, 1994 Cardiff, Wales (field trip on Sunday, April 17)

b) August 9 - 12, 1994 Iceland

c) December 1994 College Station, Texas (dates to be determined)

d) April 1995 Japan (dates to be determined)

6. Special Thanks

Carl Brenner

PCOM notes the retirement of Carl Brenner as manager of the JOIDES Site Survey Data Bank at LDEO due to ill health. Carl has been one of the key support personnel in the program. A long succession of Co-Chief scientists and drilling proponents have cause to be grateful to Carl for his diligence and dedication in helping to assemble the necessary survey packages to ensure the

success of numerous individual drilling legs. He will be severely missed by colleagues and friends in the program. PCOM wishes him increasingly good health in his retirement.

Eldridge Moores

PCOM thanks Eldridge Moores for his service and leadership as Chairman of TECP. Eldridge sensitized ODP to the need for routine structural data acquisition and 3-D geological sit survey information. He provided a classical and global perspective on tectonic issues and strong links to the land geological community. We wish him well in his future endeavors.

Jamie Austin

PCOM says good-bye to a great friend and servant to the ODP and its PCOM. Jamie has rendered long and staunch service in many different ways to the Program. His energy and spirit has permeated many levels of our activities and the Program's direction, especially during the critical renewal process. Jamie has been even-handed supporter of the diverse thematic interests that drive the ODP, and we thank him especially for his years at the Chairmanship helm. We say au revoir, but believe that like a perennial weed, Jamie will sprout again with impact in the program. We wish him well and continued success in his future plans.

Dave Huey

PCOM notes the contributions to ODP by Dave Huey, formerly of ODP-TAMU now at Stress Engineering, and thanks him for the incredible resourcefulness, skill and adventurous engineering that he has brought to the Program.

Kate Moran

With heartfelt thanks, PCOM acknowledges the rotation of Kate Moran from the Chair of the JOIDES Shipboard Measurements Panel. Kate has been a driving force in ensuring that ODP scientist have access to the best tools and techniques available when onboard the JOIDES Resolution. PCOM wishes her the best of luck in the future.

Item 1031. Old Business *continued*

2. Core-Log Integration White Paper

Lewis reported that he had consulted with BRG and the relevant panels about CLI and recommended that PCOM endorse formation of a panel of three—the CLIPAN—to review the CLI program (CLIP) and to advise PCOM on further actions. Lewis recommended the panel be composed of: Joris Geiskes (SMP), Mike Williams (DMP) and Andy Fisher - Chair (LITHP); ex officio members should include: Peter deMenocal (BRG) and Peter Blum (ODP-TAMU). Lewis suggested that the CLIPAN should use e-mail as far as possible to execute this task and should prepare a preliminary statement for the April PCOM meeting. Mix recommended Terry Hagelberg, URI, be added the committee if additional members with ODP CLI experience were required.

Mix had been asked by Goldberg, who had to leave early, to explain to PCOM that BRG would need $ 6,500 of additional funding support to get the CLIP out on Leg 154. In addition, Goldberg requested, through Mix, that *the Chairperson* have the authority to choose the CLI advisory panel. PCOM discussed the second part of the BRG request and agreed that BRG should not be given the authority to name the advisory panel.

On the subject of deploying CLIP for Leg 154, Austin thought that if BRG needed to test software it would have to find money in their base budgets to get the software tested on Leg 154. Mix asked that a strong message come from PCOM to urge BRG to complete this development and to get the program out on Leg 154. Mix read a statement from Goldberg with information about the budgeted *and personnel* level of development for CLIP by BRG in FY94. After discussion, PCOM agreed that additional funds should not need to be allocated and that money should be found in the FY94 BRG budget. Austin reminded PCOM that BCOM had allocated

more money to BRG than other contractor to do this type of innovation. PCOM adopted the following consensus statement:

PCOM Consensus - Core-Log Integration White Paper

PCOM agrees to institute the CLI advisory panel (CLIPAN) and recommends that BRG do everything possible to rearrange their budget to accommodate the need for CLIP on Leg 154.

Item 1032. New Business *continued*

7. Marine Micropaleontology Database Center

PCOM discussed the PANCH endorsement of the proposal by Lazarus & Thierstein. PCOM agreed that ODP should endorse this type of development and supported the PANCH recommendation. Kidd suggested that the Lazarus et. al. group try to interface with other groups who have done, or were doing, similar types of work.

PCOM Consensus - Marine Micropaleontology Database Center

PCOM endorses the PANCH recommendation that the Micropaleontology Data Base Center would be highly useful to the ODP program and we encourage the proponents to continue their efforts to make this facility accessible worldwide through the Internet. PCOM recommends that they interface with other international earth science communities to benefit from their experiences.

8. Less-Than-a-Leg Science

Due to time considerations, PCOM tabled the issue of less-than-a-leg science to the April meeting.

9. Core Repository

PCOM thanked the members of the JOI Advisory Committee on Core Repositories (Mix, Moore, Mayer, Shackleton) for their help in defining the issues leading to a satisfactory compromise on the Atlantic repository issue.

10. SSP Recommendation on Backup Drilling Sites

Dick reviewed the SSP recommendation proposing that ODP require backup sites for bare rock drilling. He supported the SSP recommendation and proposed the following motion, adopted by PCOM:

PCOM Motion - SSP Recommendation on Backup Drilling Sites

PCOM endorses the SSP recommendation that PCOM and ODP-TAMU require that all legs, including barerock and offset drilling legs, must plan appropriate contingency site(s) in addition to their primary sites, for drilling in the event of technical failure or other unforeseen problems; and must deposit appropriate supporting data for those site(s) in the ODP Data Bank for inclusion in the Co-Chief's data package.

Dick moved, Kidd seconded vote: 14 in favor, 0 opposed, 2 absent.

11. Basement Sampling Policy

Due to time considerations, PCOM tabled the issue until the April PCOM meeting.

12. Proposed Hydraulic Piston Coring Policy

PCOM agreed to pass to SGPP and OHP the changes proposed by ODP-TAMU for the hydraulic piston coring policy. PCOM asked that these panels evaluate at their spring meetings and make a recommendation to PCOM for the April PCOM meeting.

SGPP and OHP Action Item - Proposed Hydraulic Piston Coring Policy

PCOM asks that SGPP and OHP evaluate ODP-TAMU's proposal for revising the ODP hydraulic piston coring policy and make a recommendation on it for the April PCOM meeting.

Lunch break ..... *1:00 - 1:30 pm*

Item 1033. Review of Motions and Action Items

PCOM reviewed the motions passed, consensus statements adopted and action items assigned up to this point in the meeting.

Item 1034. FY95 Budget Issues

Lewis presented a list of budget items that needed to be prioritized for the FY95 budget, the major items that had not been addressed by previous motions or consensuses were: computing, DCS, downhole measurements lab upgrade, and shallow water hazard surveys.

Hazards Surveys

PCOM discussed implementation of the Shallow Water Drilling Working Group's Report and what the potential costs of a hazard survey were, including acquisition, processing and interpretation. The specific case of the NJ-MAT sites that were disallowed because of shallow water drilling hazards (proposed sites 4 - 9a) were identified as a case that ODP needed to budget for in FY95. PCOM debated whether or not committing funds for a hazard survey obligated PCOM to scheduling the leg in FY96. PCOM agreed that doing a hazard survey did not obligate PCOM to schedule the leg but acknowledged that there would be a high likelihood that it would get scheduled if no safety hazards were identified.

Pyle asserted that EXCOM had to approve the policy of ODP funding hazard surveys because it impacted the budget. Austin pointed out that he had raised this issue with EXCOM several years ago and that EXCOM had said at that time that PCOM should deal with these situations.

PCOM discussed the NJ-MAT transect and the scientific requirement that the shallow water sites be drilled. Berger noted that SGPP had put a place holder for these shallow holes in their global ranking in 1993, the sites were of a very high thematic priority. Dick thought that expenditures such as this should be considered operational and prioritized after a leg was scheduled. He acknowledged that the panel rankings of the NJ-MAT shallow water sites were high and that PCOM had already attempted to schedule these sites but, since PCOM had not yet put the shallow sites for NJ-MAT on the schedule or given the sites a place holder in a future schedule, he did not think that money should be spent on the hazard survey. Dick did not want PCOM to prioritize funds for this survey unless it was willing to say that a leg was being committed to this program in the FY96 schedule—if the hazard survey shows it safe to drill.

PCOM debated whether or not an explicit commitment to scheduling a leg was necessary prior to funding a shallow water hazards survey. Taylor noted that a similar type of future commitment to scheduling was made with the Sedimented Ridges II program and he referred PCOM to the wording of that motion. Dick agreed that a similar statement needed to be made in this case. At the conclusion of the discussion, PCOM passed the following motion:

PCOM Motion - Hazard Survey for the NJ-MAT Program

Given the high priority of the New Jersey Mid-Atlantic Transect sites 4 through 9a by the relevant panels, PCOM places a high priority for drilling these sites at the earliest possible date commensurate with completion of the required surveys, processing and interpretation as outlined in the Shallow Water Drilling Guidelines. PCOM therefore requests JOI to investigate ways of obtaining operational funds for ODP-TAMU to contract for these surveys and services.

Dick moved, Austin seconded vote: 11 in favor, 1 opposed, 4 absent

FY95 Budget Prioritization

PCOM agreed with the recommendations of the panels that the computing upgrade was of extremely high priority and that DCS development and testing should continue. PCOM discussed what level of funding would be necessary to upgrade the downhole measurements lab, Francis indicated that funds would be an SOE expense and the necessary budget was in the range of $ 400 K. PCOM agreed that the following four FY95 budget items needed to be prioritized: computing upgrade, DCS, downhole measurements lab upgrade and shallow water hazard surveys. PCOM discussed the level of support for each and at the conclusion of the discussion, PCOM adopted the following consensus statement:

PCOM Consensus - FY95 Budget Prioritization

Priority 1

The computer and data base upgrades are of the highest priority. PCOM endorses the PANCH recommendation that the Computer RFP Evaluation Committee continue to work closely and frequently with ODP-TAMU to monitor and advise on the implementation of the upgrades.

Priority 2

DCS. PCOM endorses the continued testing of DCS through 1995.

Priority 3

- Downhole measurements lab. PCOM supports ODP-TAMU's proposal to upgrade the downhole measurements facility expansion on the JOIDES Resolution, (=$ 400 K)
- Shallow water gas hazards surveys. PCOM recommends to JOI that ODP-TAMU include funds in the FY95 budget for shallow water gas hazards surveys.

Priority 4

BHTV (=$ 100 K). By consensus, PCOM endorses the PANCH recommendation that DMP explore the most efficient means of maintaining the capability to measure in situ stress on a routine basis, in appropriate holes, and return a recommendation to PCOM in April 1994.

SMP equipment list, progress as feasible.

Meeting adjourned ..... *3:00 pm*

LIST OF APPENDICES

DRAFT MINUTES OF THE JOIDES EXECUTIVE COMMITTEE MEETING

Prince Takaragaike Prince Hotel, Kyoto, Japan — January 31 - February 2, 1994

Table of Contents

SUMMARY OF MOTIONS
JOIDES Executive Committee, Kyoto, Japan
January 31 - February 2, 1994

ADVISORY STRUCTURE REVIEW COMMITTEE REPORT RECOMMENDATIONS

EXCOM Motion (February 1994) — ASRC Proposal 1

EXCOM endorses the PCOM motion but recommends that broad review of the White Papers be achieved though e-mail or other widely advertised mechanisms. EXCOM interprets White Paper to mean a JOIDES planning document.

EXCOM Motion (February 1994) — ASRC Proposals 2, 3, 4, 5, 6, 9, 11

EXCOM endorses the PCOM motion(s).

EXCOM Motion (February 1994) — ASRC Proposal 7

EXCOM notes that the item should have come under the purview of EXCOM, and EXCOM reaffirms the alternation of the JOIDES Office between US and non-US partners. For the period 1996 - 1998 the US partner will submit one nomination to JOI Inc. The procedure for selecting the next non-US partner will be determined by 1996.

EXCOM Motion (February 1994) — ASRC Proposal 8

EXCOM endorses the PCOM motion, noting that the ASRC points out the heavy load that panel chairs already have in executing their tasks and that requiring additional meetings for them to attend would be burdensome. EXCOM notes that PCOM has the option to invite panel chairs as necessary.

EXCOM Motion (February 1994) — ASRC Proposal 10

EXCOM endorses the PCOM motion and will develop mandates, Terms of Reference and a schedule for an engineering review.

EXCOM Motion (February 1994) — ASRC Proposal 12

EXCOM endorses the PCOM motion and encourages the JOIDES Office to supply as much help to the panel chairs as is feasible within the present budget and personnel.

ENGINEERING DEVELOPMENT REVIEW COMMITTEE (EDRC)

EXCOM Motion (February 1994) — Terms of Reference for the Engineering Development Review Committee (EDRC)

The Engineering Development Review Committee, EDRC, should review two components of engineering development in JOIDES and at ODP

1. Engineering development has been a key component of ODP. New technologies developed during ODP, including APC, HRB, free-fall reentry cones, etc., have greatly added to the program's ability to attain its scientific goals. However, a specific review of the engineering development program has not been conducted. With a greater dependency on new technological advances, it is appropriate that such a review be completed.

   The Engineering Development Review Committee, EDRC, is asked to review and comment on the engineering development program within ODP and if necessary, recommend changes in the program structure used for engineering development.

2. The mandate of TEDCOM, as recommended by the ASRC, and approved by EXCOM in February 1994, is

   The Technology and Engineering Development Committee (TEDCOM) is responsible for recommending to PCOM drilling tools and techniques to meet the objectives of the scientific plan and for monitoring the progress of their development through liaison with the ODP/TAMU Engineering development department.

   The EDRC is asked to review the TEDCOM/ODP-TAMU/PCOM interaction in the context of this mandate.

MEMBERSHIP AND INTERNATIONAL DEVELOPMENT

EXCOM Motion (February 1994) — International Development

EXCOM endorses an international development strategy through the appointment of an Associate Director for ODP International Relations in the JOI office and the establishment of an International Partnership Advisory Committee (Malpas, Raleigh, Beiersdorf).

EXCOM further recommends the allocation of commingled funds for this purpose covering salary, travel and office services. IPAC should be established immediately as an ad hoc committee, and work with JOI to develop a budget and detailed operating plan.

APPROVALS

EXCOM Motion (February 1994) — Approval of the Minutes

EXCOM approves the Revised Draft Minutes of the June 22 - 23, 1993 EXCOM meeting in College Station, Texas.

PARTICIPANT LIST

EXCOM

Helmut Beiersdorf - Bundesanstalt für Geowissenschaften und Rohstoffe (Germany)
James Briden - Natural Environment Research Council (United Kingdom)
Robert Duce - Texas A&M University, College of Geosciences and Maritime Studies
Robert Gagosian - Woods Hole Oceanographic Institution
Dennis Hayes - Columbia University, Lamont-Doherty Earth Observatory
Yves Lancelot - Laboratoire de Géologie du Quaternaire (France)
Margaret Leinen - University of Rhode Island, Graduate School of Oceanography
John Malpas - Memorial University of Newfoundland (Canada-Australia Consortium)
Arthur Maxwell - University of Texas at Austin, Institute for Geophysics
Arthur Nowell (Chair) - University of Washington, College of Ocean and Fishery Sciences
John Orcutt - University of California, San Diego, Scripps Institution of Oceanography
Nicklas Pisias - Oregon State University, College of Oceanic and Atmospheric Sciences
Barry Raleigh - University of Hawaii, School of Ocean and Earth Science and Technology
Bruce Rosendahl - University of Miami, Rosenstiel School of Marine and Atmospheric Science
Renzo Sartori - European Science Foundation (Consortium for Ocean Drilling)
Asahiko Taira - Ocean Research Institute, University of Tokyo (Japan)

Liaisons

David Goldberg - Wireline Logging Services (ODP-LDGO)
Donald Heinrichs - National Science Foundation (United States)
Brian Lewis - PCOM Chair, University of Washington, College of Ocean and Fishery Sciences
Philip Rabinowitz - Science Operator (ODP-TAMU)
James Watkins - Joint Oceanographic Institutions, Inc.

JOIDES Office, University of Washington

Bill Collins - Executive Assistant and non-US Liaison
Karen Schmitt - Science Coordinator

Guests and Observers

Jack Baldauf - Science Operator (ODP-TAMU)
Timothy Francis - Science Operator (ODP-TAMU)
David Falvey - Bureau of Mineral Resources (Canada-Australia Consortium)
Michele Fratta - European Science Foundation (ODPC, Consortium for Ocean Drilling)
Kantaro Fujioka - Deep Sea Research Department (JAMSTEC)
Eiichi Kikawa - Ocean Development Division, STA (Japan)
Kazuhiro Kitazawa - Intergovernmental Oceanographic Commission
François Madelain - IFREMER (ODPC, France)
Bruce Malfait - US National Science Foundation
Dietrich Maronde - Deutsche Forschungsgemeinschaft (ODPC, Germany)
Audrey Meyer - MiraCosta College, USSAC Chair
Atsushi Omata - Deputy Director, Ocean Development Division, STA (Japan)
Thomas Pyle - Joint Oceanographic Institutions, Inc.

JOIDES EXECUTIVE COMMITTEE DRAFT MINUTES

Monday, January 31, 1994 9:00 am

A. INITIAL BUSINESS

Taira, host of the meeting, welcomed everyone to Kyoto. After introductions, he outlined the logistics for the EXCOM meeting and joint workshop with STA/JAMSTEC.

Leinen, the Chair of JOIBOG, reviewed for EXCOM the recent personnel changes at JOI and introduced Admiral James Watkins, the new JOI President. Leinen explained that Pyle had requested professional development leave and JOIBOG had agreed; Pyle's leave would be funded by non-commingled funds. A temporary Director, Jamie Austin, had been appointed and would fill in for Pyle at JOI, beginning March 1st, until a new Director was chosen.

1. Adoption of the Agenda

EXCOM Motion - Approval of the Agenda
EXCOM approves the revised Agenda for the meeting, January 31 - February 2, 1994.

Orcutt moved, Duce seconded vote: 16 in favor, 0 opposed

2. Approval of the Minutes

There were no additions or corrections to the Revised Draft Minutes of the June 22 - 23, 1993 EXCOM meeting in College Station, Texas.

EXCOM Motion - Approval of the Minutes
EXCOM approves the Revised Draft Minutes of the June 22 - 23, 1993 EXCOM meeting in College Station, Texas.

Briden moved, Taira seconded vote: 16 in favor, 0 opposed

B. POTENTIAL NEW PARTNERS

Watkins began with an overview of US science policy regarding basic research. He explained that in the US government, now in the post-cold war period, science and technology was regarded as the underpinning for sustained third-world economic development. Science and technology could also be a harmonizing influence at a time when there was a large amount of conflict in the world and therefore, the US would pay increased attention to international partnerships. Watkins stressed that partnerships, both international and national, must be created to facilitate the general advancement of science and technology in the world because of the pluralistic funding situations in the US and abroad.

Watkins thought that a reshuffling of priorities within the funding systems was inevitable and he did not want ODP to miss any opportunities to benefit from this reorganization process. Ocean research was a natural to succeed in securing funding within the national initiatives and mandates for "strategic" research. Watkins explained that JOI intended to work toward raising the consciousness of funding agencies and the public to ocean research. He saw ODP as a model for organizing international partnerships for scientific research.

Watkins proposed a three-pronged approach for EXCOM to consider as a strategy to increase partnerships and enhance ODP's contribution to national policy- and decision-making processes in the US and the member countries:

1. Identify nations that have been previously courted and approached about membership. Compile a list of current ongoing negotiations and previous negotiations as well as identify the principal scientists and/or managers involved on both sides of these

negotiations. Monitor the status of the ongoing negotiations and make an assessment of the success or failure of the negotiations. Create an advisory committee to review the history of actions taken and monitor the ongoing negotiations.

2. Compile lists of potential-partner countries, other than those that were identified in part 1, and match these potential-partners with appropriate current national partners. The current partner could be made responsible for pursuing the new membership and a formal timetable should be laid out for the other current members to monitor the progress and assist as necessary. Such efforts should be formally tasked with individual candidate countries ranked as to their likely ability to contribute to the program. A short-, mid-, and long-term strategy for adding new members needed to be developed and followed.

3. After identification of potential member nations, two efforts needed to be made for each potential member:

   a. the ODP science program management community, through a formal tasking by EXCOM, should approach its counterpart within the target nation to identify realistic estimates of levels of participation—both in terms of funds and number of qualified scientists. In addition, these counterpart groups should be asked to identify likely allies or opposition within their own government or scientific structures.

   b. efforts should be made to convince policy-makers within potential member countries to identify concrete steps that they would take within their government to assist ODP scientists and management in this special outreach.

Watkins felt that he could assist the ODP effort in getting high-level support in the US, at the cabinet and/or congressional level. He outlined his plan for approaching the US policy-makers in this effort. Watkins emphasized that the communication process needed to incorporate both the bottom-up and top-down approaches. To accomplish all of this, Watkins explained that a full-time staff position would be needed at JOI to support the JOI President in this effort. This staff person would organize and execute the plan, both short and long-term. In addition, EXCOM needed to designate an advisory committee to work with and guide this JOI staff person and to be the formal link between the scientific community and ODP's efforts to increase membership. Members of this advisory committee should probably include a member of EXCOM and a member of PCOM. Watkins thought that the JOI staff person would need to work closely with the advisory committee and must communicate well with both the scientific and governmental contacts they would develop during this process.

Watkins stressed that the time was now for ODP to utilize a strategy such as he had outlined to exploit a favorable climate in the US Congress and State Department; he cited several examples of Senators and government officials in the US that would be in a position to help ODP. Watkins explained that if JOI had the appropriate staff to pursue this issue, there were ways that ODP could benefit directly in terms of increased membership. Watkins noted that the US was looking for foreign policy initiatives that were collaborative and non-controversial; ODP was considered an exemplary collaborative program. He urged EXCOM to take action and adopt his recommended program.

Pisias thought that there were two questions that EXCOM needed to consider: one was what type of information should ODP prepare to inform and interest senators and/or ambassadors etc. in increasing ODP membership, and the other question was would this strategy raise the need for partial memberships or different membership options for including the smaller countries that an effort like this would attract? Watkins saw the first problem as a part of the need for information to flow both from the top-down and bottom-up when plans were being made to approach a potential member; this coordination was a key role for the JOI staff person. As for membership options, he thought that depended on the scientific community and what type of flexibility they would agree to and allow for.

Briden agreed that a sustained effort to increase membership was necessary if ODP wanted to see results. On the issue of partial memberships, Briden stressed that international coordination was crucial to the success of any membership option and it would be essential to clarify the difference between Watkins' role at JOI for US national representation versus his role as representing ODP's international interests during an ODP membership effort. He perceived that there was a mixing in the political realm between national interests and internationalism, often implemented as internationalism in the service of individual nations and this was not always comfortable. Briden recognized that this was the situation that scientists would live with in the 1990's and somehow had to make work for ODP. Briden noted that one forum that had already brought up these kinds of issues to intergovernmental level was the Megascience Forum of the OECD; this mechanism was potentially useful because it could successfully attract minister-level attention to scientific problems. Briden wanted ODP to exploit that potential as another part of the government-level of the initiative. However, Briden cautioned that this type of high-level approach would pose a challenge of clarity because earth or ocean science issues would be lumped all into one category at that level. The critical necessity was that ODP be separated out from related international programs in the end, to the benefit of the program. Briden stressed that a lot of clarifying needed to be done between international and national positions, and also how to aggregate and disaggregate the scientific issues that are brought to the government level.

Watkins thought that national and international interests were coming together and they had to be considered at the outset and not as afterthoughts. He explained that in the US the White House was establishing a new Science and Technology Agency under the President, which the Vice-President will Chair, it is a whole new structure to deal with issues such as the congressional mandate for separating strategic vs. generic research. Watkins wanted to find a way to plug into what was happening both nationally and internationally so that ODP did not get left behind when priorities were set in the US next year. Watkins agreed that clarity was necessary in pursuing ODP partnerships.

Raleigh thought that ODP was in a good position to offer an international cooperative model for science. However, he pointed out that the number of potential countries that would be interested in ODP membership was small. Raleigh questioned the feasibility of convincing scientists and officials in the potential member countries that ODP was a worthwhile program for their country if scientists there were not already involved; this type of persuasion could take more resources than EXCOM was willing to provide.

Rosendahl asked Watkins who he wanted to do what, when and where—was the planning that far along? Watkins explained that he needed help to begin to implement his proposed strategy to find new members, the first step was to get staff support at JOI and an advisory committee in place to begin the international membership development process for ODP. Rosendahl asked if Watkins wanted to use commingled funds to hire a staffer to work with him and the EXCOM advisory board? Watkins agreed that it would be necessary to allocate funds for this staff position to help him find new partners.

Falvey agreed with the approach of dedicating a staff person and advisory committee, ad hoc approaches had not worked to-date. Based on the Can-Aus experience in looking for a new partner, he stressed that the top-down approach was essential in combination with the bottom-up support. Falvey noted that the target countries were not of the top of the OECD countries in terms of GNP, to get money out of them would be difficult and must be authorized at a very high level. Falvey also made the observation that consortiums of nonaligned countries were not realistic and could only be developed with a great deal of effort.

Taira thought that the expanding of ocean sciences into more international countries was important and a strategy that EXCOM should pursue. Briden also wanted EXCOM to consider getting more money from existing partners as an additional option for expanding the program budget. Nowell concluded the discussion by asking Raleigh and Falvey to work with Watkins to prepare a written motion on the international development issue for EXCOM to discuss and vote on during the Wednesday session.

C. REPORTS

1. Membership Reports

a) Can/Aus

Malpas reported that the Australian ODP Secretariat was now the Can-Aus Consortium ODP Secretariat; the Canadian ODP Secretariat would be moving after October 1, 1994, bids for the new location were still pending. As of October 1, 1993, Malpas was the Can-Aus EXCOM member, and Falvey was the Can-Aus ODPC member.

Malpas reviewed the history of the funding situation for ODP in Canada and explained the origin of the current funding shortfall. To solve the problem, Canada had made a decision to search for a third partner and Malpas had been involved in efforts to interest Korea in becoming a member of the consortium. Malpas had gone to Korea and personally met with officials from several government agencies, he noted that support in Korea for joining ODP was high; it was a slow process and communication was essential at all levels of negotiation. Canada was awaiting Korea's decision, but Malpas thought that it would be positive.

Coffee Break ..... *10:30 - 10:45 am*

b) ECOD

Sartori reported that the MOU between ESF and NSF had been signed in July 1993. Since then, the internal MOUs for all of the 12 countries within the consortium had been signed. Sartori reviewed ODP-related activities within the ECOD countries, interest for ODP-related research had been growing steadily within the consortium. In several countries, there was increased funding for shore-based ODP-related research. Recent North Atlantic ODP activities had been very successful and the ECOD countries had been heavily involved in both the NARM and NAAG programs. For 1994, the ECOD countries were looking forward to the Mediterranean projects scheduled for Legs 161 - 162. The Fifth ESF Workshop in Davos, Switzerland was scheduled for September 1994. Sartori noted that an important part of the workshop would be a discussion of the future directions of ODP research based on the results of the EXCOM-STA/JAMSTEC workshop on NEOD.

c) France

Lancelot reported that France had signed its MOU with NSF late last summer. He explained that budget problems would be an ongoing problem for France due to overall R&D budget declines in the combined Ministery of Higher Education and Research. ODP France could not count on an easy funding future, however support for ODP was strong in the French science community. The strength of this support was illustrated by the results of the recent two-day meeting sponsored by the French Geological Society in December 1993. The meeting included marine geosciences and there were a large number of ODP-related abstracts for talks and poster session, there was a strong demonstration of the strengths of the French ODP community. One important result of this meeting was the strong message from the earth science community that ODP should be integrated as a tool within other important science initiatives in France, such as: paleoceanography, global change, ridge processes, margins, fluid budgets and natural hazards. Lancelot thought that this approach would help ODP-France renew next year.

Lancelot explained that France had signed the MOU for five years in principle but the MOU included a clause that allowed for a reevaluation of France's participation in 1995 for a decision to be made in 1996 about France's continued participation until 1998. Lancelot thought that happens in 1996 would be dependent on several issues. One was the long-term future and reorganization of the program, Lancelot would present more on this at the workshop. The second issue was application of the tool to the task and France was interested in development of a multiple-platform program. France would also be expecting some technological developments in the areas of deep-drilling, DCS and utilization of other platforms for light coring, logging and experiements etc.. The future for France in the post-1998 period, which would be evaluated in 1996, would be strongly dependent on how those technological development issues were

addressed by ODP in the near future. Lancelot noted that the internationalization of ODP, both with the new logging centers and the Bremen core repository, had increased ODP support in France.

d) **Germany**

Beiersdorf reported on German activities on ODP legs in 1993. He also reviewed the ODP-related projects and site surveys for ODP programs funded by DFG. On Leg 151, the Arctic operations had well covered by TV and radio program. Beiersdorf thought that efforts to help publicize the program were essential for ODP—particularly if there were plans to request higher levels of financial support from governments.

Beiersdorf urged ODP to cooperate more with the continental drilling programs that were developing around the world, he reported that the KTB hole was now over 8 km deep. Beiersdorf stressed that there was experience that could be of great help to ODP and he cited deviation control and downhole measurements as areas where technological development could be shared with ODP. The German ODP Colloquium would be held in Cologne on March 2-4, 1994.

e) **Japan**

Taira reported Japan had signed its MOU with NSF in September, 1993. He then presented the organization al structure of Japan's ODP Program and explained how it related to the "New Era of Ocean Drilling" (NEOD) initiative of STA-JAMSTEC (Appendix 1.0). Taira supported the recent collaboration between ODP Japan and the OD21/NEOD program; he was a liaison to this STA-JAMSTEC program and he urged JOIDES to give strong support and science guidance to the program at the upcoming workshop. He concluded with a review of ODP Japan's national long-range planning activities and recently-funded site surveys (Appendix 1.1).

f) **United Kingdom**

Briden reported that in the last year the UK had been going through the process of setting up a national Science and Technology strategy, as a result NERC would operate under a new charter as of April 1, 1994. This change would require NERC to develop its science strategies to be in line with the stated government policiy. The UK policies strongly resembled the types of policies the US was developing. Briden stressed that in strategic terms it was not ODP that would be focused on, the focus would be on the national science and technology goals and ODP would come in as a means of achieving those goals.

Briden announced that NERC had funded some instrumentation for the preliminary TAG pre-drilling work through the BRIDGE program; however, the long-term array deployment for monitoring TAG after drilling was not yet approved. The JOIDES Office organization and preparation was well underway. The UK's national ODP Forum would be held later in February in Leicester, the forum would also be used to discuss and reaffirm the British perspective on ODP long-range planning.

g) **United States**

Malfait reviewed the budget situation at NSF at the agency level and the division level; ODP's budget was compared for FY93 and FY94 (Appendix 2.0). Malfait reported on the plans and achievements of the USSAC Support Program and the NSF Grants Program (Appendix 2.1).

Pyle reviewed the JOI/US Science Support Program accomplishments in 1993 and their plans for 1994 (Appendices 2.2 - 2.3). Speakers for the 1994-1995 JOI/USSAC Distinguished Lecturer Series had been named and schedules were being planned (Appendix 2.4).

2. **ODP Council Report**

Heinrichs reported that at the last ODPC meeting the council had affirmed the international contribution level of $ 2.95 M through September 30, 1995 —i.e. the same level as it was now. Heinrichs explained that this decision had been made in response to earlier Council discussions about having annual increases in contributions. He noted that ODPC would discuss an increase for the post-FY95 budget, but this was subject to further discussions on memberships. In

addition, ODPC had discussed long-range planning, the post-2003 NEOD period, and had identified OECD as important factor in the long-range planning process.

Lunch Break ..... *12:00 pm - 1:00 pm*

3. **Program Management Reports**

a) **NSF**

Malfait reported that a new contract between JOI and NSF had been finalized on September 21, 1993; it was a five-year contract with five one-year options that could take the program through 2003 (Appendix 3.0). Malfait outlined the major tenants of the contract and noted that there were no major changes in the contract terms; a minor change was the provision for the PEC to be done every three years, with the first to be done in FY95.

Malfait reviewed the results of the recent audit of JOI's ODP contract and subcontracts for the period FY89 - FY91(Appendix 3.1). NSF's conclusion was that the JOI program and financial staffs had done an excellent job in fiscal and administrative management. Malfait concluded with a comparison of the FY93 and FY94 budgets and review of the FY94 Program Plan changes (Appendix 3.2).

b) **JOI Inc.**

Pyle reviewed the status of FY94 ODP activities, issues and budget pressures (Appendix 4.0). Pyle outlined the FY95 outlook for budgets (Appendix 4.1); NSF's budget guidance had been to plan for a level budget of $ 44.9 M (Appendix 4.2). Pyle reported on FY95 Program Plan development and the major pressures for the FY95 budget (Appendix 4.3).

c) **Science Operator, ODP-TAMU**

Baldauf reported on the highlights and results of the science operations on Legs 150 - 153 (Appendices 5.0 - 5.14). He then reviewed progress on scheduling and staffing of the FY95 science programs (Appendices 5.15 - 5.17). Baldauf outlined the publication dates for the ODP Initial Results and Scientific Results volumes through Leg 150 (Appendix 5.18) and gave an overview of publication production (Appendices 5.19 - 5.20) and sample requests (Appendix 5.21). Baldauf reviewed the status of the Bremen core repository contracting process and explained that the repository would become operational for sampling about three months after the contract negotiations were finalized.

Beiersdorf asked about the use of the icebreaker *Fennica* on Leg 151, he wondered what lessons had been learned during those operations? Rabinowitz explained that, because of the way the ice conditions turned out to be, the *Fennica* had been utilized largely as an ice-scouting vessel instead of an icebreaking vessel. He thought that the lessons learned from Leg 151 were: (1) when drilling near the edge of the polar ice pack several alternate sites need to be approved before the leg starts, and (2) a single icebreaker such as *Fennica* cannot protect the drillship within a field of pack ice. A less capable vessel was sufficient for scouting purposes, but the drillship would stay clear of the pack ice.

Lewis asked what the status of the computer upgrade RFP was? Baldauf reviewed the timeline for the computer upgrade, the start of the contract was scheduled for July 1994.

d) **Wireline Logging Services, ODP-LDEO**

Goldberg reported that the internationalization of the logging program was going well and that the new labs in the UK and France were operational. He reviewed recent logging operations and results from Legs 151 - 153 (Appendices 6.0 - 6.1) and the upcoming logging operations on Legs 154 - 156 (Appendix 6.2) and for Leg 158 (Appendix 6.3). Goldberg then explained the new initiatives being pursed by BRG (Appendix 6.4).

Taira asked for more information on LWD strategy and operational specifications. Goldberg reviewed the procedure and equipment planned for LWD on Leg 156; he stressed that the LWD tools were standard in the oil industry. Beiersdorf asked about the status of the BHTV? Goldberg explained that the BHTV tool still needed to be tested after its most recent modifications.

e) PCOM Report

Lewis reviewed the main items of business from the August 1993 PCOM meeting (Appendices 7.0 - 7.1) and the December 1993 annual meeting (Appendix 7.2). In December, the DRILLOPTS meeting had been held prior to the PCOM meeting in response to the ASRC recommendations. The purpose of the DRILLOPTS meeting was to have a small working group review the rankings of the FY95 Prospectus proposals and prepare scheduling options to present to PCOM. Lewis reported that the meeting had been very successful and would be convened again at future annual meetings.

Shallow Water Drilling Working Group (SWDWG) Report

Lewis reported that PCOM had adopted the Shallow Water Drilling Working Group (SWDWG) Report. He explained that PCOM had decided that, since the hazard surveys recommended by the SWDWG Report were for safety and not science, the funding for hazards surveys should come from ODP commingled funds. To implement the hazard survey, ODP-TAMU would be tasked by JOI to contract for the services and insure quality control during the surveys.

FY95 Budget Priorities

Lewis outlined PCOM's prioritization list for the FY95 budget (Appendix 7.3). Rosendahl asked what the cost of the computer upgrade was going to be? Rabinowitz answered that it was a three year project and a $ 3 M-plus commitment over three years. Lewis stressed that PCOM had made a firm commitment to the upgrade and cited the PCOM motion from December (Appendix 7.4). Lancelot expressed his concern that the budget estimates were inflated, he wanted to know if there was an adequate review of the process in place to insure that the investment was a good one, especially given the rapidly-changing nature of computer/database technology? Lewis reviewed the history of the upgrade planning and RFP review process. He assured EXCOM that the process had been well planned and that the JOIDES Computer RFP Evaluation Committee was very involved in the evaluation and review of the RFP and the bids submitted to ODP-TAMU.

EXCOM discussed BCOM's role in evaluating the computer/database upgrade RFP costs in March without any more information than was available now. Briden requested that ODP-TAMU present BCOM with a clear picture of the three-year plan presented not in an all-or-nothing fashion but with enough detail so that BCOM could look at the cost of its components. Lewis explained that PCOM also requested a phased list of deliverables and this was being prepared by the bidders. Baldauf agreed that ODP-TAMU would have this information in April but he did not think that it would be available before BCOM met. Pyle stressed that BCOM could not do anything more than take the budget priorities set by PCOM and prepare a budget based on those priorities.

Coffee Break..... 3:00 - 3:15 pm

1995 Science Plan

Lewis reviewed the FY95 science schedule and objectives, including the replacement of DCS with VICAP/MAP for Leg 157 (Appendices 7.5 - 7.6).

PCOM's Long-Range Planning Efforts

Lewis outlined PCOM's recent long-range planning activities and PCOM's plan to update the LRP (Appendix 7.7); one of the main reasons to update the LRP was that the LRP budgets were now unrealistic and in need of revision. Lewis explained that the first step would be to add another phase to the LRP (Phase IV: 2003 - 2008) and to plan what the technology development and scientific objectives would be for this period. The second step in revising the LRP would be to get updated input on the thematic objectives and technology development for Phases II and III. The third step was for PCOM to solicit input on the LRP from other earth science groups. The fourth step was for PCOM to put all of this information together and create an updated LRP.

Watkins asked if PCOM could evaluate and analyze how the current budget shortfalls from the forecasted LRP budgets had impacted the program? He wanted to see this information presented

in terms that were easy for non-scientists to understand to show how the critical the budgets were to the success of the program. Lewis agreed that this could be done.

4. FY95 NSF Budget Planning

Heinrichs reviewed the assumptions that the target figure of $ 44.9 M for the FY95 ODP budget was based on (Appendix 8.0) he and explained NSF's overall budget planning strategy for FY95. Since there would be only modest growth in the NSF budget for ODP in FY95, NSF had requested that contractors prepare for level budgets. Heinrichs stressed that if six partners were not retained it would severely impact the budget. He was optimistic that Can-Aus would solve its problems and the existing six members would still be there.

End of Day 1 ..... *5:00 pm*

Tuesday, February 1, 1994 9:00 am

C. ADVISORY STRUCTURE REVIEW COMMITTEE (ASRC) REPORT

Nowell asked Lewis to present a summary of each of the ASRC Report proposals as well as PCOM comments and actions in response to each proposal. EXCOM decided that it would discuss each proposal along with PCOM's recommendation individually. Motions would be prepared and voted on during Wednesday morning's review of motions (Agenda Item G)

Lewis reviewed the history of the ASRC Report and PCOM's deliberations on the ASRC recommendations. Lewis reviewed his general comments on the ASRC Report (Agenda Book, p. 137) and then went into the specific PCOM recommendations regarding each ASRC proposal.

1. ASRC Proposal 1: Workshops/COSODs/White Papers

Lewis reviewed the ASRC proposal regarding Workshops/COSODs/White Papers. At its August 1993 meeting, PCOM endorsed the ASRC Proposal 1 with the following motion:

PCOM Motion (August 1993) ASRC Proposal 1

PCOM endorses the proposals numbered 1, 2, 3, 6, 9, and 11 in the ASRC report and recommends that EXCOM adopt these proposals.

EXCOM discussed whether or not the workshops were a necessary expense or if a less expensive method, such as e-mail, was more appropriate given the current budget situation. EXCOM agreed to amend the ASRC proposal to take out its endorsement of workshops and concluded that the wording of an EXCOM motion should indicate that White Papers were to be reviewed through e-mail or other widely advertised mechanisms. Briden wanted the motion to include a note about what the White Papers were so that people outside the program would know what the purpose of the documents were. On Wednesday, EXCOM passed the following motion:

EXCOM Motion (February 1994) — ASRC Proposal 1

EXCOM endorses the PCOM motion but recommends that broad review of the White Papers be achieved though e-mail or other widely advertised mechanisms. EXCOM interprets White Paper to mean a JOIDES planning document.

Nowell moved, Leinen seconded vote: 16 in favor

2. ASRC Proposal 2: Role of Thematic Panels

Lewis reviewed the ASRC proposal regarding the role of Thematic Panels. At its August 1993 meeting, PCOM endorsed the ASRC Proposal 2 with the following motion:

PCOM Motion (August 1993) ASRC Proposal 2

PCOM endorses the proposals numbered 1, 2, 3, 6, 9, and 11 in the ASRC report and recommends that EXCOM adopt these proposals.

Hayes asked how the panels solicited proposals, was it a general "RFP" or were specific individuals targeted? Lewis reviewed how panels had successfully solicited proposals for high-priority thematic objectives in the past, citing the recent example of SGPP's use of a "generic" gas hydrates proposal in its rankings to attract proposals to study gas hydrates. Lancelot thought that the panels should increase their efforts to plug into the scientific White Papers of research groups like InterRidge. He wanted other research programs and initiatives to feed ODP more proposals and not to have the JOIDES system trying to generate proposals itself. At the conclusion of the discussion, EXCOM endorsed PCOM's motion. On Wednesday, EXCOM passed the following motion:

EXCOM Motion (February 1994) — ASRC Proposal 2

EXCOM endorses the PCOM motion.

Nowell moved, Duce seconded vote: 15 in favor, 1 abstention

3. ASRC Proposal 3: Overlapping of Themes, Liaisons with International Groups

Lewis reviewed the ASRC proposal regarding the overlapping of themes and liaisons with international groups. At its August 1993 meeting, PCOM endorsed the ASRC Proposal 3 with the following motion:

PCOM Motion (August 1993) ASRC Proposal 3

PCOM endorses the proposals numbered 1, 2, 3, 6, 9, and 11 in the ASRC report and recommends that EXCOM adopt these proposals.

After brief discussion, EXCOM also endorsed this proposal and PCOM's motion. On Wednesday, EXCOM passed the following motion:

EXCOM Motion (February 1994) — ASRC Proposal 3

EXCOM endorses the PCOM motion.

Nowell moved, Taira seconded vote: 16 in favor

4. ASRC Proposal 4: Handling of Drilling Proposals

Lewis reviewed the ASRC proposal regarding the handling of drilling proposals. At its August 1993 meeting, PCOM responded to the ASRC Proposal 4 with the following motion:

PCOM Motion (August 1993) ASRC Proposal 4

- PCOM considers that the intent of ASRC Proposal 4 may be met best by modifying the existing system, rather than replacing it.
- PCOM refers the issue of more rigorous proposal review to thematic panels and PANCH for comment. PCOM will consider revised guidelines for proposal review at its December 1993 Meeting. PCOM encourages all panels to be frank in their reviews, particularly if it is unlikely that a proposal will ever get drilled.
- To prepare operational options for consideration at PCOM's annual (Dec) meeting, PCOM Chair will convene a one-day meeting of thematic-panel, SSP, PPSP and DMP chairs together with one representative each from TAMU & LDEO.

As a follow-up in December, PCOM adopted revised *Proposal Submission Guidelines, JOIDES Panel Meeting Schedule,* and *Proposal Review Guidelines* with the following motion:

PCOM Motion (December 1993) ASRC Proposal 4

PCOM adopts the revised *JOIDES Proposal Submission Guidelines, JOIDES Panel Meeting Schedule,* and *Proposal Review Guidelines* endorsed by the PANCH at the PCOM December 1993 Annual Meeting.

After a brief discussion, EXCOM agreed to endorse PCOM's motions and actions subject to the incorporation of Dürbaum's final comments on the revised documents. On Wednesday, EXCOM passed the following motion:

EXCOM Motion (February 1994) — ASRC Proposal 4
EXCOM endorses the PCOM motion.

Raleigh moved, Sartori seconded vote: 16 in favor

5. ASRC Proposal 5: SSP, PPSP

Lewis reviewed the ASRC proposal regarding the SSP and PPSP. At its August 1993 meeting, PCOM responded to the ASRC Proposal 5 with the following motion:

PCOM Motion (August 1993) ASRC Proposal 5

* PCOM accepts the ASRC's assertions on the important roles of SSP and PPSP in the assessment and augmentation of proposals for drilling but does not accept the Review Panel's recommendations for changes to the operations of the Panels.
* New procedures to cope with early identification of highly-ranked proposals with possible safety issues have been approved by PCOM and are now in place between the two Panels.
* PCOM sees major disadvantages in reducing either the size or frequency of meetings for SSP and believes it important that the task of helping proponents augment their survey packages remain with SSP "watchdog" specialists, rather than pass this role to JOIDES Office staff.

Lewis explained PCOM's objections to the specifics of the ASRC proposal and he outlined what PCOM had done to address ASRC concerns regarding safety and site survey input. After a brief discussion, EXCOM endorsed PCOM's motion. On Wednesday, EXCOM passed the following motion:

EXCOM Motion (February 1994) — ASRC Proposal 5
EXCOM endorses the PCOM motion.

Leinen moved, Sartori seconded vote: 16 in favor

6. ASRC Proposal 6: Panel and Shipboard Party Membership

Lewis reviewed the ASRC proposal regarding panel and shipboard party membership. At its August 1993 meeting, PCOM endorsed the ASRC Proposal 6 with the following motion:

PCOM Motion (August 1993) ASRC Proposal 6

PCOM endorses the proposals numbered 1, 2, 3, 6, 9, and 11 in the ASRC report and recommends that EXCOM adopt these proposals.

Malpas asked for clarification on the rights of an ODP member regarding panel membership based on the MOU. Heinrichs thought that the MOUs were vague in terms of the exact implementation of panel membership, but he noted that the system had worked well on the average over time. Lancelot agreed that the MOU should be non-binding and relatively vague so that negotiation could be used to settle problems and so that the negotiations could be based on science.

At the conclusion of the discussion, EXCOM endorsed PCOM's motion. On Wednesday, EXCOM passed the following motion:

EXCOM Motion (February 1994) — ASRC Proposal 6
EXCOM endorses the PCOM motion.

Orcutt moved, Briden seconded vote: 15 in favor, 1 abstention (Malpas)

7. ASRC Proposal 7: Selection of New JOIDES Office

Lewis reviewed the ASRC proposal regarding the selection of a new JOIDES Office. At its August 1993 meeting, PCOM responded to the ASRC Proposal 7 with the following motion:

PCOM Motion (August 1993) ASRC Proposal 7

Continue the RFP process every two years, alternating between the US and a non-US partner. Each non-US partner may submit only one bid to JOI Inc. for consideration. To gain experience, the PCOM-chair-elect should attend PCOM for a period of at least one year prior to his/her tenure.

EXCOM debated whether or not it was appropriate for PCOM or EXCOM to make recommendations on the US JOIDES Office issue. Heinrichs discouraged EXCOM from changing its previous position on this issue and urged EXCOM to fully investigate and discuss all the alternatives before taking action. EXCOM agreed that there was at least a year before this question needed to be addressed and concluded the discussion by reaffirming its previous recommendation to rotate the JOIDES Office between the US and non-US partners. On Wednesday, EXCOM passed the following motion:

EXCOM Motion (February 1994) — ASRC Proposal 7

EXCOM notes that the item should have come under the purview of EXCOM, and EXCOM reaffirms the alternation of the JOIDES Office between US and non-US partners. For the period 1996 - 1998 the US partner will submit one nomination to JOI Inc. The procedure for selecting the next non-US partner will be determined by 1996.

Raleigh moved, Hayes seconded vote: 16 in favor

Coffee Break..... 10:30 - 10:50 am

8. ASRC Proposal 8: PCOM

Lewis reviewed the ASRC proposal regarding PCOM. At its August 1993 meeting, PCOM responded to the ASRC Proposal 8 with the following motion:

PCOM Motion (August 1993) ASRC Proposal 8

a) PCOM appreciates the comments of ASRC regarding the balance between long-range planning versus operational details. PCOM notes that long-range goals are defined by thematic White Papers and that actual legs ultimately stem from proposals from the scientific community. PCOM shall take strong interest in helping thematic panels in producing White Papers for 1995- 1998 and 1998 - 2003. PCOM takes the point that global problems require global drilling, and that the pursuit of global goals may not emerge automatically from proposal-driven programs.

b) PCOM agrees that information conveyed by liaisons and watchdogs may be less comprehensive than that received through panel chairs. PCOM recommends, therefore, that panel chairs routinely present proposals for scheduling at the annual PCOM meetings and answer questions regarding scientific and technical details, assisted by PCOM watchdogs. The liaisons and watchdogs should play a more proactive role, including contacting proponents of relevant projects. As in the past, PCOM members and panel chairs who are proponents cannot present their drilling program to PCOM.

Lancelot thought that the issue of panel chairs attending PCOM meetings was important because PCOM was composed of people who represented institutions or countries and at any given time there may not be a balance of scientific interests on the panel. He asked why PCOM resisted the proposal for panel chairs to attend all PCOM meetings? Lewis replied it was because of PCOM's interests in maintaining liaisons with panels, PCOM was concerned that these liaisons would disappear if this was proposal was implemented. Lewis stressed that there was nothing to stop PCOM from inviting panel chairs to additional meetings when the need arose but PCOM's consensus was that there was not need to require panel chairs to be at all meetings. Lewis noted that he would be inviting the thematic panel chairs and the TEDCOM Chair to the April PCOM meeting to participate in discussions of White Paper revision and updating of the LRP.

Pisias did not think that you could ask the panel chairs, who were volunteers, to do more without paying them. Lewis agreed that the panel chairs had expressed reservations about the additional time commitment two extra meetings per year would require.

Pyle observed that panel chairs often behaved as if they needed to be advocates for proposals that were highly-ranked by their panels regardless of relative merit. He thought that a more balanced and distanced approached to proposal review was what PCOM should be doing and this was often better accomplished without the panel chairs being present.

EXCOM concluded that the system was very flexible as it was now and agreed with PCOM that panel chairs should be invited to additional meetings only when PCOM needed their input, it would be a burden to the panel chairs to require them to come to meetings if they were not needed. On Wednesday, EXCOM passed the following motion:

EXCOM Motion (February 1994) — ASRC Proposal 8

EXCOM endorses the PCOM motion, noting that the ASRC points out the heavy load that panel chairs already have in executing their tasks and that requiring additional meetings for them to attend would be burdensome. EXCOM notes that PCOM has the option to invite panel chairs as necessary.

Taira moved, Malpas seconded vote: 13 in favor, 3 abstentions

9. ASRC Proposal 9: Scientific Syntheses

Lewis reviewed the ASRC proposal regarding scientific syntheses. At its August 1993 meeting, PCOM endorsed the ASRC Proposal 9 with the following motion:

PCOM Motion (August 1993) ASRC Proposal 9

PCOM endorses the proposals numbered 1, 2, 3, 6, 9, and 11 in the ASRC report and recommends that EXCOM adopt these proposals.

After a brief discussion, EXCOM endorsed PCOM's motion. On Wednesday, EXCOM passed the following motion:

EXCOM Motion (February 1994) — ASRC Proposal 9

EXCOM endorses the PCOM motion.

Rosendahl, Maxwell seconded vote: 15 in favor, 1 abstention

10. ASRC Proposal 10: TEDCOM, Engineering Developments

Lewis reviewed the ASRC proposal regarding TEDCOM and engineering developments. At its December 1993 meeting, PCOM responded to the ASRC Proposal 10 with the following motion:

PCOM Motion (December 1993) ASRC Proposal 10

PCOM acknowledges and applauds the continuing and growing role of TEDCOM in helping the JOIDES Advisory Structure evaluate major engineering development programs like DCS and retractable-bit technologies.

In reference to ASRC's Proposal 10, and in recognition of the continuing importance of such engineering development to both the present and future of ODP, PCOM recommends to EXCOM that an external group be designated to review the role of engineering development within ODP, including the relationship between TAMU, TEDCOM, PCOM, and the Advisory Structure, and that this review occur as soon as possible.

Lewis explained that the main issue raised by the ASRC proposal was the review of engineering development at ODP-TAMU. In December, based on recommendations from TEDCOM, PCOM reversed its earlier position that an outside review was not necessary and was now recommending a review be done as soon as possible. Rosendahl asked what ODP-TAMU's position was on this review? Duce said they were in favor of any process that could improve engineering at ODP-TAMU.

Maxwell asked how this review would be implemented? Lewis explained that he had drafted a Terms of Reference for EXCOM to review as well as a list of members for EXCOM to consider. If this review was endorsed by EXCOM, JOI would be responsible for implementing it as soon as possible. At the conclusion of the discussion, EXCOM endorsed PCOM's motion. On Wednesday, EXCOM passed the following motion:

> **EXCOM Motion (February 1994) — ASRC Proposal 10**
>
> EXCOM endorses the PCOM motion and will develop mandates, Terms of Reference and a schedule for an engineering review.

Rosendahl moved, Duce seconded vote: 16 in favor

11. ASRC Proposal 11: New Technologies for Downhole Measurements, DMP's Role

Lewis reviewed the ASRC proposal regarding technologies for downhole measurements and DMP's role. At its August 1993 meeting, PCOM endorsed the ASRC Proposal 11 with the following motion:

PCOM Motion (August 1993) ASRC Proposal 11

PCOM endorses the proposals numbered 1, 2, 3, 6, 9, and 11 in the ASRC report and recommends that EXCOM adopt these proposals.

After a brief discussion, EXCOM endorsed PCOM's motion. On Wednesday, EXCOM passed the following motion:

> **EXCOM Motion (February 1994) — ASRC Proposal 11**
>
> EXCOM endorses the PCOM motion.

Raleigh moved, Rosendahl seconded vote: 16 in favor

12. ASRC Proposal 12: Mode of Operation of Panels, More Support of Panels' Work by the JOIDES Office Staff

Lewis reviewed the ASRC proposal regarding the mode of operation of panels, and more support of panels' work by the JOIDES Office staff. PCOM responded to the ASRC Proposal 12 with the following motion:

PCOM Motion (August 1993) ASRC Proposal 12

PCOM will encourage panels and committees to delegate more work to members, subcommittees and Ad hoc bodies as appropriate.

PCOM recommends that no additional responsibilities be placed on the JOIDES Office without a suitable increase in resources. PCOM notes that the JOIDES Office has instituted or will be instituting a number of the suggestions of the ASRC such as, continuing development of proposal guidelines, providing a compendium of active proposal abstracts to all JOIDES Panel Members and the maintenance of a data base of proposals including proposal status, rating, and reviews.

To ensure that proposals falling outside Thematic Panel mandate receive due consideration, the JOIDES Office will flag proposals for possible review by PCOM.

EXCOM discussed what the problems that the ASRC was trying to address really were. Briden objected to the requirement that panel chairs do their own secretarial work for meetings, he would try to have the UK JOIDES Office provide more help in this area. At the conclusion of the discussion, EXCOM endorsed PCOM's motion and encouraged the JOIDES Office to support the panels as much as possible. On Wednesday, EXCOM passed the following motion:

> EXCOM Motion (February 1994) — ASRC Proposal 12
>
> EXCOM endorses the PCOM motion and encourages the JOIDES Office to supply as much help to the panel chairs as is feasible within the present budget and personnel.

Beiersdorf moved, Briden seconded vote: 16 in favor

D. ENGINEERING REVIEW MANDATE

Lewis compared the ASRC's recommended Terms of Reference for an engineering development review committee with PCOM's draft of recommended Terms of Reference. Lewis stressed that there were two important issues that needed to be addressed by the review, one was an ODP-TAMU management issue, the other was a JOIDES advisory structure issue. Lewis presented names of potential candidates for the review committee to EXCOM, names had been submitted to the JOIDES Office by PCOM, ODP-TAMU and TEDCOM. Pyle wanted the review committee to be kept small, five to six people at most.

Briden thought the scope of the review and the Terms of Reference needed to be improved so that the ability of the committee to make recommendations on a wide range of possibilities was insured. Nowell called for a subcommittee to work on improving the wording of the Terms of Reference and to draft a motion for EXCOM's approval. Pisias, Maxwell and Lewis agreed to prepare a draft of a motion for presentation to EXCOM on Wednesday morning for a vote.

End of Day 2..... 12:00 pm

Wednesday, February 2, 1994 9:00 am

E. OLD EXCOM BUSINESS

1. Candidate Membership

After discussion, EXCOM tabled the issue of candidate membership until the June 1994 meeting.

2. International Development

Falvey presented the international development proposal prepared by Raleigh, Watkins and himself. He reviewed the proposed objectives and implementation strategy for international development in ODP membership.

Lancelot thought that this proposal could be an importnat short-term bonus for ODP. However, he explained that the French position was that in the long-term the goal of international development for ODP was not yet clear. France wanted to have a better definition of where this process was going and a clearer picture of where ODP thought that these smaller countries would fit into the program. Lancelot stressed that this vision of the future was a critical part of the long-term strategy because the incorporation of smaller countries into ODP memberships should be done so as to be beneficial to the scientific communities of these smaller countries as well as to ODP science. He presented the French picture of how ODP should try to reorganize itself to arrive at this type of symbiotic relationship. In the French vision for the future, the smaller countries would be linked to larger, stronger countries within the program in order to help build their scientific programs. Falvey did not see that the proposal he had presented would preclude ODP from evolving into such a system as Lancelot described, Falvey saw this as just the first step in a long-term process. EXCOM discussed the long-term organizational possibiliites for ODP given the economic strengths and geographic distributions of current member countries and potential member countries.

EXCOM discussed what the qualifications of the proposed Associate Director would be. Raleigh thought that there was a need for a person with considerable scientific stature but he acknowledged that there would also be a lot of grass-roots work for such a staff position so it might not be necessary have to hire a very senior person. He added that the Associate Director would only have a short time to succeed in getting a new partner so a full-time effort would be essential. Watkins agreed that there would be a range of individuals who he thought could fill the position and that the proposed position was for a full-time staff person dedicated to ODP international development.

EXCOM discussed possible directions for international membership initiatives. Final presentation and vote on the international development motion was tabled until end of day (Agenda Item G).

F. NEW EXCOM BUSINESS

1. BCOM Issues

Lewis reviewed the history of ODP's planning for the computer/database upgrade (Appendices 9.0 - 9.2) and the specific implementation plans for the project. In December, PCOM had endorsed these plans and prioritized the SOE funds for the upgrade in the period FY95 - FY97 (Appendices 9.3 - 9.6).

Rosendahl wanted to know how BCOM could make decisions on budgets in March without the cost information for the FY95 portion of the upgrade? Pyle thought that ODP-TAMU could probably provide BCOM with a fairly accurate range of costs for the upgrade in March but he left open the possibility that BCOM would have to revisit the issue before the June EXCOM meeting. Nowell agreed that ODP-TAMU should try to provide budget numbers to BCOM that would be adequate for them to make FY95 budget recommendations to JOI in March as well as prepare several contingency plans to deal with the outcome of the RFP in April if necessary. EXCOM concluded that a motion was not necessary at this time given the information that would be made available to BCOM, but he acknowledged that an additional BCOM meeting might be necessary to finalize the FY95 budget before the June 1994 EXCOM meeting.

2. EXCOM Meeting Schedule

a) Summer 1994: June 27 - 30, 1994, in Washington, D. C.

b) Winter 1995: January 30 - February 1, 1995, in Hawaii (hosted by Barry Raleigh)

c) Summer 1995: to be held in the UK, dates and place yet to be determined

G. REVIEW OF EXCOM MOTIONS

1. ASRC Report Actions

Motions regarding the ASRC Report are included in the Minutes within the discussion of each ASRC Proposal (see pages 12 - 17).

2. Terms of Reference for the Engineering Development Review Committee

Nowell presented the revised Terms of Reference for the Engineering Development Review Committee:

EXCOM Motion (February 1994) — Terms of Reference for the Engineering Development Review Committee (EDRC)

The Engineering Development Review Committee, EDRC, should review two components of engineering development in JOIDES and at ODP:

1. Engineering development has been a key component of ODP. New technologies developed during ODP, including APC, HRB, free-fall reentry cones, etc., have greatly added to the program's ability to attain its scientific goals. However, a specific review of the engineering development program has not been conducted. With a greater dependency on new technological advances, it is appropriate that such a review be completed.

   The Engineering Development Review Committee, EDRC, is asked to review and comment on the engineering development program within ODP and if necessary, recommend changes in the program structure used for engineering development.

2. The mandate of TEDCOM, as recommended by the ASRC, and approved by EXCOM in February 1994, is:

The Technology and Engineering Development Committee (TEDCOM) is responsible for recommending to PCOM drilling tools and techniques to meet the objectives of the scientific plan and for monitoring the progress of their development through liaison with the ODP/TAMU engineering development department.

The EDRC is asked to review the TEDCOM/ODP-TAMU/PCOM interaction in the context of this mandate.

Maxwell moved, Lancelot seconded vote: 16 in favor

EXCOM discussed the wording of the Terms of Reference, EXCOM agreed that the EDRC charge was to be very broad to allow the committee a lot of latitude to review the engineering development program and make recommendations. At the conclusion of the discussion the vote was taken.

EXCOM discussed the membership of the review committee. Lewis reviewed the list of potential candidates for the EDRC and the potential liaisons to the committee. PCOM had recommended that experts in both organizational management and engineering be included on the panel. EXCOM discussed the qualifications of the potential candidates and debated whether or not some of the potential candidates were too familiar with the program and whether or not more people from outside the ODP system would be useful. EXCOM discussed methods for identifying candidates that would insure an objective outside review.

Discussion was concluded when EXCOM agreed to Lewis' suggestion that liaisons to the EDRC be identified and then work with Lewis and JOI to set up the committee in conjunction with the EDCR Chair. EXCOM also agreed that the liaisons to the EDRC would include representatives from ODP-TAMU, JOIDES (one member representing both PCOM and TEDCOM) and JOI to insure adequate ODP input to the committee. Nowell asked that EXCOM also identify a subcommittee to provide input to JOI on the EDRC membership search; Beiersdorf and Malpas agreed to serve as EXCOM's advisory subcommittee for the EDRC. EXCOM agreed that the EDRC should be tasked by JOI to provide a report to EXCOM in time for the June 1994 meeting.

3. **International Development Proposal**

Nowell reviewed the proposed motion for international development:

EXCOM Motion (February 1994) - International Development

EXCOM endorses an international development strategy through the appointment of an Associate Director for ODP International Relations in the JOI office and the establishment of an International Partnership Advisory Committee.

EXCOM further recommends the allocation of commingled funds for this purpose covering salary, travel and office services. IPAC should be established immediately as an ad hoc committee, and work with JOI to develop a budget and detailed operating plan.

Raleigh moved, Orcutt seconded vote: 11 in favor, 0 opposed, 5 abstentions.

Rosendahl asked where EXCOM thought the budget for this new JOI staff position should come from? EXCOM discussed if the immediate budget implications should be addressed at this meeting. After discussion, EXCOM concluded that the motion was important for initiating the process of finding new partners and that the specific budget implications would have to be reviewed by BCOM in March. At the conclusion of the discussion the vote was taken.

To begin to implement the intent of the motion, Malpas suggested that the International Partnership Advisory Committee of EXCOM be formed first in order to assist JOI in identifying the new Associate Director. EXCOM discussed the membership of the EXCOM International Partnership Advisory Committee. Leinen asked if ODPC members should be included on the committee? Briden suggested that the EXCOM subcommittee be formed at this meeting and tasked to report to EXCOM in June when ODPC would be present and at that time ODPC could

become involved if they wanted to. Nowell agreed to organize the subcommittee during the lunch break, further discussions of subcommittee membership were tabled until the lunch period.

After lunch, Nowell announced that Malpas, Beiersdorf and Raleigh had agreed to serve as the International Partnership Advisory Committee and would present their first report to EXCOM at the June 1994 joint EXCOM-ODPC meeting.

H. OTHER BUSINESS

1. Strasbourg Meeting on the Long-term Future of ODP

Fratta reported on a recent meeting on the long-term future of ODP held in Strasbourg on January 19, 1994 (Appendix 10). Fratta explained that it was an informal gather of about 25 people representing all of the European countries now participating in ODP. The participants indicated that there was very positive interest in ODP within their scientific communities and that this interest had grown steadily since becoming involved with ODP. Another consensus of the participants was that under present conditions it was difficult to envisage a substantial increase in the financial support for ODP on the basis of scientific considerations only. There was interest in having European countries provide important technological contributions, including vessel-independent technologies and a Technology Study Group would be set up among the European members to look into these issues.

Adjourn ..... *12:12 pm*

APPENDIX LIST

BUDGET COMMITTEE REPORT

7-8 MARCH, 1994 WASHINGTON, D.C.

PREAMBLE

The Budget Committee of EXCOM annually reviews the ODP requests and makes its recommendations through this report and at the spring EXCOM meeting. This review process has become progressively more difficult over the last few years. The source of the difficulty is an ever increasing gap between available funds and scientific needs and expectations, particularly in regard to innovation. The fundamental problem is lack of funds and flat budgets, not a bloating of science needs.

The majority of EXCOM members feel very strongly that innovation is an essential driving force behind the drilling program, and mandated that a minimum of 4% of the total subcontractor budgets be allocated for "Special Operating Expenses" (SOE). BCOM fully endorses this position, as does PCOM in a general sense. SOE have been specified to be the mechanism to incorporate new ideas into the Project. These ideas are viewed as an investment in the future that provide important added value to the science and help to maintain a certain programmatic "freshness".

Historically, SOE have referred mainly to non-recurring technological advancements. Although they may be multi-year investments, SOE were not intended to add significantly to the base budgets of the subcontractors. In practice, this has been difficult to design and achieve. The identification of SOE has originated with the subcontractors, PCOM, and the various thematic panels. Prioritization has been mainly a PCOM responsibility. Although cost has played a role in this prioritization, it has not been paramount in PCOM's deliberations.

BCOM has adopted a somewhat broader definition of SOE and categorizes innovation as anything that significantly advances scientific capabilities. For example, we include in this definition new mechanisms for the addition of revenue through further internationalization. At the same time, BCOM reiterates the restriction of SOE to innovation that does not add to the base budgets. Without this restriction, old SOE will consume new SOE via base budget increases. BCOM also asks PCOM to explicitly consider and factor in costs in prioritizing future SOE. With the above constraints in mind, BCOM faced a formidable challenge during this year's deliberations. The difficulty was compounded by the following:

- A total budget request that was $183,797 in excess of available revenues.
- An unbudgeted request of approximately $200,000 to support the JOI Office to seek new international partners, without presentation of a detailed plan to achieve this goal.
- A JOI Office budget request that was $144,252 above a level budget.
- An LDEO base budget that lacked any SOE, which placed their request $193,613 below the 4% mandate but contained an unbudgeted request of $520,000 for "Supplemental Operating Initiatives" (essentially SOE).
- A TAMU budget that was $442, 569 below the 4% SOE mandate.
- A $900,000 request from TAMU for SOE computer upgrades whose scope, design, and final costs are yet to be determined.
- A PCOM recommendation for a $500,000 hazard survey for shallow-water drilling that was not contained in any budget.

Taken together the "excess" requests totaled $1,403,795 over available revenues. The 4% SOE mandate had not been adhered to by the subcontractors. Finally, neither the TAMU computer upgrade request or the JOI Office internationalization task were finalized in detail.

It was apparent from the start that BCOM could not make final budget recommendations at its meeting. Accordingly, we have prepared a conditional budget that will be subject to

reconsideration when additional details have been made available, as specified herein. The BCOM approach has been to recommend funding of certain specific SOE at the expense of the base budgets. We recognize the risk inherent in this approach and fully appreciate that TAMU and LDEO have probably reached the limits of how much they can be further squeezed without serious reductions in services. Indeed, in some instances the base budget reductions will already impact future services. Because of the potential consequences of our recommendations, the subcontractors have been invited to submit responses to this conditional report. These will be appended to the final BCOM report in order to allow EXCOM to evaluate all ramifications of base budget cuts.

We end this preamble with a precautionary note: This budgeting approach cannot be continued in subsequent years without undermining the underpinnings of ODP. We cannot expect the sub-contractors to continue to squeeze out more with less. There already is a sense that we are beginning to limp along due to budgetary constraints imposed during the last two years. New innovation is, of course, pointless if the basic operational and service support crumbles. It is also noted that the long-range budget predictions are now so out of kilter with reality to be almost meaningless. A new budget model is needed. Without new revenues, the time has come to consider a more surgical and possibly radical approach to matching science needs with budgeting, based upon what is in the best, affordable interests of the science. We implore EXCOM and PCOM to give these matters their utmost attention and devise some strategic budgeting guidelines prior to the 1995 BCOM meeting. We also recommend that PCOM develop a strong position paper stating why the Project needs more money, to be used by JOI in its efforts to attract new partners.

BACKGROUND

The Budget Committee met at JOI Inc., Washington, D.C., on March 7 and 8, 1994. Committee members present included Bruce Rosendahl (Chair),Yves Lancelot, Arthur Maxwell, Rob Kidd, and Brian Lewis (PCOM Chair). James Austin and Ellen Kappel, both of JOI, attended parts of the meeting, as did Phil Rabinowitz, Tim Francis, and Rick McPherson of TAMU and David Goldberg and Katherine Rodway of LDEO

The early morning session of the first day was spent reviewing the problems BCOM would face during its deliberations. The rest of the day was spent receiving presentations from the subcontractors and JOI, culminating in a short executive session to discuss the issue of SOE and innovation in general. The morning of the second day was spent in executive session addressing the major issues, culminating in a frank summary of BCOM's recommendations made to the subcontractors and JOI.

SUMMARY OF FY1995 SCIENCE PLAN

The FY95 Science Plan for ODP will consist of six legs and address topics within the four thematic foci: Lithosphere, Ocean History, Sedimentary and Geochemical Processes, and Tectonics.

Leg 158 TAG

The objective of this leg is to drill into the TAG hydrothermal mound on the mid-Atlantic ridge and characterize the fluid flow, geochemical fluxes, and associated alteration and mineralization of an active hydrothermal system on a slow spreading ridge. Leg 158 offers an opportunity to drill through a volcanogenic-hosted, hydrothermal deposit and into its underlying stockwork .

Leg 159 Return to Site 735

The purpose of this leg is to return to ODP site 735, on the Southwest Indian Ridge, and deepen hole 735B to a nominal depth of 2 km bsf. The principle objective of this proposed leg is to understand the nature of the processes involved in the generation of the lower crust, and place

some constraints on the lower crustal stratigraphy at the slowest end of the spreading spectrum.
Leg 160 Eastern Equatorial Atlantic Transform

The key issues to be addressed by drilling include an evaluation of the tectonic and sedimentary processes involved in the creation of the main morpho-structural features generated at the Cote d Ivoire-Ghana Transform Margin. Results should provide data on the timing, rate, and degree of vertical motion (subsidence and uplift) of the Cote d Ivoire-Ghana Transform Margin.

Leg 161/162 Mediterranean I & II

The proposed two legs of drilling in the Mediterranean will address three main objectives: the Alboran Basin (Western Mediterranean), drilling on the Mediterranean Accretionary Complex (Eastern Mediterranean), and an E-W transect across the Mediterranean Sea to sample and study organic-rich layers called Sapropels.

Leg 163 N. Atlantic Arctic Gateways

This is the second of two North Atlantic-Arctic Gateways (NAAG)legs. The first leg, ODP Leg 151, was drilled in August - September of 1993. The scheduled second leg of NAAG drilling will focus on the same goals as NAAG I, but also will collect cores to try to resolve millennial-scale climate variability and provide links to ice core data.

BUDGET PROPOSALS MADE TO BCOM (DOLLARS)

	ACTUAL FY 94	PROPOSED FY 95	Innovation Not Included in FY 95 [a]	TOTAL FY 95	CHANGE 94-95
TAMU	38,440,000	38,439,215 [b]	0	38,439,215	-785
LDEO	4,800,002	4,840,330 [c]	520,000	5,360,330	560,322
JOI/JOIDES	1,660,000	1,804,252 [c]	200,000	2,004,252	344,252
TOTAL	44,900,002	45,083,797	720,000	45,803,797	903,795
AMOUNT AVAILABLE PER NSF PLAN		44,900,000		44,900,000	
DEFICIT		183,797	720,000 [d]	903,797 [d]	

[a] Innovation includes SOE and Supplemental Operating Initiatives.

[b] Includes $1,095,000 in SOE, or 2.85% of TAMU total.

[c] Includes no SOE in base budget.

[d] Does not include $500,000 requested by PCOM for hazard survey.

TAMU

The total TAMU budget has remained essentially flat in comparison to the FY 94 level. However, TAMU was provided with $2,020,000 in SOE in FY 94, compared to $1,095, 000 requested for FY 95. Hence, the TAMU base budget request has grown by $924,215, or a very modest 2.54%. Much of this increase is contained in programmed day rate increases and some in fuel costs.

TAMU also was asked to "absorb" a pro-rated portion of the total ODP budget shortfall of $163,797 ($183,797 minus $20,000 saved from the requested JOI budget; see JOI section), through internal reprogramming of its base budget. The pro-ration is with respect to the total TAMU and LDEO budgets. The TAMU portion is $143,009. In addition, TAMU was asked to reduce its base budget by an additional $180,000 to accommodate internationalization (see JOI section). Hence, the total TAMU base reduction is $323,009, which changes the base budget to a level that is only $601,206 above the FY 94 level. Half of this is used up in fixed or programmed cost increases related to ship operations (e.g., day-rate increases). Because these recommendations provide TAMU with an exceedingly tight budget, BCOM has asked TAMU to provide a description of where and how these decreases are to be instituted before we submit our final budget recommendations. BCOM also asked TAMU for a more detailed budget that describes how it plans for contingencies such as lost drill-pipe and other potentially unrecoverable hardware, prior to finalization of this report. This is mainly for the edification of BCOM, not an attempt to micro-manage TAMU.

A summary of the Science Operator FY 95 SOE requests is provided below (in dollars):

	Base	SOE
Engineering Development	1,279,020	105,000
Information Services	1,084,584	900,000
Ship Operations	21,721,739	90,000
	TOTAL SOE	1,095,000

The vast bulk of TAMU's SOE request is for computer upgrades that PCOM listed as its highest "innovation" priority. Although BCOM concurs with the importance of the upgrades, our unease derives from the arbitrariness of this figure (it was initially $1,500,000 in TAMU's first budget submission), the in completion of the RFP process at the time of our meeting, uncertainties regarding the time frame for completion of the upgrades, and uncertainties as to what the Project gets for the level of expenditure in FY 95. The issue of avoidance of pre-completion obsolescence was discussed on several occasions. The specter of the ongoing DCS problems, and the lesson learned here about the risks of incremental funding, added to our concerns. It is notable that NSF also is concerned with computer upgrades and has withheld payment of the $600,000 that was allocated in last year's budget pending a more detailed plan from TAMU. TAMU was asked by BCOM to obtain "best and final" offers from the contending bidders within 30 days and to work closely with the ad hoc computer upgrade evaluation committee to finalize and formalize a plan. This should occur sufficiently prior to the EXCOM meeting in June so that BCOM has an opportunity to review the fiscal implications of the plan.

The Engineering Development SOE refers to the DCS land test, which was deferred from last fiscal year due to delays in delivery of functional third-party software. These delays will cause TAMU to miss the contracted land-test drilling window even though the requisite drill-hole was paid for and completed. In effect, the hole must now be abandoned because the drilling contractor is not required and does not intend to pursue its arrangement with TAMU. TAMU is now searching for another contractor to drill a new hole at a new site and it plans to conduct the land test in July. TAMU has approximately $420,000 remaining from last year's allocation and together with the current request, the total was said to be sufficient to carry out the work. BCOM expressed concern about the wasted money for the first hole and wondered why TAMU had entered into an agreement that led to the above described situation. BCOM generally agrees that if the land test is not demonstrably successful, we will recommend discontinuance of DCS

development. This does not mean that alternative technologies to achieve DCS-type objectives would necessarily be abandoned.

The Ship Operations SOE refers to a scheduled dry dock to meet necessary ABS certification and upgrade shipboard laboratories.

BCOM tentatively recommends the TAMU SOE at the requested level. A final recommendation must await the results of the RFP process. Although the TAMU SOE percentage falls below the 4% mandate, we note that TAMU's percentage last year was over 5% of their base budget. Given that TAMU has left-over guide-bases from the FY 94 program, funded through last year's SOE, BCOM believes that TAMU is keeping with the spirit of EXCOM's wishes regarding innovation.

LDEO

The LDEO budget request is $40,327 above the FY 94 level. Neither the FY 94 nor 95 budgets contain any SOE requests per se, although last year's BCOM members considered the CNRS and Leicester subcontracts to satisfy the spirit of innovation. These costs total $586,525 in FY 95, or about 12% of the total LDEO budget. Given that these will be recurring costs and add to the base budget, BCOM no longer views the subcontracts in keeping with the EXCOM mandate for innovation. The Supplemental Operating Initiatives requested by LDEO (but not budgeted in the request) are summarized below (in dollars):

Wireline Heave Compensator (WHC) Upgrade	75,000
Borehole Televiewer (BHTV) Operations	100,000
Continuation of Core-Log Integration Platform (CLIP)	100,000
Logging While Drilling (LWD)	200,000
Test and Training Facility (TTF)	45,000
TOTAL	520,000

The WHC and CLIP initiatives were judged particularly worthwhile and meritorious and together represent SOE that total 3.6% of the total LDEO budget. BCOM recommends that LDEO undertake these two initiatives and fund them from the proposed FY 95 base budget. Line item base-budget cuts were not specified, but it was noted that the internationalization of the Borehole Research Group has added almost $200,000 to the total Borehole budget, without a concomitant decrease in the LDEO proportion. Questions concerning "value-added" were raised, but it was felt that it was too soon to address these issues meaningfully. They will be a topic at next year's BCOM meeting. BCOM made a request to LDEO that it preserve science services in deciding where and how to reallocate its budget, meaning that the CNRS and Leicester subcontracts remain as whole as possible. Regrettably, this course of action was the only option available to BCOM in achieving the innovation required by EXCOM. For the record, LDEO representatives were understandably chagrined with this approach, but accepted its necessity.

The FY 95 LDEO budget calls for a 6% raise pool, whereas the TAMU pool is 3% in the budget with an additional 1% to be found from unspecified sources. The JOI raise pool is 4%. BCOM felt uncomfortable limiting institutional decisions regarding raises, but it was strongly suggested that LDEO should consider a reduction not to exceed 4% to keep in line with TAMU and JOI. Large disparities in raise pools were cited as potentially divisive. The cost savings of this reduction would cover almost 10% of LDEO's reallocation problem. LDEO also was asked to "absorb" a pro-rated portion of the total ODP budget shortfall of $163,797 through internal reprogramming of its choosing. The pro-ration is with respect to the total TAMU and LDEO budgets. The LDEO

portion is $20,787. Before finalizing these recommendations, BCOM asks LDEO to describe how it will achieve its base budget cuts.

JOI

The JOI budget request is $144,252 above the FY 94 level, representing about an 8.7% increase. The increases are mainly in salaries & benefits, the ODP Data Bank, the requirement for a fourth Performance Evaluation Committee, and the JOI G&A (overhead). In addition, JOI requested an unbudgeted SOE of $200,000-$250,000 for internationalization, which derives from an EXCOM motion to that effect. These funds would be used to hire a Vice-President of JOI (or equivalent) charged with the task of finding new partners and to provide a working budget.

BCOM generally supported the notion of internationalization and tentatively recommended an allocation of $180,000. These funds would be derived from an equivalent reduction in the TAMU base budget. It should be noted that BCOM did not unanimously endorse the JOI approach toward internationalization, and the non-U.S. members of BCOM expressed some unease about the use of co-mingled funds for this purpose. It is recommend that JOI be cautious in the expenditure of these funds. They are meant for the betterment of ODP, not just JOI and JOIDES. All BCOM members felt uncomfortable reprogramming science operation monies for what is essentially administration. However, the need for additional revenues is so pressing that the trade-offs were deemed worth the risk.

The JOI budget request asked for $20,000 to update the ODP brochure. BCOM recommended that this activity be postponed. BCOM also will ask NSF if the PEC activity could be postponed for another year. The justification is based upon the high costs of this activity and the fact that both engineering and computer upgrade reviews are underway. If acceptable to NSF, this will save another $40,000 or so. We have not budgeted these savings in the following budget summary. Should they appear, BCOM recommends that JOI hold these funds in reserve for subcontractor science needs and for the production costs of an updated long-range plan. If NSF rejects this proposal, we recommend that JOI should obtain these production costs from internal reprogramming of the JOI budget.

BCOM appreciates the PCOM request for a shallow water hazard survey ($500,000). However, no funds could be identified for such work. It was suggested that more traditional funding routes be sought, although the likelihood for success was deemed uncertain at best.

Finally, BCOM requests that JOI should more closely monitor and supervise subcontractor expenditures, particularly in regard to the large and complex TAMU budget. In an environment of very tight and limited funds, there was a sense that JOI and EXCOM, working through BCOM, should have more control over where unused funds are expended. Priorities should be determined by the subcontractor, JOI, and BCOM working in consort. However, BCOM members unanimously agree that the subcontractors need some degree of flexibility.

SUMMARY OF BUDGET RECOMMENDATIONS FOR FY1995 (DOLLARS)

	BASE FY 95	CHANGE 94-95	INNOVATION FY95	CHANGE 94-95	TOTAL FY 95	CHANGE 94-95
TAMU	37,021,206	601,206	1,095,000	-925,000	38,116,206	-323,797
LDEO	4,644,543	-55,459[a] 431,066[b]	75,000	175,000 256,066	4,819,543	19,541
JOI	1,784,252	124,252	180,000	180,000	1,964,252[c]	304,252
TOTAL	43,450,001		1,450,000		44,900,001	

[a] Assumes Leicester and CNRS subcontracts as part of 94 base

[b] Assumes a 94 base that excludes Leicester and CNRS subcontracts

[c] Excludes $40,000 in savings if PEC activities are postponed

CONCLUDING COMMENTS

It is fair to state that neither the subcontractors nor BCOM are happy or comfortable with these budget recommendations. The subcontractors were understandably distressed at base budget cuts and TAMU commented that this is a risky proposition because it inevitably will result in a lessening of their work force and inventory. TAMU also noted that there are ways to juggle base costs and innovation, but "it's playing a game with smoke and mirrors". BCOM is worried that this is exactly what might happen and we stress the importance of maintaining a clear distinction between base budget and innovation expenses.

BCOM stresses that this type of budgeting and budget control should not continue. This probably means an end to "business as usual". Whether this leads to a restructuring of ODP for more cost efficiency and/or a restructuring of the types and goals of the science are matters for EXCOM, PCOM, and JOI to resolve. We ask these groups to discuss and derive better ways of doing the ODP "business". If this does not happen, we believe the long-term health of the program will be placed in serious jeopardy.

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

College Station, Texas, 7-8 March 1994

EXECUTIVE SUMMARY

The following is the executive summary of the 15th TEDCOM meeting. It includes TEDCOM recommendations to PCOM with budgetary implications for the program (see points 3,7,12,13,14). Advice to TAMU included in the following can be accepted or rejected and requires no action by PCOM.

The main object of the meeting was:

- to discuss progress on DCS.
- to hold a joint session with SGPP to discuss VPC, PCS, PPCS.
- to discuss slimline risers for deepwater drilling in the 21st Century.
- to discuss problems encountered with hard rock drilling (as on MARK-L153, Hess Deep-L147 as well as L106/109 and L118).
- to obtain from TAMU spread sheets showing the history, present status and future planning of operational tools developments.

The TEDCOM agenda followed directly from results of COMPOST, the annual PCOM meeting, L153, and the Kyoto workshop. The following are the principal results of the meeting.

A. DCS Review

1. The TEDCOM notes that the contract (for DCS land tests) with Partech has been terminated, since the contract period expired and negotiations to extend failed.
2. The TEDCOM proposes that the DCS sub-committee, formed in September '93, should remain active until the next TEDCOM meeting to further advise TAMU on the development of the DCS. The SC membership should be modified to cover coring expertise. SC members: Schuh, Shanks(chair), Shatto, Svendsen, Zinkgraf.
3. The TEDCOM recommends to PCOM that representatives of the above SC be allowed to assist at the following events and meetings, with associated expenses paid by JOI:
   - Fluctuating W.O.B. tests of diamond bits (Salt Lake City),
   - Mechanical simulator tests with new controls (Salt Lake City),
   - Meetings with SES and TAMU,
   - Visit land tests when initiated.
4. The TEDCOM advises that the DCS land test schedule should not be finalized or initiated until satisfactory completion of model tests and simulation tests.
5. The TEDCOM concurs and approves TAMU's intention to invite diamond core drillers to participate in the DCS land tests for training purposes in advance of the next seatest (L165).

6. TEDCOM advises TAMU to examine the possibility of carrying out the DCS land tests close to ODP (College Station) where the DCS rig could be reset up in the future for training purposes.

7. The TEDCOM again recommends to PCOM that two HRBs be pre-set on VEMA (in about 600 m and 1300 m of water) prior to the next DCS test (L165). This would require about 7 days ship's time and would appear to be possible following L158. The bases could be set testing Russian retractable tricone bits or using other existing technology.

8. TEDCOM reiterates its advice that diamond retractable bits for the DCS should not be pursued until the rest of the system has been made to work, since it is a high risk item. This position will be reviewed at the next TEDCOM.

9. TEDCOM advises TAMU to reexamine the possibility of using a bumper sub /slip joint in the DCS mining string in lieu of the active secondary compensator.

B. Tools for SGPP (PCS, VPC)

10. TEDCOM notes that SGPP has no interest in the PPCS, since it would not be deployable in formations of sufficient interest to them. Limited TAMU resources would be best used to improve the PCS tool.

11. Following discussions with SGPP and TAMU, TEDCOM is optimistic that the PCS can be made to recover core. Changes to the cutting shoe/core entry design have been proposed for which the cost should be minimal.

12. TEDCOM recommends to PCOM that the PCS cutting shoe/core entry design be modified and the tool be tested together with the unmodified version, for comparison. The cost of the additional testing will be estimated by TAMU.

13. TEDCOM recommends to PCOM that the TEDCOM coring specialist (SVENDSEN) be used by TAMU to follow the modifications/testing of the PCS and that he be invited to witness the tests (with his associated expenses paid by JOI.).

14. If the above modifications/testing of the PCS are successful, TEDCOM recommends to PCOM that the modified tool be retested at sea before the L164 Gas Hydrates Leg, (L161, or 162 might be suitable occasions).

15. The TEDCOM suggests that other VPC options be pursued by TAMU, in parallel with the reassessment of the tool by BGS, but without commitment of funds.

C. Deepwater slimline risers

16. The TEDCOM confirmed that, with today's technology, 4,000?m slimline risers of the type presented by Charles SPARKS at ODP EXCOM/JAMSTEC workshop in Kyoto are technically feasible; oil industry risers for that depth (with Kill and Choke lines and buoyancy units) are considered not to be technically feasible with today's technology.

17. Several members of TEDCOM with riser experience could participate in a meeting between PCOM/TAMU/ TEDCOM/JAMSTEC on deepwater risers, if convened in Texas. Best date - early June 1994.

18. Frank WILLIFORD (SEDCO) presented ways of extending the life of the JOIDES RESOLUTION by 20 years and increasing its length and capacity to carry a slimline riser and other equipment. Cost involved - a fraction of the cost of a new vessel. Refined costing would require a detailed engineering study.

D. Hard rock drilling

19. TEDCOM agreed with many conclusions already drawn on the subject by TAMU and in addition:
    - TEDCOM suggested particularly that reverse circulation be investigated as a means to improve hole cleaning.
    - THORHALLSSON provided information about vibratory systems used to drive casing in hard rock (on land) in Iceland.
    - Greater use could possibly be made of cement to stabilize holes.
    - Sites should be better surveyed and precise markers or buoys preset.

E. Long Range Plan. Phase I achievements

20. Comparisons between planned and actual expenditure on engineering developments for Phase I (1989-92) of the LRP (provided by TAMU) are attached.

F. Operational Tools Developments

21. Spread sheets on history and planning of ODP tool developments provided by TAMU are attached.

G. TEDCOM chairmanship

22. In a closed session TEDCOM members discussed the chairmanship of the committee. They felt that no election was necessary at this time and asked SPARKS to continue to occupy the chair. (Last election held May 1992).

H. Next TEDCOM meeting

23. It is proposed to hold the next TEDCOM meeting at the KTB site Windisch- Eschenbach, Germany on October 3-5, 1994.

LONG RANGE PLAN

Phase I 1989-1992

Planned and Actual Expenditures for Engineering Developments and Special Operations

Engineering Developments and Operational Requirements	LRP Objectives Addressed	Planned Expenditure (X $ 1,000)	Actual Expenditure (X $ 1,000)
1. 4 km DCS	1,2,3,4,7,8,9,13	1,390	4,921 *
2. 6 km DCS	1,2,3,4,7,8,9	-	-
3. Slimline riser and BOP	1,2,3,7,8,9,10,11	300	-
4. Improved sediment coring systems	7,8,9,10,11,12,13	250	163
5. Borehole seismometers and operations of seismic systems	2,4,5	600	-
6. High temperature systems	3,4,11	1,000	404
7. Improved packer and fluid samplers	4,5,8,11	800	63
8. Oriented core samples	1,2,5,6	250	82
9. In-situ pressure sampler	7,8	250	81
10. Slimline logging and borehole experiments	1,2,3,4,7,8,9,10, 11,13	650	-
TOTAL		5,490	5,714

* including $172K in 1988

TEDCOM

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Ocean Drilling Program
CURRENT DEVELOPMENT ENGINEERING PROJECTS
December 1993

PROJECT	Cost Center and Sub-Object Code	Current Project Engineer	Past Project Engineers	Budget Expended thru FY93	Proposed FY94 Budget	Projected Budget Beyond FY94	ODP Engineering Man-Months to Complete Phase
VIBROCORER (VPC)							
Attempt to apply vibration and/or percussive techniques to the wireline coring of unconsolidated sediments such as loose sands, turbidites, and reefal limestones.	1803-03/225	Pettigrew	Pheasant	$160,286	$0	$150-200k	24 to 30
SONIC CORE MONITOR (SCM)							
Monitors and records core entry data while coring. Data can be downloaded from memory tool upon recovery of the wireline core barrel. This allows accurate placement of the recovered interval within the cored interval.	1803-03/226	Rhinehart	Huey	$313,151	$40,000	$10,000	6 to 12
MONITOR WHILE CORING (MWC)							
Next phase of SCM development which will allow real time feedback on core entry status to drill floor. Data transmission during coring process will likely be in a yes/no format giving the driller critical information on whether core is entering the core barrel.	1803-03/	Rhinehart	None	None	$20,000	$80,000	24 to 36
HARD ROCK ORIENTATION (HRO)							
Combines SCM technology and Tensor electronic multishot technology with core scribing capability to obtain hard rock core orientation capability. System is being developed for use with Rotary Core Barrel (RCB).	1803-03/259	Rhinehart	Huey	$86,964	$25,000	$0-25k	6 to 12

Ocean Drilling Program
CURRENT DEVELOPMENT ENGINEERING PROJECTS
December 1993

PROJECT	Cost Center and Sub-Object Code	Current Project Engineer	Past Project Engineers	Budget Expended thru FY93	Proposed FY94 Budget	Projected Budget Beyond FY94	ODP Engineering Man-Months to Complete Phase
PRESSURE CORE SAMPLER (PCS)							
Allows the recovery of a limited core (0.86 m x 42 mm) sample under insitu (10,000 psi max) pressure. Development of a purpose designed lab chamber is required to allow transfer of core sample while under pressure.	1803-03/314	Pettigrew	None	$117,714	$10,000	$0	0
HARD ROCK BASE NON-DCS (HRB)							
Modifications to the original DCS version of the HRB to allow compatibility with other coring/casing hanger systems (i.e. RCB and Dril-Quip systems). Also to provide functional gimbal locking capability for high angle placement requirement.	1803-03/388	Holloway	Howard	$727,230	$15,000	$0	3 to 6
MODULAR SEA FLOOR STRUCTURE (MSS)							
Review existing HRB, reentry cone, and free fall funnel designs with the goal of encorporating all good features, eliminating weaknesses, developing commonality of parts, reducing fabrication cost, and improving shipping/shipboard storage.	1803/	TBN	None	$0	$50,000	$35,000	12 to 24
SHIPBOARD DATA INTEGRATION (SDI)							
Develop and/or procure required rig instrumentation systems to allow all critical drilling/coring parameters to be monitored/recorded (including depth/ROP), and integrated into a shipboard computer network. Work will require close coordination with ODP/TAMU Science Operations and Computer Services departments.	1803-03/472	Rhinehart	Reudelhuber	$90,400	$15,000	$100,000	18 to 24

Ocean Drilling Program
CURRENT DEVELOPMENT ENGINEERING PROJECTS
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PROJECT	Cost Center and Sub Object Code	Current Project Engineer	Past Project Engineers	Budget Expended thru FY93	Proposed FY94 Budget	Projected Budget Beyond FY94	ODP Engineering Man-Months to Complete Phase
DIAMOND CORING SYSTEM (DCS)							
MAST & PLATFORM — Structural, hydraulic, and drilling/coring machinery associated with the DCS. Includes the platform, top drive, wireline winch, power pack, console, drilling controls, handling equipment, fire/safety systems, etc.	1803-05/224	Reudelhuber	Howard	$1,518,058	$0	$0	0
TUBING/DRILL ROD STRING — Operational tubing string of 4,500 meters (10 meter joints) with 300 meter penetration depth capability. Penetration is accomplished using 3 meter drilling joints. Tubing consists of N-80 and S-130 materials with Hydril 500 series wedge lock connections.	1803-05/224	None	Howard	$220,000	$0	$0	0
LAND TESTING — Consists of two major elements: testing associated with safety systems - completed in 1991 ($150K), and testing of the secondary heave compensation system under simulated heave conditions.	1803-05/224	Reudelhuber	Howard	$350,000	$0	$0	8 to 12
SECONDARY HEAVE COMPENSATION — Software development, computer hardware, sensors, hydraulic control components, system analysis, engineering, and consultant requirements pertaining to the development of an operational secondary heave compensation system.	1803-05/224	Reudelhuber	Howard	$959,000	$50,000	$0	4 to 8

Ocean Drilling Program
CURRENT DEVELOPMENT ENGINEERING PROJECTS
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PROJECT	Cost Center and Sub-Object Code	Current Project Engineer	Past Project Engineers	Budget Expended thru FY93	Proposed FY94 Budget	Projected Budget Beyond FY94	ODP Engineering Man Months to Complete Phase
WEIGHT-ON-BIT TOOL (WOB)							
	1803-05/224	Rhinehart	Reudelhuber	$20,000	$25,000	$15,000	3 to 6
Tool(s) are being designed to be run in place of the DCS wireline core barrel. Tool is run on the logging line and gives real time feedback on actual WOB fluctuation. One version of the tool uses a load cell and the other uses an accelerometer.							
HARD ROCK BASE (for DCS)							
	1803-05/224	Holloway	Howard	$602,750	$81,000	$0	3 to 6
Development of ballasted version of the HRB with gimbaled casing hanger option for nested DI-BHA. Weighted HRB allows tensioning of the API drill string for DCS coring operations and lateral stability on bare rock during DI-BHA operations.							
DRILL-IN-BHA (DI-BHA)							
	1803-05/224	Holloway	Holloway	$600,171	$8,000	$0	3 to 6
Consists of nested drill collar/back-off assembly (6-3/4" & 10-3/4") hardware for stabilizing hard, unstable, fractured formations. The DI-BHA is designed to be emplaced and left in the hole during a single pipe trip negating the need to maintain open hole for conventional casing emplacement.							
POSITIVE DISPLACEMENT CORING MOTOR (PDCM)							
	1803-05/224	Holloway	Howard	$100,000	$0	$0	0
Developed a 9-1/2" PDCM for use as a bare rock coring/spudding tool. Tool is an optional way to rotate bit without requiring drill pipe rotation during bare rock spudding operations.							

Ocean Drilling Program
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PROJECT	Cost Center and Sub-Object Code	Current Project Engineer	Past Project Engineers	Budget Expended thru FY93	Proposed FY94 Budget	Projected Budget Beyond FY94	ODP Engineering Man-Months to Complete Phase
FLEX/SAFETY JOINT							
The flex and safety joints were developed as part of the DCS/API string "mini-riser". The flex or tapered stress joint provides a smooth transition from the API drill pipe into the HRB minimizing bending stress. The safety joint provides a break-away capability in case of drive-off or loss of dynamic positioning capability.	1803-05/224	Holloway	Holloway	$96,770	$500	$0	0
TRI-CONE RETRACTABLE BIT (TRB)							
Russian system is being adapted to provide alternative to drag bits for DI-BHA system. Allows DI-BHA to be emplaced and released. Full sized tricone bit cones are then recovered via wireline leaving bore open for DCS or second stage DI-BHA.	1803-05/224	Holloway	Holloway	$0	$120,000	$0	12 to 24
DIAMOND RETRACTABLE BIT (DRB)							
Adaption of a Russian slimhole coring system which allows the diamond cutting structure on DCS bits to be recovered via wireline. The DRB will greatly enhance DCS efficiency by vastly reducing the number of required tubing round trips.	1803-05/224	Holloway	Holloway	$0	$115,000	$0	12 to 24
DIAMOND CORE BARREL & DCS (DCB)							
The DCB was a spin-off of the 6-3/4" DI-BHA development. System uses the same wireline core barrel components as the RCB but requires smaller diameter (6-3/4") drill collars and outer core barrel.	1803-05/224	Holloway	Holloway	$158,000	$0	$0	0

Ocean Drilling Program
CURRENT DEVELOPMENT ENGINEERING PROJECTS
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PROJECT	Cost Center and Sub-Object Code	Current Project Engineer	Past Project Engineers	Budget Expended thru FY93	Proposed FY94 Budget	Projected Budget Beyond FY94	ODP Engineering Man-Months to Complete Phase
DIAMOND CORE BARREL BITS							
Special wide kerf diamond core bits for use with the DCB coring system. These bits are predominantly 7-1/4" O.D. carbonado diamond with thermally stable diamonds and geosets used for gage protection.	1803-05/224	Holloway	Holloway	$124,878	$0	$0	0
WIRELINE CORING SYSTEM							
Developed smaller, more robust version of the Longyear CHD 101 slimhole coring system. Hardware includes enhanced capabilities such as a piston sampler, multiple core catcher options, center bit (drill-ahead) capability, push-in/percussion sampler, and a suite of fishing tools/hardware.	1803-05/224	Holloway	Holloway	$103,300	$3,500	$0	0
SLIMHOLE DIAMOND CORE BITS							
DCS core bit design has ranged from of-the-shelf models to special stacked-matrix impregnated versions. Carbonado surface set diamond bits with spiral water ways and heavy I.D./O.D. gage protection have also been developed.	1803-05/224	Holloway	Young	$46,900	$15,000	$0	0
DRILL-IN-BHA BITS							
Drilling bits were originally designed around a roller cone style with a retrievable center bit. Current versions include carbonado surface set type with both drag and roller cone style center bits. Rugged latching hardware also had to be developed.	1803-05/224	Holloway	Holloway	$362,177	$176,000	$0	6 to 12

Ocean Drilling Program
CURRENT DEVELOPMENT ENGINEERING PROJECTS
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PROJECT	Cost Center and Sub-Object Code	Current Project Engineer	Past Project Engineers	Budget Expended thru FY93	Proposed FY94 Budget	Projected Budget Beyond FY94	ODP Engineering Man-Months to Complete Phase
OTHER DCS (TRAVEL, ETC.)	This category includes all other miscellaneous expenditures associated with the DCS development. This includes travel/subsistence costs for all testing programs, meetings, etc. and other personnel costs, etc.						
	1803-05/224	Reudelhuber	Howard	$314,450	$0	$105,000	n/a
DCS PROJECT TOTAL	Total past, and projected future, cost of the DCS development.						
	1803-05/224	Reudelhuber	Howard	$5,676,454	$594,000	Approx.$300-500K/year*	

'NOTES: * Operational support funding only, not additional development costs

FY94 ENGINEERING BUDGET (1803-103)

Revised Cost Center Distribution (MAS 3-3-94)

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SUB OBJ	Description	Revised Program Plan Budget 3/11/93	7220 Supplies	7130 Equip.	6840 Services	7770 Subcontr.	7530 Travel, Meetings	7580 Travel, Port calls	6570 Shipping	7170 Equipment Rental	7180 Equipment Repair	7780 Other Services	TOTALS
000	Misc.	$10,000			2,000					4,500	1,000	2,000	$9,500
052	Drafting	$3,000	3,000										$3,000
067	Computer- Supplies	$25,000	9,500	21,950	200	2,350							$34,000
197	Technical Notes	$5,000											$0
201	Consulting, non-subc	$0											$0
202	Travel	$60,000					41,000	19,000					$60,000
204	Training	$0											$0
206	Shipping	$10,000							10,000				$10,000
221	MDCB	$15,000											$0
222	9-1/2 Coring Motors	$0											$0
224	DCS Transfer to .02	$0											$100,000
223	DCB	$0											$0
225	VPC	$60,000				45,000							$85,000
226	SCM	$60,000	15,000										$60,000
251	Gun, Coring Improv.	$25,000											$0
259	HHO	$25,000	7,500		5,000	12,500							$25,000
265	Drill String Studies	$20,000			2,500	17,500							$20,000
284	Cork	$10,000											$0
291	Failure Anal. Studies	$25,000			15,000								$15,000
292	TFAC	$1,000	1,000										$1,000
296	LDEO-BRG	$3,000											$0
297	3rd Party Devel.	$10,000											$0
299	Reserve	$0											$0
302	Core bits, developm.	$35,000											$0
313	XCB	$15,000	4,000		5,000	6,000							$15,000
314	PCS	$10,000	5,000		5,000								$10,000
315	Tensor (core orienta.)	$5,000	2,500		2,500								$5,000
331	Core Liners	$8,000											$0
387	DIC	$0											$0
388	HRB's / Seafloor bases	$50,000			50,000								$50,000
420	Packers	$5,000											$0
430	Personnel Expenses	$25,000			25,000								$25,000
443	Oilsaver	$1,500											$0
472	Dring Reidr, sensors	$15,000	10,000	60,000		30,000							$15,000
665	Shop / Tools	$2,000	2,000										$2,000
668	Hardware	$2,000	1,000										$1,000
	TOTALS	$545,500	$60,500	$81,950	$112,200	$113,350	$41,000	$19,000	$10,000	$4,500	$1,000	$2,000	$545,500
			PROJECTS:	385,000			OTHER:	160,500			DCS:	100,000	

PROPOSED FY95 PROGRAM PLAN
Engineering Budget 1803-K03

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(Without $175,000 FY94 BCOM cut reinstated and without the 3.5% increase originally indicated)

SUB OBJ	Project Description		Total FY95 Budget	7220 Supplies	7130 Equip.	6840 Services	7770 Subcontr.	7530 Travel, Meetings	7580 Travel, Port calls	8570 Shipping	7170 Equipment Rental	7180 Equipment Repair	7780 Other Services
000	Misc.		$9,000			2,000					4,000	1,000	2,000
052	Drafting		$3,000	3,000									
087	Computer- Network		$35,000	11,000	22,500		1,500						
197	Technical Notes		$6,000	1,000		4,000							
201	Consulting, non-subcontract		$45,000				45,000						
202	Travel		$40,000					30,000	10,000				
206	Shipping		$10,000							10,000			
221	Motor Driven Core Barrel (MDCB)		$16,000	16,000									
225	Vibro-Percussive Corer (VPC)	1	$0										
226	Sonic Core Monitor (SCM)	2	$90,000	12,500	35,000		42,500						
251	General Coring Improvements		$25,000	15,000		10,000							
259	Hard Rock Orientation (HRO)		$8,000				8,000						
265	Drill String Studies		$0										
291	Failure Analysis		$7,500			7,500							
292	Engineering Test Facility (TFAC)		$1,000	1,000									
297	3rd Party Devel.		$5,000	3,000		2,000							
302	Core Bit Development	3	$25,000										
313	Extended Core Barrel (XCB)		$12,000	12,000									
315	Tensor Core Orientation		$15,000	3,000	2,000		10,000						
316	Push-In PCS (PPCS)	4	$25,000										
388	Modular HRB/RECONE	4	$35,000				35,000						
404	Shock Sub Development	4	$15,000				15,000						
430	Personnel Expenses		$15,000			15,000							
470	Rig Instrumentation/Integration	5	$100,000	7,500	62,500		30,000						
665	Shop / Tools		$2,000	2,000									
668	Hardware		$2,000	2,000									
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	TOTALS	6	$545,500	$89,000	$122,000	$40,500	$187,000	$30,000	$10,000	$10,000	$4,000	$1,000	$2,000

1 - Project on hold for FY94 (per PCOM) pending BGS evaluation of Novatek hardware
2 - Expanded project to incorporate Monitoring While Coring (MWC) capability
3 -Testing only - Bit cost to be funded under Drilling Operations budget (1803-02)
4 - New projects
5 - Expanded project/effort for on-line system with maintenance, data integrity, and preliminiery core log integration features
6 - FY94 Budget with $175K removed by BCOM: $545,500

PROJECTS:	418,500
OTHER:	127,000

IHP Recommendations for PCOM Action:

March 9 - 11, 1994

* First Priority:

Archiving of old data sets (resources required):

IHP recommends to PCOM that the ODP Operator prepare a detailed evaluation of the commitment in time and resources that would be required to revise the old data sets and incorporate them in the new database. IHP further recommends that an effort to incorporate the old data be carried out in parallel with the upgrade and RFPs to the scientific community be made for this task.

Computer Upgrade:

IHP is in favor of continuing with the computer upgrade despite the lack of consideration of the inclusion of older data sets and despite reservations with regard to potential underestimates of costs to be incurred.

* Second Priority:

1. Data and Software Development (resources required):

1. IHP recommends that the ODP RAWHIDE programmer go to Scripps as soon as possible to test the program in consultation with W. Riedel and A. Sanfilippo.

2. IHP recommends the Operator capture paleo data also from IR volume range charts not superseded by SR charts and from text information in both SR and IR volumes.

3. IHP recommends ODP issue the new CD-ROM in the most expedient manner and not worry at this time about making a sophisticated, clean data set.

2. Publications:

1. IHP comments that the pressure to reduce the volume size was recommended by IHP for the IR, but not for the SR volume and is another factor that may dissuade scientists from putting their best work into the SR volumes. IHP recommends PCOM drop the volume size reduction request for SR volumes.

2. The IHP recommends that PCOM add the name of the outside ERB member to the citation, that it drops the "et al." in reference to the scientific party (they play no part in editing the volume), and that the term "Eds." be added after the names of the four ERB

members. That is, the reference should be changed to : ..."In Proc. ODP, Sci. Res., ERB1, ERB2, ERB3, ERB4 (Eds.) ..."

3. After discussion of problems relating to the 18 month post-cruise deadline for submission of manuscripts to the SR volumes, IHP recommends that rare extenuating circumstances be considered, with R. Merrill given final authority regarding exceptions, and that the deadline remain fixed for now.

3 Membership of IHP:

1. Recent co-chiefs that have left the panel should be replaced. Recent co-chiefs suggested for the IHP are: Annik Myhre (Leg 151), Bill Curry (Leg 154), Roger Flood (Leg 155), Y. Ogawa (Leg 156).

2. There is a need to replace T. Saito, A. Richards, but these replacements will be chosen by member countries.

3. Industry contacts on the IHP would be useful. L. Whatney suggested John Petzlaff of Texaco, Paul Yarka of Marathon research as industry people with computing expertise.

IHP Meeting Executive Summary

9-11 March 1994

I. Micropaleontology Subcommittee Report:

Lead Stratigrapher: The Paleo-subcommittee continues to stress the need for a shipboard designation of a Lead Stratigrapher and will continue to work with Jack Baldauf to further refine the duties of this position and to ensure that Co-Chiefs are aware of the need.

Biostratigraphic Database Center: D. Lazarus and H. Thierstein propose to create a Biostratigraphic Database Center for Neogene data. The Center would provide a unified data set of biostratigraphic/paleontological results for quality (paleomag supported) data for the Neogene. External support would be needed for the proponents. The panel is generally supportive but suggested the issue go back to the Paleo-subcommittee for details.

Nannofossil CD-ROM: To-date 700 descriptions of genus and species taxon have been scanned and edited. A total of 2500 images have been created. The projected completion date is the end of May 1994. The data will then go to NGDC to be put on a CD-ROM; this will be a beta version to go to sea for testing.

Micropaleontological Reference Centers (MRCs): At the MRCs curators meeting in Basel, last June a new structure for the MRCs was proposed so that collections lacking a resident specialist could get to where they would be most useful to the scientific community. The curators suggested dividing the MRCs into three types. The primary MRC (A-type) would be a permanent loan institution, often a museum. The secondary MRC (B-Type) would be a semi-permanent loan institution, usually a larger institution with a history of paleontological research. The tertiary MRC (C-type) would be "subloan" satellite institutions and the collection would be tied to a specific researcher or group. The collection housed in such a locality would usually be a specialized subset (e.g., diatoms). A discussion of the 3-tier curation system followed. A curator at each type of MRC will report annually to IHP through a Lead MRC Curator (a member of IHP). This Lead MRC Curator will maintain coordination of the three-tier structure and monitor the collections. Widespread advertisement will be made for proposals and results will be monitored. Subloan institutions must be responsible for ancillary documentation and cover any costs. A formal letter of agreement between the subloan institution and the IHP is required, the material loaned must be acknowledged as the property of the US Government, and the curators emphasized that the collections can be recalled if the research emphasis declines. The IHP endorsed the establishment of the three-tier MRC structure. B. Huber was chosen for lead MRC curator, by acclamation. IHP endorses periodic MRC curators meetings to promote coordination. IHP made the following recommendations regarding moving of unused collections: 1) Nebraska is to be a subloan site as they have offered to prepare calcareous nannofossils for all 8 MRCs and will make 4 sets of accompanying lithology slides. The material is to come from the Lamont collection which has been unused. 2) The rest of the Lamont collection may go to Bremen (?). 3) The California Academy of Sciences has requested the diatom collection but the IHP will ask for a statement of contribution to the overall MRC effort before deciding on the request. If granted the diatoms will be sent from the Scripps collection. 4) IHP recommends moving the TAMU Oceanography collection to ODP and the return of the Russian collection.

II. Publication Deadlines:

Problems arising from the establishment of firm deadlines (18 months post-cruise) for submission of the manuscripts for the Scientific Results volumes fall into four categories:

1. The potential exists for loss of some manuscripts that have a fundamental and critical scientific impact on the SR volumes.

2. The potential for authors submitting "place-holders" by the deadline or not submitting any manuscript and thus for degradation of the scientific quality of the SR volumes is a real one.

3. Some research/manuscripts cannot be completed by the deadline and the deadline causes hardships for some partner nation participants (e.g. an author from a partner nation couldn't send in his manuscript because of the federal express charges required to get it there in time for submission). There may be a possible negative effect on the sampling on the ship (sampling will be heavier).

4. Consistency in handling the policy is a problem. Authors were told there would be no exceptions, but exceptions were given. Better communication near the time of the deadline are needed and establishment of authority for granting rare exceptions should be given to R. Merrill.

*** After discussion of problems relating to the 18 month deadline for submission of manuscripts to the SR volumes, IHP recommends that rare extenuating circumstances be considered, with R. Merrill given final authority regarding exceptions, and that the deadline remain fixed for now.**

III. Evaluation of ROCKY (Response to PCOM Directive):

The IHP felt ill-prepared to perform the evaluation directed by PCOM, lacking any input on ROCKY from the Co-chiefs of Leg 153, but asked J. Miller (ODP Staff Scientist) to present a report on the program. Miller reported that ROCKY successfully solved the problem of ease of data entry. Miller felt however that ROCKY does not provide the level of detail desired (limited as is HRVI/HRTHIN to description by section). The problem of a better data format regarding processing vs. archiving needs to be addressed by the community as a whole. Goals for the future would be to facilitate use of the data to interpret changes down-hole, a mechanism for describing pieces or intervals in detail. Users complained that they do not get the amount and quality of data they are used to getting in their own labs. Miller is canvassing the community to see what parameters are needed in a database format for types of data they are interested in recording. IHP commends the efforts of ODP/TAMU to address the immediate problem of improving the ease of data entry. IHP also encourages efforts to plan for an increase in the flexibility of ROCKY through interaction with the petrological community.

IV. ODP Publications Report:

Volume reduction effort: No legs have gone through the entire publication process under the new guidelines to reduce volume, however, in general, things seem to be working well. The target size reduction is 20% less than a previous similar leg.

*** IHP comments that the pressure to reduce the volume size was recommended by IHP for the IR, but not for the SR volume, and is another factor that may dissuade scientists from putting their best work into the SR**

volumes. IHP recommends PCOM drop the volume size reduction request for SR volumes.

It was noted that the publications staff at ODP are doing a fine job of keeping on schedule.

IHP recommends to PCOM that the manner of citations of the ERB in SR volumes be changed. Currently the outside member of the ERB is left off of the citations. Also currently the entire shipboard party is acknowledged as an et al. in the citations of the SR volume. While this is appropriate for the IR volumes it is not for the SR volumes, as the duties of editing the volume are the sole responsibility of the ERB. Therefore,

*** The IHP recommends that PCOM add the name of the outside ERB member to the citation, that it drops the "et al." in reference to the scientific party (they play no part in editing the volume), and that the term "Eds." be added after the names of the four ERB members. That is, the reference should be changed to : ..."In Proc. ODP, Sci. Res., ERB1, ERB2, ERB3, ERB4 (Eds.) ..."**

V. Curators Report:

A thin section recall is underway. A bar-code system is beginning which will involve end-caps on cores and all samples. The goal is for the system to be in place by the end of the year. There has been some wasted energy in curation efforts because of on/off closing of ECR. The contract is now signed for the Bremen repository, so construction and modifications are starting and it should be ready by 1 May. The first cores are to arrive in May.

VI. Database/Computer Report:

Data requests are on plateau with last year and the typical turn-around is down to several days. The database it is keeping up with current acquisition. Students are working on the paleontology database, hand-entering range charts from the SR volumes into Excel spreadsheets. Nine legs are finished.

*** IHP recommends the Operator capture paleo data also from IR volume range charts not superseded by SR charts and from text information in both SR and IR volumes.**

Data problems: The computer group is trying to migrate XRF data to new media (equipment exists, old PDP-11, but not personnel resources). They are almost finished with the Corelog (depth) editing project. Incorrectly recorded sample depths for some legs are being corrected and only a few bad legs are left. Shipboard scientists have changed parameters for the natural gamma data collection either on the machine or in the software, and there is a need for some review/update of procedure. This problem was caught on Leg 152 and calls into question prior legs (150-151). Also there is a problem with some sonic log data (shipboard scientists left out some calibration values).

It is about time to issue a new CD-ROM, but a source of funds is not clear. R. Mithal stated that for the CD-ROM for Legs 130 onward, there are many inconsistencies. He raised the question do we wait until all of the data is cleaned up (wait a year) or try to put it out fast?

*** IHP recommends ODP issue the new CD-ROM in the most expedient manner and not worry at this time about making a sophisticated, clean data set.**

RAWHIDE program: No. 1 priority for software applications development has been the RAWHIDE paleoprogram. RAWHIDE is currently in beta version. J. Coyne explained he has only one staff member (L. Patton) trained in 4D programming to pick up the task of developing the RAWHIDE program. The program did not make the Leg 154 goal. The computer group will possibly be sailing a programmer on Leg 156.

*** IHP recommends that the ODP RAWHIDE programmer go to Scripps as soon as possible, especially if the programmer cannot sail on Leg 156, to test the program in consultation with W. Riedel and A. Sanfilippo.**

VCD program: The computer group is trying to write the VCD program into an object-oriented environment in hopes this will make it easier to make rapid changes. The group is still working on the problem of high-detail descriptions and on the problem of getting sample depths. The Dec VAX 750's have been retired.

VII. Computer Upgrade

The best and final offers from potential vendors are expected in April. Subcontracts will be awarded in May. The upgrade will start this summer. It will take 9 months to get the necessary equipment and install software and a further 6 months of studying data to design data formats. Training for ODP personnel will be included. The target is to have some equipment and programs on ship by early 1995.

Coyne gave background on system architecture and philosophy. Lewis described the proposed computer upgrade oversight committee and explained the budget issues. There are $1.5M budgeted in '94,'95 the rest must come in '96. If the project only runs until 1998, there will be 12 good legs of data, but 64 legs of disorganized data. When asked whether PCOM was interested in/committed to migration of old data to the new format, Lewis said that is a separate issue and IHP would need to present PCOM with a detailed budget and road map.

IHP is responsible for the archiving of data. The panel estimates the task of cleaning up the old data sets would take 3 people/year for 3 years, at a total cost of ~ $450,000. ODP should go outside for expertise to assist with this task. The Panel consensus is that the necessary funds may have to come from reprogramming of the computer funds. IHP is in favor of continuing with the upgrade despite the lack of consideration of the inclusion of older data sets and despite reservations with regard to potential underestimates of costs to be incurred. However, as its highest priority request for PCOM action:

*** IHP recommends to PCOM IHP recommends that an effort to incorporate the old data be carried out in parallel with the upgrade and RFPs to the scientific community be considered for this task. To this end IHP recommends that the ODP Operator prepare a detailed evaluation of the commitment in time and resources that would be required to revise the old data sets and incorporate them in the new database.**

VIII. Membership of IHP:

IHP requests replacement of departing members. It was generally agreed that for IHP, which has an archival mandate, it is important to maintain a balance of individuals with

modern technological expertise and individuals that carry a "corporate memory" for the work of IHP.

* Industry contacts would be useful. L. Whatney suggested John Petzlaff of Texaco, Paul Yarka of Marathon research as industry people with computing expertise.

* Recent co-chiefs that have left the panel should be replaced. Recent co-chiefs suggested by the IHP are: **Annik Mura (Leg 151), Bill Curry (Leg 154), Roger Flood (Leg 155), Y. Ogawa (Leg 156).**

It was suggested W. Wise continue as a guest with in the Paleo-subcommittee. There is a need to replace T. Saito, A. Richards, but these replacements will be chosen by member countries.

JOIDES Tectonics Panel Meeting - Spring 1994

Date: March 10 - 12, 1994

Place: Royal Waikoloan Resort, Hawaii

Chair: Alastair Robertson

Host: Greg Moore

1. Attendees:

Panel Members	Liaisons and Guests
Agar, Sue	Taylor, Brian (PCOM)
Ashi, Juichiro	Underwood, Mike (SGPP)
Brown, Kevin	Clift, Peter (ODP-TAMU)
Hurst, Steve	Pezard, Phillipe (ODP-LDEO)
Lagabrielle, Yves	Schmitt, Karen (JOIDES)
Lin, Jian	
Moore, Greg	
Robertson, Alastair	
Skogseid, Jakob	
Steckler, Michael	
Symonds, Phil	
Ten Brink, Uri	
Von Huene, Roland	
Yin, An	

2. Panel Recommendations to PCOM

TECP Recommendation 1: Shipboard Structural Science

Recommendation 1.1 Shipboard Structural Science

TECP recommends to PCOM that PCOM recommend to JOI Inc. that ODP-TAMU be directed to immediately implement the collection and archiving of structural data on the *JOIDES Resolution* and that it should be made a responsibility of the Co-chiefs and the TAMU staff scientist to ensure that these data are collected whenever features of structural interest are noted by the shipboard scientists.

Explanatory Notes:

TECP remains very concerned that structural data are still not being routinely recorded at sea. Important data undoubtedly are being lost. TECP will present standardized log sheets, one for "soft rocks" and one for "hard rocks" for routine use to SMP and IHP for review at their next meetings.

Recommendation 1.2 Shipboard Structural Geologist Staffing

TECP recommends to PCOM that PCOM recommend to JOI Inc. that ODP-TAMU be directed to ensure that a minimum of two shipboard scientists with structural capabilities are included on every leg that was globally ranked as a proposal within the top-four by TECP.

Explanatory Notes:

TECP notes that there is still a need for advertisement, both within the US and within international partner countries, for additional shipboard structural geologists. TECP will

endeavor to attract applications from structural geologists (e.g. advertisement in GSA Structural Geology and Tectonics Newsletter).

Recommendation 1.3 Publication of Structural Data

TECP recommends to PCOM that PCOM recommend to JOI Inc. that ODP-TAMU be directed to ensure that all structural data collected on a leg be routinely published in both the Initial Reports and Scientific Results volumes. Specifically, TECP recommends that the structural logs for Leg 153 be published with their respective volumes.

Explanatory Notes:

TECP is very concerned that structural data already recorded are not being published in the cruise reports on a routine basis. These are unique primary data, for example, of essential use in core-log integration.

Recommendation 1.4 Salvage of Recorded Structural Data

TECP recommends to PCOM that PCOM recommend to JOI Inc. that ODP-TAMU be directed to ensure that TAMU devise a means for collating and formally archiving structural data, initially to be made available in a written format as an ODP Technical Note.

Explanatory Notes:

TECP is concerned that ODP structural data previously collected are seriously in danger of being dispersed and lost. Inexpensive means of salvaging these data could include employing a graduate student for a limited period, or a former staff scientist part-time, under direction of a TAMU staff scientist. To maximize data salvage it will be necessary to contact past Co-chiefs of relevant legs and, in some cases, individual former shipboard structural geologists. Once collated and archived, TECP recommends that the structural data be retained in a generally accessible format (e.g. accessible by computer).

TECP Recommendation 2: Computing

A. TECP recommends that PCOM endorse TECP's establishment of a liaison between TECP and SMP and IHP to facilitate communication on the issue of structural data collection, processing, archiving and salvage.

B. TECP recommends that PCOM endorse TECP's establishment of a Tectonics Panel Working Group on Structural Measurements with the mandate to: (a) review computing requirements for structural data collection, processing, archiving and salvage, and (b) to communicate these requirements to SMP, IHP, and the Computer RFP Evaluation Committee.

Explanatory Notes:

TECP is concerned that new computer systems should be able to handle structural data effectively. To facilitate this, a working group under Steve Hurst was formally set up to review and make recommendations to TECP. TECP has also appointed Joann Stock to be a liaison to IHP to facilitate interaction.

Plans for significant upgrading of the shipboard computer hardware and software present an opportunity to correct past deficiencies and adopt new methods to make the scientist's job of collecting and analyzing data significantly easier. These improvements will come only if the shipboard scientists are actively involved in the specification, development and testing of the new data handling system. We suggest that a formal program be established to include representation from the ODP scientific community in the development and evolution of the new system.

The details of what exactly should be in the basic database should be done in consultation with experienced shipboard scientists. There is now a large reservoir of experience and opinion on

what should be included. A formal method for distilling these requirements into the database specifications should be provided. We suggest using the Tectonics Panel Working Group on Structural Measurements as a clearinghouse for the structural related specifications. The Tectonics Panel Working Group on Structural Measurements had the following general suggestions in addition:

- The ODP database should have a nucleus of recommended measurement and description that are the minimum expected for the features observed in the core (this is already implemented to some extent for non-structural data, but clearly deficient in structural data).
- The database should be flexible enough to add fields for numeric and textual data at the discretion of the shipboard party. These added fields should be fully integrated with the rest of the database.
- Graphic items such as scanned photos and drawings should be fully integrated into the database and on equal standing with other data items (fields). These graphics should be scalable (i.e. show items for the whole hole or any part of a core). The graphics should be able to be displayed with overlays and adjacent additional data (such as core photos with overlain structural drawings, adjacent to physical props. measurements).
- The database and extraction program(s) should be portable. The shipboard scientist should be able to bring a runtime version of the extraction program(s) and the leg database to his home base.

It is essential that the database programs be tested during development and implementation. Scientists with data from a variety of former ODP legs should be asked to use the program intensively to enter and extract data in simulated conditions as soon as practicable. Before shipboard use the system should undergo intensive testing, perhaps at a workshop meeting where real core is described, entered into the system, archived and extracted.

We emphasize that the new system should not be restricted by the need to be totally compatible with previous ODP databases. The previous databases are clearly insufficient to serve the needs of the scientists, especially structural geologists.

We recommend that a prime goal of the database system be to ease the means of entering a variety of shipboard data. Currently, a great deal more time may be spent entering data into the computer than is used to describe the core itself. Methods such as automatic scanning of core, portable measurement devices with automatic computer entry and handwriting recognition systems should be considered.

TECP Recommendation 3: Equipment Development

TECP recommends to PCOM the following engineering development priorities:

a. recovery of fluids and gases (i.e. Pressure Core Sampler)

b. recording stress and strain in formation (e.g. Borehole Televiewer, Orientation Tool, Lateral Stress Tool, P/S Wave Tool,)

Explanatory Notes:

TECP notes with concern the current financial constraints on engineering and tool development. If continued, this will place serious constraints on highly-ranked TECP objectives. TECP continues to endorse its previous prioritization (with removal of the PPCS).

To facilitate communication, TECP has appointed Kevin Brown to liaison to SMP, Steve Hurst to TEDCOM, while Sue Agar remains as liaison to DMP.

TECP Recommendation 4: Equipment Deployment

TECP recommends to PCOM that PCOM recommend to JOI Inc. that ODP-TAMU be directed to generate without delay a comprehensive guidebook dealing with capabilities and limitations of equipment (onboard and downhole) to be available primarily to Co-Chiefs to assist planning of legs and science operations at sea.

Explanatory Notes:

TECP is concerned that written information on capabilities of downhole instruments is not available, e.g. in a handbook for Co-chiefs to assist with planning of legs and shipboard science. TECP suggests to ODP-TAMU that this item be discussed and an implementation plan be created at the annual Co-chief's Review Meeting.

TECP looks forward to interaction with IHP on these aspects.

3. Global Ranking (Spring meeting) / Prospectus Ranking (Fall meeting)

Rank	Number	Short Title	Score	Std.Dev.	"Hero"
1.	447	Continental Extension in W. Woodlark Basin	18.73	3.4	Phil Symonds
2.	400-Add	Mass Balance of the Costa Rica Accretionary Wedge	17.33	4.5	Kevin Brown
3.	450	Taiwan Arc-Continent Collision	15.87	5	Greg Moore
4.	NARM-Add3	Iberia II	14.71	6.2	Roland Von Huene
5.	442	Rift Initiation in Backarc Basins: N. Mariana	14.13	5.9	Uri Ten Brink
6.	340	Tectonic Climatic Oceanic Change, N. Australian Margin	13.64	6.9	Carlo Doglioni
7.	NARM-Add2	East Greenland	12.47	6.2	
8.	333	Evolution of Pull-Apart Basin, Cayman Trough	12.36	6.5	
9.	445	Deformation and Fluid Flow in Nankai Trough	12.29	5.7	
10.	438	Test of Reflecting Interfaces in Oceanic Crust	12.00	5.3	
11.	31	Lower-Plate Continental margin A399	11.60	6.1	
12.	28	Japan Trench Downhole Observatory Off Sanriku	11.07	6	
13.	437	Lau-Havre-Taupo Rift to Drift	11.00	4.7	
14.	NARM-Add	Newfoundland Basin	10.87	5.9	

15.	432	Galicia Deep Hole S-Reflector	10.80	5.9	
16.	30	Erosion, Mass and Fluid Flux, Returned to the Mantle	9.93	5.6	
17.	446	Ocean Drilling in the Tonga Forearc	9.87	5.7	
18.	24	Cascadia Margin II	9.07	6	
19.	431-Add	Western Pacific Seismic Network	8.13	5.2	
20.	29	Evolution of the Hawaiian Hot Spot	7.93	5.9	
21.	21	Early Stages of Crustal Creation in the Western Pacific	7.13	4.7	
22.	443	Faults, Crustal Heterogeneity & Hydrology at 504B/896A	6.33	5.4	

4. Future Meeting Dates

Dates	Place	Host/Contact
Oct. 20 - 22, 1994	Cyprus	Xenophontos/Robertson
Spring 1995	San Luis Obispo, California	Underwood

5. TECP Liaisons for 1994

Panel Member	Liaison to:
Greg Moore	SGPP
Jian Lin	LITHP
Kevin Brown	SMP
Joann Stock	IHP
Sue Agar	DMP
Steve Hurst	TEDCOM

No other membership actions required.

A. Liaison Reports at the TECP Meeting

1. PCOM

Taylor reviewed the evolution of the FY95 Science Plan adopted by PCOM at the December 1993 annual meeting. He reported on the budget priorities that PCOM had recommended for the FY95 budget process and discussed the agenda items for the upcoming PCOM meeting.

2. ODP-TAMU

TAMU Science Operator Report (Peter Clift)

The diamond coring system (DCS) is presently being prepared for land testing at Midland, Texas.. The testing will not focus on the drilling technology but on the secondary heave compensator. This has a new software system involving "fuzzy logic" and will be tested using real wave data from the JOIDES Resolution. This testing is dependent on the success of testing on models and on the resolution of contractual problems with the operating company in Midland, *Partech*. Further engineering developments include improvements in the pressure core sampler in the region of the seal in preparation for upcoming legs, such as 156 and 164.

The computing group at ODP/TAMU are aiming to complete and sign a contract for the database upgrade in April this year. Development is due to last until 1997. Testing of Rocky, the hardrock description program was done on Leg 153. It is yet to achieve operational quality and will now be modified for further testing. Etch-a-sketch, which is the next generation sediment description and barrel sheet program will be demonstrated at the SMP meeting and is intended to be tested at sea soon. The role of structural measurements in the database must be considered as a priority item by TECP. The standardization of ODP structural data collection is now a principle item of concern. The recent inclusion of "structural geologist" as a regular position has helped in strengthening structural geology within the program but TECP's input as to what measurements need to be taken and in what form is essential. The aim is to produce a structural data program to allow the direct input of data into the database.

Staffing is complete up to Leg 158 and future staffing for Legs 159-162 will begin in April.

Leg 151, which had little tectonic component, successfully documented the history of glaciation and deep water flow through the Fram Strait into the Greenland Basin. Plio-Pleistocene calcareous fauna were recovered but in older sediments these have been dissolved away. A siliceous fauna, suggesting high productivity, has been found in the middle to upper Miocene in the Fram Strait and in the upper Eocene to Oligocene on the Greenland margin. North Atlantic Deep Water is dated from the Late Miocene. Intense glaciation starts at 2.5 Ma but is first recorded on the Iceland Plateau at 6.5 Ma.

Leg 152 was a big tectonic success as it completed a transect across the dipping reflectors off SE Greenland. Site 917 penetrated almost 800m of basalt into steeply dipping volcaniclastic shale under a major normal fault. The basalts were all erupted subaerially within magnetic Chron 24r. Early spreading rates are inferred to be more rapid than subsequently. Uplift of the Greenland margin is inferred to occur in the late Oligocene, possibly due to a ridge push effect.

Leg 153 cored 200m of serpentinized peridotite at Site 920, the deepest such hole in the ocean basins. Shallower coring in gabbros penetrated up to 80 m into basement. Plastic and brittle deformation is recorded in these rocks and documents rapid unroofing close to the rift valley. Melt veins in equilibrium with the peridotite represents an important find.

Leg 154 has succeeded in drilling high recovery, deep penetration holes into the pelagic cover of the Ceara Rise. At Site 925 none of the expected Miocene hiatuses were recognized, thus providing a continuous lower Eocene to Recent record with a diverse calcareous fauna throughout. Increasing sedimentation rates and flux from Amazon since the Plio-Pleistocene.

3. LITHP

MARK Review - Leg 153

Cannat reviewed the TECP objectives addressed on the MARK leg and reviewed the preliminary scientific results. She reported that Hole 920 was characterized by high temperature deformation

(near solidus). A 200 m section of mantle was brought up and the distribution of shear zones indicated that the deformation was very localized. In addition, at 920 it was possible to see the multiple generations of gabbro injected at the end of the asthenospheric deformation. These gabbros were emplaced during the uplift as repeated injections of melt. Cannat explained that it would now be possible to look at the sequence of this injection process.

Cannat outlined the operational difficulties that were encountered during drilling at 920. Hole 920B was drilling well at 120 mbsf so they had pulled out of to put down the HRB. However, after this the HRB became unstable on the hole due to washout around and below the HRB. Hole 920D drilled well to 100 - 120 m when it also became unstable and collapsed. She concluded that at this site the HRB was not the main problem, internal hole stability caused the difficulties.

At Site 921 hole instability also made deep drilling unfeasible, again it was not problems with the HRB that were as problematical as the tectonism of the fault zone. Cannat explained that the gabbros recovered at this site were similar in composition to the 735B gabbros and different from the Hess Deep recovery.

4. DMP

Downhole Measurements Panel Report (Sue Agar)

The DMP meeting in Santa Fe was held jointly with LITHP with a main objective to discuss downhole measurements for TAG drilling. Of the possible drilling scenarios discussed it was considered most likely that vigorous downflow of cold seawater into the hole would occur, in which case the normal logging suite could be used but clearly some of planned measurements would not be achieved. If the holes are not cooled then the Schlumberger HEL tools ($60k) or memory tools would be needed. There are still problems with a high temperature cable for high temperature tools. This cable is currently being independently developed and if successful the company will approach ODP to see if they are interested in purchasing it.

The future of the DMT borehole televiewer was to be decided after Leg 152 but as it was not used during this Leg there is no change in the status of this tool. The cost per leg of running the BTV is $14k. DMP is taking action to ensure that there is a reliable tool available for recording borehole breakouts. A second version of the LAST (lateral stress) tool is being developed, involving a solid device (as opposed to a cylinder) with an inflatable packer. This tool still needs calibration. The core scriber and tensor tool are operational. The sonic core monitor, essential for core-log integration, is being developed over the next 1 to 3 years. The French temperature tool has been successful on Leg 148, 140 and 139 and is planned for use on TAG. The CSMA resistivity tool is designed to be used at temperatures up to 350°C and can measure borehole temperature and fluid conductivity. This tool requires funds on land high temperature tests.

The borehole research group outlined tools it is currently considering for development and sought feedback from the panels for prioritization. Does TECP see a use for the Dipole sonic imager tool? There are problems with the data interpretation for this tool at the moment. There is a modular formation dynamics tool and an improved geochemical tool from Schlumberger (both requiring "top hats" for deployment. The GHMT magnetic susceptibility tool is free until Leg 160. After this, the costs of the tool will be incurred. This tool could be included as part of the standard logging suite. The BRG will be sending representatives to meetings. Preliminary versions of tool brochures for geochemical tool and the neutron porosity tool have been prepared.

LWD (logging while drilling) was support by DMP for Barbados. DMP noted that the Sedimented Ridges II and Mediterranean Ridges legs would involve similar logging needs to Barbados and TAG and that panels and proponents should note the high costs involved. No special operating expenses for tool development have been included in the FY94 budget so any tool development will require proponents to acquire external funds. DMP recognized that the

procedures for third party tool development could be off-putting for proponents. P. Lysne is preparing a JOIDES Journal article outlining these procedures.

5. BRG

BRG Report (Philippe Pezard; IMT, Marseilles, France)

Following a 1992 RFP concerning downhole measurements activities, the ODP "wireline services" structure was formally reorganized in October 1993 (FY94). Still headed at Lamont-Doherty, this activity now receives support in the areas of ship staffing, scientific support and data processing, of two groups located within Leicester University in the UK, and the Institut Méditerranéen de Technologie in Marseilles, France. While the activity of the former is primarily concerned with the processing of geochemical and sonic data, that of the latter is centered on electrical FMS images and magnetic data.

With a downhole measurement program now stabilized in terms of data reliability for "standard" measurements (geophysical and geochemical strings, FMS images), an effort appears to be needed to assist the ODP community in the use and translation of downhole measurements into geological facts. As for other thematic panels, the presence of a BRG liaison to at least a TECP meeting a year is intended to contribute to respond to this need.

Panel members are invited to seek support from the BRG representative, both during and in between meetings, to answer questions concerning downhole measurements or specifics of logging programs.

Recent results and new methods

Beside Leg 153 (MARK area), where logging was not allowed due to hole instabilities, the recording of downhole measurements has been highly successful over the past 12 months. High quality logging data and borehole images were recorded in sediments at 4 sites during both Leg 150 (New Jersey margin) and 151 (NAAG I), and at least at two sites (at the time of the meeting) during Leg 154 (Ceara Rise).

FMS images recorded during Leg 149 (NARM/Iberia) in foliated basement were reported as defective in the Part A volume. Initially unreported software modifications related to the use of the MAXIS computer (for which it was the first leg) were responsible for image scrambles. The 149 images will be reprocessed and available for analysis in the near future.

The mapping of fractures imaged with the FMS at Site 894 (Leg 147 at Hess Deep) over a 35-m-long interval indicate a 35 degrees clockwise rotation of the paleomagnetic vector over the past million year. This implies a presently unexplained rotation of the horst within which most of the holes of Leg 147 were sited.

Data recorded during Leg 152 (NARM/SE Greenland) and Leg 148 (Hole 504B and 896A) were presented to the panel.

Leg 152 - Site 917 penetrated almost 800 m of subaerial basalt, and logs were recorded over a 350-m-long interval in Hole 917A. The geophysical data (Figure 1) show in a continuous manner the succession of individual flows found to be electrically resistive and acoustically fast at the base, whereas more conductive and slower near the top. Such signatures are similar to those observed in Hole 642E on the Vöring plateau, and is associated with alteration that developed between eruptions in the upper part of the flows. This m-scale structure is reproduced in FMS images, which also picture numerous structural and textural features.

The primary magmatic signal appears to be preserved in the natural gamma ray (GR) profile, which mostly respond to potassium content. While the tholeeites at the base of the sequence have a generally low potassium content and natural radioactivity, the dacite and more picritic lava

located above are more radioactive. The remarkable linearity of the GR profile across a 60-m-thick massive flow (Unit LU2) is unexplained at this stage.

The calipers of the FMS show a-N030°-oriented hole elongation over the logged interval. Whether this direction is associated with the flexure of the continental margin has not been investigated at this stage. This orientation is however coherent with the plate motion direction in this part of the North Atlantic.

Leg 148 - The quality of logging data collected both in Hole 504B and 896A was certainly the most positive element of the cruise. In particular, excellent acoustic (P- and S-wave), electrical resistivity, magnetic data (with the German BGR tool) and FMS images (Figure 2) were obtained throughout basement in each hole. The calipers and inclinometry section of the FMS provided a continuous description of hole size, shape and direction.

While calipers show a substantially enlarged borehole in the extrusive upper 700 m of basement (Figure 3), the newly recorded directional data will be essential in a reappraisal of borehole breakouts and induced fractures for stress in Hole 504B from existing BHTV and newly recorded FMS images.

The electrical resistivity data from the dual laterolog provide a continuous description of fracture distribution versus depth at m-scale. Near the base of the hole, high concentration of fractures appear to be associated with the presence of borehole breakouts (Figure 4) oriented at right-angle to those detected from BHTV images in the upper part of the dikes. Whereas theses breakouts originate in locally reduced effective stresses due to modified pore pressure in the fractures, or in relation to thermal stresses ("thermo-fracs") associated with drilling and borehole fluid circulation is not known at this stage.

At cm-scale, the geometry and aperture of individual fractures and fault zones imaged with the FMS will be determined in the near future from newly established image analysis workstation at L-DEO, IMT in Marseille or Leicester University. The use of these borehole surface image-analysis workstations are open to the ODP community for analysis of old or newly recorded images.

6. TEDCOM

TEDCOM Liaison Report (Greg Moore)

At its Fall meeting TEDCOM discussed the status of DCS development. The land field test of DCS was scheduled for October, but problems with the computer simulations seemed likely to preclude actually carrying out the tests until some later date.

Other reports were made on the status of the Diamond Retractable Bit, vibra-percussion corer, hard rock core orientation, and pressure core sampler. A discussion of deep drilling technology was focused on the likelihood that the Alboran deep site would be drilled in 1994/5.

At its Spring meeting, TEDCOM again addressed the status of DCS. ODP/TAMU engineers reported that computer simulations and mechanical model tests should be completed in June, and land tests will be scheduled for summer of 1994. TEDCOM does not want land tests scheduled until the simulation and model tests are completed.

In a joint meeting with SGPP, TEDCOM discussed the status of PCB, which needs only minor modifications to be operational.

The problem of inadequate site surveys for MARK and Hess Deep were discussed and ideas were presented for improving site characterization prior to drilling operations in this type of environment.

A list of on-going engineering projects was presented. This list is available for TECP members to use for prioritizing future engineering development.

7. SGPP

Underwood reported on the SGPP White Paper revision noting that budget situation would make focusing an important problem for all of the panels. SGPP had decided to focus on the themes of: (1) sea level and facies architecture; (2) fluid flow and geochemical fluxes, (3) base of the biosphere (nutrient fluxes/cycles, carbon geodynamics and deep microbiology.

Discussion of the SGPP global ranking was held for discussion until after TECP ranking.

Underwood discussed the 2003-1998 period in the context of the three themes; studies to address the SGPP themes would not include time periods beyond the Neogene. Emphasis was also given to priorities that would have an attraction for funding agencies in addition to being of thematic interest. Robertson asked TECP to consider this issue of societal relevance and be prepared for discussion on the topic after the review of proposals.

B. Proposal Reviews

Robertson explained the process that the panel would use to review proposals and highlight those with TECP interest for the global ranking process.

NARM-Add3, Basement sampling of the ocean-continent transition west of Iberia: sequel to Leg 149 studies of a non-volcanic margin

A1, B1.2, B2.1, C2, D1, E5, E8, F2

This proposal builds on the results and interpretations arising from Leg 149 over the non-volcanic, west Iberia continental margin. It presents a strategy to complete the NARM-DPG objectives in this area and thus characterize basement on a transect of holes across the ocean/continent transition zone (OCT), at the same time as addressing new questions raised by the drilling, The proposal also includes drilling a pilot hole at GAL-1 (an old NARM-DPG site that was not scheduled for Leg 149 because of time constraints) to determine the nature of the enigmatic terrane overlying the S' reflector imaged on the northwest slope of Galicia Bank. This was proposed to test the possibility of drilling a detachment fault or the crust/mantle boundary on a subsequent leg. As mentioned by the proponents, the proposal presents a preliminary drilling program, and presumably a more mature proposal will be submitted following further analysis of the results of Leg 149.

Leg 149 confirmed the continental nature of the inboard end of the drilling transect, and revealed a much wider expanse of peridotite (upper mantle) within the outer part of the OCT than the original proponents expected. It also produced some unexpected and as yet poorly understood results, which highlight the complex nature of the OCT. The application of a simple shear model, as presented in this proposal, or a combination simple/pure shear model, to explain the lithospheric extension across the west Iberia margin predicts the possibility of a complex arrangement of basement highs within the OCT, and points to the need for detailed consideration of such models prior to drilling. It reinforces TECP's appeal for the presentation of balanced cross sections, no matter how schematic, within proposals as although they can be very subjective they are a very useful aid to proponents in thinking about the extensional history and processes that have operated, and thus the arrangement of rock types that can be expected within the area to be drilled. For example, using such models to explain the west Iberia OCT would predict that the basement highs could consists of a wide variety of possibilities ranging from peridotite (exposed upper continental mantle), underplated material, lower continental crust, upper continental crust, pre-rift sedimentary rocks, and syn-rift sedimentary rocks, as well as combinations of some of the above separated by a detachment. In the model contained in the proposal a later stage of faulting following on from detachment faulting, is invoked to break up the extended terrane into the fault blocks observed in the west Iberia OCT. However, a detachment model could also be envisaged

in which this was unnecessary, as a detachment fault rooted in the upper mantle could be overlain by rotated, upper plate fault blocks containing all of the basement elements described above without recourse to a later episode of significant structuring.

The above discussion serves to illustrate that there are probably a variety of tectonic models that can be used to explain the results of Leg 149. TECP feels that this points to the need for a period of reflection on the results and implications of the leg, before new, testable drilling proposals can be brought to maturity. TECP would like to see the proponents discuss the issue of what further drilling in this area will tell us beyond the main outcome of Leg 149, that the OCT is a complicated extended zone in which upper mantle has been exposed. Although TECP sees the logic in the drilling strategy proposed, it considers that there is considerable risk in proceeding with further drilling in this area prior to the development of more firmly based models. Further processing of seismic data in the area using the interactive, pre-stack migration techniques employed by Tim Reston should result in better imaging of the basement blocks and improved understanding of the Leg 149 sites and their place within the OCT. This will help in the development of more realistic models for testing on any future leg.

TECP feels that the results of Leg 149 require re-modeling of the potential field data on the transect to better constrain the limits of the peridotite and the metamorphosed mafic igneous rocks (gabbro) of Site 900. There was considerable mis-match between observed and modeled magnetic anomaly in the pre-drill interpretation and this may be pointing to a complication in the OCT that can now be understood following Leg 149.

There are some ambiguities and inconsistencies in the proposal as is stands at the moment:

1. In the strategy section mention is commonly made of the location of the OCT between various sites. The original idea of Leg 149 was not so much locate the ocean-continent boundary but to characterize the OCT.

2. In the extensional model contained within the proposal the ocean-continent boundary would lie at the junction of the oceanic crust and the exposed continental upper mantle represented by the peridotites. If the peridotites were shown to represent oceanic upper mantle then of course the ocean-continent boundary could be some distance to the east. The start of the OCT must lie at the inner edge of identified oceanic crust,

TECP still rates characterization of the OCT on the west Iberia margin as a high priority objective, and believes that drilling in this area should be completed following a period of reflection on the results of Leg 149 and a reconsideration of what can be tested and achieved by drilling at this location.

354 rev-2, Wefer et al.

A5, B1.1, B2.1, C1, D1

The proposal is not directed towards tectonic thematics. A deep hole on the Walvis Ridge could, however, reveal information on the subsidence history of this originally sub-aerial plume-related structure, and thus show "the entire" history of the current system in the region.

355-Rev3, Geophysical Estimates of gas hydrate quantities: A calibration through ODP drilling

A3, B1.2, B2.1, C1, D5, E8, F3

TECP recognized that this proposal was intended primarily for SGPP review but noted that there were several aspects that were of direct interest to TECP. Specifically, investigations proposed to examine the impact of the burial and uplift history of sediments on the formation of gas hydrates could provide a valuable way to use gas hydrates as a tool for constraining active tectonic processes. From this perspective, the proposal needs to include more information on existing

constraints on the structural framework, for example, have the locations of basin-controlling faults been identified? What are the existing constraints on the burial and uplift histories? How do the results of the fluid flow modeling relate to forearc structures? A higher ranking by TECP would need more detail on the broader tectonic history and present-day framework to examine possible hypotheses that link the generation of gas hydrates to the tectonic history. Some of the main aims of the proposal rely on the success of fluid sampling tools and retaining samples under pressure. The proponents would need to ensure that they could achieve these sampling objectives, given some of the difficulties encountered with fluid sampling in the past. Even though the Peru location is well-justified as one possible site for this study it would help to explain why Cascadia or the Chile Triple junction are not better alternative locations, given the studies that have already been undertaken in these areas.

367-Rev, Great Australian Bight: Evolution of a Cenozoic cool-water carbonate continental margin

A5, B1.1, B2.1, C2, D1, F4

This well formulated and presented proposal addresses the evolution of the world's largest cool-water carbonate shelf - southern Australian continental margin - and examines its response to oceanographic and biotic change. The proposal also seeks to use the carbonate sediments to understand global sea-level fluctuations, physical and chemical paleo-ocean dynamics, biotic evolution, hydrology and diagenesis, The proponents also suggest that some of sites could be used to deduce the subsidence history in and around the Southwest Ceduna Accommodation Zone - a major structural compartment boundary within the southern Australian margin rift system - as a basis for understanding accommodation zone movements. While this is of general tectonic interest it is not an important TECP thematic objective.

TECP recognizes that if a tectonically oriented proposal such as outlined in letter of intent L31 (Lower-plate continental margin off southern Australia) progresses to maturity, then some of the sites outlined in this current proposal may be relevant to understanding the subsidence history of the inboard part of the margin.

Another consideration for this proposal that may have tectonic implications is that the Southern Ocean appears to be associated with anomalous mantle which is interpreted o be responsible for enigmatic features such as the Australia-Antarctic Discordance. It is possible that this anomaly could have affected the tectonic subsidence regime along the southern Australian margin, and therefore distorted the influence of global sea-level fluctuations on the carbonate sediments.

The proposal focuses on OHP and SGPP themes, and is not relevant to the priority thematic objectives of TECP.

384-Rev3

A2, B1.2, B2.1, C3, D1, E8, F2

In the present group of drilling proposals before the ODP panels, proposal 384 could be a contender if it were formulated more precisely. TECP interest is confined to proposed site A-1 because of its potential to define the path of the Caribbean plate and refine the Pacific basin plate history. Despite 2 revisions and extensive new geophysical data the present proposal does not adequately define the drill target. A 1500 m depth hole in these water depths is at high risk of not being completed because of the increasing drilling problems with depth. This means that the geophysics supporting the drilling must be of good quality. A-1 is located in an area of confused reflections and the target depth is not certain.

The following suggestions are offered from the TECP to improve this proposal. First the C03 seismic line must be carefully migrated so that the reflections at the site are in proper position and clearly defined. If B" is clearly imaged, then a precise depth estimate with stated limits of

uncertainty must be made. This estimate should make use of the site 153 depth and velocity information which is then extended downward with information from the closest refraction station (not semblance stacking velocities). The hole stability history of 153 and its implications for A-1 should be indicated. If the hole is then clearly drillable in half a leg, the dense network of seismic lines around the proposed sites A-1 and 153 should be used for construction of contour maps in depth showing the A"B"and sub B" horizons. Variability of thickness relative to the ridge would greatly support the safety and site survey aspects. This is the type of data set required to support a proposal which would stand any chance at all of being drilled.

In the present group of drilling proposals before the ODP panels, proposal 384 could be a contender if it were formulated more precisely. The TECP interest is confined to proposed site A-1 because of its potential to define the path of the Caribbean plate and refine the Pacific basin plate history. Despite 2 revisions and extensive new geophysical data the present proposal does not adequately define the drill target. A 1500 m depth a hole in these water depths is at high risk of not being completed because of the increasing drilling problems with depth. This means that the geophysics supporting the drilling must be of good quality. The following suggestions are offered from the TECP. First the C03 seismic line must be carefully migrated so that the reflections at the site are in proper position and clearly defined. If B" is clearly imaged, then a precise depth estimate with limits of uncertainty must be made. This estimate should make use of the site 153 depth and velocity information which is then extended downward with information from the closest refraction station (not semblance stacking velocities). Indicate also the hole stability history of 153 and the implications for A-1. If the hole is then drillable in half a leg the dense network of seismic lines around the proposed sites A-1 and 153 should be used for construction of contour maps in depth showing the A"B"and sub B" horizons. This is the type of data set required to support a proposal which would stand any chance at all of being drilled.

386-Add2, M. Lyle et al.

A3, , , , , , F4

Although this proposal addresses primarily OHP objectives, the proposed basement penetration at Site CA-4 remains of strong interest to TECP. TECP is also interested in the general issue of translation, rotation, and titling of the California margin and its relation to continental tectonics of the California. TECP wish to emphasize that it is important to retain the basement penetration at Site CA-4 as a part of the California margin drilling strategy. We also continue to encourage stress measurement at CA-4.

To better address the Tectonic aspects of this drilling program, we encourage the proponents to consider possible collaboration with researchers who are interested in tectonics of this region. Possible candidates include, but not limited to, Dr. Paul Stoddard of the Northeastern Illinois University and Dr. Doug Wilson of UC, Santa Barbara.

400-Add2, Costa Rica

A1, B1.1, B2.1, C1, D1, , F1

This proposal remains a very high priority of the TECP as it presents excellent opportunity to test the proposed crustal flux objectives with an additional important component concerned with the fluid flux distribution in the wedge. The following improvements, however, should be made in terms of the clarity and detail of the proposed scientific objectives.

First, the panel was very keen to see the proponents make full use of the new Alvin and existing 3 D seismic data sets to put the proposed sites in a detailed structural and hydrogeologic context. In particular, detailed structural maps should show the main structural elements (for example, out-sequence thrusts, deformation front, the western termination of the seismically resolvable slope cover sequence, and the fluid vents) in the context of the drill sites. Structural contour maps

should be presented to delineate the 3D nature dipping internal structures that are an important drilling target at CR 3. Any changes in the lateral nature and extent of the negative polarity anomaly associated with the basal decollement zone at the toe of the wedge should also be brought out in the context of the positioning of site CR 2. At a secondary level it should also be possible to define the lateral extent of the ramps associated with the underplated sediments and the general distribution of the duplexes. The plan of study for the CORK site should also be tightened up with a clear detailed plan that addresses what and how data is to be collected (i.e instruments to be deployed) and further details of any follow up program that will use the CORK for permeability tests etc.

The panel also felt that emphasis should remain on: a) Determining the position and nature of the backstop (i.e. CR4) since this is important to the total material flux balance and, b) fully coordinating this study with studies of the along arc geochemical variations in the volcanoes.

1) We need to see the sites placed in the context of the 3D data

2) Need to bring in more form the on-land volcanoes

3) Back stop needs to be better delineated

4) CORKs we need to see a more detailed plan

408-Add2, Droxler et al.

A5, , , , , ,

The Caribbean played an important role in the exchange of water masses between the low latitudes of the North Atlantic and Pacific oceans. The Caribbean evolution comprises a succession of opening and closure of small basin and barriers which modulated exchanges of water masses.

From a tectonic point of view, it is of high interest to describe better the temporal succession of current distribution in order to understand the role of Neogene tectonic activity on ocean circulation. This proposal has local tectonic interests but also has implication for a more global scale. It may help increase our understanding of how tectonic processes have consequences on global water masses circulation, and thus on global climate changes.

This addendum to proposals 408-rev, 415-rev, and 434 is an attempt to gather in a comprehensive Neogene drilling package several objectives which have been partially described in other proposals. This package includes a series of drilling targets designed specifically to answer questions about the location and the strength of ocean currents in the Caribbean during the Neogene. It addresses problems of major interest for OHP, but several questions that are discussed could be also of interest for the Tectonic Panel.

Four sites NR 1/2, NR 4, SSF 1 and S1 are located along a transect parallel to the Western Boundary Current. This surface current comprises the Caribbean current, the Loop current and the Gulf Stream. It could play a major role in inter-hemisphere exchanges from the South to the North Atlantic Ocean.

This proposal also addresses the question of variations through time of the water column stratification at intermediate water depths. Two depth transects are proposed that include up-current location relative to the Northern Nicaragua Rise (NR 9, NR 8/S 5, S 6, S 3, S 7, S 4) and down-current location relative to the Northern Nicaragua Rise (NR 7, S 2).

NR 1/2, NR 4, NR 9, SSF 1, BC 1 are ready to drill in the near future

(high resolution single channel and multi-channel lines and piston cores are available). S 2, NR 7, NR 8/S 5, S 6 and S 8 need site surveys. Proposal for site survey will be submitted this year to NSF. A cruise from GEOMAR is scheduled for the end of 1995.

Time estimates given by the authors do not seem unreasonable (total between 60 days to 68 days). Some sites should be eliminated if necessary.

TECP Review

This proposal could help better understand how tectonic processes have consequences on global water masses circulation, and thus on Earth global climate changes.

To have better TECP support, this proposal needs first to develop the types of links between the foundering of the megabank and the regional tectonics in the Caribbean. Why and how do these events relate to motion along the northern Caribbean boundary ? Which type of tectonics is responsible for the relative motion between the pieces of the foundered bank : extensional only, strike-slip, a combination of two? They should also mention that interest in Sites S1 and NR7 can be to try to document vertical motion related to the opening of the Cayman Trough. The second question concerns the plate kinematic reconstruction used in the proposal. The proponents do not discuss the validity of the reconstruction that they refer to in this proposal. Is the reconstruction used the only one available?

415-Add2, H. Sigurdsson et al.

A5, , , , , , F4

In this Addendum, the proponents of the three Caribbean ODP proposals (#415-Rev, #408 Rev, and #434) propose to coordinate their programs into two drilling scenarios: 1) single-leg drilling to achieve primarily the paleoceanographic and Cretaceous/Tertiary boundary objectives; or 2) two-leg drilling to achieve additional lithospheric objectives of studying large Caribbean igneous province, as well as the same paleoceanographic and K/T boundary objectives as in the single-leg scenario.

Although TECP has a general interest in the problems of large igneous province and K/T boundary, neither of the proposed drilling scenarios will address the primary TECP priorities. We encourage the proponents of 415-Add2 and 408-Add2 to continue coordination of their drilling programs in the Caribbean.

421-rev, Vasiliev

A5, B1.3, B2.1, C3, D1, E2, E3, E4, E8, F4

The proposal does not address high priority tectonic themes. Processes in subduction zones however, have high priority to the panel, and existing data, e.g. from dredging, are important in the evaluation of tectonic models. Both from a geological and a technical point of view a detailed geophysical investigation will be needed before any drill site can be located. The panel stress that the proposal could become a higher priority topic if very much more data is added, and thus, can place the proposed sites in the frame of a testable tectonic setting.

Because the observations of high SiO2 content igneous rocks, as described in the proposal, are observed also other places in the oceanic domain, the panel recommend the proponent to make contact with the panel chair who can suggest contact with other groups working in the area, or with related topics.

431-Add, Western Pacific Seismic Network

A2, , B2.1, C1, D3, E1, E3, E4, E8, F3

TECP is highly supportive of the long-term objectives of the suggested work, which involves installation of two submarine broadband seismic stations as part of the Western Pacific Seismic network. The addition of data from these stations to the data from on-land networks will help elucidate some topics that are TECP objectives, including structure of the Philippine Sea plate and

underlying mantle; structure of the western Pacific plate and underlying mantle; seismological images of the subducted plates and how they interact with the 670 km discontinuity; and mantle flow related to the creation of the western Pacific marginal seas.

The sites suggested (NW Pacific site at approximately 42 N, 160 E and site in the Philippine Sea) constitute two of the eight listed as priority sites in the OSN/ISN document (Aug. 1993). This is clearly a strength of the proposal, because it demonstrates a consensus, among the international seismological community, of the importance of these particular sites.

The OSN/ION planning document also proposes a 3-phase implementation of ocean bottom seismometers: pilot experiments, prototype stations, and establishment of the ION after the year 2000. Under this scenario, the drilling proposed here would contribute to phase 2 of this program. However, TECP is concerned that Phase 1 has not progressed far enough that planning of Phase 2 can commence. In particular, it must be demonstrated that the installation of seismometers within a drill hole, rather than just on the seafloor (OBS), is warranted at these sites. Although TECP recognizes the great benefits to be realized from the installation of permanent seismic stations in oceanic regions, it is not clear from this proposal (nor from the OSN/IOS document, Appendix 2) that downhole installations at these two sites will be superior to seafloor installations. We urge the proponents to specifically discuss this point, in light of the sediment thicknesses and lithologies at the two proposed sites and any available test data from other areas.

Two other questions of technical feasibility arise. First, the present instrument still has rather high noise levels at frequencies < 0.1 Hz. Better signal-to-noise ratios are needed; we understand that progress should be made in this direction as developmental work continues. Second, TECP recommends that shorter-term OBS studies should be made at the sites prior to any decision to drill them. This would ensure that the sites have no unexpected site effects that might make them undesirable locations for a network station, regardless of whether seafloor or downhole installation is used.

The OSN/ION planning document (1993) recognizes the need for studies to understand how the depth of burial of the sensor affects the recorded data. Presumably such studies could be conducted in TECP thus suggests that the proponents provide some rationale for the depth of basement penetration chosen (50 m) and continue to monitor this aspect of the drilling request as more data on this point become available.

TECP also notes, for the record, that there are several tectonic objectives that could be addressed in holes in these two locations, prior to the installation of borehole seismometers. For example, characterization of basement fractures, borehole breakouts (if present), or the stress state, would be highly desirable in both of the proposed drill hole locations, and would augment the presently sparse data sets on the Pacific and Philippine plates.

B2.1 Location is appropriate, both for the specific scientific objectives mentioned in the proposal and for the general needs of the global seismological community as expressed in the OSN/ION document of Aug., 1993.

E1. Needs abstract

E3. Survey coverage map - not shown. (Surveys not done yet for hole WP-2)

E4. Regional geological setting--needs more work and needs to be more thoroughly included in the objectives

E8. See review comments

435-Rev, Crustal fluxes into the mantle at convergent margins: A. The Nicaraguan margin

A. 3, B1.1, B2.1, C. 2, D. 1, E. 2, 3, 5, F. 2

This proposal addresses the flux of crustal material subducted at a relatively simple convergent margin. The margin has a distinct petrochemistry that is known from extensive sampling of the Central American volcanic arc. ODP samples will provide critical data on the sedimentary and oceanic crustal components being input to the system for comparison with known output from the active volcanoes.

This is the first part of a revision of a proposal that was first ranked by TECP in 1993. At that time, TECP agreed that the determination of the mass balance in accretionary prisms is of fundamental tectonic significance and that the Nicaraguan convergent margin is probably among the best places to carry out such an experiment. The proposal was still immature last year, lacking adequate geophysical data and geologic characterization of the margin. The proposal was assigned a "3".

This revision addresses some questions raised in the initial review. For instance, the UT seismic line across the Nicaraguan margin has been reprocessed. However, because no new geophysical data have been collected, the region remains insufficiently characterized -- a site survey is needed before this proposal can be considered to be mature. If the forearc region is to be drilled, excellent structural maps and cross-sections are necessary. TECP would like to see more information on Central American land geology, especially the history of volcanism and the chemical evolution of the volcanoes through time.

TECP suggests a strategy of drilling the seaward reference site to determine whether or not there is a geochemical signal off Nicaragua. If not, the landward sites are not necessary. A large amount of site survey data would not be necessary to locate a seaward site.

435-Rev2, Crustal fluxes into the mantle at convergent margins: B. The Mariana-Izu margin

A3, B1.2, B2.1, C2, D1, E8, F3

As with 435-Rev, this is a revision of part of 435 and deals with the flux of crustal material subducted at a convergent margin. This proposal is complementary to 435-Rev; it deals with the Mariana-Izu region in the western Pacific.

TECP believes that this revision still contains major deficiencies. The choice of ODP Site 801C is poor, because no Jurassic crust has been subducted in the Izu-Mariana region. A site closer to the Mariana Trench would be better. TECP has reservations about the validity of determining the bulk chemical composition from a single oceanic crustal reference site, given the known heterogeneity of oceanic crust (e.g., hydrothermal alteration, etc.). TECP suggests that geochemical modeling be undertaken using the existing data from the Izu-Bonin and Mariana arc and forearc sites to predict the linkage between subducting crust and the output observed in the arc/forearc. Thermal modeling would also be helpful to constrain the overall fluid circulation regime.

TECP finds the present proposal to be of limited thematic interest because it addresses only the topic of geochemical fluxes.

This revision contains examples of seismic reflection lines shot over the proposed drilling area; the sites are adequately characterized.

436, Neogene Sequence Stratigraphy Northern Campeche Bank

A5, , , , , F4

The main objectives of this proposal are to test the validity of sequence stratigraphic models and study the local geological processes which control depositional geometries. There are no objectives related to the TECP mandate.

437, Lau-Havre-Taupo: Convergent margin spreading to rifting transect

A1, B1.2, B2.1, C2, D1, E3, E5, E6, F3

This is an immature proposal to drill a series of holes along the strike of the Lau-Havre-Taupo backarc rift system. The series of holes, primarily drilled along the axis of the system, will date the propagation of the rifting southward and document the sedimentary and volcanic fill of the rift. The proposal is still preliminary, in that, while a general approach to the drilling is outlined, specific locations for the sites are not identified. Due to the lack of seismic data showing the settings of sites within the rift structure, a complete evaluation of the probability of achieve the objectives is not yet possible. However, the scientific problem is of great interest to TECP and the strategy seems promising. We encourage the proponents in their plans to convene a working group to prepare a full proposal.

One problem, identified by the proponents, with the current drilling plans is the amount of drilling. The proposal envisions eight 1000-1500 m deep holes to achieve its objectives, including 500 m of basement drilling at each site. The proposal solicits the advice of the panels on how to revise the plans. We discussed two possibilities. If the proponents to maintain the same focus, then we recommend that the drilling be reduced to one leg. Since there is relatively little along-strike variability in the Havre Trough, justification/reduction of the number of sites is required. TECP noted that there is already a mature proposal investigating backarc rift propagation in the Izu-Bonin region. Thus, if this proposal is to move forward it would have to make a strong case as to why this would be the best region to investigate this important process. Advantages of this region include the absence of multiple seamounts on the downgoing plate.

An alternative, which represents the strong preference of TECP, is to concentrate the proposed drilling on the Taupo rift zone and the transition from backarc to continental rifting (Sites LHT 5-7). We consider this to be a high priority objective that can be addressed in one leg in a limited area, and one that is not addressed by other proposals. There is also opportunity for coordinating onshore-offshore scientific investigations, to the benefit of both. We suggest improved contact with the New Zealand geological community (e.g. paleomagnetists).

438, A drilling test of the Origin of Reflecting Interfaces in Oceanic Crust

A2, B1.1/1.2, B2.1/2.2, C2, D3/D2, , E, F3

Variations in reflectivity of the oceanic crust and the nature of internal crustal reflectors are of strong interest to TECP. Although this proposal addresses these themes, it is currently inadequate in both its presentation of the observational data leading to the problem and in its presentation of two alternative models to be tested by drilling.

First, we question the proponents' assertion that there is, indeed, a uniform variation of reflectivity with spreading rate. The seismic sections shown for comparison in the proposal differ in terms of data processing and data quality and therefore are difficult to use as support of this difference in reflectivity. The proponents should consider data from other regions, such as the Argo Abyssal plain, where faster-spreading crust is characterized by both a strong reflection Moho and by numerous low-angle reflecting horizons.

In the presentation of two alternative hypotheses to test, the hypothesis regarding structural control (faults or shear zones) is clearly presented whereas the alternative model seems poorly supported. If the reflectivity is related to a characteristic tuning thickness of magmatic layering, which in turn depends on finite strain, one might expect to be able to model the depths (for various spreading rates) at which this value of finite strain is expected, and perhaps expect to find the maximum reflectivity at different depths as a function of spreading rate. This would not necessarily correspond to the proponents' stated observations, which seem to be bimodal: that is, slow=reflective, fast=transparent.

Another question that needs to be addressed with this model is that the reflectors are not ubiquitous in the crust; they are visible over vertical spacings much greater than the expected tuning distance, so if a magmatic origin must be invoked, then it is widely vertically spaced or very heterogeneous in width so that not all reflectors are being imaged. All of the flow models that might give rise to different strain fields predict a rather homogeneous and smoothly varying pattern. Also, there is no explanation, under this model, for the variable dips of the observed reflectors.

The proponents argue that the site chosen is the only one of these reflectors within marginal reach of the drill ship. From its appearance on the seismic line, bounding a basement high, it seems quite likely to be a fault. If clearer data processing, or newer data acquisition, shows that it is very likely to be a fault, then this is not a good location to test this model. Thus, even if this site is drilled, it would be unlikely to resolve the identity of the deeper, subhorizontal reflectors.

TECP also questions the conclusion that this is the best site to drill in order to test this hypothesis. Since newer data acquired with better technology is showing crustal reflectors in more regimes, we feel that it might be better to pose this as a general challenge to the ODP community to identify the best site to address what is, in fact, a very important question concerning the structure and deformation of the oceanic lithosphere.

C2. Needs more supporting work, data from other regions, and a critical re-evaluation of the hypotheses presented. As the PIs recognize, they need to establish with the highest possible

D3/D2. Technology under development; for the site chosen, the proposed work is at the limits of current capability because of the 5400 m water depth, 1400 m sediment thickness, and the need for 500 m of basement penetration.

E1. Abstract - complete

E2. Site Location Map - complete

E3. Survey coverage Map -

E4. Regional geological setting - better resolution of faults and 3-D structure in the area would be desirable

E5. Balanced cross sections - better resolution of faults needed

E6. Site Summary forms - present

E7. Reference list - incomplete; need to look at more areas

F3 Proposal is of Low Priority, but could become High Priority

439, Mass budget of hot spots: deep apron drilling at the Marquesas

A1 , B1.3, B2.2, C1, 0, E8, F3

The proposed investigation is to drill through a deep part of the Marquesas volcanic apron. The information obtained from the drilling in conjunction with the existing seismic data will be used to establish the volcanic stratigraphy, which will be in turn used to evaluate (1) mass balance associated with the development of the Marquesas hot-spot track, (2) isotopic evolution of the hot-spot volcanism, and (3) spatial and temporal development of the apron as a function of volcanic loading during the propagation of the hot-spot tract. Although the result of the proposed work will enhance the knowledge of the stratigraphic evolution of the hot-spot system, the TECP considers that the proposal could be relevant only if the hypothesis is substantially revised to emphasize on the problems of lithospheric flexure and post-loading thermal relaxation. In addition, the hypotheses and questions to be addressed are at present poorly formulated. Specific comments are summarized as follows:

1. Mass budget: the "paradox' on the relation between the volume of the hot-spot volcanoes (Vv) and that of the archipelagic apron (Va), i.e., 5Vv=Va. is ill-defined. From the volcanological point of view, there is no need why Vv=Va has to be true. Data from one drill hole cannot differentiate various eruption/mass wasting mechanisms that produced the apron.

2. Diffusion model: The hypothesized diffusion process for mass wasting associated with the hot-spot evolution may not be appropriate. First, landslides along flanks of the volcanic centers are commonly generated during volcanic eruption and /or earthquakes. Thus, mass wasting may not be a purely gravity-driven processes and the amount of transported mass do not have to follow the linear relationship to the slope angle. In fact, the size of landslides is inversely proportional to the run-off angles: the lower angles the larger landslides. In addition, ejected air-fall volcanic materials should not follow the simple diffusion relation, as it has nothing to do with the surface gradient.

440, Investigating the nature and consequences of hydrothermal circulation in oceanic crust: Drilling on the eastern flank of the Juan de Fuca ridge

A4, B1.1, B2.1, C2, 0, E2, F4

This is a well designed experiment that will investigate three representative hydrothermal systems in a relatively well understood tectonic setting. The result will provide new insights into the fundamental physics on the relationship among fluid flow, alteration, thermal structure, and heat flow during the evolution of the oceanic crust. The proposed research could be relevant to the thematic interests of the TECP with certain revisions. In particular, we would like to see more input and consideration into the implications of the result for deformational processes in general. Additionally, we urge the proponents to consider the structural complexities that may cause the abrupt change in thermal regimes between the sediment-free section and the sediment-covered section away from the ridge. Proponents might raise the TECP rating of the proposal by discussing the nature of fracture-controlled permeability in the sediments and the basement, and their relation to the evolution of basement structures. The results from this study could provide a valuable control section for other deformed upper oceanic-crust section.

The assumption of the impermeable base for the permeable basaltic layer needs to be evaluated by both numerical modeling, which tests the sensitivity of the assumption, and further detailed seismic studies. Some panel members suggest that assuming an uniform permeability for the basaltic layer below the sedimentary layer may be over simplistic. This assumption itself should be tested during the drilling, i.e., to make the test as part of the operation. Understanding the permeability distribution will help differentiate the effect of the sedimentary layer from the inhomogeneous distribution of permeability in the basaltic layer below.

E2: locations of the figures are poorly indicated

E3: poor map symbols

441, R.M. Carter et al.

A5, , , , , , F4

This proposal addresses primarily thematic objectives of OHP. Although this proposal, as it stands, addresses few TECP objectives, we recognize that this part of the Southwest Pacific is of great tectonic interest. We thus would like to encourage the proponents of the present proposal to collaborate with tectonic geologists and to explore, to the extent possible, any tectonic aspects of drilling in this region.

442, Rift initiation in the northern Mariana Trough

A1, , , , , , F2

This is a mature proposal that clearly poses tectonic questions: The general problem is that of rift initiation and propagation in a back-arc setting. The Mariana Trough has been considered a type-example of arc/back-arc system. From previous studies in the area it appears that seafloor spreading turns into amagmatic deeps which are eastward dipping half-grabens possibly over a westward dipping detachment. Farther north a point-source volcanism becomes again important and finally the very tip of the rift is being uplifted along a single eastward-dipping fault. The axis of rifting progressively approaches the axis of the arc. The two axes merge at the northern part of the section displaying point-source volcanism and along the uplifted tip.

A DSDP leg (60) was devoted to studying the general features of the system at the widest portion of the arc. Other ODP legs focused on other aspects of arc and backarc geology (Legs 126,127,128, 135). In particular, sites 790, 791 drilled into the Sumisu backarc rift and came with interesting results regarding the development of tectonic styles of rifting and volcanism with rifting. Unlike the northern edge of the Mariana Trough, the Sumisu rift has been relatively stable and opening contemporaneously along a large section. This proposal does not fully address the new aspects of rift initiation to be found in this site.

Site survey for this area is good with dense grid of old seismic data, wide-swath bathymetry, dredging, and planned diving. However, High resolution single or multi-channel seismic data (using sleeve guns or GI guns) are needed to improve site location and determination of hole depths. The sites extend from north to south and represent the temporal development of a propagating rift from organized spreading toward the tip. Some in the panel questioned the location of Site A. Site A is aimed at recording the timing of motion along the Hiyoshi fault. It was unclear how a site 15 km from the fault scarp with flat stratigraphic layering is going to tell about rates of movement on the fault. The recovered sediments are also expected to record sedimentary history indicating regional uplift. How, if the area is still more than 1000 m b.s.l. They are also expected to record turbidites and slump deposits from the fault. However, some of the seamounts (like fukutoku) are much closer and other sources are also possible.

Finally, TECP would like to see some structural hypotheses for rift propagation. TECP recommends adding proponents with structural background to the proposal.

443, Oceanic faults, crustal heterogeneity and ridge flank hydrogeology and alteration: Deepening of ODP Holes 504B and 896A (Alt and Becker)

A1, B1.3, B2.1, C4, D5, E8, F2

TECP has an interest in this proposal and, in principle, supports the objective to penetrate an oceanic fault and a footwall section. The panel has some reservations about the current version of the proposal. First, given the history of drilling at Hole 504B and the low recovery levels the panel questions whether the returns from future drilling would be worth the investment of a drilling leg. What is the condition of the hole and the chances of acquiring comprehensive logging data? The predicted drilling scenario for 896A may be optimistic, given that it has taken 7 legs to achieve the present depths of Hole 504B. TECP strongly recommends that a structural geologist be involved in this proposal to develop hypotheses for the structural geometries that could be tested by drilling. At present the proposal presents a great deal of back ground information and comments on related studies in ophiolites, but it needs to focus on the structural problems specific to Holes 504B and 896A. In addition, the proponents should examine possible models for coupled fluid flow and deformation, relating these to hypothesized structural geometries and patterns of alteration. The proponents need to state clearly the rationale for problems that will be addressed by logging, core data and permeability measurements. For tectonic objectives the proposal is still at an immature stage but, TECP encourages the proponents to consider the suggested revisions and pursue their objectives.

444, History for Glacial-induced Sea-level fluctuations from siliciclastic shelf and slope records of the Western Pacific, Joban Margin, off Northeast Japan

A5, , , , , , F3

The main objectives of this proposal are to reveal the timing of sea-level fluctuations in mid-latitude Pacific Ocean and investigate the relationship between sea-level change and siliciclastic sedimentary architecture. These objectives are not within the TECP mandate. TECP, however, is interested in sedimentary basin evolution in a convergent margin. Significance of tectonic process to sedimentation should be discussed more, although this proposal noted the limited tectonic effects in the area.

445, Nankai

A1, B1.2, B2.1(?), C1, D1, F2

This proposal could become a high priority of the TECP as it presents an excellent opportunity to test the 3D coupling of deformation and physical process with the fluid flux distribution in this type of accretionary wedge. Important evolutionary improvements, however, could be made in this proposal to advance and focus its objectives on some of the potentially exciting three dimensional properties of this system. Having brought up the prospects for significant along strike variations in the slope of the wedge and its possible relation to the nature of the decollement (i.e. physical, seismic and hydrogeologic properties) this exciting theme was then not developed on sufficiently. As one example, it would be extremely informative if the already existing and fairly dense seismic reflection data resources could be use to related (preferably in a quantitative manner) the laterally changing nature of the polarity anomalies and distribution of the -ve polatity/+ ve polarity boundary (if indeed there is a simple boundary) to the surface slope and structural changes in the wedge. The objectives could then be viewed in the broader context of heterogeneity in the subductions system, thus, substantially advancing the potential scientific gains over those of the previous leg. Note, questions were also raised concerning the need for proper hydrogeologic (numerical) models to be built up for this region (that use the physical property data) to help constrain objectives and provide a testable hydrogeologic model.

446, Ocean drilling in the Tonga forearc: a test...

A2, B1.2, B2.1, C.1, D.2HRG, E. , F. 3

Although this proposal addresses a topic important to the Tectonics Panel, origin of ophiolites and the initiation of subduction, the testable hypothesis is primarily petrological and geochemical in nature. Tectonic aspects such as state of stress, subduction erosion, and forearc deformation are clearly secondary and without clear description of how the proposed drilling program will constrain or shed light on these problems. In addition, the proposal to drill boninitic lavas and the gabbro section does not have a clearly defined rationale. Why drill another lower crustal section to compare to Hess Deep, 735B, and MARK without a clear and important tectonic and structural framework for the section?

On the primary objective, the panel had questions about the accuracy of the dating methods and whether they can actually constrain the age of lava emplacement well enough to give a clear answer to whether the whole forearc developed synchronously. Also two points per transect doesn't seem to provide much constraint on the petrology, geochemistry and age of wide zone.

Additional site survey work needs to be done, specifically, several holes are on single seismic lines and need to be placed in a better 3-D context by getting at least crossing lines.

447, Active continental extension in the western Woodlark Basin

A1, B1.1, B2.1, C2, D1, , F1

TECP was very pleased to see this long awaited proposal that addresses important TECP themes related to lithospheric extension, continental breakup and the nature of low-angle faulting in the western Woodlark Basin. This area may be the only place on Earth where all the various extensional deformation elements are present in an area which extends laterally from active continental rifting on the Papuan Peninsula and is associated islands, to active seafloor spreading in the western Woodlark Basin. This setting provides a unique situation for studying the mechanics of extension, detachment faulting and the formation of metamorphic core complexes in that the structures are active and thus their physical properties are quantifiable.

The proposal presents a transect of three sites across the area, which is considered to form a single drilling leg and represents the minimum drilling program to achieve the objectives. These sites test the interpretation that the Moresby Seamount is a metamorphic core complex associated with a detachment fault, or a tilt block associated with a low-angle normal fault; characterize and monitor the in situ properties of the fault by drilling through it and installing a CORKed geochemical string and seismometer;

determine differences in in situ properties between the low-angle fault and similar inactive pre-existing structures; and deduce the vertical motion history of the upper and lower plates of the ?detachment system.

The proposal is succinct and generally well presented. However, TECP believes that there are some aspects of the proposal that require further attention by the proponents:

1. The sites do not appear to well imaged seismically. We realize that only preliminary stacked sections are presented and that further processing is underway, but have some apprehension about the level of improvement that will be obtained, particularly in terms of multiple removal.

2. Site ACE-3 is only based on single channel seismic.

3. Non of the sites appear to be located on intersecting seismic lines according to the seismic track charts presented.

4. TECP has real doubts about the penetration depths of the sites as shown on the site summary forms. A preliminary check using low estimated velocities indicates that Sites ACE-1 and 2 could be several hundred meters deeper than shown on the site seismic sections, and ACE-3 could be substantially shallower.

5. Other comments made during the course of the review suggested the need for a hydrologist proponent to help with the development of the fault fluid aspects of the study; the use of a submersible or ROV to examine the low-angle fault where it is exposed at the seafloor, as well as to check the possibility of active venting around the fault;

This proposal examines high priority TECP thematic objectives in an active tectonic environment.

448, Assessing the origins, age and post-emplacement history of the Ontong Java Plateau...

A. 3, B1.2, B2.1, C.1, D.1, E. , F. 4

Portions of this proposal address topics of importance to the Tectonics Panel, namely the effects of the collision on the southern margin and the rotational and translational history of the plateau. The first of these is not clearly addressed in the proposal and could be developed further although it would probably entail additional or changed drill sites. If drilling the rift-dipping reflectors becomes feasible the panel would also be interested in that aspect.

As noted by the authors of the proposal, significant additional site survey work remains. Additional dating and possibly drilling on islands would be preferable as pre-ocean drilling preparation to better constrain the tectonic goals.

449, Evolution of restricted Mesozoic Weddell Basin (Antarctic margin)

A3, , , , , , F4

This proposal is aimed at providing a continuous Late Jurassic and Early Cretaceous record of the widespread anoxic "black shale" environment. Corollary benefits, according to the proposal would be dating of seaward dipping reflector sequence underlying the sediments and to obtain the early sedimentary record to help constrain the sequence and timing of breakup and dispersal of Gondwana. These later objectives are of interest to TECP, however, the proponents underestimate the depth of hole (1.5-2 sec) necessary to penetrate into the seaward dipping reflectors. In addition, although this proposal is an extension of Leg 113 the data presented in a way that makes it difficult to evaluate the site locations.

450, Taiwan arc-continent collision: forearc basin closure and orogenic history

A1, B1.2, B2.1, C2, D1, E3, E5, E8, F2

This proposal attacks high priority TECP objectives related to collisional systems in the area south of Taiwan. In this region there is a northward progression from subduction at the Manilla Trench, through the early stages of collision, to significant development of a fold and thrust belt around Taiwan. The proposal focuses on the backside of the accretionary wedge in order to examine the closure of what was once a forearc basin - the N. Luzon Trough. The main objectives of the proposal concern the structural geometry and kinematics during the collisional closure of the forearc basin, tectonic processes during early collision, sedimentological processes associated with collision, and global plate kinematics.

Six sites are proposed distributed along the strike of the progressively deformed forearc basin; a seventh site is located east of the Luzon Arc aimed at collecting a continuous undeformed section that preserves a record of the Taiwan collision, and paleomagnetic data to constrain the Cenozoic movement of the Philippine Sea plate.

The proposal is reasonably well formulated in terms of objectives and scientific rationale but is lacking detail in supporting information. Such information is often critical to being able to solve the problems in collisional systems as it can provide the evidence for the timing and style of deformation at some distance from the study area, and sets the scene for the features being investigated. TECP felt that the following aspects of the proposal could be improved:

1. Although the proposal refers to numerous, relevant on-land studies that contribute significantly to understanding of the collision, none of this work is summarized in the proposal.

2. The scientific outcomes that will be obtained from drilling each site are not clearly outlined. How will a small sample of sediment and its record of deformation allow us to solve the major problems associated with collisional systems?

3. There is no map showing the seismic data distribution. In particular are the sites placed o intersecting seismic lines?

4. The seismic data used to illustrate the sites is all single channel data, although is of good quality. However, deeper penetration multichannel data may be required to place the sites in their correct tectonic context. TECP notes that a multichannel survey and associated OBS work is planned for mid 1995.

TECP has considerable interest in this proposal as it examines important thematic questions in a very well represented collisional system.

451, The Tonga Ridge Longitudinal Island Arc Transect (SW Pacific Ocean)

A.3, B1.2, B2.1, C.1, D.1, E., F.4

Portions of this proposal address topics of importance to the Tectonics Panel, effects of subduction of aseismic ridges and subsidence and uplift of arc terranes. However these problems are not clearly developed in this proposal and may lie within the LITHP mandate. Although unlikely to become a high priority of the Tectonics Panel, these aspects of the proposal should receive some additional attention. It could be increased if specific hypothesis capable of being tested by drilling can be posed.

452, Antarctic Peninsula Pacific Margin: Antarctic Glacial History and Causes of Sea-Level Change

A5, , , , , F3

This proposal is mainly of concern to SGPP and/or OHP, because the main objectives are related to the Antarctic continental climate change over 8-10 Ma, Cenozoic glacial history and global sea-level change. The proposal, however, also includes the study about the vertical motion history associated with ridge crest collision, which should be discussed in TECP. Seismic stratigraphy provides a preliminary result of thermal/tectonic uplift and subsidence history. How degree do the proposed drillings improve this result? No additional sites to reveal lateral variations of uplift and subsidence history? More discussion in this point needs to be presented.

453, Fisk et al.

A3, B1.2, B2.1, C2;, D5, E8, F3

The proposal partly address priority tectonic themes and TECP regards this as an unusually interesting area. However, the panel recommends a rewriting of the proposal focusing on the ridge-trench-backarc aspects, only. Before the proposal is resubmitted a complete evaluation of the formation of the Bransfield Strait would have to be made, including an evolutionary model with balanced cross- sections (the panel noticed it to be very unlikely, or even impossible, that a ~60 km wide basin structure has been affected with 60 km extension). This can independently be compared with the changing stress regimes and convergence rates etc. and the proponents can make up their own mind on how stretching and slowing down of spreading are interacting.

The proposed drill sites are the most important parts in the proposal. These have to be argued for in details related to the tectonic, or other aspects, the proponents wants to address. This may include reprocessing and migration of the seismic data, and conversion from time sections to depth sections displayed in true scale (H=V). This would probably help resolving the nature of the fault blocks and the nature of the apparent "sub-basement" reflectors.

The technical feasibility may be questioned due to probability of large amounts of dropstones in the Neogene sequence.

LOI 15, Fracassi

A5, , , , , F4

The tectonic panel appreciate the interest expressed in the letter, but can not see that any main ODP objectives can be solved by drilling in this region.

LOI 16, Palaeogeographic drilling south of Australia: global impact of a maturing mid-latitude ocean.

A5, , , , , F4

This letter of intent outlines a palaeooceanographic drilling proposal for the Southern Ocean. It has no direct relevance to TECP thematic objectives, although with coordination could result in some drilling sites that support a tectonically oriented proposal for the development of the southern Australian continental margin and ocean/continent transition.

LOI 17, Internal anatomy of two hydrothermally-active volcanoes

A4, B1.1, , C1, D0, , F4

The TECP considers that the proposed subject is irrelevant to its thematic interests, although important results could be derived from this study regarding hydrothermal alteration and fluid circulation in three dimension.

LOI 18, A. Mix

A5, , , , , ,

Of no relevance to TECP

LOI 19, Hydrothermalism and metallogenesis in the Red Sea (Sichler, B.)

A1, , , , , ,

TECP strongly supports a drilling Leg in the Red Sea. Both the topics addressed in this letter are of interest to TECP. If a proposal is to be submitted the panel encourages the proponents to include all available site survey data. Given the existing proposal submitted by E. Bonnatti to study petrological and tectonic problems in the Red Sea the panel suggests that the proponents consider combining forces with Bonatti to develop a drilling Leg with integrated objectives.

LOI 21 Early stages of crustal creation in the western Pacific.

A2, , , , , , F3

This letter of intent addresses two problems that can examined by drilling in the Sikoku Basin area of the northwest Pacific - 1. The tectonomagmatic setting of bononitic magamatism associated with the creation of the Palau-Kyushu Ridge. 2. The effect of the mantle wedge overlying subducted Pacific Lithosphere on the composition of the magmas of the Parece Vela-Shikoku Basins. Although largely a LITHP-type proposal as presented, drilling in this unique region to determine the age and nature of basement has the potential to answer important Pacific plate kinematic questions such as the pre-Hawaii/Emperor "bend change" plate configuration in the western Pacific.

LOI 22, Laurentide Ice Sheet

A5, B0, , C0, D1, E0, F4

This letter of intent presents a plan formulated to sample Laurentian Channel and Hudson Strait sediments for paleoclimatic purposes. This drilling is not of interest to TECP.

D1- except for shallow sites

LOI 23, Kerguelan Plateau and Broken Ridge

A.3, , , , , ,

A. 3 Portions relevant to Tectonics Panel. However, the Ontong-Java proposal is more mature and seems to have objectives closer to possible tectonics importance because of the collision of the Ontong-Java with a subduction zone.

LOI 24, Carson et al.

A2, , , , , ,

The TECP rating would have been higher with a stronger tectonic component.

LOI 25, Drilling the Shatsky Rise

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The project outlined in this letter of intent is categorized as "A3", that is, portions of the project would be relevant to TECP, but an interdisciplinary approach would be required. It is unlikely that this type of study would ever become a high priority for TECP.

LOI 26, Evolution of a Late Cretaceous-Cenozoic Seaway: Multiple Drilling objectives, SE Gulf of Mexico/Southern Straits of Florida, by Buffler et al.

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This LOI is more than a letter of intent but can be considered as a part of a proposal. The authors refer to existing set of transects being proposed throughout the Caribbean/Gulf of Mexico/Bahamas regions. The proponents ask whether there is interest in these sites by the different Panels.

Beside clear objectives relevant to OHP priorities, the sites have a number of objectives of interest for the TECP :

- detailed timing of tectonic events in the evolution of the Caribbean/N. Am plate boundary.

- Sedimentary record of arc collision/obduction and thrusting. Significance of olistostrome and turbidites as manifestation of compressional events at an arc-continent boundary.

- Study the problem of subsidence of fore-arc region in response to collision.

- Better understanding of the causes of the breaking up the Cretaceous megabank.

- Short-term and long-term influence of plate tectonics on deep and shallow water circulation in the oceans.

LOI 27, Integration of slopes & basins in Rhone & Var turbidites

A5, , , , , F3

The main objective of this proposal is to reveal the relationship between gravity sedimentation and sea-level change. Tectonics in the proposed area is very interesting for TECP, but discussion about tectonic significance of fan evolution is not clear. The role of salt layer deformation to sedimentary process is also indistinct. More description is needed. The proposal objectives are not within TECP mandate for the present.

LOI 28, Japan Trench Downhole

A1, , , , , F3

This could form the basis for a highly significant proposal in view of the downhole observatories relevance to seismic risk assessment, improvement of the imaging the deeper structure of the plate boundary, and the interesting geodetic component. Tectonic panel doubts were raised, however, about basing a leg so exclusively on, as yet, unproven technology. In addition, in its current form it is too narrowly focused in its scientific scope. In particular, considerable work needs to be done to expand the proposal in terms of other types of multidisiplinary study to further justify the siting the holes . One possibility would be to widen the scientific proponent

group and bring in further objectives that will advance our understanding of the structure, hydrogeology, strain distribution, and tectonic history of this fast convergent rate margin.

LOI 29, Evolution of the Hawaiian Hot Spot

A2, , , , ,

A. 2 The Tectonics panel is interested in the evolution of the mantle over time and clarifying the ages along the Emperor-Hawaii seamount chain to more closely define the timing and nature of the mantle hot-spot.

LOI 30

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TECP encourages the proponents to submit a complete proposal to study the Peru forearc. There are currently no proposals that address the important tectonic problem of tectonic erosion. TECP would expect to see testable hypotheses presented. How will drilling demonstrate tectonic erosion? Integrated structural studies will be needed to evaluate tectonic processes. TECP does not believe that evidence for subsidence alone necessarily implies tectonic erosion.

LOI 31, Lower-plate continental margin

A1, B1.2, B2.1, C2, 0, E5, F3

This is a potentially excellent project that would provide new information for the formation of passive continental margins. The TECP is very excited abut the proposed work and considers that the southern Australian continental margin contains many key features that would allow testing the detachment-fault models. The TECP is also interested in potential contribution of the proposed work to the better understanding of the rifting history of the Gondwanaland. One of the important implications of this study is that it may provide clues on why core-complex-like structures in any of the ancient passive continental margins (i.e., the Cordillera, Appalachian, Asia, etc.) are so difficult to be recognized or preserved. Although we encourage the submittal of a formal proposal, we would like the proponents to consider the following aspects during your writing.

First, an important aspect of testing the detachment-fault model is to establish the tectonic-denudation history of the footwall. Thermochronology and age relationship between faulting and sedimentation should be considered to be important components in the formal proposal. This will allow the proponents to differentiate the mylonitic rocks formed during the detachment faulting from those that are unrelated to the rifting. Second, the time-section based on seismic reflection profiles should be converted into detailed balanced cross-sections. Kinematic evolution derived from these sections should be discussed, so that the testing by the drilling will be specific and well defined.

C. Watchdog Reports

1. Back arc basins and forearc domains (Yves Lagabrielle)

A large number of new proposals and Letters of Intent relate to problems of back-arc spreading and arc-forearc geology. All of these, except one (453), concern the West Pacific region, with clear concentration around the Lau basin.

A total of 7 new proposals and 3 LOI are directly relevant to objectives that concern tectonics of forearcs, arcs and back-arcs. Two revised proposals also concern the same topics.

Most of these proposals propose very good science. The study of active arc systems is clearly becoming a high priority for different scientific teams around the world. In addition, most of the proposals are of high priority for both the TECP and LITHP.

Most of the proposals seek to obtain 3-dimensional information on these tectonic systems as well as evolution through times. For this reason, the proposals often refer to transects of holes designed to constrain dynamic models, such as rift propagation, spreading axis propagation and progressive splitting of arcs. Some proposals also focus on problems of the origin and nature of forearc crust and to construction of early arc volcanic provinces.

The areas of concern in these proposals are both active plate boundaries and older domains, now inactive, but which may help better understanding present-day processes.

- The "old" regions are north of the Kyushu-Palau Ridge, is the target of LOI 21, and the complex oceanic system formed by the Tasman, the New Caledonia, the South Fiji and the Norfolk basins (targets of LOI 20).

- The active systems which are proposed for drilling are :

  - the north of the Mariana trough (442: study of rift and back-arc spreading propagation),

  - the tip of the Woodlark spreading axis (447: study of continental extension and transition to oceanic spreading, and LOI 17, drilling into active volcanoes),

  - the Lau-Havre system has 3 different proposals focusing on 3 different problems ; (1) processes of oceanic spreading in the back-arc basin (437), (2) north-south evolution of arc activity with time (451) and (3) the nature and origin of the forearc region (446).

One other new proposal concerns the Ontong-Java plateau whose post emplacement evolution has had considerable influence on the geodynamics of the SW Pacific region (448).

Revised proposals concern the general problem of input and output at convergent margin without accretionary complex (435-Rev2), and the origin of silicic rocks in the forearc (421-Rev).

Among the new proposals, proposal 453 (Fisk et al.) concerns the geology of arc and back-arc regions, north of the Antarctica peninsula. This multiple objective proposal addresses problems of global tectonics of magma genesis and also of paleoceanography.

448. Assessing the origins, age and post-emplacement history of the Ontong Java plateau through basement drilling. (Kroenke and others)

This is a two leg program with the aim of drilling the basement. The proponents point out that sampling of the basement was not yet done and that only the surface has been scratched.

This proposal is of interest for us because a plateau has effects on subduction patterns and may cause major changes in plate motions. For this reason, studying the post-emplacement history of the Ontong-Java plateau is very important and must be considered as a priority by our panel. Ontong Java plateau is folded and its southern boundary is an arch (Roncador homocline). Its southern boundary now corresponds to the inactive Solomon Trench. The collision of the plateau with the trench has led to reverse polarity of the subduction in this region.

A site of interest for the panel is OJ5 which has tectonic objectives.

Most of the sites need additional surveys and are not ready to drill.

To fit better with TECP priorities we could suggest drilling site closer to Malaita Island where thrust faults and compressive tectonics are well documented.

447. Active continental extension in the western Woodlark basin (Taylor and others.)

This is a totally tectonic-oriented proposal. The 3 sites include objectives of high priority for TECP. This proposals shows two main interests:

I. Regional interest. The question is how oceanic spreading in the Woodlark basin passes into continental stretching in the Papuan Peninsula.

II. General interest. It is to test a model of asymmetric rifting of the crust. It is specifically interesting to test whether the inferred detachment fault evolves from high angle to low angle and to test the mode of emplacement of a metamorphic core complex.

The Woodlark basin ridge is actively separating the Woodlark and Pocklington rises since 5 ma. Further west, extension is accommodated by continental rifting. Dredges on the Moresby seamount recovered material similar to the adjacent metamorphic core complex on the d'Entrecasteaux Islands.

According to the proponents, drilling is essential to test the interpretation that Moresby Seamount is a lower plate metamorphic core complex. A transect of sites is proposed and two different models of faulting are proposed with two different geometries.

442 The magmatic and tectonic evolution of rift initiation in back-arc basins : drilling in the northern Mariana trough. (Stern et al.)

This proposal addresses problems that are also discussed in other new proposals, especially 447 (Taylor et al.) and 437 (Parson et al.).

The problem concerns the way in which continental, or arc crust is stretched before oceanic spreading. The proponents emphasize that they want to compare their results to results obtained from rifting of felsic continental crust.

The TECP is mainly concerned with 3 objectives that are:

- style of initial rifting of arcs,

- timing of rifting and evolution with time,

- modes of propagation of rifting and then of spreading into a new region.

The remaining objectives are of interest for LITHP.

This proposal has also interest for on-land geologists since rifting of pre-existing arcs has been evoked in reconstructions of the tectonic evolution of ancient domains (cf CRO, California).

This proposal refers to previous ODP or DSDP legs : 126 (Sumisu Rift, rifting in the Bonin arc); 127, 128 in the Sea of Japan; 135 in the Lau Basin, 60 which tends to show (by opposition to Leg 135) that spreading of new crust in the back arc basin as dominant with respect to crustal stretching.

Mariana trough is spreading at a half rate of 1.5-2.2 cm/yr. The spreading regime passes progressively into amagmatic deeps (with gabbros and peridotites exposed) and then to grabens and volcanoes. The main question is to know how far to the north does crust formed by seafloor spreading extend.

The proposed strategy is to drill 5 sites along strike. All of them have clear tectonic objectives.

Site A : to study the W. Iyoshi Fault, the border fault of a half graben in an active tectonic region.

Site B : to study the tectonics and sedimentation in an asymmetrical graben in the northern continuation of the Volcanic-Tectonic Zone.

Site C : to drill in an inactive basin of the VTZ flanked by active volcanoes (S. Nikko basin).

Site D : to drill an inactive basin now away from the active zone formed by extension in the Northern Mariana Trough.

Site E : to study the volcanic-sedimentary sequence in an active half graben. In contrast to the other basins the floor deepens to the east.

451 The Tonga Ridge longitudinal Island Arc transect. (Tappin et al.)

The major interest of this proposal is that it develops the idea that arc construction is a 3 dimensional process. The drilling sites are designed to test a model where the volcanic arc is older to the north and younger to the south. The idea is that the rifting of the Lau-Tonga pre-existing ridge was followed by spreading propagation from the north to the south.

The Tonga ridge is not a simple feature and includes, from E to W: an inactive ridge, the Tofua trough and the active arc -- the Tofua arc.

They propose to drill 6 sites from the North to the South with objectives which are of interest to 3 panels TECP, LITHP and SGPP.

The integration of the results of these sites will help to reconstruct the tectonic history of an arc-back arc basin boundary in 3D and through time.

446 Ocean Drilling in the Tonga forearc. A test of models for the origin of supra-subduction ophiolites, early arc volcanism, subduction initiation and subduction erosion/accretion. (MacLeod and Bloomer.)

This is a preliminary proposal that addresses problems of high priority to TECP such as the structural evolution of forearc domains and more generally the history of subduction zones. However, most of the objectives are relevant to LITHP.

The proposal is based on the idea that the forearc crust originated not only as trapped oceanic crust but also incorporated products derived from subduction magmatism. The scientific objectives are to test the model developed from ODP Leg 135 in the Lau-Tonga region. Site 841 in the forearc appears to have an Eocene basement made up of silicic volcanic products which are part of a subaerial island-arc. This volcano subsided as a consequence of extension and erosion (the same conclusions were proposed from the results of a tectonic and petrological study of cores from Site 786 Leg 125 in the Bonin forearc).

This proposal is not ready to drill and requires additional information. 5 holes are proposed to be drilled, including about 500 m of sediments and 100 to 400 m of basement.

LOI 21. Early stages of crustal creation in the western Pacific. (Arculus.)

Arculus points out that the boninite volcanism could be older than the change in Pacific plate motion which caused the initiation of subduction at the boundary of the newly formed Philippine Sea plate and the creation of the Palau-Kyushu Ridge. He shows that the pre-Eocene basement has not been sampled yet by drilling and thinks that this could be possible in the Amami Plateau along an E-W transect north of the Kyushu-Palau Ridge.

The first objective is very similar to that developed in proposal 446, that is to constrain better processes of crustal formation at the early stages of volcanic arcs. The second objective is to test the chemical variations along strike of the arc. It is of secondary priority for TECP, except objective 2B which is to evaluate the tectonic control of alkalic magmatism that accompanies the initial rifting of an arc.

A transect from the Parece Vela basin (southern equivalent of the Shikoku basin) to the Shikoku basin is proposed, making a sort of complementary cross-transect with respect to DSDP Leg 58-59 transect.

437 Lau-Havre-Taupo: Convergent margin, spreading to rifting transect. (Parson and others.)

This is an "immature" drilling proposal which looks more like a letter of intent. The aim is to study a geological evolution through time from the attenuation of continental or arc crust (rifting process) to the spreading and the accretion of new oceanic crust.

This proposal addresses problems of equivalent interest for both LITHP and TECP.

The Lau-Havre-Taupo back-arc basin is shown as a modern example of where propagating oceanic spreading is succeeding to propagating rifting.

They propose to drill 7 sites along strike of the back-arc basin. Sites 6 and 7 have specific tectonic objectives as they are located at the tip of the oceanic axis, on "super" rifted continental crust. Other sites also have tectonic objectives specifically to determine the tectonic evolution of the rift and the history and processes of propagation.

421-Rev. Investigation of section age and formation conditions of the acidic volcanic layers in the ocean slope of the volcano Trench.

This proposal also relates to the general topic of forearc settings as it concerns the study of acidic rocks discovered in the volcano trench (at the Junction between the Mariana and Izu-Bonin trenches). The objectives are mostly petrological and geochemical objectives but the problem which is debated is close to the question arising from the Arculus proposal.

(Note that this proposal relates the occurrence of limestones and cherts of Early to Late Cretaceous age on the western side of the trench. This confirms old ages found farther south in similar position in the Mariana trench.)

435-Rev2 (Plank et al.)

This revised proposal also concerns the domain of forearc. They propose to drill 2 sites in the incoming plate in front of the Bonin forearc.

One of the objectives is to determine the fluid fluxes lost from the subducting plate to the fore-arc.

453 Bransfield Strait, Antarctica: marginal basin formation, timing of rift volcanism, mantle geochemistry, and Antarctic glaciation. (Fisk et al.)

This new proposal does not concern the W Pacific domain but also addresses questions of rifting and back arc spreading.

The study area is the Bransfield Strait located at the extreme north of the Antarctica Peninsula. The strait corresponds to a back arc basin that opened behind the now inactive South Shetland Islands Arc.

The objectives concern geodynamics, tectonic and paleoceanography.

Here again the problem of intra-arc rifting and further oceanic spreading are addressed.

They propose to drill 10 holes. About 5 holes have clear tectonic objectives.

LOI 17 (Binns and Scott.)

This LOI must be cited here although it concerns mostly LITHP objectives.

It is designed to drill into two active volcanoes and hydrothermal systems located along active spreading axis of the Manus and the Woodlark basins.

Drilling in the Woodlark basin could be joined with the tectonic proposal of Taylor et al.

LOI 20. Drill the major dilational basins of the SW Pacific. (Ewart and others.)

This letter of intent is of high interest for scientists concerned by the geodynamics and plate kinematics of the SW Pacific region.

Since the Cretaceous, the boundary between the Indo-Australian and the Pacific plates has been migrating to the east and has been changing drastically especially with the creation of island-arcs and related basins. The proponents focus on the older features of the SW Pacific region, such as the Tasman basin, the New Caledonia Basin, the South Fiji basin and the Norfolk basin.

They propose to drill 8 holes, 2 holes in each basin with the major aim to sample basement.

They have 3 objectives.

1. Determine the basement age and help constrain the spreading history of the basins.

2. Evaluate mantle affinities and determine an Indian or a Pacific isotopic signature.

3. Investigate regional geochemical affinities (arc versus MORB).

2. Watchdog report - Translation settings (Uri Ten Brink)

Current and active proposals

Leg 165 in Vema fracture zone:

Jan.-Feb. 1996: Engineering leg to test the improved Diamond Coring System (DCS) for enhanced core recovery. Drilling on the median ridge through thin sediment cover into thick limestone.

Equatorial Atlantic Transform (346)

Leg 160. Goal is to constrain the structure and evolution of ocean-continent transform boundary, particularly its deformational history, vertical movements and their effects on the sedimentary record. 3 holes are proposed on the marginal ridge south of Ivory Coast.

California margin and southern California borderland-(386/422 and 386-add)

On 1995 prospectus. Although it is geared toward ocean history goals, it has the potential to contribute to our understanding of the California margin by dating the Neogene stratigraphy. 14 drill sites are proposed from northern Baja to Mendocino.

Other active proposals:

333-Cayman trough - Needs site survey. MCS proposal recently turned down. Will be resubmitted in May.

376- Vema F.Z. -(last proposed July 1992) - some objectives may be fulfilled in Leg 165

In general, there is still a great need for new proposals describing different aspects of translational settings, including the following settings:

1. oceanic transforms

2. Ocean-continent boundaries (Agulhas F.Z.)

3. Compressional transform margins (e.g., California borderland)

JOIDES Ocean History Panel Meeting - Spring 1994

Date: 29-31 March 1994

Place: Amherst, Massachusetts

Chair: Margaret Delaney

Host: R. Mark Leckie

1. Attendees:

Panel Members	Liaisons and Guests
Jan Backman	Alan Mix (PCOM)
Gregg Blake	Paul Baker (SGPP; day 1)
Robert Carter	Brian Huber (IHP)
Bradford Clement	John Firth (TAMU-ODP)
Peggy Delaney	Peter deMenocal (BRG; day 3)
Rainer Gersonde	
David Hodell	
Anne-Marie Karpoff	
Mark Leckie	
Theodore Moore	
Warren Prell	
Kozo Takahashi	
Philip Weaver	
James Zachos	

Absent	
Tim Herbert,	John Tarduno (LITHP liaison)
Maureen Raymo	

2. OHP recommendations to PCOM

OHP Recommendation 1.

In response to ODP/TAMU's proposal revising the APC coring policy, OHP recommends to PCOM that the policy should read:

At the discretion of the co-chief scientists for a given leg, an additional APC hole of 3 to 4 cores (from the mudline) should be drilled at every appropriate site.

OHP Recommendation 2.

OHP recommends that PCOM consider a longer term of panel service (perhaps 4 years rather than 3 years), given the time between the first submission of a proposal and its appearance on the drilling schedule under optimum conditions and the effect on "corporate memory" of the current system. We recognize that implementing such a change might pose difficulties for some non-U.S. member nations.

OHP Recommendation 3.

OHP recommends to PCOM that the Shallow Water Drilling Working Group Report be rapidly disseminated to the community via publication in the JOIDES Journal, distribution to proponents and panel members, and other appropriate avenues.

OHP Recommendation 4.

OHP recommends to PCOM that a joint meeting of the panel members with sea level interests on OHP (Blake, Carter, and Moore) and SGPP (Hiscott, Garrison, Sarg, Surlyk, Underwood) be arranged prior to or in conjunction with the fall panel meetings to discuss the coordination of sea level efforts in the program and other aspects of mutual concern about sea level (such as the role of alternate platforms in future drilling efforts). This one-day meeting should be scheduled by mutual consent of the individuals involved; Delaney would be willing to host this at UC Santa Cruz, if this is most convenient.

3. Global ranking

Rank	Number	Short title	Fraction of possible points (0-1)
1 *		Caribbean Workshop OHP leg	0.83
2 **		California Margin	0.82
3/4 ***		NJ MAT II	0.75
3/4	430	Sub-SAT	0.75
5	441	Southwest Pacific Gateway (OHP focus--one leg)	0.69
6	354-Rev2	Benguela Current and Angola/Namibia	0.67
7	404	Neogene paleoc., W. N. Atlantic	0.60
8	427/427-Add	South Florida margin sea level	0.36
9	367-Rev+	GAB cool water carbonates	0.33
10	449	Mesozoic Weddell Basin	0.30
11	079-Rev2	Mesozoic Somali Basin	0.26
12 ****		Bahamas Transect plus K/T Seaway	0.25
13	444	Joban Margin sea level	0.23
14	253-Rev/253-Add	Organic-carbon-rich strata, ancestral Pacific	0.21

Footnotes giving numbers or additional explanation:

* based on 1-leg package constructed from 415-Rev/415-Add/434/415-Add2, 408-Rev/408-Add/408-Add2, 384-Rev3 at the Caribbean Drilling Workshop

** 386-Rev2/422-Rev/386-Add/386-Add2

*** 348/348-Add/Letter

\+ combined with LOI 16, McGowran

**** 412/412-Add/412-Add2 packaged with LOI26, Evolution of K/T Seaway, sites

OF THEMATIC INTEREST AND DISCUSSED FOR RANKING, BUT NOT RANKED IN TOP 14:

347-Rev South equatorial Atlantic

436 Campeche Bank stratigraphy

FLAGGED AS OF INTEREST, POTENTIALLY RANKING HIGH IN THE FUTURE, BASED ON PROPOSALS ARRIVING:

LOI18 South East Pacific Depth Transects - Bering Sea

LOI22 Laurentide Ice Sheet

4. Proposal reviews

330-Add4 Mediterranean Ridge accretionary complex (Phase I)

A5

354-Rev2 Benguela Current and Angola/Namibia upwelling

A1, B1.1, B2.1, C1, D1, E1, F2

355-Rev3 Formation of a gas hydrate

A5

367-Rev Great Australian Bight cool-water carbonates

A1, B1.2, B2.1, C1, D1, E8, F2

380-Rev4 Clastic apron, Gran Canaria, and Madeira Abyssal Plain

Scheduled leg in prospectus stage; no review necessary

384-Rev3 Pacific-Atlantic connection...

Based on Caribbean Workshop OHP leg,

A1, B1.1, B2.1, C1, D1, E8, F2

386-Add2 California margin drilling

A1, B1.1, B2.1, C1, D1, E6, F1

400-Add2 Mass balance of Costa Rica accretionary wedge

A5

408-Add2 Caribbean Neogene transects

Based on Caribbean Workshop OHP leg,

A1, B1.1, B2.1, C1, D1, E8, F2

415-Add2 Caribbean Ocean History...

Based on Caribbean Workshop OHP leg,

A1, B1.1, B2.1, C1, D1, E8, F2

421-Rev Alkali-acidic rocks of the Volcano Trench

A5

431-Add Western Pacific Seismic Network

A5

435-Rev Crustal fluxes: Nicaragua Margin

A5

435-Rev2 Crustal fluxes: Mariana-Izu

A5

436 Campeche Bank stratigraphy

A1, B1.2, B2.1, C3, D5, E8, F3

437 Lau-Havre-Taupo rift to drift

A5

438 Test of reflecting interfaces

A5

439 Marquesa Islands...

A5

440 Hydrothermal circulation....

A5

441 Southwest Pacific Gateway I and II

A1, B1.2, B2.1, C1, D1, E8, F2

442 Rift initiation...

A5

443 Faults, crustal heterogeneity...

A5

444 Joban margin sea level

A1, B1.1, B2.1, C2, D1, E8, F2

445 Nankai Trough

A5

446 Tonga forearc

A5

447 Western Woodlark Basin

A5

448 History of the OJP

A5

449 Evolution of the Mesozoic Weddell Basin

A1, B1.2, B2.1, C2, D1, E6, F2

450 Taiwan arc-continent collision

A5

451 Tonga Ridge Island Arc Transect

A5

452 Antarctic glacial history and causes of sea level change

A3, B1.3, B2.2, C4, D1, E8, F3

453 Bransfield Strait, Antarctica

A3, B1.3, B2.1, C2, D1, E8, F3

Narm-Add3 OCT west of Iberia

A5

5. Future meeting dates

Fall 1994: 27-29 September 1994

James Cook University, Townsville, Australia

Robert Carter, host

Spring 1995: 2-4 March 1995

Florida International University, Miami, Florida

Bradford Clement, host

6. Liaisons for 1994

Liaison to SGPP to be named

7. Membership activity

Margaret Delaney, panel chair, will be rotating off at end of calendar year 1994

Nominations for 1995 chair:

1. Tim Herbert, SIO (to be moving to Brown University in 1995)
2. Tom Loutit, Australian Geological Survey
3. Ted Moore, University of Michigan

Non-U.S. membership activity.

Philip Weaver to be replaced by Alan Kemp

8. Liaison reports at meeting

PCOM report given by Alan Mix

TAMU-ODP report given by John Firth

SGPP report given by Paul Baker

IHP report given by Brian Huber

BRG report given by Peter deMenocal

9. Other reports

Leg 154, Ceara Rise drilling, given by Jim Zachos

Kyoto Workshop Report given by Warren Prell

Caribbean Workshop Report given by Mark Leckie

RESULTS OF A WORKSHOP BY AN AD HOC GROUP OF PROPONENTS AND REPRESENTATIVES OF OHP AND LITHP ON CARIBBEAN OCEAN DRILLING

The following are two proposals arising from a recent workshop on Caribbean Ocean Drilling. Both are compilations of sites originating in numerous proposals in the ODP system. Both will likely be submitted for the July 1 proposal submission deadline.

REPORT A

Proposes two scenarios, the first is a one leg OHP focus (ranked 1 by OHP 1994 global rankings) and the second scenario is a two leg option with an OHP and a LITHP focus.

Authors
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R.A. Duncan
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A. Hine
A. Mauffret
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L.C. Peterson
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C.W. Sinton

REPORT B

Proposes drilling to be focused on Caribbean basement objectives (rank 1 by LITHP 1994 global ranking)

Authors
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Report A

Revised Caribbean Drilling Plan

In February 1994 proponents of Caribbean ODP drilling and representatives of the Ocean History Panel and Lithosphere Panel met at the University of Puerto Rico to discuss scientific objectives, the status of drilling proposals and to develop a coordinated program. As an outcome of this meeting, we have prepared the following drilling plan for the Caribbean, which is a revision of the two Addenda (415-Add2, Sigurdsson et al 1994; and 408-Add2, Droxler et al 1994) and drilling proposal #384-Rev3, Mauffret et al 1994), submitted to ODP. This revision of our earlier drilling plan is based on the availability and re-assessment of site survey data and further prioritization of scientific objectives.

The current status of site survey information for proposed Caribbean sites is given in table 1. Site survey information on ten primary and alternate sites has been submitted to the ODP data bank, and information on the other sites will be submitted by the 1 April 1994 deadline. Additional site survey information on four sites will be provided by a geophysical cruise of Diebold and Driscoll in the spring of 1995.

This document includes (a) estimates of drilling times during a single leg, devoted largely to addressing ocean history (Neogene, Paleogene and Late Cretaceous) and Cretaceous/Tertiary boundary objectives, and (b) a two-leg drilling scenario, which combines ocean history and KT boundary objectives with lithosphere objectives, regarding the origin of the Caribbean plate as a large igneous province.

Ocean History Single Leg Site Objectives

The location of proposed seven primary sites and six alternate drill sites for a single-leg scenario is shown in figure 1, and estimated drilling times are given in table 2. With low rate of penetration, we consider a total of 55 days drilling time a realistic estimate, versus 51 days with high rate of penetration. Neither estimate includes time under way. Principal factors that have a bearing on our selection of these sites are given below, together with information on site survey data.

S-2a:

Ocean history (OH) objectives--(1) determining processes of impact deposition at a KT boundary sequence relatively proximal to the Yucatan Peninsula, (2) isotopic and microfaunal/floral documention of regional paleoceanographic conditions before and after mid-Miocene (?) subsidence of the Northern Nicaragua Rise (i.e. the Neogene initiation and downstream evolution of the Caribbean Current downstream of the Nicaragua Rise), and (3) assessing the history of Atlantic intermediate waters in the Yucatan Basin.

Other relevant information--S-2a is in a critical geographic location, both with respect to studies of the KT boundary impact event and the Caribbean Current. It is relatively proximal to the Yucatan peninsula and downstream of the Nicaragua Rise. Since S-1 has now been relegated to an alternate site, because of lack of crossing seismic lines, S-2a is the primary site most proximal to the KT impact crater. Since the Caribbean Current is a primary source of the Gulf Stream, documentation of its initiation and downstream history will critically constrain our understanding of oceanic heat transport and paleoclimate of the late Neogene and Quaternary.

S-3 (DSDP 152):

OH objectives--(1) recovery of a relatively undisturbed high resolution, deep-water KT sequence, (2) Cretaceous and Paleogene sediments suitable for isotopic reconstruction of low latitude surface water temperatures (for determining latitudinal gradients in Late Cretaceous seasurface temperature and assessing the relative importance of greenhouse gas concentrations [i.e. atmospheric CO_2] and latitudinal heat transport to Late Cretaceous climate), (3) development of high-resolution low-latitude Cretaceous and Paleogene chronostratigraphy, and (4) assessment of low latitude paleoceanographic changes that have taken place from Late Cretaceous to Recent times.

Other relevant information--at the 2/94 Mayaguez meeting of Caribbean drilling proponents, we relocated site S-3 to DSDP site 152. Previous drilling of DSDP site 152 documented (1) that there is a strong probability of recovering a relatively complete KT boundary at S-3 (the earliest Paleocene of DSDP 152 contains the *P. eugubina* Zone and is complete on about a 100 kyr timescale), and (2) very good Paleocene carbonate preservation and generally good Late Cretaceous carbonate preservation (rendering the Cretaceous and Paleogene sediments suitable for isotopic study). A stratigraphically well-constrained site is critical for reconstructing Late Cretaceous equatorial seasurface properties and thereby constraining models of Late Cretaceous greenhouse climate.

Due to intermittent coring and poor recovery, the original DSDP site 152 is far too incomplete for reconstruction of KT, Paleogene, and Late Cretaceous paleoceanography. Coring was not initiated until 153 m sub-bottom, several deeper intervals were not cored [295 to 342, 351 to 398, and 434 to 453 m sub-bottom], and several cored intervals were poorly recovered [i.e. ~5% recovery of lowermost Paleocene and uppermost Cretaceous).

S-6:

OH objectives--(1) recovery of a KT sequence distal from the Chicxulub crater and on a different tangent to the crater than other KT sequences (for testing the direction of the KT impact and types

of emplacement processes associated with the impact), (2) recovery of an extended sequence for high-resolution chronostratigraphy of the low-latitude Late Cretaceous. (3) recovery of Paleogene and Neogene sediments that at shallower sub-bottom depths will be appropriate for stable isotopic reconstruction of low latitude paleoceanographic conditions and events, including the Miocene and Pliocene transition from seawater flow westward through the Panama "straits" to the present post-closure situation of northward flow through the Yucatan channel. (4) relatively high-resolution analysis of tropical climate variability and Late Quaternary NAIW history, and (5) documentation of Atlantic intermediate water history in the Colombia Basin.

Other relevant information--Thick sedimentary column and possibility of relatively complete Cretaceous and Cenozoic record. This is the westernmost of all the proposed sites and critical for evaluating spatial distribution of KT impact ejecta. Nearby V19-19 had late Pleistocene accumulation rates of 5 cm/kyr (allowing for relatively high resolution Pleistocene studies). If these sedimentation rates hold throughout the Pleistocene, this site could provide an important Caribbean counterpart to the equatorial Pleistocene records of Eastern Pacific Leg 138 and Atlantic leg 154. S-6 has been placed on top of an un-named rise northeast of Mono Rise in order to avoid turbidite deposition as much as possible.

S-7 (DSDP 146):

OH objectives--(1) recovery of a KT sequence distal from the proposed Chicxulub impact site. (2) recovery of sequences suitable for documenting low latitude paleoceanographic trends and events of the Cretaceous and Paleogene, and (3) recovery of relatively deepwater (3750 m) sediments for documentation of deep Caribbean watermass response to Neogene and Quaternary variation in the ocean-climate system.

Other relevant information--at the 2/94 Mayaguez meeting of Caribbean drilling proponents, we relocated site S-7 to DSDP site 146. Due to poor recovery, the original DSDP site 146 is too incomplete for reconstruction of KT events and Paleogene / Late Cretaceous paleoceanography. Despite very poor recovery, the earliest Paleocene of Site 146 appears to be complete on an approximately 100 kyr scale (since it contains the *P. eugubina* Zone). Hence, there is a strong probability of recovering a relatively complete KT boundary at S-7. The Late Cretaceous record of site 146 exhibits what appears to be strong Milankovitch variation in magnetic susceptibility and carbonate content (S. D'Hondt and J. King, unpublished). This could provide critical information on the Milankovitch-scale sensitivity of Late Cretaceous climate to low-latitude ocean-climate processes. Burial depth of the Neogene and upper Paleogene sediments is probably low enough to allow isotopic analysis of those intervals. Carbonate dissolution is strong and planktonic

foraminiferal faunas impoverished throughout most of the Late Cretaceous and Cenozoic record of Site 146/149 (probably due to paleodepth well below the lysocline).

CB-1:

OH objectives--extremely high-resolution records for studying (1) rates and magnitudes of tropical Atlantic climate change at interannual to millenial timescales over the late Quaternary (including late Quaternary variability in trade wind intensity and position of the intertropical convergence zone), (2) relationships between Cariaco Basin ventilation and paleoclimatic and paleoceanographic change in the late Quaternary, (3) relationships between environmental change and sedimentary and geochemical properties in modern large anoxic basins, (4) a downstream link to paleoceanographic objectives of Amazon Fan drilling (Leg 155).

Other relevant information--high sediment accumulation rates and low bioturbation result in interannual and millenial resolution of this low-latitude Late Quaternary record.

NR-1/2:

OH objectives--(1) close dating of the mid (?) Miocene submergence of the Pedro Channel, (for estimating timing of Caribbean Current initiation and 'timing mismatch between final closure of the Isthmus of Panama [3.0 - 4.0 Ma] and onset of a more vigorous thermohaline cell in the North Atlantic [10.0 -12.0 Ma]" [Maier-Reimer et al., 1990]), and (2) reasonably well-preserved carbonate records of the Caribbean Current and shallow intermediate-depth Atlantic watermass properties throughout the Late Neogene and Quaternary.

Other relevant information--since its original proposal by Droxler et al. (ODP drilling proposal 408), NR-1/2 has been relocated toward the southwest of Pedro Channel. Based on seismic stratigraphy and the 420 kyr record of piston-core CH9204-PC42 (10.9 m), the relocated NR-1/2 appears likely to provide a continuous late Neogene periplatform record.

NR-4:

OH objectives-- (1) to closely date the mid (?) Miocene submergence of the Walton Basin, the second prominent gateway for Caribbean Current flow over the Northern Nicaragua Rise (for closer estimation of the timing of Caribbean Current initiation, since it should resolve any possible diachroneity in subsidence of the Pedro Channel and Walton Basins). Otherwise, its Late Neogene and Quaternary paleoceanographic utility should be similar to that of NR-1.

Alternate Sites:

Some sites listed below are suitable alternates for some of the primary sites, whereas others are sites of secondary interest.

S-1:

OH objectives--(1) proximal section of the KT sequence in the vicinity of the Chicxulub impact crater on the Yucatan Peninsula, (2) well-preserved carbonates suitable for documenting the Neogene history of Atlantic intermediate waters and regional surface-water conditions, and (3) information about the age and nature of the Yucatan borderland which can be used to correlate with the land-based stratigraphy of the Yucatan peninsula.

Other relevant information--because this site is located on an extension of the Yucatan platform, post-impact plate movements may not have significantly changed its position relative to the proposed impact site.

B-1:

Possible alternate for S-7 (DSDP 146).

OH objectives--(1) recovery of a relatively distal KT impact sequence on the east to west (proximal to distal) transect from the proposed Chicxulub impact site, (2) recovery of sequences suitable for microfossil and lithologic documentation of Cretaceous and Paleogene low latitude paleoceanographic trends and events, (3) recovery of an extended sequence for high-resolution chronostratigraphy of the low-latitude Late Cretaceous, and (4) stable isotopic reconstruction of Late Paleogene and Neogene low latitude paleoceanographic conditions and events (i.e. the Neogene history of the Caribbean Current "upstream" of the Nicaragua Rise, low latitude surface ocean temperature of the Eocene and Oligocene).

Other relevant information--There is some possibility of recovering a complete KT boundary sequence since seismic horizons A" and B" appear to be present (Mauffret, ODP proposal 384-Rev2). The site is a few hundred km west of S-7 and would recover a less distal KT impact deposit. Seawater depth at B-1 is 935 m shallower than at DSDP 146 and is therefore probably much less affected by carbonate dissolution.. Burial depth of the Neogene and upper Paleogene sediments is probably low enough to allow isotopic analysis of those intervals.

S-3a:

Possible alternate for Site S-3 (DSDP 152).

OH objectives are similar to S-3.

Other relevant information--completeness of Paleogene and Cretaceous section not as well constrained as at S-3 (the stage-level stratigraphy of site S-3a is unknown). Seawater depth is 700 m shallower than at DSDP 152. Seismic horizons A" and B" appear to be present.

S-5/NR8:

OH objectives--(1) recovery of a distal high resolution KT sequence located along a trajectory path suitable for testing the direction of the KT impact and evaluating the different types of emplacement processes associated with particle dispersal by the impact, and (2) Neogene carbonates suitable for documenting the "upstream" history of the Caribbean Current before, during, and after subsidence of the Northern Nicaragua Rise and closure of the Isthmus of Panama.

Other relevant information--Cretaceous and Paleogene sediments probably too deeply buried for isotopic study. This site would provide a record of Caribbean intermediate waters at 2000 m present depth. The primary sites are all either less than 1250 m present depth or greater than 2750 m present depth.

NR-7:

OH objectives – (1) isotopic and microfaunal/floral documention of regional paleoceanographic conditions before and after mid-Miocene (?) subsidence of the Northern Nicaragua Rise (i.e. the Neogene initiation and downstream evolution of the Caribbean Current following the mid-Miocene (?) foundering of the Northern Nicaragua Rise), and (2) assessment of the influence of intermediate Atlantic waters on deep waters in Cayman Trough throughout the Late Neogene and Quaternary.

NR-9:

OH objectives – (1) a shallow (1200 m) record of late Neogene and Quaternary intermediate water variation in the Colombia Basin (just below the thermocline).

Other relevant information– this site would provide a periplatform record of metastable carbonate preservation (generally restricted to waters shallower than 2000 m in the Caribbean). It is slightly upstream of the Caribbean Current relative to sites NR-1/2 and NR-4.

Ocean History and Lithosphere Double-Leg Site Objectives

A two-leg Caribbean drilling scenario, which meets both ocean history, KT boundary and lithosphere objectives, includes nine primary sites and six alternate sites. Site locations and proposed ship track are shown in figure 2, and drilling times are given in table 3. OH sites proposed in the single-leg scenario have been deepened in the two-leg scenario to obtain basement drilling of 100 to 150 m, as shown in table 3 (footnotes 5 and 6). At low rate of penetration, the total drilling time for the primary sites on Leg A is estimated 55.4 days, and 55.3 days for Leg B, excluding time under way.

The two-leg scenario has considerable advantages for both OH and LITH objectives. The additional sites have important benefits for OH and KT boundary objectives. Site B-1 is likely to have relatively good carbonate preservation and low carbonate dissolution for a Caribbean site. Both sites A-1 and B-1 will also contribute significantly to studies of dispersal of KT boundary ejecta.

The two-leg scenario offers great advantages for LITH objectives, as we propose deep basement drilling (100 to 150 m) at six sites, whereas a single LITH leg would probably accomplish deep drilling into the Caribbean oceanic crust at only two or at the most three sites.

Below we describe objectives for primary LITH sites and LITH objectives for basement drilling of sites proposed for the single-leg OH scenario.

Primary LITH Sites:

A-1:

LITH objectives – Drilling at this site, in the Aruba gap, has the potential of penetrating through the B" reflector and reaching into the underlying old plate (sub-B" reflector of Mauffret et al 1994). Thus the principal advantage of this site for LITH objectives is the complete penetration of the edge of the large igneous province which constitutes the Caribbean plate.

Information relevant for OH objectives–there is some possibility of recovering a sediment record of the KT impact (seismic horizons A" and B" appear to be present). At 3950 m waterdepth, this site was probably below the paleolysocline for much of its history. With 1450 m of total sedimentary thickness, Cretaceous and Paleogene carbonates would be too lithified for isotopic study.

S-6:

Determining crustal age and composition for this part of the Colombia Basin and evaluating the proposed extension of reflector B" into this part of the Caribbean. This is the westernmost site proposed by Donnelly et al. (3/94) for E-W LITH transect of the Caribbean and is critical for evaluating the age and compositional variation of the Caribbean LIP.

B-1:

LITH objectives – for study of spatial age relations and geochemical variability of B" volcanic event. Proposed by Donnelly et al. (3/94) as central site in E-W transect of Caribbean LIP (for sampling age and compositional variation of LIP in region of thickest Caribbean crust).

Information relevant for OH objectives -- see one-leg OH scenario.

C-1:

LITH objectives--easternmost site in transect of Caribbean LIP proposed by Donnelly et al. (3/94), sampling the thinnest and most distal part of the LIP.

Information relevant for OH objectives--there is some possibility of recovering a distal Caribbean record of the KT impact (seismic horizons A" and B" appear to be present). However, unlike at S-7 (DSDP 146), the completeness of the KT boundary at C-1 cannot be estimated at resolution higher than several million years. At 4065 m waterdepth, C-1 is more than 100 m deeper than S-7 (DSDP 146) and probably characterized by worse carbonate preservation.

LITH Objectives for Basement Drilling of OH Sites:

S-2a:

Determining the crustal age of the eastern Yucatan Basin and documenting its relationship to the Caribbean Large Igneous Province (LIP) and the Camaguey Ridge.

S-3:

The age and nature of crust in the Colombia basin for comparison to the Venezuela Basin to the east (allowing evaluation of any temporal evolution in the development of the B" reflector).

S-7:

Information concerning the age, extent and chemical diversity of the Caribbean Cretaceous Basalt Province.

LITH Objectives at OH Alternate Sites:

S-3a:

Similar to B-1. For OH single-leg, this site is an alternate to S-3.

S-5:

Information concerning the age, extent and chemical diversity of the Caribbean Cretaceous Basalt Province. This was an alternate site in the proposed OH single-leg.

Table 1. Site Survey Status of Proposed Caribbean Sites

Primary Sites	MCS	SCS	3.5 khz	Crossing	Site type
S-2	UTIG GT2-52E*		yes*	no	ocean crust >400 m seds.
S-3 (152)	*redrilling of existing DSDP site 152*			poss.[2]	ocean crust >400 m seds.
S-6	UTIG CT1-12*	LDGO C 1003[1]	yes*	yes	ocean crust >400 m seds.
S-7 (146)	*redrilling of existing DSDP site 146*			poss.[2]	ocean crust >400 m seds.
CB-1		PLUME-07	yes[1]	yes	passive margin
NR-1/2	UTIG CT1-29C[1]	CH9204-30[1],-05[1] ICP CAR214, 208[1]	yes[1]	yes	topo. elevated feature
NR-4	UTIG CT2-17[1]	CH0288-31*,-36[1]	yes[1]	yes	topo. elevated feature
B-1	CASIS 92 grid*		yes*	yes	ocean crust >400 m seds.
A-1	CASIS 92 grid*		yes*	yes	ocean crust >400 m seds.
Alternate Sites					
S-1	UTIG CT 1-140*		yes*	no	passive margin
S-3a	CASIS Co-01*		yes*	poss.[2]	ocean crust >400 m seds.
S-5/NR8	UTIG CT 1-28B*		yes*	no	ocean crust >400 m seds.
C-1	RC1904*		yes	poss.[2]	ocean crust >400 m seds.
NR-7		SC2-68	no	no	ocean crust <400 m seds.
NR-9		CH0288-42[1]	yes[1]	no	ocean crust >400 m seds.

* Submitted to ODP databank
1. Will be submitted for April 1 deadline
2. Geophysical cruise by John Diebold (Spring 95) may supply crossing information

Table 2. Drilling Time Estimates for Single Caribbean Leg

Site	Sed. Thick (m)	Water Depth (m)	Drillstring Roundtrip	Rotating Time XCB	Rotating Time HROP	Rotating Time LROP	Wireline Trip APC	Wireline Trip XCB	Wireline Trip RCB	Logging	Total Time (days) HROP	Total Time (days) LROP
S-2a	600	3150	28 h	15	4.5	12.3	46.3	44.2	17.4	30.8	7.8	8.1
S-3 (152)	480	3899	32	15	2	4	52.6	50.5	1.8	30	7.7	7.8
S-6	1300	2750	28	15	22	70.7	47.6	44.2	119.4	43.5	13.3	15.3
S-7 (146)	762	3949	34	15	8.6	25.8	52.6	55.3	51.5	35.6	10.5	11.2
CB-1	200	920	8	0	0	0	36.5	0	0	18.6	2.6	2.6
NR-1/2	650	910	16	15	12.5	30	25.3	20.5	10.3	27.1	5.3	6.0
NR-4	370	1150	18	8.8	10	20	25.3	9.5	3.9	23.2	4.1	4.5
TOTAL											**51.3**	**55.5**
Alternate Sites												
S-1	500	1200	20	15	2	4	29.5	23.7	0.8	25	4.8	4.9
B-1	750	3015	28	15	8.3	24.8	46.3	44.2	1.6	29	9.0	9.7
S-3a	500	3200	30	15	2	4	46.3	44.2	1.6	29	7.0	7.1
S-5/NR8	1000	2050	24	15	14.5	45.7	33.7	36.3	64.4	36.3	9.3	10.6
NR-7	250	4200	18	2.5	0	0	52.6	9.2	0	26.1	4.5	4.5
NR-9	300	1200	9	5	0	0	25.3	8.4	0	21.2	2.9	2.9

All times are in hours except for totals (days)
Calculations based on ODP Technical Note 1 (December, 1986)
Assumptions:

1. Double APC at all sites (200 m)
2. XCB coring from 200 to 500 m where appropriate
3. HROP= high rate of penetration (40 m/h for sediment, 5 m/h for basement)
4. LROP= low rate of penetration (12 m/h for sediment, 2.5 m/h for basement)

Table 3. Drilling Time Estimates for Two Caribbean Legs

Site	Sed. Thick (m)	Water Depth (m)	Drillstring Roundtrip	Rotating Time XCB	Rotating Time HROP	Rotating Time LROP	Wireline Trip APC	Wireline Trip XCB	Wireline Trip RCB	Logging	Total Time (days) HROP	Total Time (days) LROP
LEG A												
S-2a	600	3150	28 h	15	4.5	12.3	46.3	44.2	17.4	30.8	7.8	8.1
S-3 (152)	480	3899	52	15	20	40	52.6	50.5	14.7	31.8	9.9	10.7
S-7 (146)	762	3949	51	15	26.6	61.8	52.6	55.3	68.6	37.3	12.8	14.2
B-1	750	3015	44	15	26.3	60.8	46.3	44.2	55.3	33.2	11.1	12.5
NR-1/2	650	910	18	15	12.5	30	25.3	20.5	10.3	27.1	5.3	6.0
NR-4	370	1150	18	8.8	10	20	25.3	9.5	3.9	23.2	4.1	4.5
TOTAL											**51.0**	**56.0**
LEG B												
CB-1	200	920	8	0	0	0	36.5	0	0	18.6	2.6	2.6
S-6	1300	2750									17.1	23.8
A-1	1174	4080									23.7	28.9
TOTAL											**43.4**	**55.3**
ALTERNATE SITES												
S-1	500	1200	20	15	2	4	29.5	23.7	0.8	25	4.8	4.9
S-3a	500	3200									9.8	12.0
S-5/NR8	1000	2050	40	15	42.5	101.7	33.7	36.3	82.1	39	12	14.5
C-1	680	4725									18.1	14.9
NR-7	250	4200	18	2.5	0	0	52.6	9.2	0	26.1	4.5	4.5
NR-9	300	1200	9	5	0	0	25.3	8.4	0	21.2	2.9	2.9

All times are in hours except for totals (days)
Calculations based on ODP Technical Note 1 (December, 1986)
Assumptions:

1. Double APC at all sites (200 m)
2. XCB coring from 200 to 500 m where appropriate
3. HROP= high rate of penetration (40 m/h for sediment, 5 m/h for basement)
4. LROP= low rate of penetration (12 m/h for sediment, 2.5 m/h for basement)
5. 100 m basement penetration at sites B-1, S-3 (152), and S-7 (146), (Leg A)
6. 150 m basement penetration at sites S-6 and A-1 (Leg B), S-3a, S5/NR8, and C-1 (alternates)

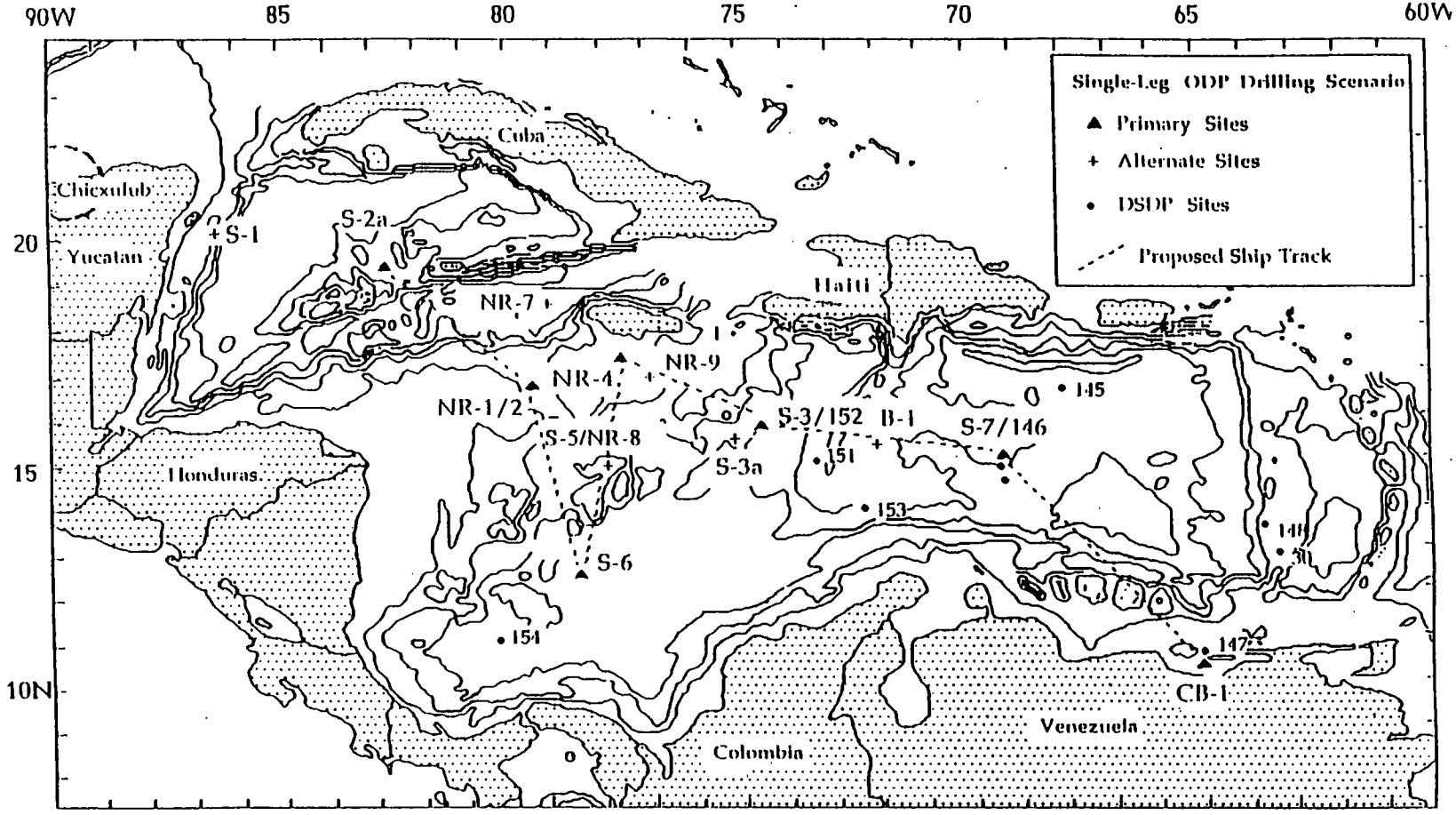


Figure 1: Proposed ODP Caribbean site locations and ship track for a single-leg scenario. Site CB-1 in the Carinco Basin is from ODP proposal #434 (Peterson 1993). Sites NR-1 and NR-4 are from ODP proposal #408 Rev (Droxler et al 1992), and sites S-1 through S-7 are from ODP proposal #415 Rev (Sigurdsson et al 1993). Site B-1 is from ODP proposal of A. Mauffret et al (1994).

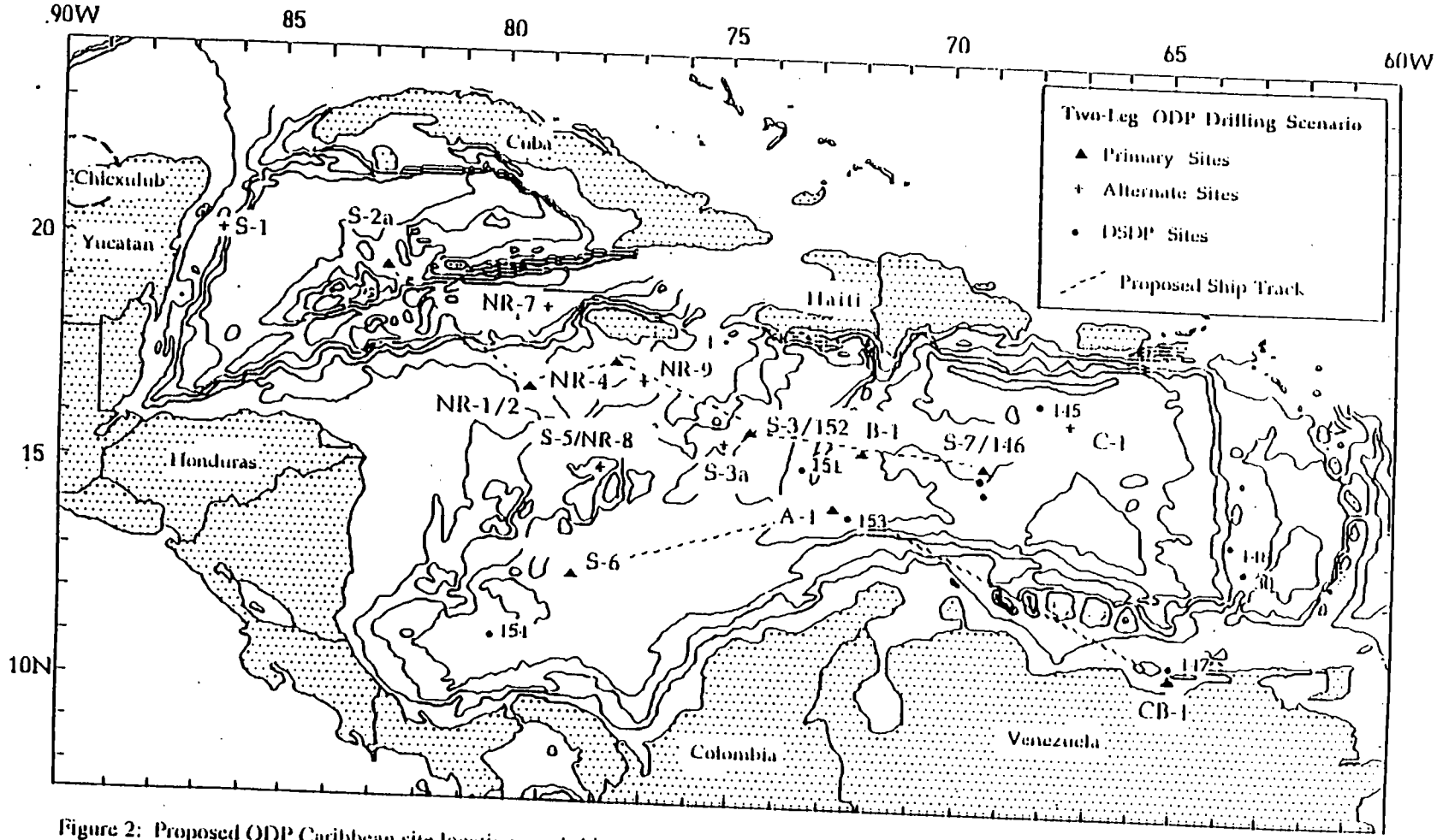


Figure 2: Proposed ODP Caribbean site locations and ship track for a two-leg scenario. Site CB-1 in the Cariaco Basin is from ODP proposal #434 (Peterson 1993). Sites NR-1 and NR-4 are from ODP proposal #408 Rev (Droxler et al 1992), and sites S-1 through S-7 are from ODP proposal #415 Rev (Sigurdsson et al 1993). Sites A-1, B-1 and C-1 are from ODP proposal of Mauffret et al (1994).

Revisions for a Focused Caribbean Basement Drilling Program: Report B

At the request of LITHP, proponents of basement drilling in the Caribbean met at the University of Puerto Rico (Mayaguez), during February 25 and 26, to revise a drilling plan for investigation of the Caribbean Cretaceous Basalt Province. This large igneous province (LIP) is proposed to have formed in the eastern Pacific basin in mid/late Cretaceous time as a volcanic oceanic plateau that subsequently drifted east with the Farallon plate and was tectonically inserted between the North and South America plates. Objectives and proposed sites have been previously described in proposals #411 (Donnelly et al.), #415-Rev (Sigurdsson et al.) and #384-Rev3 (Mauffret and Leroy). This revision is submitted by the proponents of these proposals after discussion about site priorities in achieving drilling objectives, assessment of site survey data, and reference to the strategy for LIP drilling described in the 1993 LITHP White Paper draft.

Our program has three major goals:

(1) Determine the age and compositional variability of volcanic rocks forming the Caribbean plateau, identified by the B" reflector in seismic profiles.

(2) Obtain a deep penetration of the plateau to determine its internal structure and composition, and the nature of sediments and crust below the plateau (the "old plate").

(3) Document the lithospheric response to mechanical loading by construction of the plateau and decay of the thermal regime associated with volcanism, through recovery of supracrustal sediments.

Our essential strategy is to drill a transect of sites into basement, east-west, across the plateau. This is designed to provide the greatest geographic sampling of potential age and compositional patterns, and to provide a link to tectonized crustal sections of the plateau exposed subaerially along its margins.

Is the Caribbean Cretaceous Basalt Province a LIP?

Before presenting our drilling plan it is important to briefly review results of recent investigations of the age and composition of onland sections thought to be tectonized margins of the plateau. Radiometric dating of basalts from four such sections, using primarily ^{40}Ar-^{39}Ar incremental heating experiments but also the Re-Os isochron method, shows contemporaneous volcanic activity at 88-89 Ma at all sites (Haiti, Curacao, W. Colombia, and Costa Rica) - see Figure 1 and Table 1.

Fossil ages are in some sections contemporaneous with these radiometric ages, and in at least one location somewhat older (Albian-ammonites in Curacao). However, the stratigraphic

relationships of these older sediments and the basalts are not clear, and biostratigraphic ages must be evaluated critically. In the Nicoya section, for example, radiolarian cherts of Jurassic-early Cretaceous age were reported to lie between two basaltic sequences of different ages. Radiometric ages from both sequences are identical (Cretaceous), however, and field relationships show that the basalts are intrusive into the cherts. The present biostratigraphic and radiometric evidence for the timing of this LIP suggests that there may have been earlier (Albian) magmatism of unknown extent and a final (Turonian) volcanism of vast extent. A major goal of this program is to obtain additional sections of the untectonized LIP by drilling, suitable for radiometric dating.

While each location is fault-bounded, and thus original positions are not known with precision, these sections cannot be reconstructed to have formed close to one another. Their broad distribution and common age, which coincides with the biostratigraphic age (Turonian-Coniacian) of four of the five basement sites drilled by DSDP (sites 146, 150, 151, 153)*, indicate a very wide-spread, voluminous basaltic event that occurred in a brief period. Radiometric dating of the DSDP basalts has not been successful because of the high degree of alteration of that material. Deeper penetration should provide fresher basalts.

The basalts from the onland and drilled sections show other common features. The sections appear to be entirely submarine pillow and massive flows, hyaloclastites, and intrusive equivalents (gabbros). Compositionally the predominant magma type is most similar to oceanic plateau basalts (e.g. Ontong Java, Nauru Basin), with tholeiitic major element abundances and flat REE patterns (Figure 2). Minor and trace element patterns are similar to MORB. A second type is alkali basalt LREE-enriched patterns (Figure 2) that has been identified at the top of the sections in Haiti and Costa Rica, and at DSDP Site 151. A third type is MgO-rich basalts, picrites and komatiites, with some of which exhibit LREE-depleted patterns (Figure 2), found in W. Columbia (Gorgona Island and mainland), Curacao and Costa Rica. The stratigraphic position of this type is not well established, but at Curacao the high MgO rocks appear to have erupted early in the volcanic event. At this locality the high MgO rocks are interlayered with normal, MORB-like basalts. Hence, the three magma types are broadly distributed in the marginal sections, and two of them are represented in the small amount of B* basalt drilled during DSDP Leg 15.

The range in compositions within volcanic rocks erupted almost simultaneously over this large region (~1500 x 1000 km^2) reflects variable conditions of mantle melting. The high MgO rocks (up to 22 wgt% MgO in quenched, glassy rocks) are especially remarkable as they indicate eruption temperatures of up to 1500°C and perhaps 50% partial melting of the mantle! Once thought to be almost entirely restricted to Precambrian time when geothermal gradients were much higher, these high-temperature magmas may be commonly generated in flood basalt events. Their

* site 152 basalts are overlain by Campanian (75-83 Ma) sediments

discovery in the Caribbean is probably the result of the deep exposure of the tectonized margins of the province. We note the exciting potential of reconstructing the thermal regime and melting history of the upwelling mantle that formed this plateau, from the range of rock compositions. Trace element patterns and isotopic compositions (Figure 3) show a restricted range that is consistent with mixing of mantle sources (DMM and EMI/HIMU).

We conclude that the Caribbean Cretaceous Basalt Province, comprised of onland, tectonized sections and the regionally extensive, smooth B" basalt drilled during DSDP Leg 15 in the central Caribbean, is an oceanic LIP. The evidence is:

(1) Appropriate size. The B" reflector can be mapped over ~750,000 km^2 with a variable but average thickness of about 5 km, giving an approximate volume of 3-4x10^6 km^3 for the central intact plateau alone. The tectonized sections add an unknown volume.

(2) Brief and wide-spread submarine eruptions. Radiometric dating fixes the main activity at 88-89 Ma. There may have been earlier, precursory activity and later eruptions associated with plateau extension or an emerging hotspot track.

(3) Predominantly oceanic plateau compositions, with subsidiary high-MgO and alkali basalts.

How can drilling contribute to understanding this oceanic LIP?

The age and compositional relationships within the Caribbean Cretaceous Basalt Province are critical in identifying this as a LIP and revealing the conditions of formation and post-emplacement evolution. We have designed an E-W transect of drilling sites to provide the greatest possible geographic distribution of sampling of the intact central portion of the plateau basalts and supracrustal sediments (Figure 4 and Table 1). An additional, deep penetration site is aimed at reaching the internal structure of the plateau and the underlying sediments and crust on which the plateau was built, through a deep rift "window". Drilling is the only way to sample the intact portion of the plateau, and the undisturbed supracrustal sediments that will be used to describe the vertical tectonics of the plateau.

Site Selection

Sites (Table 2) have been chosen from among the reviewed proposals, according to the rationale:

(1) Construct an E-W transect of three sites to sample the eastern, central and western regions. Crustal thickness varies from <5 to >20 km and compositional differences between the central and eastern regions are known from the minimal DSDP penetration. Nothing is known about the plateau basalts in the large western region (Colombian Basin).

(2) Clear B" and A" reflectors (plateau basalts and Eocene cherts, respectively) and sufficient sediments between them to ensure good preservation of Late Cretaceous-Early Tertiary

sediments for paleoceanographic (esp. depth) studies. This condition also maximizes the potential for recovery of the K/T boundary - see concluding discussion.

(3) Tie-in to existing and imminent MCS grids and DSDP Leg 15 sites.

(4) Absence of thick Neogene turbidite deposits.

All sites will penetrate 150 m into basement (B") to adequately sample basalts for age and compositional studies, and to document geomagnetic field behavior (paleolatitude, long Cretaceous normal polarity character). Where possible, sites have been adjusted to meet objectives of the OHP proponents of Neogene, Paleogene or Late Cretaceous objectives.

Site S-6 (NE of Mono Rise). This is the westernmost of the E-W transect of sites to sample B" for age and compositional variation. It is located on a prominent basement high overlain by thick, parallel sedimentary reflectors. This site is on multichannel seismic line UTIG CT1-12A (s.p. 4720), at the crossing with an LDEO SCS line.

Site B-1 (E. Beata Ridge). This is the central site of the E-W transect to sample B" basalts. This is the region of thickest crust and close to DSDP Site 151 where the alkali basalt magma type was identified. It is located within a MCS grid (CASIS '92 cruise) presented by Mauffret (proposal 384-Rev2). Our alternate site in this region is S-3A (shifted 100 km NNW of S-3 to avoid turbidites), on the Hess Escarpment. This site is located on MCS line Co-01 (CASIS '92) and will be crossed by the Diebold and Driscoll MCS cruise (Jan '95). DSDP Site 152 is 50 km NE and will be tied in with the D & D line. The paleocean proponents prefer to return to DSDP Site 152 because of the demonstrated presence of a good Cretaceous-Paleogene section, and this could be a second alternate for the central transect site.

Site C-1 (N. Venezuelan Basin). This is the easternmost of the E-W transect of sites to sample B", in a region of relativeiy thin crust characterized by many carapace-topping volcanoes. The objective is to drill the LIP in an area with a shallow Moho, in anticipation of sampling the thinnest part of the LIP (most distal?). If C-1 is sited close to one of the volcano-like features, then debris from this edifice might be sampled in the supracrustal sedimentary section. The site is located on MCS line RC1904, Leg 8, and will be crossed by the Diebold and Driscoll MCS survey. Our alternate in this region is site S-7, located on MCS line UTIG VB-1-SA. The site is tied to DSDP site 146 with LDEO C2103 lines 119, 120, and a Gulf Oil line available through UTIG.

Site A-1 (Aruba Gap). This is the favored site to reach below the B" reflector, into the internal structure of the plateau (V reflector in proposal 384-Rev2) and into the old plate on which the plateau was built (sub-B" reflector in proposal 384-Rev2). This is the most time-consuming and

most uncertain of the basement sites, but also the most rewarding if the sub-B" reflectors are penetrated. The site is well imaged in a MCS grid presented by Mauffret (proposal 384-Rev2).

Drilling time estimates for first priority sites and alternates appear in Tables 2 and 3. Site survey data are complete for S-6, B-1 and A-1. Sites C-1, S-3A and S-7A will have crossing MCS lines after the Diebold and Driscoll (Jan '95) cruise. All existing data will be provided to the ODP databank by April 1 for preliminary SSP review.

Integration with K/T boundary and paleocean objectives

The basement sites, particularly the transect S-6, B-1 and C-1, are optimally placed to study (reconstructed) azimuthal and distance-from-impact variations in K/T boundary sections. While it is impossible to be assured of recovering complete K/T sections, we have chosen sites with the thickest possible A"-B" intervals, with undisturbed layering, to maximize this opportunity. These sites will augment the K/T boundary sites selected for the OHP-focused Caribbean drilling program.

Our three basement transect sites (S-6, B-1 and C-1) are located on seismic sections that show the most complete late Cretaceous and early Paleogene sedimentary intervals. These units will provide paleodepth and paleolatitude data for vertical and horizontal tectonic objectives, but also should satisfy high-resolution paleocean objectives, known to be possible from the sediments partially recovered at DSDP sites 146 and 152. Neogene objectives could also be accomplished, especially at S-6. Hence drilling times (Tables 2, 3) include not only basement objectives, but recognize the importance of addressing OHP objectives as well. The total 4-site, optimum basement drilling program will require about 74 days (average of HROP and LROP estimates), but this includes time for K/T boundary and OHP objectives. If a 2-leg Caribbean drilling program that includes LITHP and OHP objectives is considered, the 4 basement sites can be drilled.

Figure Captions

Figure 1. The Caribbean plate and locations mentioned in the proposed ocean drilling plan. Plate boundaries are schematic and simplified. Major subaerial outcrops of the Caribbean Cretaceous Basalt Province are shown in black. The B" reflector (intact plateau basalts) is imaged over a large central part of the plate. DSDP Leg 15 sites to basement are shown in italics; proposed ODP basement sites are indicated.

Figure 2. Rare earth element (REE) abundance patterns (normalized to chondrite) for basalts and high MgO rocks from the Caribbean Cretaceous Basalt Province. The top panel compares flat-REE patterns of the dominant MORB-like basalt with ocean plateau basalts from the Pacific basin. The middle panel compares the light-REE enriched patterns of alkali basalts from Haiti and the Beata Ridge with the common flat-REE basalts. The bottom panel compares light-REE depleted patterns of high MgO rocks (basalts and komatiites) with the common flat-REE basalts.

Figure 3. Pb-Pb isotopic compositions for the Caribbean Cretaceous Basalt Province, compared with MORB from the EPR and basalts from the Galapagos platform. The bulk of the Caribbean basalts are more radiogenic than MORB and show mixing between MORB and OIB mantle sources.

Table 1. Radiometric Ages of Circum-Caribbean Oceanic Crustal Sections

Site	Sample	Age (± 1 σ), Ma	Method
Haiti	HA77-28	88.7 ± 1.5	40Ar-39Ar age spectrum[1]
(Dumisseau Fm)	HA76-165	89.9 ± 1.1	40Ar-39Ar age spectrum[1]
	HA76-120	87.6 ± 1.5	40Ar-39Ar age spectrum[1]
Curacao	BK79-262	88.0 ± 1.2	40Ar-39Ar age spectrum[1]
	79BE-73	89.5 ± 1.0	40Ar-39Ar age spectrum[1]
Gorgona Island	GOR92-14	88.3 ± 1.9	40Ar-39Ar age spectrum[2]
	GOR92-27	88.0 ± 2.1	40Ar-39Ar age spectrum[2]
	GOR92-18	87.1 ± 3.2	40Ar-39Ar age spectrum[2]
	GOR92-1	86.0 ± 4.6	40Ar-39Ar age spectrum[2]
		88.1 ± 3.8	Re-Os isochron[3]
Costa Rica	NC93-34	87.5 ± 0.7	40Ar-39Ar age spectrum[2]
(Nicoya Peninsula)	NC93-20	88.2 ± 3.1	40Ar-39Ar age spectrum[2]

1 Sinton and Duncan (1992), EOS, Trans. Amer. Geophys. Union, 73: 532.
2 Sinton, Duncan and Storey (1993), EOS, Trans. Amer. Geophys. Union, 74: 553.
3 Walker, et al. (1990), Contrib. Mineral. Petrol., 107: 150-162.

Table 2. Summary of Sites Proposed for Revised Caribbean Basement Drilling Program

Site	Location	Depth (m)	Sediment (m)	Basement (m)	Site Time (days)* HROP	LROP	Comments
S-6	Colombian Basin (12° 35'N, 78° 58'W)	2750	1300	150	16.1	23.8	Western site in transect
B-1	East Beata Ridge (15° 08'N, 72° 02'W)	3015	750	150	11.6	14.6	Central transect site
[S-3A	Hess Escarpment (15° 30'N, 75° 12'W)	3200	500	150	11	14	Central site (alternate)
[152	Hess Escarpment (15° 53'N, 74° 36'W)	3900	477	150	12	15	Central site (alternate)
C-1	Venezuelan Basin (16° 23'N, 67° 15'W)	4065	820	150	14.9	18.1	Eastern site in transect
[S-7A	Venezuelan Basin (15° 26'N, 69° 31'W)	4110	550	150	11.6	13.8	Eastern site (alternate)
A-1	Aruba Gap (14° 03'N, 72° 30'W)	3950	1450	150	23.7	28.9	Internal structure, old plate

*Estimated using ODP Technical Note 1 (December, 1986), and includes:

1. Double APC to 200m at all sites
2. XCB coring from 200 to 500m where appropriate
3. HROP = high rate of penetration (40m/hr for sediment, 5m/hr for basalt)
4. LROP = low rate of penetration (10m/hr for sediment, 2.5m/hr for basalt)
5. Re-entry at sites S-6 and A-1
6. Three (3) logging runs.

Full details and additional drilling options are given in Table 3.

Table 3. Estimated Site Times for Caribbean Basement Drilling Program

Site	Depth (m)	Sediment (m)	Basement (m)	Site Time (days) HROP	LROP
S-6	2750	1300	150		
a) Full size re-entry cone, 50m of 16" casing, double APC to 200m				17.1	23.8
b) Same as "a" with fully cased hole to 1300 mbsf				19.4	26.1
c) Same as "a" without double APC to 200m				16.1	22.8
d) Same as "a" without double APC, but full casing to 1300 mbsf				18.5	25.2
A-1	3950	1450	150		
a) Full size re-entry cone, 50m of 16" casing, double APC to 200m				23.7	28.9
b) Same as "a" with fully cased hole to 1450 mbsf				26.4	31.6
c) Same as "a" without double APC to 200m				22.5	27.7
d) Same as "a" without double APC, but full casing to 1450 mbsf				25.3	30.4
B-1	3015	750	150		
a) Mini-cone single re-entry, double APC to 200m				11.6	14.6
b) Mini-cone single re-entry, without double APC to 200m				10.6	13.6
c) Full size re-entry cone, single re-entry, 50m of 16" casing, no APC				12.6	15.5
d) Same as "c", with double APC				13.6	16.5
C-1	4065	820	150		
a) Same as at Site B-1				14.9	18.1
b) Same as at Site B-1				13.8	17.0
c) Same as at Site B-1				16.0	19.1
d) Same as at Site B-1				17.1	20.3
S-7A	4110	550	150		
a) Same as at Site B-1				11.6	13.8
b) Same as at Site B-1				10.4	12.6
c) Same as at Site B-1				12.4	14.6
d) Same as at Site B-1				13.7	15.9
152	3900	470	150		
a) Same as at Site B-1				10.6	12.7
b) Same as at Site B-1				9.4	11.5
c) Same as at Site B-1				10.5	12.6
d) Same as at Site B-1				11.7	13.8
S-3A	3200	500	150		
a) Same as at Site B-1				9.8	12.0
b) Same as at Site B-1				8.7	10.9
c) Same as at Site B-1				10.2	12.4
d) Same as at Site B-1				11.3	13.5

HROP = (40m/hr sediments, 5m/hr basalt); LROP = (10 m/hr sediments, 2.5m/hr basalt). All times include three (3) full logging runs. Sites S-6 and A-1 require multiple re-entries so full sizes cone and at least 50m casing required; it may be possible to drill the remaining sites with single re-entry using mini-cones.

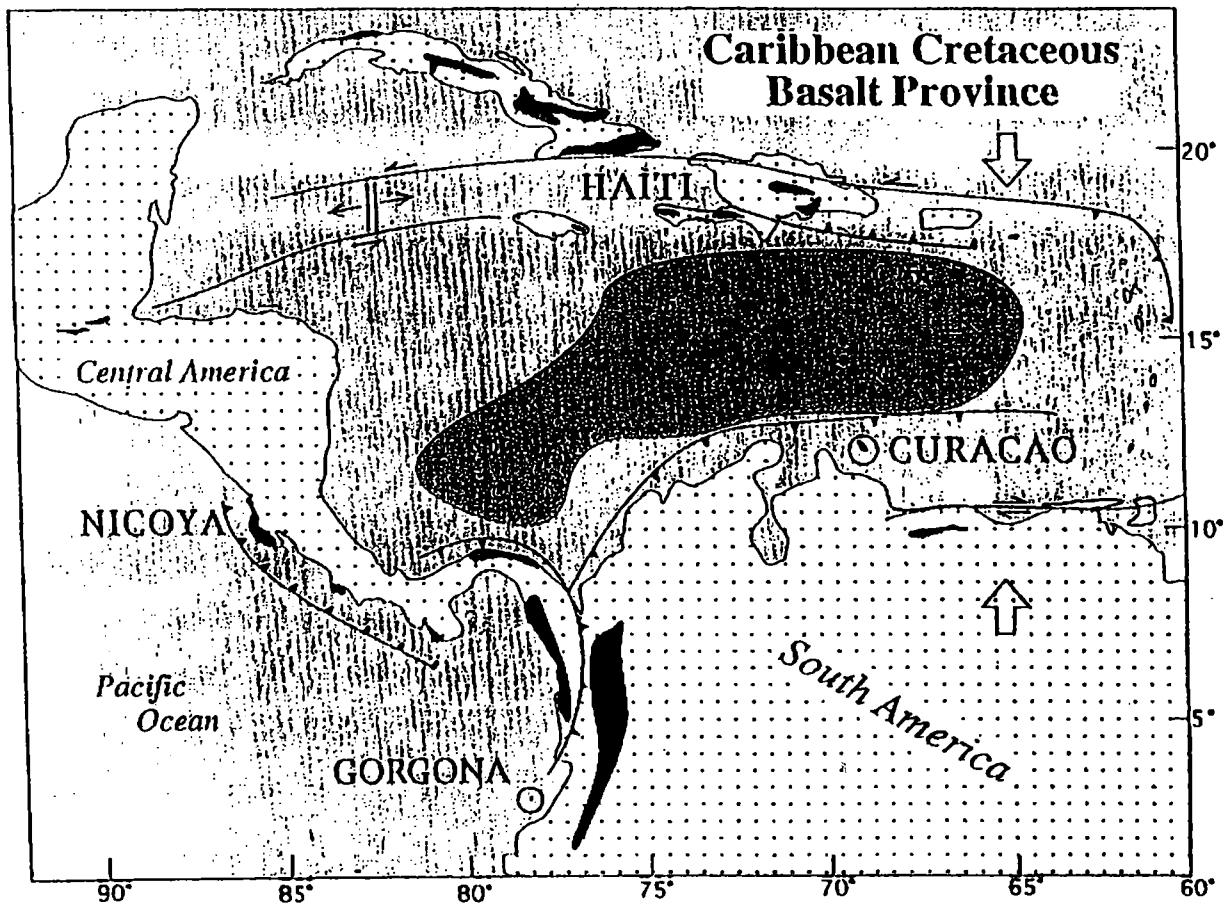
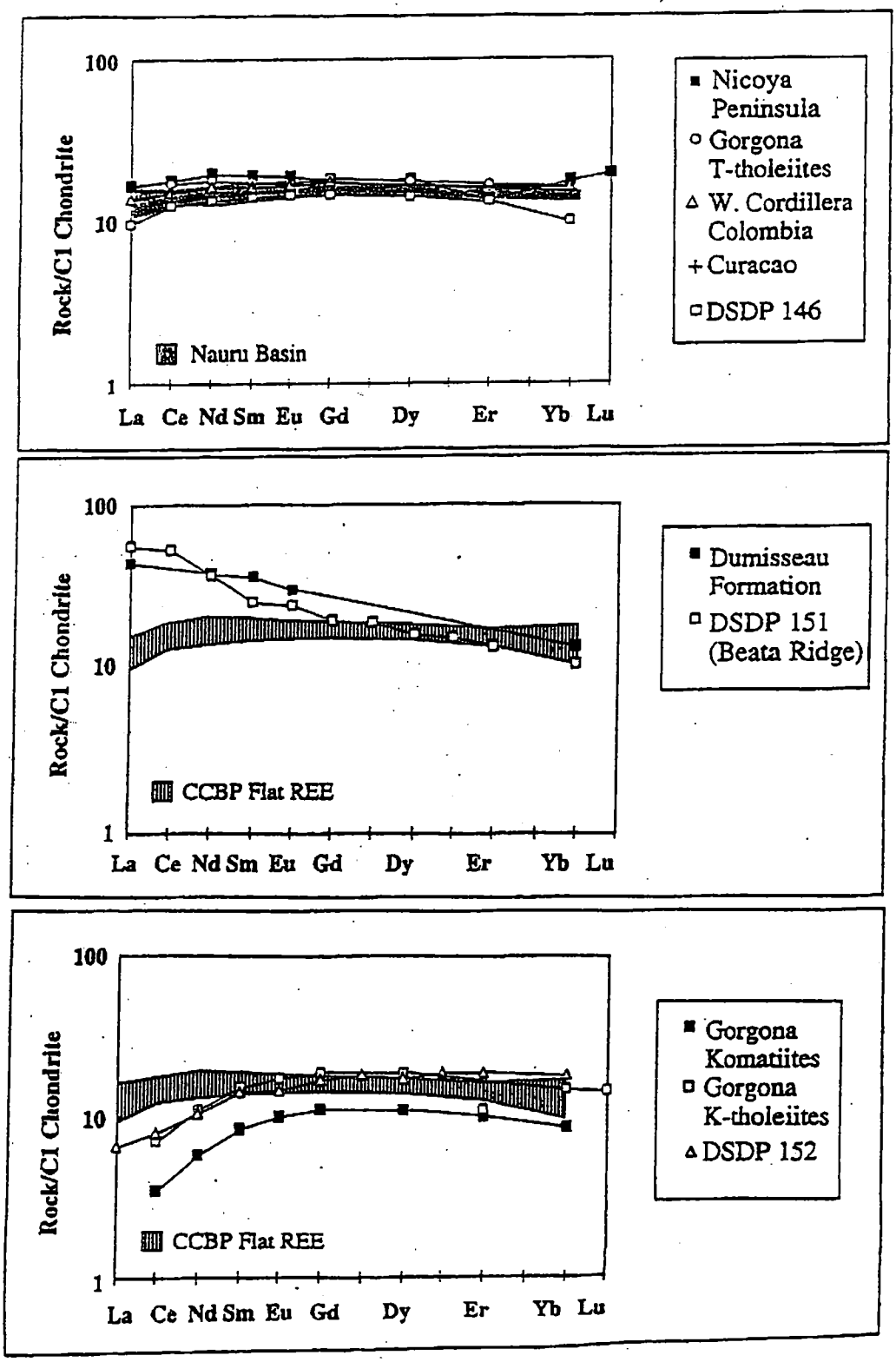
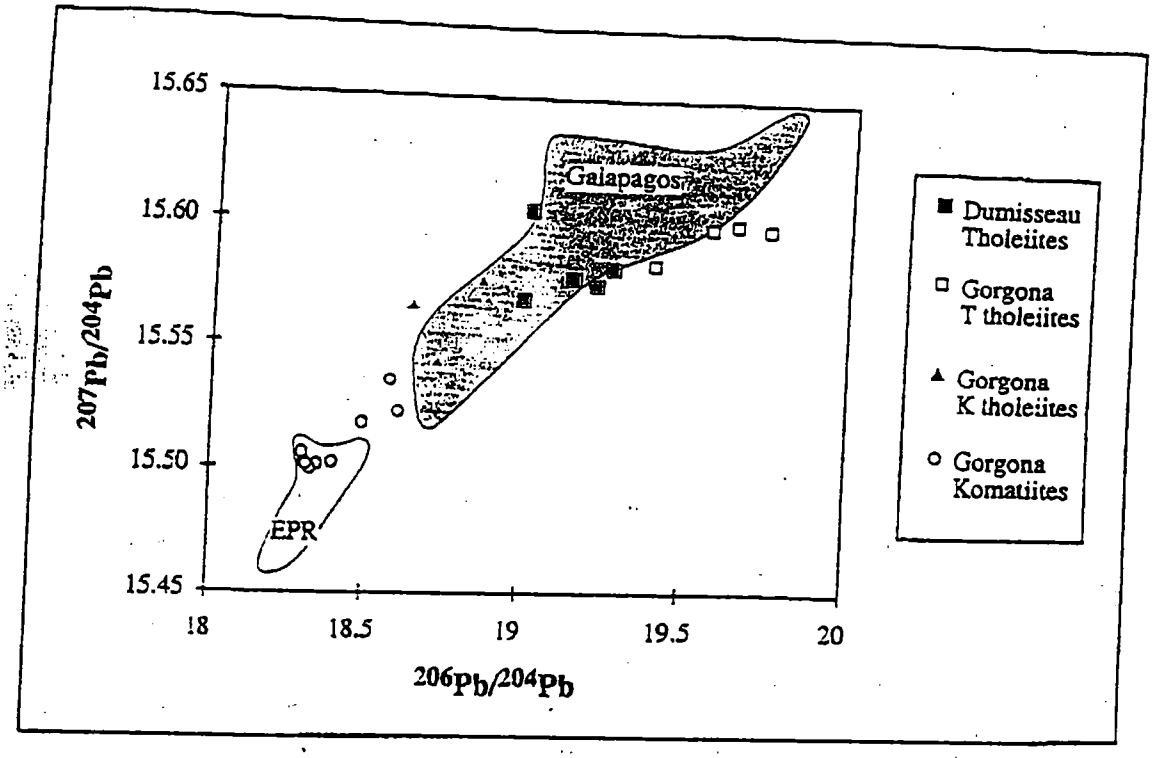
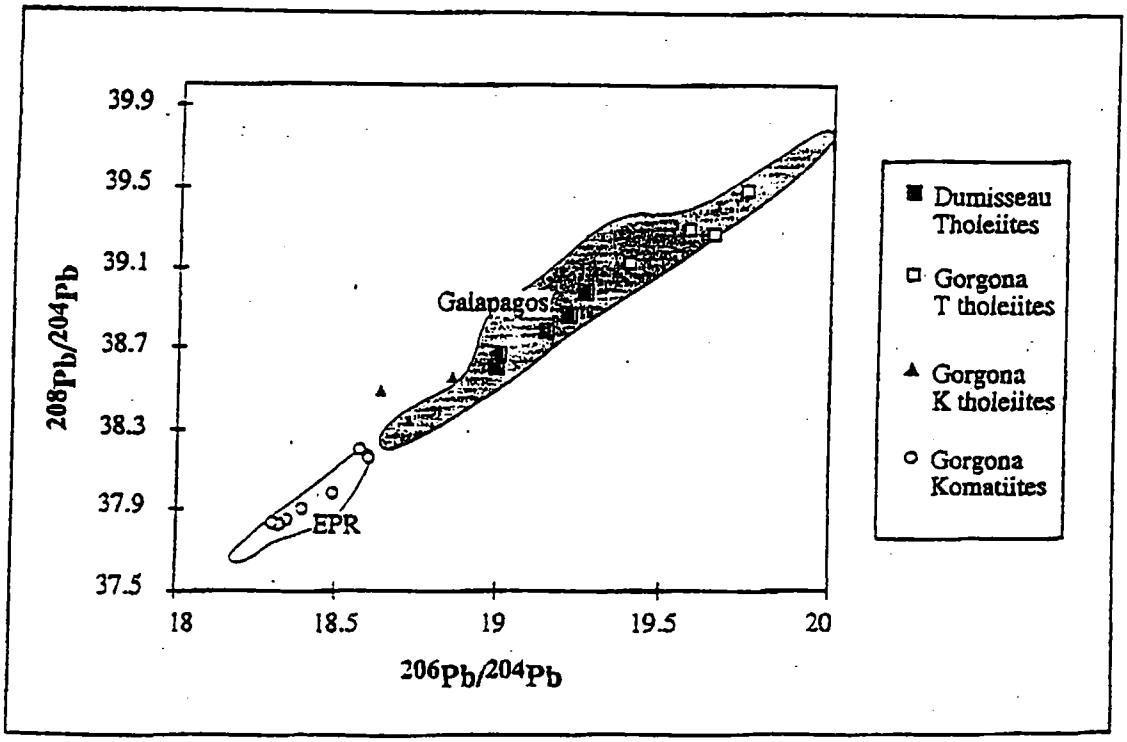

Caribbean Cretaceous
Basalt Province
HAITI
Central America
CURACAO
NICOYA
Pacific
Ocean
South America
GORGONA
20°
15°
10°
5°
90°
85°
80°
75°
70°
65°
60°

Figure 1


100
10
1
Rock/C1 Chondrite
La Ce Nd Sm Eu Gd Dy Er Yb Lu
Nauru Basin
Nicoya Peninsula
Gorgona T-tholeiites
W. Cordillera Colombia
Curacao
DSDP 146
CCBP Flat REE
Dumisseau Formation
DSDP 151 (Beata Ridge)
Gorgona Komatiites
Gorgona K-tholeiites
DSDP 152


15.65
15.60
15.55
15.50
15.45
18
18.5
19
19.5
20
$^{207}Pb/^{204}Pb$
$^{206}Pb/^{204}Pb$
Galapagos
EPR
Dumisseau Tholeiites
Gorgona T tholeiites
Gorgona K tholeiites
Gorgona Komatiites


39.9
39.5
39.1
38.7
38.3
37.9
37.5
18
18.5
19
19.5
20
$^{208}Pb/^{204}Pb$
$^{206}Pb/^{204}Pb$
Galapagos
EPR
Dumisseau Tholeiites
Gorgona T tholeiites
Gorgona K tholeiites
Gorgona Komatiites