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

MINUTES

Planning Committee (PCOM):

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

Liaisons:

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

Guests and Observers:

J. Baker - Joint Oceanographic Institutions, Inc.
L. Cathles - Cornell University
T. Crawford - University of Tasmania (Canada-Australia Consortium)
P. Dauphin - Oregon State University
P. Davies - Bureau of Mineral Resources (Australia)
E. Davis - Pacific Geoscience Centre (Canada)
E. Kappel - Joint Oceanographic Institutions, Inc.
S. McGregor - National Science Foundation

Panel Chairpersons:

M. Ball - U.S. Geological Survey, Denver (PPSP)
S. Humphris - Woods Hole Oceanographic Institution (LITHP)
R. Kidd - University College of Swansea (SSP)
T. Moore - University of Michigan (IHP)
E. Moores - University of California, Davis (TECP)
K. Moran - Geological Survey of Canada, Dartmouth (SMP)
N. Shackleton - Cambridge University (OHP)

C. Sparks - Institut Français du Pétrole (TEDCOM)
E. Suess - GEOMAR, Kiel (SGPP)
P. Worthington - BP Research Centre, Sunbury-on-Thames (DMP)

JOIDES Office:

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

SELECTED ACRONYMS AND ABBREVIATIONS

CSDP	Continental Scientific Drilling Program
DCS	Diamond Coring System
DPG	Detailed Planning Group
EEZ	Exclusive Economic Zone
EIS	Environmental Impact Statement
FSDN	Federation of Digital Seismic Networks
GSGP	Global Sedimentary Geology Program
IGBP	International Geosphere/Biosphere Program
ILP	International Lithosphere Program
IRIS	Incorporated Research Institutions for Seismology
JAMSTEC	Japan Marine Science and Technology Center
JAPEX	Japan Petroleum Exploration Company
JGOFS	Joint Global Ocean Flux Studies
KTB	Kontinental Tief Bohrpogramm
LANL	Los Alamos National Laboratory
LRP	Long Range Plan
MCS	Multi-Channel Seismic
MOU	Memorandum of Understanding
NADP	Nansen Arctic Drilling Program
OSN	Ocean Seismic Network
PEC	Performance Evaluation Committee
RIDGE, InterRIDGE	Ridge Inter-Disciplinary Global Experiments (US and international elements)
SNL	Sandia National Laboratory
SOE	Special Operating Expenditure
STA	Science and Technology Agency of Japan
USSAC	US Scientific Advisory Committee
USSSP	US Science Support Program
WCRP	World Climate Research Program
WG	Working Group
WOCE	World Ocean Circulation Experiment

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EXECUTIVE SUMMARY

PCOM Motions

PCOM approves the minutes for the 14-16 August 1990 PCOM meeting. (Page 6.)

PCOM adopts the agenda for the 28 November - 1 December 1990 PCOM meeting, with amendments. (Page 6.)

PCOM endorses the use of the Formation Microscanner (FMS) as a standard logging tool. (Page 21.)

With the present status of technology development, particularly DCS Phase II, it appears unlikely that an optimal science program can be undertaken both for Sedimented Ridges II and EPR Science I in FY 92. PCOM, therefore, moves that these programs be considered as a high priority for drilling at the earliest possible date commensurate with technology development and ship scheduling, assuming that the science remains a high priority of the relevant thematic panels(s). Since (at this time) the science at these areas is of extremely high priority in thematic panel and PCOM rankings, PCOM wishes to stress that technology development, particularly that of DCS Phase III, take place as expeditiously as possible. (Page 49.)

PCOM moves that, should a one-leg program of Cascadia margin drilling appear on the FY92 schedule, it should be that program submitted by the Cascadia margin Detailed Planning Group. (Page 51.)

PCOM moves that the JOIDES Resolution be scheduled to depart the Pacific Ocean approximately in mid-January 1993, thus allowing for 8 legs of drilling after the September 1990 port call at the conclusion of Leg 139. Thus the program is:

Leg 140	504B or Hess Deep	
Leg 141	Chile Triple Junction	
Leg 142	Engineering 4, EPR	
Leg 143	Atolls and Guyots	
Leg 144	Atolls and Guyots	
Leg 145	North Pacific Transect	
Leg 146	Cascadia Accretion	
Leg 147	Hess Deep or EPR	(Page 53.)

In the event that time is left following the attempt to clear and drill Hole 504B, these contingencies will be followed: 1) full logging program, 2) begin Leg 138 drilling. If the remaining time is too limited to begin reasonably Leg 138 drilling, then HPC/APC coring for hydrogeochemistry should be conducted in high-heat flow areas near 504B. (Page 54.)

PCOM establishes an Atolls and Guyots Detailed Planning Group (AG-DPG) to be charged to construct a two-leg drilling plan that includes the priority 1 and 2 targets of proposal

203/E(Rev) (approximately 38.4 days) and additional targets of proposals 203/E(Rev) and 202/E(Rev), selected so as to create a maximized, balanced scientific return from the range of objectives of these proposals. The DPG will also take into account thematic panel priorities. (Page 61.)

PCOM moves that nominees for panels, WGs and DPGs, selected by PCOM, be approached to serve. (Page 62.)

PCOM moves that JOIDES allow and advertise the possibility of including short, one to four days proposals along the general ship track. Proposals will be reviewed by the thematic panels, SSP and PPSP for PCOM's decision. (Page 64.)

PCOM will consider scheduling up to 10 days of *ad hoc* drilling during legs 141 to 147. (Page 65.)

PCOM endorses the recommendation of the Ocean History Panel that whole-round sampling for organic geochemistry (OG) be discontinued, and that frozen 30-cm whole-round core sections presently in the repositories stored as OG samples, be returned to the regular collection. (Page 65.)

PCOM Consensuses

PCOM endorses the use of the index properties manual *Recommend Methods for the Discrete Measurement of Index Properties on the JOIDES Resolution: Water Content, Bulk Density and Grain Density* aboard ship. PCOM also endorses the core-log integration plan developed jointly by SMP and DMP. Those panels will develop an implementation strategy. (Page 22.)

PCOM endorses the purchase of a second Rock Eval prior to Leg 139. (Page 23.)

PCOM endorses adherence to the guideline specifying preparation of safety packages prior to PPSP review. (Page 23.)

PCOM expects ODP-TAMU to maintain publication a continuing priority in FY91. PCOM will not, however, endorse a specific manuscript coordinator *per se*. (Page 25.)

PCOM generally endorses the PANCHM recommendations (Appendix 8) for the submission and review of "add-on" proposals. (Page 65.)

JOIDES PCOM
Wednesday, 28 November 1990

868 WELCOME AND INTRODUCTION

PCOM Chairperson J. Austin called the 1990 Annual Meeting of the JOIDES Planning Committee to order. R. Moberly welcomed the attendants to Hawaii and explained the logistics, including a luau hosted by the University of Hawaii and JOI, Inc. He thanked Allison Burns of JOI, Inc. for her assistance. Austin then called for introductions around the table.

869 APPROVAL OF MINUTES, 14-16 AUGUST 1990 SCRIPPS PCOM MEETING

Austin called for comments, corrections and approval of the minutes of the 14-16 August 1990 PCOM Meeting held at the University of California, San Diego, Scripps Institution of Oceanography. The minutes included modifications through November 15, 1990. There were no further corrections to the revised draft minutes.

PCOM Motion

PCOM approves the minutes for the 14-16 August 1990 PCOM meeting.
Motion Moberly, second Leinen Vote: for 15; against 0; abstain 0; absent 1

870 APPROVAL OF AGENDA

Austin stated that the main purposes of the meeting were to hear the reports of panel chairs, to improve communication among various parts of the scientific ocean drilling community, and to define and approve the Fiscal Year 1992 (FY92) Program Plan. He summarized the agenda and noted that the discussion of alternate drilling strategies for Leg 137 would be moved up on the Saturday December 1 schedule to accommodate the early departure time of Becker, sole chief scientist of that leg. He then called for adoption of the modified agenda.

PCOM Motion

PCOM adopts the agenda for the 28 November - 1 December 1990 PCOM meeting, with amendments.
Motion Cita-Seroni, second Natland Vote: for 15; against 0; abstain 0; absent 1

871 ODP REPORTS BY LIAISONS TO PCOM

EXCOM

Austin reported on the results of the EXCOM meeting held on 2-4 October in Villefranche-sur-Mer. He noted that Moberly was also present as that meeting marked the occasion of the change of JOIDES Office duties from the University of Hawaii School of Ocean and Earth Science and Technology to The University of Texas at Austin, Institute for Geophysics.

At the time of the EXCOM meeting, participation of the USSR in ODP had not yet been approved by the U.S., but such approval was expected in the near future. EXCOM passed a motion reaffirming its desire to have the USSR admitted as a member in ODP and requesting that, provided an invitation to membership was extended to the USSR, that USSR observers to future PCOM and EXCOM meetings be identified and accommodated (see PCOM Agenda Notes, p. 007, for exact wording.) An official invitation to the USSR was extended on 31

October 1990 by Allan Bromley, Science Advisor to the President of the United States (see pertinent correspondence attached to the PCOM Agenda Book). Austin asked Malfait, NSF liaison to PCOM, for an update.

Malfait replied that he had no new information. (The USSR accepted NSF's invitation on 29 December 1990, following the PCOM Annual Meeting.) He noted that the wording of the EXCOM motion was inaccurate since it referred to the reestablishment of USSR membership. The USSR has never been a member of ODP, though it had been a member of DSDP/IPOD. Austin said that the USSR may become a full member as soon as early 1991. He added that observers at EXCOM and PCOM will be guests, and will not be able to vote until a MOU has been signed with the USSR. In response to a question from von Rad, Austin said that the observers had not yet been invited.

Austin then reported on the response of EXCOM to STRATCOM recommendations. EXCOM applauded the activities of STRATCOM and in general took a more active role in addressing renewal. EXCOM discussed the issue of flexibility and passed a motion (PCOM Agenda Notes, p. 008) which gives PCOM and the advisory structure marching orders to do "exciting" science. EXCOM was also sympathetic to further focussing of ODP and to six major themes identified by STRATCOM (see EXCOM consensus on the Long Range Plan (LRP), PCOM Agenda Notes, p. 009.)

Malfait asked if EXCOM did not think that the work of ODP was exciting. Moberly responded that while PCOM had always felt that the science was exciting, EXCOM wanted it to be exciting to the general public and to scientists outside the sphere of ocean drilling. Austin added that some EXCOM members feared that renewal would be in jeopardy if no action was taken along these lines, and that PCOM would return to these topics later. Responding to a question from Duncan, Francis said that there would be four EXCOM members on Leg 136 (Oahu OSN pilot hole).

NSF

Malfait began his report by commenting on the "fascinating" beginning to FY91 caused by the chaotic situation created by the prolonged US federal government deficit reduction negotiations. Grants received only half of their funding during this period, a situation that is particularly serious since NSF spends 50-60% of its money in the first 4-5 months of each FY. Some programs were cut. The ODP funding increment remained intact, however, and Malfait acknowledged the contribution of McGregor, of NSF's Division of Grants and Contracts, in this accomplishment.

The FY91 budget of NSF was increased by 12%, compared to the 16% requested (see handout 1 distributed at the PCOM meeting.) The Ocean Sciences budget will probably be increased by 12%, with most of the increase going to the global change initiative. ODP will probably receive its requested budget increase of 9%. Any additional increment to cover increased fuel costs will come from an increase in the NSF contribution; the contributions of the international partners will remain constant for FY91. NSF/ODP field programs are listed in the handout. The Vema Transform and Kane Transform studies may be rescheduled from 1991 to 1992.

The invitation to the USSR to join ODP had been sent through their embassy in Washington. No response has been received and Malfait noted the need to check on progress. On behalf of

NSF, Malfait thanked Bromley, US Science Advisor to the President, and ODP's international partners who have maintained pressure to admit the USSR.

Regarding renewal, Malfait said that NSF foresees a 10 year program. The first 5 years (1994-1998) involve use of the *JOIDES Resolution* along with continuing technology development. Alternative or additional platforms will be considered for use post-1998. Three factors suggest the need to consider future directions during the first 5 years: 1) lack of a guarantee that the SEDCO contract can be extended beyond 1998, 2) the proposed Soviet drillship, and 3) the proposed Japanese drillship.

Dr. C.Massey has been nominated as new NSF director but will not take over until February-March 1991. The National Academy of Sciences (NAS) will review the LRP and NSF will review plans, budgets and contracts in late 1991 to early 1992. The review of USSAC's program plan for 1991-1993 is going well. Its review by the National Science Board (NSB) will occur in February 1991.

Discussion

Malpas asked if NSF had considered small increases to international partner contributions prior to renewal to avoid a big jump in contributions at renewal time, which could adversely affect renewal. Malfait replied that NSF does not envisage a major increase being necessary in 1993. NSF has discussed increases with international partners since the beginning of ODP. Partners accept that their contributions will have to increase but there has been no agreement on scheduling. Moberly commented that some EXCOM members had said that renewal would be easy if there was no step increase, but they had expressed concern that a step increase was on the way. Malfait reiterated that, based on the LRP, NSF does not expect that a large increase will be necessary.

Jarrard asked whether renewal could be for 5 instead of 10 years. Malfait answered that some partners prefer a 5-year renewal. He noted that even if the decision to terminate was made now, it would take 3-4 years to phase out ODP, and added that it may not be possible to extend the SEDCO contract beyond 5 years. Malpas asked whether NSF would be funding only Atlantic field programs in 1992. In response, Malfait said that the ODP-related field areas would be set by the 4-year plan and funding would be based on the resulting focus. NSF was now, however, open to field programs in any ocean. Leinen said that if the review of the LRP is delayed until the new NSF director takes over, the result will not be available until the end of 1991, leaving insufficient time to respond to recommendations. Malfait said that he was not sure that NSF would wait for the new director before initiating the review. Leinen asked that this concern over the timing of the review be conveyed to the NAS.

In response to a question from Austin regarding the effect on operations of a possible large increase in fuel prices, Malfait said that fuel prices have been stable for a month or two and there are no problems at present and none are foreseen if fuel costs remain stable. Austin asked if SOE expenses would be reduced and the money used for fuel, to which Malfait replied that there is a possibility of additional funds becoming available. Austin then asked when TAMU would approach SEDCO about renewal of their contract. Francis answered that there had already been some discussions and that SEDCO is sympathetic to renewal. Malfait noted that ODP has the option, at its own discretion, of renewal of the *JOIDES Resolution* contract until 1998.

JOI, INC.

Pyle began by relating that, at the October 1990 EXCOM meeting, he had made a number of suggestions, most importantly: 1) to adopt a surcharge on partner contributions, perhaps linked to technology development or fuel price increases, to avoid a large increase at renewal, and 2) to accept contributions in currencies other than dollars. No action was taken by EXCOM. Austin noted that EXCOM felt that an invitation would be extended to the USSR and that NSF felt that the resulting additional contribution would cushion the fuel price increase.

Pyle commented on the need to resolve FY90 budget overruns by LDGO and the Hawaii JOIDES Office. At the same time, TAMU and JOI, Inc. had under-spent.

In FY91, any USSR contribution would only be partial, for perhaps half a year. Set against this potential increase in funds are increasing fuel costs, which were double the budgeted amount at the Townsville port call. If the Producer Price Index (PPI) does not increase, there may be some money available to cover fuel costs. (The day rate for the drillship is tied to the PPI.) The cost of the DCS must be examined, it has proved to be a "money sink". Its status will be reviewed in December and Austin and perhaps others will be asked to attend. In response to a question from Sparks, Francis said that the DCS has cost $3-4 million to date, exclusive of ship time. Pyle continued by pointing out that while there is a desire to avoid costly development work on high-temperature logging tools, no suitable off-the-shelf tools exist. JOI, Inc. will appoint the third Performance Evaluation Committee (PEC-3) from a list of names decided upon by EXCOM. This review is required by NSF every 2 years.

Regarding FY92, Pyle stated that this would be the last 1-year program plan before the MOUs come up for renegotiation and renewal. JOI, Inc. will also coordinate reviews of both the LRP and Program Plan (largely a NSF function). FY92 will also bring further fuel cost uncertainty.

Since there are no off-the-shelf, slimline, high temperature tools which work completely, and given the NSF-incremented budget of $300,000 Pyle outlined the FY91 plan for high temperature logging and sampling. For temperature logging, the JAPEX tool (measuring temperature, pressure and flow) will be rented ($90,000-$100,000). This tool will not, however, be available until April 1991. As a back-up, the French tool (temperature only) will be built ($35,000-?). For water sampling, the Los Alamos National Laboratory (LANL) tool will be borrowed, though it is known to leak ($60,000). The Sandia National Laboratory (SNL) tool(s) will be developed on a proposed cost-sharing basis with KTB. Pyle noted that, in spite of these plans, ODP is going to be forced to develop something internally. He went on to address the issue of modeling and consulting. There may be a need for scientific advice. Discussions with R. von Herzen and J. Cann may lead to their use as consultants ($70,000). They would provide advice on what to expect on a site-by-site basis. C. Lister may also be available to carry out modeling (cost unknown).

Pyle then discussed liaisons with other earth science initiatives. Pyle said that 2 proposals for use of the Oahu OSN hole have been turned down by NSF. An *ad hoc* JOI, Inc./IRIS group has been asked to assist with planning/coordination problems. Nominations for members of a liaison group with Inter-Ridge are being sent by J. Delaney. PCOM should think about its members. There has been agreement on liaison by Zoback, co-chair of the International Lithosphere Program (ILP)/Coordinating Committee on Continental Drilling. Some names have been suggested and PCOM should consider nominations before the next PCOM meeting. A brochure on the Nansen Arctic Drilling Program (NADP) has been produced by JOI, Inc.; copies were distributed. There have been no responses regarding liaison from the Joint Global

Ocean Flux Studies (JGOFS) or PAGES. Leinen said that the JGOFS steering committee was to meet in late November 1990 and that this matter is on their agenda. Shackleton said that PAGES had postponed a meeting and Pyle added that PAGES is not yet sufficiently organized to permit formal liaison. Shackleton asked if PCOM ensured that the liaisons would include proper representation by thematic panels. Austin replied that the liaison would be from an interested/appropriate panel.

Pyle reminded panel chairs to talk to the PCOM Chairperson before making plans for *ad hoc* workshops and panel commitments. JOI, Inc. can only approve such plans upon Austin's recommendation. Kappel noted that travel funds for US personnel are from USSSP. Pyle completed his report by highlighting a special issue of *Scientific Drilling*, a new journal published by Springer-Verlag. It may provide an opportunity to publicize ODP. Austin said that PCOM would return to the issue of publications to advertise ODP later in the meeting.

Discussion

In response to a question from Cowan on the significance of the rejection of the seismometer (Leg 136) proposals, Pyle said that the proposals will probably be re-submitted, but that the nature and duration of the test must be better defined. Austin said that it was originally felt that there would be no guarantee of funding for the project until the hole existed. Pyle and Malfait agreed that the hole should be drilled first. Cowan asked what had happened since PEC-2. Pyle said that the major change had been from regional to thematic panels, and the development of inter-program liaison groups. There has been little progress on thematic publications, however. Kappel commented that individuals, but not ODP, have proposed thematic workshops to USSAC, and Pyle added that there had been no requests for the money JOI, Inc. set aside for this purpose. Austin said that TAMU has a list of publications on scientific ocean drilling and that it contains a large number of papers. He said that a version of the list would be available at the next PCOM meeting.

Worthington said that the question of high-temperature tools is the greatest problem facing DMP. If the DCS cannot be made to function, such tools may not be needed. In addition, the temperatures that will be encountered are unknown. In response to a question from Malfait, Francis said that he thought ODP would be able to accomplish whatever was requested by JGOFS for Leg 138, and Leinen commented that the co-chiefs were enthusiastic about this nutrient work. Pyle, responding to von Rad, said that PEC-3 would probably meet in January 1991.

SCIENCE OPERATOR

Francis said that Leg 133 had broken records across the board (Appendix 1). In addition the vibro-percussive corer (VPC) was tested. The greater core recovery will increase future costs of storage and publication. There was concern during the leg that the ship would run out of liner! Less than a week before the end of the leg ODP-TAMU learned that there was no fuel in Townsville and that the ship would have to go to Cairns. ODP-TAMU then discovered that there was no fuel in Cairns. The ship ultimately went to Townsville, and fuel became available in Gladstone. The Townsville port call lasted 3.5 days and went well. After refuelling in Gladstone, the ship began Leg 134 just 24 hours behind schedule and made up half a day in transit. The cost of fuel was $435/ton, compared to the budgeted amount of $200 per ton. ODP-TAMU has already overspent its FY90 budget for fuel by $300,000.

On Leg 134 (Vanuatu), poor hole conditions prevented target depths being reached at two sites (DEZ-2 and DEZ-4). At DEZ-1, basement of volcanic breccia and altered basalt was reached. At DEZ-5 and IAB-1, the target depths have been exceeded. While drilling at DEZ-4, *JOIDES Resolution* was visited by officials from Vanuatu and was required to clear customs, even though the ship was only within Vanuatu's EEZ.

Regarding upcoming legs (PCOM Agenda Book, p. 004), Francis reported that clearance for Leg 135 (Lau Basin) had been obtained from Fiji but is still needed for Tonga. Scientists from both of these parties will be on Leg 135 and a request from Tonga for an additional scientist has been approved. Cost of fuel in Fiji is expected to be about $400/ton. Leg 135 ends with a long transit to Honolulu, dropping the scientific party off at Pago Pago on February 17 1991. The scientific party for Leg 136 (OSN-1) includes members of EXCOM; staffing of the leg is almost complete. Becker will be the sole chief scientist on Leg 137 (Engineering 3A at 504B) with a scientific party of about 8. Staffing of the leg is complete. There will be no boat link to the Galapagos Islands or Ecuador. A port call in Costa Rica was considered but the correct fuel type was not available and Leg 137 will still end in Panama. In response to questions from Natland and Mutter, Francis said that the *JOIDES Resolution* requires low sulphur fuel and that fuel costs in Panama were as yet unknown.

Staffing of Leg 138 (Eastern Equatorial Pacific) is almost complete. Responding to a question from Shackleton, Francis said that from Leg 138 on, places are being held open for 2 scientists/leg from the USSR. This will increase the scientific party on each leg by 4, since the present policy is to balance numbers of US and international scientists. Malfait said that when the USSR joins, the problem of the scientific party being too large will have to be addressed and Austin added that PCOM may have to consider a limit on party size. Francis continued, stating that 2 sites on Leg 138 require clearance, one from Ecuador and the other from France. Coring will be heavy and involve triple APC coverage.

Kidd returned the discussion to the topic of scientific party size, which he said was getting out of control. The US vs. international parity should be considered over an entire year, not for each leg. Francis answered that that was indeed the policy but that size will, on average, increase. Cita-Seroni stressed the importance of allowing non-US scientists access to every cruise. She suggested that each non-US partner should continue to be entitled to 2 places per leg and that total scientific party numbers be reduced by reducing the US staffing allowance below the present 50%. Francis noted, however, that the US pays more than 50% of the budget. Austin said that PCOM would return to the question of staffing later in the meeting.

Francis continued his report stating that PPSP has set up a subcommittee to consider safety associated with hydrothermal drilling on Leg 139 (Sedimented Ridges I). Malpas noted that Canada requires an environmental impact statement (EIS, soon to be available) to address: 1) H_2S concerns (Canada will insist on an H_2S expert aboard the ship), and 2) placement of re-entry cone(s) where damage to the biota will be minimal. If these conditions are met, Canada will issue clearance. Austin commented that these points had been considered by PPSP for some time and will form part of their revised guidelines, to be published in 1991. PCOM will also need to know if safety considerations might increase leg length which will also be considered further later in the meeting.

Francis went on to discuss publications. FY90 has been a period of catching up with the publication schedule. More pages were published during FY90 than in the previous 4 years (Appendix 1). The post-cruise delay in publication of Initial Reports was reduced to 12 months from 20, and that of the Scientific Reports was reduced to 3 years from 4 (Appendix 1). Some

FY90 publications will be paid for with FY91 funds because of routine delays in invoicing and payment. Initial Reports volumes are increasing in length (Appendix 1) owing to greater core recovery and the presence of Macintosh computers aboard ship, resulting in more figures/chapter. The result is increasing production costs. The FY91 publication schedule assumes a budget that is not reduced because of increased fuel costs. Even so, ODP-TAMU has funds to produce only 6 volumes. The capacity of ODP-TAMU is 14 volumes/year but funds to pay outside contractors are limited. Responding to questions from Kidd, Francis said that some volumes, otherwise ready for publication, will be shelved, though if money were made available they could be published. Moore noted that there was no trend in the size of the Scientific Results volumes. Replying to Shackleton's comment that concern would be generated if deadlines for submission to volumes were changed, Francis said that ODP-TAMU would try to avoid such changes. Von Rad and Moore noted morale problems would result if publication is delayed after scientific parties have been pushed to meet deadlines. Austin added that it is also a renewal issue as it would not be beneficial if publication slips behind schedule near renewal time after the big effort to catch up. Francis said that it will cost an additional $500,000 to publish all available volumes in FY91.

Francis displayed a pie chart of the ODP science operator FY91 program plan budget to place the cost of fuel in context (Appendix 1). Fuel amounts to 5.5% of the total, and the budgeted figure of $1.9 million assumes a requirement of 9500 tonnes over the year at $200/tonne. The price in Guam in August 1990 was $180/tonne, that in Townsville $435/tonne and the projected price in Fiji $415/tonne. This would leave ODP-TAMU $600,000 over budget. Over the whole of FY91, the shortfall could be $2.2 million. Consequently, ODP-TAMU has frozen all Special Operating Expenditures (SOE) for Diamond Coring System (DCS) drilling, publications and drilling supplies. Francis said that he was, therefore, pleased to hear that NSF will be able to find extra money. Austin asked Malfait about the amount of money being considered by NSF. Malfait replied that there are several options, that NSF was moving quickly to resolve the problem and that no problems are anticipated. Francis stressed the importance of moving quickly as ODP-TAMU cannot commit money to the DCS. A decision on funding is required by mid-December if the DCS is to be used on Leg 140. If its use is allowed to slide to Leg 141 (this option would be preferable because the SEDCO crew with experience of DCS drilling would be aboard) it would only push the decision point back by one month to mid-January. Replying to questions from Becker and Natland, Francis said that ODP-TAMU had suspended all preparations for DCS drilling on Leg 140 and that there were insufficient funds for expensive items, such as a H_2S expert, on Leg 139. Austin made the point that this impacts FY92, in addition to FY91, planning. Francis said that planning will have to go ahead under the assumption that the money will be provided.

WIRELINE LOGGING SERVICES

Jarrard first summarized recent technological developments (Appendix 2). The feasibility of logging in conjunction with the DCS was tested on Leg 132 and the result was unsuccessful. Leg 133 included 3 technology developments. 1) The Wireline Packer proved unsuccessful. ODP-LDGO is considering the costs in money and time required to develop an operational Wireline Packer and will report to DMP and PCOM at their next meetings. 2) Core imaging for link to FMS, involving high-resolution resistivity imaging of cores as a link between cores and FMS logs. In response to a question from Moore, Jarrard said that the high-resolution core imaging is carried out on split cores. 3) The Sidewall Entry Sub (SES) was an important development (by ODP-TAMU) used at one hole (823C) to 1000 mbsf. The hole could not have been logged without the SES, which worked well with only minor bugs. Little additional work is required. The SES allows faster logging in a wider range of holes. Leg 134 will incorporate a Vax station for shipboard FMS processing, communication between the shipboard, ODP-

LDGO and ODP-TAMU computers, and the German digital slimhole televiewer (already run successfully in 2 holes). The usefulness of the French magnetometer/susceptibility tool to ODP will also be evaluated. The susceptibility tool has proved successful but data from the magnetometer will require substantial reprocessing in order to obtain reversal stratigraphy.To date on Leg 134, 3 sites have been successfully logged. Hole caving has caused problems in the bottom 100 m of the holes.

Jarrard summarized logging on Leg 133. Drilling followed an east-west and a north-south transect. Logging was successful at almost every hole where it was attempted. The 12 sites and 5100m logged are approximately equal to the total for the preceding 4 legs combined. Because of the number of sites logged, all 3 strings were not always used. Some sites were logged in great detail so that nearby sites did not require as many runs. The lithology comprised carbonates at most holes. Features of several logging runs are interpreted as being related to sea-level variations (Appendix 2). On the Marion and Queensland plateaus, sawtooth patterns of upward-decreasing porosity (increasing diagenesis), terminated by abrupt increases in porosity (change to uncemented sediment), are thought to relate to cycles of subaerial exposure. Off the Great Barrier Reef, clay/carbonate cycles were observed. Inter-site correlations and ties of logging results to seismic profiles will be particularly important in the sequence stratigraphic interpretation of onlap/offlap patterns. Ties between sites yield differential sediment accumulation rates which can be removed, allowing comparison of lithological variations along transects. The assumption that seismic reflections are chronostratigraphic horizons will be tested. Sedimentary facies and dip variations will also be interpreted as sea-level patterns. Such patterns are particularly clear on geochemical logs when two components, for example clay and carbonate, are present (Appendix 2).

Natland asked about the Motor-Driven Core Barrel (MDCB) and Francis answered that it had been used on Leg 134 and had worked well. It is still under development but looks much more promising than the old Navidrill.

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PPSP

The 1990 activities of PPSP are summarized in Appendix 3. Ball pointed out some areas of concern, one of which was the short lead time of proposals reaching both PPSP and SSP. Ball recommended that guidelines for proposal preparation be distributed and that a proposal length limit be set to ease the workload on PPSP. Regarding proposed "add-on" science, Ball said that the preference of PPSP would be for expansions of logging or drilling at previously-reviewed sites. The main concern at sedimented ridges drilling sites is with H_2S and a subcommittee has been established to develop procedures to deal with these hazards. Finally, there is to be a change in the policy for drilling clathrates. Penetration of the reflector giving rise to the BSR will no longer be prohibited; consideration will be given on a site-by-site basis.

Discussion

Von Rad said that SGPP had suggested a working group (WG) on BSRs, involving members of SGPP and PPSP. Suess added that French discoveries of H_2S gas hydrates have wider bearing than sedimented ridges and may justify a WG. Responding to Austin, Ball said that the update on safety guidelines for clathrate drilling will not be completed until after April 1991. Information may have to be passed to Canada prior to this to assist its preparation of the EIS

for sedimented ridges and Cascadia drilling. Malpas said that Canada will need 9 months lead time to complete its study and issue clearance. Moberly noted that the earliest that either leg could be drilled is November 1991, and Ball responded that the timing of the approval process should not, therefore, be a problem. In response to a question from Natland, Ball said that the revised safety guidelines would be published in a special issue of the *JOIDES Journal*. Austin reiterated that the guidelines would also have to be disseminated early to, for example, Canada. Ball commented that safety guidelines often do not reach chief scientists.(Note added in revision: Francis has stated that ODP-TAMU routinely sends safety guidelines to Co-Chiefs when they accept the invitation to sail. The guidelines form part of a large package of information.) Austin said that Kidd would touch on a related matter addressed in the Panel Chairperson's Meeting. Responding to von Rad, Ball said that PPSP had not discussed the possible Santa Barbara Basin "add-on".

Austin summarized PCOM action items from the meeting so far. Kidd said that SSP would be interested in the proposed SGPP/PPSP WG on BSRs. Austin said that it could be an *ad hoc* group. Von Rad asked PCOM to consider increasing the time allowed for international partners to reply to RFPs from the present 3 weeks to 4-6 weeks. Austin said that PCOM may decide to make a statement on the minimum time necessary for such response.

DMP

DMP 1990 activities are summarized in Appendix 4. Worthington noted that the Wireline Packer has not been successful and represents a very ambitious goal. There is still no information on when high-temperature logging capability will be required. Shipboard integration of core and log data is well underway; this has never been tried by the oil industry. In this context, Jarrard noted that not all holes will be suitable for obtaining Milankovitch cyclicity with the sediment magnetometer. Worthington said that the time has come to publish guidelines for third-party tools in the *JOIDES Journal*.

Commenting on the specific recommendations of DMP (Appendix 4), Worthington said that the FMS is now well-proven and should become a standard tool. Regarding causes for concern, the WG on Nankai-type hole instability should precede the next DMP meeting. The issue of high-temperature logging may arise at short notice and, together with problems associated with the wireline packer, may require meetings outside the normal panel schedule. The system needs the flexibility to allow such meetings and DMP would like PCOM to address the issue. DMP is under great pressure at its meetings and, while a proliferation of meetings is to be avoided, some extra meetings involving only interested parties would be helpful.

Shackleton commented that the correlation of core and log data is a major achievement and should be highlighted more than the sediment magnetometer, which will not yield useful results in most holes; knowing the depth of the core in the hole is vital. Austin said that the issue of whether to sail with additional DCS expertise (Appendix 4) is important but will be deferred until more is known about the status of, and outlook for, continued DCS development and deployment(s).

SMP

Appendix 5 outlines the SMP report. Moran highlighted the problem of consistency in density measurements. The index property manual has been under review since June and PCOM should decide on its application. A workshop on physical properties measurement would be

beneficial. Improved resistivity measurements are needed. The Rock Eval can be down for whole legs and PCOM should decide on the purchase of a back-up instrument. It is an important safety concern. Moran also requested PCOM action on the computerization of the micropaleontology lab. There is a need to study high-speed streamers to improve the collection of underway geophysical data at steaming speeds. The XRF is often down and the electronics technicians are not trained in its repair. Moran requested that the ESF representative put pressure on the European manufacturer of the XRF to train ODP technicians.

SMP defined user requirements for core-log data integration (Appendix 5 and SMP minutes). Core nominal depths should be corrected using the Sonic Core Monitor (SCM) and log data to give reference depth. Shipboard data acquisition must be improved, including natural gamma, magnetic susceptibility and resistivity data and a core logging data specialist should be present on each leg for data processing. Finally, the data must be made generally available. SMP seeks PCOM endorsement of these requirements and a plan to set up a WG on core log integration.

The ratio of technical to scientific staff aboard ship has decreased, while the amount of technical equipment has increased. SMP would like 4 extra technicians/leg or cuts in shipboard measurements may prove necessary. Responding to Austin, Moran said SMP had not discussed what might be cut. She also requested that technical staff be assigned to one lab for at least 6 legs. The latest (Fall 1990) SMP minutes (p. 1) contain a list of suggested equipment priorities.

Discussion

Kidd, referring to another SMP suggestion that graduate students be involved in technical support, asked if they would be tied to a particular lab. Moran replied that this was the intent. In response to a question from Leinen, Moran replied that students could handle those tasks, such as core splitting, that require little training. Moore asked for more information about the SCM. Francis said that it had been partially successful and that he would be providing further information in his engineering report. Natland asked if there were any plans to remedy the inability to measure pore water samples, now that there is no longer a CHN analyzer aboard the ship. Moran replied that the problem was under consideration but that there would be no capability on Leg 135.

Austin raised the issue of the number of scientific and technical staff aboard *JOIDES Resolution*. Davies noted that Leg 133 carried 29 scientists and a full technical staff and that there were 2 spare bunks. Austin said that 8 additional personnel had been suggested, 4 technicians and 4 scientists following full participation by the USSR. He commented that more work will no doubt be found for them to do, leading to future requests for for even more staff. Shackleton asked about the possibility of other countries providing technical support for less-skilled tasks. Moran replied that this had been suggested. Lancelot suggested that trained technicians from labs other than ODP-TAMU should also be invited. In this case, the technicians could count as members of the scientific party. This approach would not add to the FTEs at ODP-TAMU. Kappel noted that such technicians will need travel funds and salary, which would involve USSAC. Francis said that he was surprised by how few nationals of the international participating countries work at College Station. Leinen said that the ideas presented may be a way to include graduate students without their having to compete for the same berths as established scientists, a practise that has been criticized. Austin said that PCOM should make a statement about the size of the shipboard party and that some action items be considered following the panel reports.

SSP

The SSP annual report is summarized in Appendix 6. Kidd emphasized that, in terms of the existing SSP mandate, regional seismic data are needed in support of proposed Hess Deep drilling and PCOM action is required. He made the general comment that visits by proponents to the Data Bank should be funded by proponents. PCOM should encourage proponents to begin filing data for Atlantic proposals with the Data Bank. Austin responded to this and a suggestion from Moberly by saying that proponents have until approximately January 15 1991 to rework proposals. If no revisions have been received by the JOIDES Office by that date, Austin will inform all proponents that they must begin sending data to the Data Bank. Leinen asked when all data should be in the Data Bank. Moberly noted that PPSP will not review sites until all data have been filed. Kidd added that existing guidelines for proposals contain a flow chart indicating that all data should be at the Data Bank at least 6 months before safety review. It would therefore be sufficient to receive all seismic data when proposal revisions are received by the JOIDES Office. Kidd concluded his report with a list of other causes for concern (Appendix 6).

Discussion

Natland referred to the discussion of the Hess Deep program in the latest SSP minutes (July 1990 meeting). SSP considers that MCS data are necessary prior to Hess Deep drilling. A proposal for such work was under review at NSF and Natland was disturbed by what appeared to be almost an endorsement of this proposal prior to its review by NSF. Natland said that there should be no perception of endorsement of a proposal by ODP before its review by NSF and that he was also concerned about the potential for a breach of confidentiality. Austin added that SSP must be cautious about disseminating information on a proposal that is also before a funding agency. Kidd said that SSP had been cautious and did not wish to endorse the proposal. SSP needs to have access to all available data and the presentation on the proposal had been useful. In any event, SSP wanted a more comprehensive seismic grid than was proposed.

Taira suggested that ODP-TAMU investigate technological innovations to handle strong currents to avoid problems such as those encountered at Nankai (Leg 131). Oceanographic problems should be discussed. Kidd said that oceanographic problems are discussed at pre-cruise meetings. Early in ODP graduate students at ODP-TAMU performed oceanographic site reviews.

Moberly, referring to SSP cause for concern (Appendix 6) regarding the terms of reference for service panels, which state that ".....service panels.....are not directly involved with the selection of drilling targets.....or definition of cruise objectives," noted that EXCOM rewrote the SSP mandate and advised the wording to avoid situations in which SSP might dictate locations of drilling sites. Austin agreed.

TEDCOM

Sparks began his presentation by noting that 1990 had been a very satisfactory year at TEDCOM. Direct contact between TEDCOM and members of the thematic panels occurred for the first time. Activities during the year comprised two TEDCOM meetings, a Deep Drilling Working Group (DD-WG), and attendance of a TEDCOM member at the March LITHP/TECP meeting.

Dr. Khakhaev and Dr. Gamsakhurdia of the USSR attended the September TEDCOM meeting and DD-WG. They were very positive participants and answered questions from the ODP-TAMU engineers.

Presentations on ultra-deep land drilling in the USSR, Sweden and FRG were given to the DD-WG. The USSR is able to use turbines and aluminum drill strings since temperatures at the Kola Peninsula sites do not exceed 200 °C at 12 km. The KTB (FRG) pilot hole was drilled to 4 km with continuous, diamond coring using a high-speed top drive. A 10 km, ultra-deep hole has been spudded and will be discontinuously cored using downhole motors. Swedish drilling has reached 7 km using roller-cone bits. The primary message received was that there are many different techniques and the choice between them may be subjective; no general rules could be deduced. Problems encountered in each case were similar, in particular: 1) breakouts at depth, due to unbalanced stresses, and 2) deviations from the vertical (up to 30°). Deviations were countered in the USSR using weighted stabilizers. Several more sophisticated, but as yet untried, automatic compensation systems are planned for use by KTB. The consensus was that existing capabilities of the *JOIDES Resolution* would allow a penetration of 3 km with a total drill string of about ~8 km.

Nonetheless DD-WG was unable to respond to the PCOM mandate generated at its August 1990 meeting. DD-WG suggested dropping the WG approach and returning primary responsibility for deep drilling to TEDCOM. ODP-TAMU, or a sub-contractor, should perform specific and detailed studies based on a small number of generic deep holes specified by the thematic panels and endorsed by PCOM. The holes might be located in: 1) an accretionary margin, 2) a passive margin, and 3) oceanic lithosphere.TEDCOM will review the results of these studies. Sparks added that PCOM has seemed reluctant to choose specific sites for deep drilling, but the detailed definition of generic holes would allow detailed studies to proceed. Responding to a question from Moberly, Sparks said that 6 km penetration is possible with the *JOIDES Resolution*, but only in sedimentary rocks and not in 4 km water depth.

Besides deep drilling, the main preoccupation of TEDCOM has been the DCS. TEDCOM is actively involved in advising ODP-TAMU on the development of DCS Phase III. This should involve suppression of the secondary platform in the derrick for improved safety and efficiency. Sparks praised the work done by ODP-TAMU engineers. TEDCOM is very satisfied to note how their advice has been incorporated into DCS development, for example the development of a seabed system to avoid heave of the API string in the hole during running of the DCS string. It is necessary to refine the method of stabilizing the API string, however. The disconnectable point tried on Leg 132 had problems. The main concern of TEDCOM is how to speed up development of the DCS. The full DCS was tried for only a few days on Leg 132 and almost all core recovery occurred on one afternoon. If the present frequency of engineering legs is maintained, it will be several years before the DCS is fully operational. This technology is breaking new ground. It is an enormous extrapolation of technology used successfully in the North Sea in only 200 m water depth. TEDCOM recommends two approaches to accelerating the development of the DCS (see TEDCOM September 1990 minutes): 1) test the DCS on a separate vessel or barge so that development and testing can proceed continuously, and 2) get oil industry interest and funding. AMOCO should be approached first as AMOCO staff have expressed interest in the DCS. B. Harding has been informed of a seminar on slimhole drilling on December 12 1990 in Newcastle, UK. This would provide a good opportunity to speak publically about such collaborations possible.

TEDCOM is particularly impressed by ODP-TAMU development of the Motor Driven Core Barrel (MDCB). The tool has been completely rethought and redesigned to correct built-in defects in the original version (Navidrill). During the September 1990 TEDCOM meeting, Prof. Rischmuller proposed that development of the Pressure Core Sampler Sample Chamber (PCSSC) should be shared between ODP and KTB (see TEDCOM minutes).

Responding to PCOM, TEDCOM discussed logging in loose sands. Recommendations were the use of mud, inert casing or inert drill strings. Other PCOM suggestions for discussion were not received until after the TEDCOM meeting.

Discussion

Leinen said that previous presentations of results of the Leg 132 have suggested that success with the DCS was just a leg away. She asked for clarification. Francis said that real success will be a production model DCS operated from the rig floor, i.e. Phase III. Austin asked that discussion of the DCS be deferred until the following day. Francis noted that oil industry involvement in the DCS would be breaking new ground. Austin said that EXCOM had addressed joint developments and Moberly added that any joint developments would be legally governed by TAMU policy on patents. Von Rad suggested that PCOM had asked DD-WG questions that were too simplistic and which DD-WG could not address. He added that SGPP had suggested deep drilling from islands, for example from sites in the Aleutians into the accretionary wedge, as an alternative to keeping the ship on station for extended periods. Austin said that ODP-TAMU engineers want more feedback from the science advisory structure. This should be an iterative liaison process. There will be no alternative platform within 5 years. PCOM should, however, address the need for specification of deep drilling sites, real or generic. In response to a question from Lancelot, Sparks said that TEDCOM did not assess milling of Hole 504B. Sparks agreed that TEDCOM would be appropriate for reviewing plans for engineering legs, for example the work at 504B, but that there was insufficient time.

DEEP DRILLING WG

Natland, as PCOM liaison, reported specifically on the DD-WG meeting (see Agenda Book white pages p. 83). DD-WG addressed holes as deep as 4 or 5 km, but was reluctant to be specific about technologies required for, for example, reaching the mantle. DD-WG recommended closer liaison with ODP-TAMU engineers, since they have the expertise. Expertise was not present in DD-WG to discuss, for example, risers. Discussion focussed initially on continental margin drilling in sediments and drilling in crystalline rocks. Subsequent discussion addressed drilling to the Moho. There was confusion about the type of hole to be drilled. A system must be designed that meets the specifications of PCOM, but there is no need to assume that drilling will commence with rotary coring, for instance. As soon as targets have been identified, information should be transmitted to the ODP-TAMU engineers for their assessment. They will be able to give their requirements for the next 5 years. A start should be made soon and it should be done through ODP-TAMU.

As indicated in the TEDCOM report, continental deep-drilling programs have adopted differing philosophies. DD-WG could not distill these into a report, but the meeting gave ODP-TAMU engineers an opportunity to examine the problems associated with deep drilling. Deviation from the vertical has not yet been experienced in ODP; schistosity which produces deviations may be absent in drilling environments likely to be encountered by ODP. However, at 4 to 6 km breakouts may occur. DD-WG was impressed and encouraged by the success of the continental

holes. ODP should have technological options available to deal with problems as they arise, for example by the use of casing, or changing the type of drilling.It should be possible to make a start on deep holes and progress to 2 to 3 km penetration by 1998. ODP should have such holes in place, and their upper portions cased (especially in basalt), by 1998.Then the push to greater depths can be designed.

Discussion

Responding to a question from Kidd, Natland said that he did not know how difficult it would be to deviate an ODP hole. ODP deviates to pass junk, away from, instead of back to, the vertical. Austin said that the most important aspect of the meeting was the need by the ODP-TAMU engineers for information from the scientific community. He said that he would like TEDCOM to play a role, in addition to ODP-TAMU. Natland said that ODP-TAMU engineers present options and TEDCOM assesses these. Moberly noted that the Science Operator cannot advise itself; TEDCOM must be involved. Sparks said that if thematic panels send TEDCOM information on prospective deep holes, it will give direction to ODP-TAMU. Austin added that the JOIDES Office should also be in the loop. Pyle said that ODP-TAMU are stretched thinly already, yet the discussion suggests adding to their workload. Sparks replied that they could subcontract the work or increase their staff, but agreed that both options would require increased funds. Austin asked if PCOM should allow ODP-TAMU to take on the load if it means that they will have less time for other important tasks. Von Rad said that panel chairs had discussed this, and Suess reiterated the SGPP proposal to drill from an island. Austin said that ODP-TAMU engineers do not believe that the limits of the *JOIDES Resolution* have yet been tested, and that the use of alternative platforms will not occur until this has been done.

Humphris commented that deep penetration has been a high-priority, but long-term, objective since the beginning of ODP. In the meantime, ODP can attempt offset drilling. However, ODP should continue to develop long-term methods. Moores said that TECP is also interested in the long-term objective of deep drilling. He added that offset drilling must be carried out at sites where structure is well understood. Sparks expressed surprise that the proposal to drill on an island was politically acceptable, since it was not ocean drilling. Pyle noted, however, that a continental drilling program would probably not consider drilling on an island to lie within their sphere of operations either. Responding to a question from Cita-Seroni, Francis said that the present capability of the *JOIDES Resolution* is ~3 km penetration with ~8 km of total drill string, according to TEDCOM. Austin concluded the discussion by saying that the advisory structure and ODP-TAMU should pursue interactive discussions on deep-drilling. Thematic panels should pursue long-term objectives, but for the present the capability of *JOIDES Resolution* should be maximized.

IHP

The IHP report is summarized in Appendix 7. Moore complimented the ODP-TAMU publications groups and also the co-chiefs who have met publication deadlines. Manuscript submission time appears to be the most important factors influencing publication delay. If manuscripts are received within 95 weeks, Scientific Results volumes should be out within 36 months. If manuscripts are in on time but there are insufficient funds for publication, this would reflect negatively on ODP. IHP, therefore, requested that PCOM support allocation of sufficient funds to ensure publication of all completed volumes. In requesting that PCOM endorse permanent retention of the second manuscript coordinator at ODP-TAMU, Moore said that it would be advantageous to have a scientific liaison, rather that purely librarians, in the Manuscript Coordinators Office. Commenting on the vast amount of data being collected and

the need to archive these data properly and make them accessible to shipboard scientists, Moore asked if all data were needed, or collected simply because the capability exists? The resultant volume of data adds to the workload on the scientific party. Moore added that a second cause for concern is the need for a Micropaleontological Reference Center WG to address standards and needs of reference centers and their potential educational uses.

Discussion

Leinen agreed that concern about the amount of shipboard data is valid. A similar concern among workers in earth-orbiting satellite programs led to their funding a pilot program to study types of data, storage media and known and potential applicability. ODP may need a similar study. Shackleton said that delays in communication cause many problems in publication and questioned whether ODP-TAMU was using the quickest methods. Moore replied that the situation is complex. There is an expertise problem; people controlling publication are not scientists. Communications with the manuscript coordinator must be improved. Kidd agreed, adding that the science operations group should oversee the publications group. Suess commented that PCOM had discussed publication outside the ODP volumes and queried whether IHP had addressed this point. Austin said that ODP-TAMU is keeping a data base of drilling publications. Moore said that the best source of information is Georef and Austin responded that ODP-TAMU had just subscribed to Georef. Ball said that there used to be a science editor. Francis and Moore acknowledged this, but said that the work is now done by an Editorial Review Board (ERB).

Cowan asked if IHP was monitoring the inclusion of synthesis chapters in the Scientific Reports volumes. Moore replied that data are available but that IHP finds out after the fact. Results are not commonly seen for 2 to 3 years after a policy change. One change that should help preparation and inclusion of syntheses is the introduction of a second post-cruise meeting. Moberly said that if an extra 3 months were allowed for completion of the synthesis chapter, the volume could still be published on time. Von Rad said that the ERB should meet with manuscript coordinators. Austin added that PCOM must exercise care when nominating co-chiefs; poor post-cruise performance by some co-chiefs has contributed to the problem.

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Austin decided that PCOM should address individual service panel concerns before moving on to other agenda items, in order to assure panel chairs that PCOM was responding to their concerns. He deferred the JOI, Inc. action items involving consideration of ILP and Inter-Ridge liaisons and also the SMP action item concerning number in the scientific party until later in the meeting.

PPSP

PPSP had asked about increasing lead time. Austin said that this was an old problem and that he did not think that PCOM could endorse increasing lead time. The second PPSP action item was the PPSP recommendation that the length of proposals be limited. Mutter suggested that proponents be asked to provide extended summaries to PPSP. Austin said that other panels were also concerned about proposal length. He suggested that a requirement for an extended summary could be added to the proposal submission guidelines. Humphris said that since panels still have to read proposals, a length limit would be preferable. Kidd expressed concern that proponents would shorten proposals by omitting data. Watkins asked the average length of

text in proposals, and Moberly responded that they are "big". Natland said that variable length proposals cannot be prevented, since problems they address vary in scale. DPGs will help, however, since by the time they reach PPSP and SSP, proposals will be incorporated within composite documents. Austin suggested that the problem be addressed specifically for PPSP and Moberly agreed, adding that PPSP was, like TEDCOM, not comprised of academics; the panel chair should be allowed to decide. Austin said that the safety package should be more concise that the original proposal. Ball asked how NERC handled its letter proposal guidelines. Kidd replied that there was strong resistance to long proposals in the UK. Austin said that he was reluctant to stipulate a length, which will depend on the program being proposed. Leinen noted that NSF policy is that all proposals are limited to 15 pages no matter what the scale of the project. Why cannot ODP do likewise? Austin said that he would prefer to leave this until the time of submission of safety packages, but that he would modify the guidelines to discourage excessive length.

PPSP had wanted joint meetings or WGs with SSP and SGPP on the issue of BSRs. Austin said that he felt that PPSP and SSP liaisons should attend the next (March) SGPP meeting for such discussions, which could be incorporated into a third day of that meeting. SGPP will invite selected PPSP and SSP members as guests.

DMP

Austin deferred discussion of the DMP action item to include additional DCS expertise on legs using the DCS. DMP had also recommended that FMS be run as a "standard" tool. Moberly recommended that PCOM endorse the practice since FMS has been successful. Becker said that FMS will require a separate logging run, raising the number of runs back to 3/site. Jarrard said that the additional time required would be about 6 hours/site. Worthington pointed out that when ODP-LDGO combined 2 tool strings into 1, reducing the number of logging runs from 3 to 2, he had felt that a vacancy had been created. Leinen moved that PCOM endorse use of FMS as a standard logging tool to be used at all holes which are logged; Moberly seconded the motion. Worthington said that at the moment not every hole is logged by the standard 2 runs. Jarrard added that FMS is already run at most sites and, therefore, the increase in logging time resulting from the motion would be limited. FMS, however, already strains ODP-LDGO. In response to Mutter, Jarrard said that no combination of existing tools plus FMS could be reduced to 2 strings. Davies said that it would be useful to wait until FMS gives more information about the rocks. It is beneficial to have a choice of tools and too early to know that FMS will solve all problems, though that stage may be approached in the future. Moberly said that he would not second the motion if it was made less specific. Natland expressed concern that color output from FMS would increase the load on publications. Lancelot said that DMP are the experts and they think that FMS is a useful tool on a routine basis. Pyle noted that ODP-LDGO overspent by 10%, probably because of FMS. This cannot continue, so either FMS logging should be discontinued or something else cut. Nonetheless, Leinen proposed an amended motion, which was passed by PCOM:

PCOM Motion

PCOM endorses the use of the Formation Microscanner (FMS) as a standard logging tool.

Motion Leinen, second Moberly Vote: for 14; against 1; abstain 1; absent 0

Austin deferred another DMP action item, that concerning the flexibility of *ad hoc* groups. Worthington said that it had been stated that all panel recommendations must go to PCOM. In future, Worthington proposed to classify recommendations: some for PCOM to consider and others to go to their targets through PCOM.

SMP

Austin highlighted action items arising from the SMP report: 1) endorsement of the use of the physical properties manual, 2) purchase of a second Rock Eval, at a cost of about $60,000, 3) to endorse a core-log data integration plan developed in association with DMP, and 4) to endorse adequate technical support aboard the vessel through the hiring of additional personnel and through no-cost exchange.

Leinen said that the Rock Eval will be essential for safety on Leg 139. It tends to break down and without a backup there is a danger that drilling on sedimented ridges will have to be terminated prematurely. Responding to a question from Natland, Moran said that a lot of energy is expended repairing the Rock Eval; it is relatively new but complex to operate. It is critical and a back-up should be available. Francis added that oil companies normally have several because of down time. Moberly suggested delaying a decision until details on the March 1990 BCOM deliberations regarding purchasing priorities for shipboard equipment could be reexamined (see p. 20). Leinen said that the option to rent had been considered, but that the cost would be $35,000 to $40,000. Suess commented that there are other methods besides the Rock Eval and these should be considered.

Austin asked if there was a consensus on index properties and on core-log integration. Leinen recommended that PCOM endorse core-log integration and require co-chiefs to designate a core-log data integration person within each shipboard party. Duncan said that this could be written into the guidelines for staffing. Moran noted that the task of shipboard core-log integration would be a full-time job. She suggested that PCOM endorse the plan; its implications could be discussed later. Austin said that PCOM endorses the concept of carrying out shipboard core-log integration. Its implementation, in particular ensuring that adequate technical support is provided, will be deferred. Austin asked if PCOM would like to pass a motion on index properties and core-log integration. Moberly said that this could be a consensus, if there is no objection.

PCOM Consensus

PCOM endorses the use of the index properties manual *Recommend Methods for the Discrete Measurement of Index Properties on the JOIDES Resolution: Water Content, Bulk Density and Grain Density* aboard ship. PCOM also endorses the core-log integration plan developed jointly by SMP and DMP. Those panels will develop an implementation strategy.

Thursday, 29 November 1990

Austin announced that PCOM would continue to deal with service panel action items and that the agenda would be changed by moving the STRATCOM report (Minute 876) to a position following the Panel Chairperson's Report (Minute 875).

Austin said that he had verified with JOI, Inc. that $57,000 is in the FY90 budget for SMP-prioritized equipment. The Rock Eval costs $60,000, so there is money available. Austin asked Leinen, as liaison to SMP, to begin the discussion of the appropriateness of endorsement. Leinen said that PPSP has stated that continuous monitoring of gases during drilling on sedimented ridges is a necessity. PCOM should endorse the purchase. Lancelot pointed out that before the Rock Eval was introduced, gas chromatography was used for safety; all options should be evaluated. Francis said that gas chromatography is still used on normal legs, but at high temperatures results will not be meaningful. The Rock Eval gives additional information on maturation. Ball said that the Rock Eval gives a quantitative measure and Francis added that gas chromatography will be used on Leg 139 to measure H_2S in pore waters. Suess said that a second Rock Eval is required as a back-up for safety on Leg 139. Austin noted that the Rock Eval is the top priority of a list of 8 items that SMP would like ODP to purchase (see SMP minutes). Purchase of the Rock Eval would mean that other equipment could not be purchased. Tucholke asked if other needs might arise that have a higher priority, and Moberly replied that BCOM asked SMP to prioritize their list and this has been done. Austin asked if there were any objections to the purchase of a second Rock Eval prior to the sedimented ridges leg. In the absence of objections, this became the consensus of PCOM.

PCOM Consensus

PCOM endorses the purchase of a second Rock Eval prior to Leg 139.

SSP

SSP had requested that PCOM endorse preparation of safety packages prior to PPSP review (including an executive summary). Kidd noted that this is required now, but is not done. PCOM reached the following consensus.

PCOM Consensus

PCOM endorses adherence to the guideline specifying preparation of safety packages prior to PPSP review.

Austin said that SSP had also requested PCOM endorsement of requiring oceanographic reviews of sites as part of the preparation of prospectuses. Kidd said that a review should be carried out even earlier. Von Rad suggested that proponents would be best qualified to perform such studies, but Kidd disagreed, adding that some independent group should be charged with the task. Lancelot said that the review will also include safety and weather and should not be performed, as in the past, by graduate students at ODP-TAMU but by ODP-TAMU staff. Francis pointed out that current-related problems do not arise often, and PCOM may be placing too great an emphasis on this area. Lancelot said that swell is also a problem, however, especially with a long drill string. Austin said that an oceanographic review is the responsibility of ODP-TAMU, but that SSP should flag potential problems if they notice them. Davies said that proponents should provide all possible local data to ODP-TAMU. Austin said that he planned to review proposal guidelines and to include them in the next *JOIDES Journal*, and that he can ask proponents to provide an oceanographic package. Kidd reaffirmed SSP's need for the data.

IHP

IHP had requested PCOM endorsement for provision of sufficient funds to maintain publication schedule. Austin noted that this will result in a base budget increase at ODP-TAMU.

In response to questions from Moberly, Francis clarified the present situation. The plan for FY91 is to publish 6 volumes with existing funds. These funds include a SOE of $172,000, which at the time of BCOM was thought sufficient for publication of 4 average volumes. ODP-TAMU could publish a total of 14 volumes, but this would require an additional sum of about $500,000. At the end of FY90, much progress will have been made in catching up with the publications schedule, but now ODP-TAMU is slipping behind again. A total of 28 volumes will have been published in FY90 and FY91, if ODP-TAMU adheres to the present plan, but 22 of these were published in FY90 and only 6 are scheduled for FY91. Some of the FY90 volumes were published using FY91 funds, since some of the FY90 invoices will arrive in FY91. Becker said that at some point ODP-TAMU should reach a steady state of 12 volumes/year, so that the budgetary impact of funding additional publications should be a single occurrence. Moore said that it would be more likely to impact the budget over a finite period.

Austin commented that publications should not fall behind schedule when ODP is about to be scrutinized for renewal. Tucholke agreed, and Leinen added that the co-chiefs, having been pressed to meet submission deadlines, would be annoyed at subsequent delays. Cowan agreed that the rate of publication should be maintained, but asked where the money would be obtained. Moberly said that the budget has been allocated and that the most that PCOM can do is to make recommendations for FY91. Pyle pointed out that the budget can be altered, but that this would necessitate cuts elsewhere. Shackleton suggested that, if additional funds cannot be obtained, ODP-TAMU publish the volumes in hand and extend the submission deadlines for those still in the pipeline to avoid keeping volumes lying around for long periods. Francis said that this would not help the present situation, and Austin added that PCOM would be criticized for a reversal of policy if it did that. It is important to encourage contributors to meet deadlines; relaxing deadlines is bad. Austin further suggested that PCOM could endorse all efforts by ODP-TAMU to publish under the present strictures and encourage them to request money from BCOM. Jenkyns asked if Initial Reports should be given priority over Scientific Results but Moore noted that this happens by default. Leinen suggested publishing science legs before engineering legs and Moores said that, since the number of pages controls the cost of publication, perhaps a manuscript length limit should be considered. Moore answered that the main problem is ensuring the timely submission of manuscripts. Most of the increases in volume length are the result of more core recovery and larger scientific parties. Responding to a question from Natland, Francis said that the freeze of SOEs must be maintained until the fuel situation improves. Even if the FY91 $172,000 publication SOE is unfrozen, however, it simply allows adherence to the original plan of 6 volumes in FY91. Kappel suggested the possibility of paying some FY91 bills in FY92. Malpas said that gradual increases in the contributions of the international partners could be a source of money which should be considered, because this problem will recur every year. However, Moberly reminded PCOM that NSF is loath to increase international partner contributions at present. Austin said that PCOM feels that the publication schedule should be maintained, and that deadlines should not be extended. There is, however, little financial flexibility at present. He said that the minutes should reflect that PCOM wishes ODP-TAMU to make all efforts to make publication a priority in FY91 (see consensus below).

IHP also requested that PCOM endorse permanent retention of a second manuscript coordinator at ODP-TAMU. Austin said that this also has a budgetary impact on ODP-TAMU. Pyle asked if this was not the plan in any case, and Kappel answered that it was a SOE. Francis noted that each manuscript coordinator looks after 4 legs at a time and has to monitor the reviewers. Austin said that this is similar to the last item, in that ODP-TAMU must continue to consider publication a high priority item. Lancelot suggested that the whole system be examined to find bottlenecks and questioned whether this single action would solve the problem. Moberly pointed out that the purpose of the FY90 SOE was to help the Manuscript Coordinators Office to catch up. Now that they have done so, are they still needed? Austin agreed that there was no need to increase the number of volumes yet to be published. He said that he would like to reiterate what he had said earlier and expressed the following PCOM consensus.

PCOM Consensus

PCOM expects ODP-TAMU to maintain publication a continuing priority in FY91. PCOM will not, however, endorse a specific manuscript coordinator *per se*.

874 SUMMARY OF SCIENTIFIC RESULTS: NORTHEAST AUSTRALIA, LEG 133

Davies began by saying that although he and the other co-chief, J. McKenzie, would place emphasis on different aspects of Leg 133 results, she would endorse his comments. He remarked on the excellent spirit displayed by scientists, technicians and SEDCO personnel. Davies said that he would be interested to hear suggestions from other co-chiefs on how this atmosphere can be maintained on future legs.

The Queensland and Marion plateaus are carbonate platforms adjacent to 2 rift basins, the Queensland and Townsville troughs. Stratigraphy was expected to reflect the northward movement of Australia with superimposed effects of sea-level variation. 16 holes were drilled.

Sediment in both troughs is much younger than previously thought. Abundant dolomitization characterized the platforms. Flow directions of dolomitizing fluids in the plateaus (north to south on Queensland Plateau and south to north on Marion Plateau) are thought to be related to their heat flow regimes. Basement metamorphics of probable Paleozoic age were cored on the northern margin of the Queensland Plateau. Overlying temperate carbonates are abruptly succeeded by a tropical shelf facies reflecting inception of the East Australian Current at around 20 Ma. Drilling also documented the differing tectonic subsidence histories of the northern and southern ends of the plateau. Sea level predictions were confirmed but paleodepths were greater than expected and local tectonics distorted the record on the northern end.

Drilling on the Marion Plateau documented an unconformity at the base of 287 m of lower Pliocene, current-deposited sediment. The unconformity is interpreted to reflect a Miocene sea-level fall of greater than 165 m. The prognosis of platform drowning in the early Pliocene followed by development of the Great Barrier Reef was shown to be incorrect. Further sites adjacent to the reef revealed it to be only between 0.5 to 1 m.y. old. This result is having a fundamental effect on biological theory in Australia regarding the time required for evolution of the gene pool and also the source of the original corals. Existing paleoceanographic models are also affected.

Good correlations were obtained between every measured parameter: lithology, regional geophysics and logging. All correlate and suggest cycles which may be related to sea level. Cycles of alternating carbonate and terrigenous sediment were cored in which low carbonate intervals correlate with seismic reflections. The shape of the susceptibility curve may reflect build-up and decline of the ice caps. It should also be possible to comment on the temporal nature of seismic reflections. Davies concluded by saying that that the leg benefitted from the assistance of SSP and PPSP. Oil companies created the only problems, by asking why, if ODP is allowed to drill in the area, they were prohibited from doing so.

Kidd asked if the cycles could be of glacial, rather than sea level, origin. Davies said that this could be the case on the Marion Plateau but not on the Great Barrier Reef, where lowstand terrigenous sediments and highstand carbonates were recovered. Austin thanked Davies for his stewardship of the leg and his report.

875 REPORT OF THE ANNUAL PANEL CHAIRPERSONS MEETING (PANCHM)

Kidd, the *pro tem* chair, reported on PANCHM (Appendix 8). During the morning session, panel chairs presented concerns of their panels. Concerns common to all were discussed. Items that PCOM had asked panels to address were discussed in the afternoon.

Regarding advertising of upcoming ODP activities, PANCHM recommended that in addition to articles in the *JOIDES Journal*, regular *EOS* articles should be published, clarifying the upcoming ship track and resulting opportunities. There are newsletters in ODP member countries, but something more international is needed.

PANCHM addressed the issue of financial support for panel chairpersons. At present, $1500 is provided for post, fax, etc., but funds for part-time secretarial support are needed. Non-US chairpersons discussed approaching their own funding agencies. Lancelot and Cita-Seroni agreed that the easiest method for non-US chairpersons would be to do that. Kidd said that US chairpersons could ask USSAC for support. Kappel pointed out that nobody has asked. Pyle noted that JOI, Inc. has responded to special requests. Shackleton said that it would be inappropriate to have a procedure for US chairpersons (through USSAC), while non-US chairs face a heavier cost burden.

PANCHM requested that PCOM discuss how to provide increased flexibility in arranging subgroup meetings, particularly those related to technological developments. Austin noted that these are best arranged as extensions of normal panel meetings. Moran said that SMP had requested a meeting of past physical properties specialists to specifically talk about wanting one lab. This does not fit under the workshop umbrella and is not suitable for attachment to a panel meeting; a mechanism is required to deal with such meetings. Austin said that the only way that this can be done at the moment is by opening a line item in the budget, coming to BCOM in March for funding starting next October. Pyle said that the JOIDES Office funds a small number of people/year to attend PCOM meetings; this budget could be expanded. Austin asked if there is anything in the ODP budget for subgroup meetings. Kappel replied that, as long as there is no proliferation of meetings, USSAC can provide a limited amount of support for US scientists to travel to them. Austin noted that nobody wanted a proliferation of meetings, and that such meetings might take the place of normal panel meetings. Suess said that he would put before PCOM, later in the meeting, a request for a Gas Hydrate subgroup of SGPP. Worthington said that most meetings would be predictable; DMP had asked for special meetings twice and both were approved. Moberly, however, pointed out that most panels are supposed to meet only twice/year, but DMP has always asked for 3 meetings/year.

Worthington, however, said that 3 meetings/year have been essential in view of DMP's workload; 2 meetings had been tried but had proved insufficient. Austin said that subgroup meetings should preferably be planned with 3 to 4 months lead time, and appended to scheduled meetings. Such meetings must be handled by the JOIDES Office on a case-by-case basis. As Worthington has commented, the system is in place now. Worthington asked if it was PCOM's view that the number of DMP meetings is excessive; he requested a guideline on meeting frequency. Kidd said that SSP aimed to meet twice a year but that sometimes 3 meetings per year would be necessary. Austin said that this must be left to panel chairs but that panels should not meet more than 3 times/year and should plan 4 months in advance.

Kidd continued the PANCHM report by saying that panel recommendations to PCOM, in panel minutes, are often missed by PCOM and not acted upon. Austin replied that this would not happen during his PCOM chair tenure.

Kidd then moved on to report on the afternoon session of PANCHM, which concerned issues that panels had been asked by PCOM to address. The first concerned feedback of thematic panel reviews to proponents. There was a feeling that thematic panel reviews and review forms do not contain enough information for proponents. Modifications were discussed. Blum is designing a new form. In addition to providing more comments for proponents, PCOM members felt that thematic panels should be more blunt with proponents whose proposals will never be drilled.

Regarding developing proposals mandated by the LRP, thematic panel chairs were reluctant to commit their panels to such work. They felt that they were tracking proposals relevant to their part of the LRP, but that it might be useful to seek proponents for particular themes. Leinen said that PCOM did not ask thematic panels to develop proposals, but requested input on how to generate proposals for themes not represented. Shackleton replied that OHP solicits proposals if a need is recognized. Leinen asked Shackleton if OHP's approach gave the broad base of the community an opportunity to participate. Austin drew PCOM's attention to the exact wording of PCOM's charge to the thematic panels (Agenda Book White Pages, p. 27, minutes of August 1990, PCOM meeting). Austin asked PCOM if there was a role for thematic panels as intermediaries between the LRP and proponents. Moberly suggested advertising the need for proposals which address themes of the LRP. Natland said that there are some LRP themes, such as drilling to the mantle, which would be difficult for an individual proponent to address. Suess agreed with Leinen and Moberly that advertising is preferable to soliciting proponents. Malpas stressed the need to communicate to the earth sciences community what ODP does and plans to do. The circulation of the *JOIDES Journal* is too restricted. A general advertisement or a short paper is needed, perhaps designed by STRATCOM. If this does not produce, OHP's route could be adopted. Humphris said that LITHP advertised in *EOS* to avoid the perception that thematic panels set priorities and write proposals. Shackleton said that he agreed with all that had been said but that it was a matter of scale. Moberly added that it was acceptable to invite someone to put in a proposal.

PANCHM felt that there are gaps in ODP's efforts to address COSOD I themes. Austin said that the JOIDES Office is prepared to put together one or more papers on the change from a regional to a thematic drilling program over the next year.

Regarding "add-on" science proposals, PANCHM felt that the concept should be encouraged to enhance the dynamism of ODP, though it will bring problems for SSP and PPSP. It was felt that proposals should be tied to the track of the vessel and, therefore, that the track must be advertised. Days assigned to such proposals should not exceed 12/FY. This could restrict

individual proposals to about 2 days/leg, including transit. All proposals should be mature, not simply letters of intent, and also meet SSP guidelines for data quality, type, etc. Proponents should be charged with visiting the ODP Data Bank at LDGO, at their own expense, to prepare survey packages for PPSP review. Finally, PANCHM felt that proponents should be prepared to serve in the shipboard party. Austin reminded PCOM said that there are two issues: whether PCOM should endorse the philosophy of "add-on" science, and how to put the philosophy into practice. Responding to Lancelot, Kidd said that the only difference between "add-on" and regular proposals is that the former are limited to what can be done in 2 days. Lancelot responded that proponents of "add-ons" should approach the original leg proponents; an individual might be faced with writing a normal proposal for only 2 days. Moberly said that in a sense, however, it is a normal proposal. Co-chiefs will not willingly take time to do something different, so there is a need for a separate review. Mutter made the point that this is not "add-on" but subtraction. Austin agreed that overall leg length will not be increased. He added that part of the discussion addressed whether the "add-on" should be thematically related to the leg. Lancelot said that he would support "add-ons" which involve taking the opportunity to address LRP themes while the ship is in a particular region, but not if the aim is to fill in gaps by addressing second priority items. Austin commented that the "add-on" may involve, for example, extending an existing site to basement, or additional logging, rather than a new site. Kidd said that one extreme is PPSP's preference to limit "add-on" work to holes that have already been surveyed, while the other is is to use the "add-on" system for science which would never be drilled in another form. Austin said that he expected that there would be a large number of "add-on" submissions, perhaps 50 to 100 per year. Kidd, however, replied that since the proposed sites must be close to the ship track, he did not think that the number would be large. He suggested the following annual procedure: 1) November, PCOM sets the ship track; 2) January, publicize the ship track in the *JOIDES Journal* and *EOS*; 3) March, deadline for submission of "add-on" proposals, followed by mail reviews by thematic panel chairs and of favored proposals by SSP chair; 4) June, decision by PCOM. Austin said that this deadline would cut down the "deluge" of proposals. Becker said that this system means that something would have to be deleted from original legs. Francis suggested that 2 days from each leg be withheld for possible "add-ons" and returned to the co-chiefs if no add-on was assigned. Austin concluded this part of the discussion by noting that there would be further discussion of leg length and "add-ons" later in the meeting.

PCOM had also asked the thematic panels to consider deep-drilling test sites. Kidd said that thematic panels could, and would, define generic sites (see TEDCOM report).

The final topic of the PANCHM report concerned panel membership procedures. The requirement of providing PCOM with 2 or 3 names of industry nominees, with their prior acceptance, creates problems since nominees have to get approval from their organizations, a more complex matter than for academic nominees. PANCHM suggested that panels recommend a single industry nominee. PCOM could either accept the nomination or ask for an alternative. Tucholke suggested providing PCOM with a list of names without prior approval, but Austin pointed out that prior approval reduced the time required to effect personnel changes and increased efficiency. Kidd said that a second recommendation was that PCOM clarify the rotation schedule for international partners, about which PANCHM was unclear. Moberly said that it was necessary to ask PCOM representatives of the member countries for such information. Austin added that some panels have suffered catastrophic losses of expertise through regular rotation. Cita-Seroni said that ESF maintains a strict 3 year rotation, Jenkyns added that a 3 year rotation is the policy in the UK, though it is not strictly applied. Malpas said that Canada's rotation cycle is 3 years, and Taira said that Japan's policy is also for 3 years, but that they do not always adhere to it. Von Rad stated that the rotation schedule in the FRG is 3 years and Lancelot said that France's policy was for 3 years, but that it tried not to exceed 4 years. Austin said that the US does not always adhere to its 3 year rotation policy either.

PANCHM agreed that panel chairs should recommend to PCOM when they would like new members to join. Moberly noted that the 3 years begins in January no matter when the panel member joins. Austin highlighted the need to preserve corporate memory. Responding to Kidd's query of the policy of beginning the 3 year rotation schedule in January regardless of the timing of membership, Austin added that as many US members are overstaying their 3 years as are rotating on time.

Cowan raised the issue of conflict of interest, asking whether proponents on thematic panels should be allowed to vote on their proposals. He added that two proponents on TECP left the room during discussion but were allowed to vote. This influences the ranking and is inappropriate. Austin said that proponents have been allowed to be present for discussion on a case-by-case basis, to maintain expertise, but it is inappropriate for them to vote.

876 ISSUES RELATED TO 1993 RENEWAL: STRATCOM

STRATCOM 1

Austin began his report by summarizing the history and recommendations of STRATCOM 1 (Appendix 9). STRATCOM is an *ad hoc* subcommittee of PCOM, formed to examine ways to facilitate renewal and to showcase ODP's accomplishments. STRATCOM 1 (Austin (chair), Leinen, Malpas, Moberly, Pisias) took a long-term view and did not restrict its discussions to the period prior to 1993. Discussion of liaisons with other earth science initiatives led to the subsequent production of a series of one-page supplements to the LRP. The LRP was also examined with a view to focussing its objectives. Based on the LRP, thematic panel white papers and proposals received, the number of themes was reduced from 16 to 6 (Appendix 9). STRATCOM was divided on whether ODP should be a proactive or "top-down" program, with the community getting direction from the advisory structure, or a reactive, "bottom-up" program. At its August meeting, PCOM decided not to focus ODP beyond the scope of the LRP. The LRP had just been published and there was a desire to avoid limiting or degrading its impact. In October, Austin reported STRATCOM deliberations to EXCOM, which expressed sympathy for a more proactive stance prior to 1993. They felt that PCOM should implement the LRP.

Discussion

Moberly said that EXCOM still felt that the LRP should be the scientific basis for renewal. Malpas said that the inevitable result of the change from a regional to a thematic program is a proactive ODP. ODP must, therefore, be more focussed than the LRP and more proactive, though not to the exclusion of "bottom-up" proposals. Austin asked thematic panel chairs to comment on STRATCOM's themes. Suess said that SGPP also came up with 6 themes, but not all are in STRATCOM's list, for example paleo-ocean chemistry and sedimentary mass balance. Humphris said that there is no specific mention of deep rifting or global seismic arrays. Moores noted the absence of sheared margins, oceanic plateau history and plate driving forces and kinematics. Austin commented that no proposals have been received which address the last problem. Shackleton said that STRATCOM's list is good and the correct way to proceed, though a way to change it later should be built in. Malpas said that STRATCOM had before it highly-ranked proposals and these were part of the basis for arriving at the 6 themes. Wording of themes could be changed, but the number of themes should be approximately maintained. Malfait suggested that, to avoid a charge from the community that PCOM is focussing ODP, PCOM should say that ODP is focussed by the proposals received. Malpas said that 6 themes came out of a meeting whose objective was to sell ODP. ODP cannot do

everything for everybody. Moberly asked whether the objective was to substitute 6 for 16 or if this was a first phase. Austin replied that STRATCOM initially took a long-term view and that the 6 themes represent the long range plan, not just Phase I. However, Malpas and Leinen pointed out that the 6 themes were produced taking into account Phase I of the LRP and the thematic panel priorities; in trying to sell the LRP, it is necessary to focus, rather than state everything ODP does or plans, but this does not imply an attempt to change the LRP. Natland asked whether, if this is a first phase plan, it is appropriate for a 10 year renewal.

Austin continued that STRATCOM 1 recommendations have been interpreted differently by different STRATCOM members. The mandate was to sell ODP and the feeling was that the LRP was insufficient to do this effectively. Shackleton agreed and Austin added that the goals are fluid and will be reviewed but that something is needed up front. Politicians do not have time to read 16 themes. Tucholke said that the list is fine if its purpose is to target administrators, but much of the scientific community will see that it does not address their interests and will conclude that they can have no involvement in ODP. Austin re-emphasized that the list is based in part on proposals submitted and Malpas characterized it as an executive summary. Austin acknowledged that some PCOM members fear that losing grass-roots support would result in the loss of ODP. Tucholke said that the list needs additions, for example Mesozoic paleoceanography. Cowan said it should be reworded to appeal to land geologists.

Austin said that there are two issues: 1) the desirability of condensing the 16 themes to 6, and 2) the exact wording. Malpas agreed but noted that, if the wording is changed, it must not become too generic. Leinen said that the list is not a summary of the LRP, but a list of highlights. Austin asked if it could be taken as a consensus, with the proviso that some changes in the wording of the list be made, that a condensation of LRP themes is useful. Mutter said that PCOM should not redefine the program in order to sell it, but Austin replied that this was not what had been done by STRATCOM. Moberly said that the LRP had been tied to engineering developments. The engineers need consistent objectives and the LRP gave them some general direction. Some global initiatives are missing from the list of 6 themes. PCOM should avoid giving conflicting directions to the engineers. Lancelot first noted that politicians will not understand terms like "Neogene transect" and added that in order to sell the program, PCOM's response to the 6 objectives should be added, and also some indication as to how the scientific community fits in. Malpas said that PCOM must define the target audience. The grass roots community would all like their interests covered, and the LRP does this. The political audience may simply need the executive summary of the LRP, with its 4 themes. STRATCOM has tried to find a middle ground and this might not be possible. Humphris said that the list could be presented as highlights of the program. She noted, however, that offset drilling, deep drilling and transects are strategies and not objectives. Natland and Watkins agreed with Tucholke that the wording should be changed. Baker said that in order to sell ODP, a discussion of the program's purpose and a simple explanation of the LRP are needed. ODP is broad with broad support and has consequently endured. Condensation of the themes of the LRP is necessary to sell ODP to decision-makers.

STRATCOM 2

In response to the rambling discussion summarized above, Austin concluded by saying that PCOM felt that the emphasis of STRATCOM 1 had been too long-term. Consequently, STRATCOM 2 addressed short-term actions (Appendix 9). STRATCOM members are ready to go out and sell ODP by giving presentations in aid of renewal. One has already been given by Austin in Australia. PCOM members should provide slides, etc. to STRATCOM members for

such presentations. PCOM members should also prepare short, popular articles, perhaps based on the inserts in the LRP. Austin called on Moores for additional comments.

Moores said that, in January 1991, the *GSA Newsletter* will be renamed *GSA Today* and published monthly with a tabloid format. Each issue will contain 1 scientific article and 4 slots for such articles are available. As science editor, he proposed that they be reserved for ODP themes, for example global change (Leinen), Hole 735B ophiolites (Malpas), hotspots (Duncan), and accretionary prisms or dolomitization (names in parentheses are PCOM volunteers to serve as authors). The goal should be to highlight universality of interest and why ODP material should be included in every undergraduate educational program. The ship track will also be published. Austin added that the JOIDES Office will prepare an article for *EOS* advertising the FY92 ship track soon after the meeting.

Discussion

Malpas said that he had offered to recast *Geotimes* articles on ODP as a separate volume in Canada. Cita-Seroni added that she recently gave a lecture on the impact of ODP at a large stratigraphy conference in Barcelona. Mutter asked what the next move of STRATCOM would be. Austin replied that he would prefer STRATCOM to remain in existence until renewal. Baker suggested a series of articles in *Science* or *Nature*. ODP would then appear before the broad scientific community. STRATCOM should decide on the type of articles required. Leinen agreed but said that she had received pessimistic comments from *Science* on this issue. Baker responded that the people he had spoken to, at both *Science* and *Nature*, had been supportive. Von Rad said that next year's Indian Ocean synthesis meeting will publish a volume with AGU. Responding to a question from Cita-Seroni, Taira said that a symposium on ODP, that he would co-chair with Austin, is also planned for the IGC in Japan in 1992. Worthington said that, to maximize impact, articles must: 1) have a global perspective, 2) include what was known before ODP, 3) include what is known now, and 4) be generally intelligible. Austin said that he would like to continue the mandate of STRATCOM (Agenda Book white pages,p. 141, and Appendix 8) for 1 more meeting in order to reword themes and sell them to the political audience. The grass-roots audience is covered by the LRP. Tucholke stressed that the grass roots should be kept in mind and Moberly said that ODP should be sold within individual countries. Austin asked if there was a reason for STRATCOM to continue. Worthington joked "only if it meets just before PCOM." There was a general lack of support among PCOM members for another meeting of STRATCOM, at present.

877 JOIDES ANNUAL REPORTS BY THEMATIC PANEL CHAIRPERSONS.

LITHP

The LITHP Annual Report and overheads used at the PCOM Annual Meeting are included as Appendix 21. Concerning progress toward thematic objectives, Humphris said that drilling of a complete crustal section remains a long-term objective. To further progress toward this goal, a Deep Drilling Working Group (DD-WG) was recommended and 4 generic sites for deep drilling selected: 1) zero-age crust, 2) off-axis, 3) passive margin and 4) within a subduction zone. The EPR-DPG was also set up. The alternative approach is offset drilling, and a large number of proposals which would employ this strategy have now been submitted. LITHP proposes the establishment of a WG on offset drilling. The Oahu pilot hole has been scheduled (Leg 136). LITHP recommends that observatory installation be an integral part of the LRP, so that all drilling sites in appropriate locations for observatory installation be equipped with re-entry cones. This requires the site to be located and monitoring of re-entry cone installation.

Highlights from the joint LITHP-TECP meeting were the formation of the North Atlantic Rifted Margins DPG (NARM-DPG) and the commitment to a multidisciplinary approach to mid-ocean ridge (MOR) processes.

Humphris went on to address immediate concerns of LITHP. First of these is the freeze on development of the DCS. LITHP urges that development be continued as soon as possible, since a number of LITHP programs in the next 2 years depend on it. Progress to acquire high-temperature and slimhole logging tools must also be maintained in order to achieve LITHP objectives. LITHP recommends that all equipment necessary to establish the future of Hole 504B be carried on Leg 137. If casing repair is deferred to the science leg, it may mean that the science leg goes to a hole that is not viable. In the event that additional time is available on Leg 137, LITHP's recommendations are given in the minutes of their last meeting (Agenda Book white pages, p. 161). See also Appendix 21.

ODP's success in addressing COSOD I themes will be discussed by LITHP in a 3-page summary addressing 5 themes. LITHP considers that new proposals and technological advances are required in order to implement the LRP.

As for LITHP rankings (Agenda Notes, p. 020, and Appendix 21), Humphris noted that the top three priorities ranked far above the rest. EPR Bare Rock Drilling is a long-standing priority. Hess Deep is exciting and LITHP is gratified by EXCOM's interest. LITHP does not believe that MCS will be helpful in the rough terrain in defining drilling targets, and disagrees with SSP about the necessity for further seismic data prior to drilling. Sedimented Ridges II is a long-term commitment. All sulfide drilling has been deferred to the proposed second leg, since DCS is required. The second leg must happen within 2 years of the first. If there is no second leg, plans for the first will have to be altered. In response to a question from Austin, Humphris said that proponents were not present during discussions but that 1 proponent did vote.

LITHP has suffered a major overturn of members in its last 2 meetings and has lost many of its geologists. LITHP, therefore, wishes one of those remaining to delay his departure until after the spring 1991 meeting.

Discussion

Worthington said that ODP cannot invest further in slimline logging until the DCS has been proven. Humphris said that LITHP simply wanted to stress the need for tools. Responding to Sparks, she said that at the EPR, the goal is DCS penetration of 1500m. Natland asked about plans for deep crustal drilling. Humphris said that the LRP calls for 3 phases: 1) 1991-1993, engineering development; 2) 1993-1996, several 2-3 km crustal holes; 3) 1996-2000, deepening of one hole to the Moho. Feedback from the DD-WG on the timeframe is required. LITHP felt that 1 leg/year could be committed. Francis said that there would be no liner aboard on Leg 137. It would cost about $80,000 and the engineers recommend that the feasibility of cleaning Hole 504B should be verified first. Additionally, all equipment for Leg 137 must be aboard by March and there is insufficient time to purchase the liner, if funds were available. Humphris asked whether the viability of the hole could be ascertained on the first leg. Francis said that it could and that the primary objective of the first leg will be cleaning out the hole.

Addressing LITHP action items, Austin deferred the request for an offset WG and consideration of Leg 137. He added that PCOM is working with FDSN through a liaison. ODP

cannot spend much time on the OSN pilot hole until a test of the seismometer system has been performed.

TECP

Moores noted that he was not present at the last TECP meeting, the joint meeting with LITHP. At that meeting, proponents were not present during discussions but did vote. TECP recommendations are given in Appendix 10.

Moores went on to discuss TECP's responses to PCOM's requests. A model site for deep drilling is being prepared by D. Sawyer; land sites are also being discussed. Hole 504B should be logged to the extent possible. If a new hole is planned, a structural geologist should be included in the scientific party to glean structural information from the core. Regarding the LRP, TECP has decided to appoint watchdogs in its thematic areas. TECP will solicit proposals in under-represented areas and preserve unsolicited proposals. Offset drilling should test tectonic controls and various tectonic models. TECP considers "add-ons" to provide good opportunities for obtaining basement samples and stress measurements.

TECP concerns include the quality of structural presentations in proposals: balanced cross-sections are needed. Papers on this subject and also on models of the tectonic evolution of ridges are being developed. An additional concern is the narrowness of proposals from a tectonic point of view. Moores concluded his report with a list of TECP nominees; all have agreed to serve.

Discussion

Mutter requested clarification of concerns regarding narrowness of proposals. Moores said that many proposals would be in areas of TECP interest if tectonic problems had been addressed, but proponents often have no tectonic expertise. Proponents should be asked to broaden themes addressed by their proposals. Tectonics is a young theme in ODP, there is little oriented sampling and, therefore, few tectonic proposals. Natland said that historically proposals have been submitted by people with focussed interests, and the panels need to provide helpful and specific criticism. Taira commented that a clear picture of the tectonic framework would benefit most proposals. Responding to Mutter, Moores said that tectonics have been partially addressed in the Hess Deep proposal, but that there is a need to understand the sequence of displacements that produced offset exposure. Tucholke and Cita-Seroni stressed that TECP has been very fair to proponents in drawing out tectonic interest in proposals and offering helpful comments. Responding to Austin, Taira (the PCOM liaison) said that proponents voted on proposals unless the vote was close, in which case there was additional discussion. Moberly and Austin emphasized that proponents should not vote and should not be in the room during discussions, though the latter restriction had been softened for one panel. Moberly noted that SGPP allowed proponents to vote for proposals other than their own.

SGPP

The SGPP annual report is summarized in Appendix 11. Suess said that SGPP had focussed on Pacific proposal review at its 2 meetings in 1990. The SGPP white paper was published in the June issue of the *JOIDES Journal*, and included a wish-list of desirable instrumentation and measurements. J. McKenzie will be the next chair. SGPP is concerned about maintaining a balance between geochemists and sedimentologists during upcoming membership rotation.

Three meetings have been requested for 1991. At SGPP's fall meeting, proponents did not vote and were absent from discussions, though this was restrictive.

SGPP suggested modifications to the Cascadia Accretion, Chile Triple Junction (CTJ), and Peru Gas Hydrate (PGH) proposals (Appendix 11). Responding to PCOM requests, SGPP discussed preferred options for the use of any available time at Hole 504B (Leg 137), suggestions for panel-driven drilling, deep drilling, showcasing ODP and "add-on" science. Suess concluded with a list of concerns (Appendix 11).

Discussion

Responding to Cowan, Suess said that a generic gas hydrates leg is envisioned as a combination of the PGH proposal and half of the CTJ proposal into one leg. Cowan noted, however, that the new CTJ proposal contains a gas hydrate component. Taira said that fluid processes appear to dominate the ranking and questioned the absence of Atolls and Guyots (AG) and the sea level theme. Natland felt that such modifications at this late stage would be confusing.

Austin brought the discussion to the action item concerning technological developments, in particular the Pressure Core Sampler Phase II (PCS II; see Appendix 14). Francis said that the present PCS tool will be modified to produce PCS II. The Sedimented Ridges leg (139) will have to use the phase I tool. PCS II will be ready for a gas hydrates leg at the end of 1991. Tucholke stressed the need to measure heat flow, and not just to derive it from modeling. Moberly said that the package to extract core from the PCS II awaits work by Brass and Kastner; ODP-TAMU has done all it can. Moran commented that ODP-TAMU cannot design a tool without a plan from the scientific community. Responding to a question from Tucholke, Suess said that thermogenic bacteria will be studied along with the gas hydrates themselves.

Concerning the second action item, Austin felt that it was the responsibility of the outgoing chair to make the new chairperson aware of his or her responsibilities. Austin said that he might approve a SGPP meeting to discuss BSRs/gas hydrates and attended by liaisons from PPSP, but that he would need a letter of intent and an agenda. He deferred further discussion.

OHP

The OHP report is outlined in Appendix 12. Shackleton reported that OHP supports the idea of "add-on" proposals, recommends the cessation of whole-round sampling, that the ship track and other information be published outside the *JOIDES Journal*, and expressed concerns about manuscript handling. OHP's major concern is that if the highest priority theme for the first portion of the LRP is not being addressed by sufficient drilling legs, there is no chance to get to other themes. OHP strongly supports the Santa Barbara Basin site as an "add-on objective" (Appendix 12). Shackleton concluded his report with a discussion of panel membership changes. OHP would prefer not to rotate any members before its next meeting (Appendix 12).

Discussion

Kidd raised the issue of environmental concerns in the Santa Barbara Basin. Francis, referring to OHP's proposal that a start could be made on Eastern Equatorial Pacific (Leg 138) drilling if

sufficient time was available on Leg 137, noted that OHP's preferred Leg 138 site (EQ4) is in Ecuadorian waters and would require clearance. Another site would be preferable.

878 REPORTS OF DETAILED PLANNING GROUPS

EAST PACIFIC RISE

Davis passed round copies of the EPR-DPG report. The recommendations are summarized in Appendix 13. The zero age crust objective requires only shallow drilling, but the approach to a magma chamber may require penetration of 1500 m. The axial magma chamber reflector is broader, and a better target, at 9°30'N. Location of Site EPR 1 is based on the consensus that least technical difficulty would be encountered there. EPR-DPG estimated that items 1 to 4 under under Drilling Strategy (Appendix 13) would require approximately 5 legs at suspected DCS drilling rates. EPR may not be the best place to pursue item 5. Only items 1 and 2 of the Site Survey Requirements (Appendix 13) are required before final site selection; the aim of item 2 is to identify and avoid rubbly sections. Items 3 to 7 may be carried out in parallel with, or following, drilling. The second of the Priorities for Drilling (Appendix 13) depends on the success of the DCS to meet the criterion of >50% core recovery. If this objective cannot be met, a full logging suite will be required, perhaps necessitating reaming. The Tentative EPR Operations Schedule (Appendix 12) is for the first of a possible 5 legs. Contingencies include drilling EPR 2 as a viable alternative to EPR 1, and being prepared to ream if DCS core recovery is low. A re-entry cone seal should be left in place, or the hole grouted.

Discussion

Sparks questioned the plan to ream the DCS hole, since the API-BHA is cemented into the hole. Worthington said that reaming is necessary because, although logging tools would fit inside a 4 inch pipe, they would not fit within a 4 inch hole. Malpas questioned the need for both EPR 1 and EPR 2 if they are interchangeable. Davis said that EPR 1 and EPR 2 are both required in case the DPG's intuition is wrong. They are not interchangeable, however: EPR 1 is outside the axial rift graben (in possibly annealed formations) and EPR 2 is within the axial rift. Both are important for fluid circulation studies. Responding to Duncan, Davis said that the seafloor comprises flows, probably with flat slopes. Moores commented that the local structure may be asymmetrical (a half graben).

Francis said that practice in coring with DCS is the most important priority. He added, agreeing with Sparks, that he was not sure how a hole can be reamed through a BHA. Natland said that a test of the drill-in BHA should be included in the drilling plan. Moberly said that the first EPR leg is supposed to combine engineering and science, and Jarrard asked that ODP-TAMU inform ODP-LDGO if it thinks that there will not be enough time for logging so that ODP/LDGO does not waste time in preparation. ODP-TAMU must also consider how to ream the hole. Responding to Mutter, Davis said that the location of EPR 3 was selected partly based on the scale of the velocity anomaly. Mutter cautioned that the velocity anomaly was not corrected for anisotropy. Davis told Worthington that temperatures are unknown. Worthington said that the DPG's tools list is bigger than DMP felt was achievable. Slimhole tools will be difficult to insulate, but if reaming is possible, off-the-shelf tools can be used. Austin said that the most up-to-date ODP-TAMU feelings about reaming are needed. Davis replied that M. Storms of ODP-TAMU considered the DPG ideas to reflect the latest ODP-TAMU thinking. Francis said that ODP-TAMU is assuming no hydrothermal problem at EPR 1, so that the DCS

can be tested. Humphris noted that LITHP had removed an engineering step and added 8 days of coring in response to Storms. Austin thanked Davis for his report.

CASCADIA

Cathles began his report (outlined in Appendix 14) with a summary of the importance of fluids at accretionary margins. Fluid venting can be diffuse or fracture-dominated, also continuous or episodic. The Cascadia (CA) leg is a fluid flux leg with important implications for sedimentary basins and metamorphic terranes. Fluid flux in the Vancouver Island (VI) area is mostly diffuse, though probably with some fracture flux, while that in the Oregon Margin (OM) area is fracture-dominated, with subordinate diffuse flow. At VI, 3 holes are proposed to obtain 3 estimates of diffuse expulsion based on: 1) horizontal porosity gradient, 2) second derivative of temperature with depth, and 3) concentration of methane in pore fluids above, below and within the presumed clathrate layer. At OM, measurement of flow through 4 faults is proposed. The concentration of methane in each fault will be measured using a barrel on known vents and faults will be cored to study the history of fluid movement. One hole will be drilled through an up-bowed clathrate layer as an independent measure of fluid flux. The frontal thrust site is the most important. Fluid flow along landward-verging faults is sourced from the underlying basalt, in contrast to seaward-verging faults where fluid flow is sourced from the prism. Temperatures will be measured as a function of depth and time in a number of ways (WSTP, 6 log runs, thermistor string), and pressure will be measured using packers, Geoprops, and will be monitored over time. A proposed follow-on CA leg would focus on OM, with additional reference holes and studies of proto-deformation and the frontal thrust, but include non-hydrate VI drilling. Cathles concluded his report with a summary of specific issues concerning CA drilling and a list of advantages of the CA program.

Discussion

Responding to questions from Natland and Malpas, Cathles said that the focus of the proposed program is on processes. Therefore, assigning drilling on VI and OM to separate legs would mean that an overview would be delayed for 2 years. Cathles felt the program addresses fluid flow squarely and without compromise. Even if a second leg were guaranteed, the present plan would still be the preferred approach. Responding to Taira, Cathles said that clathrate affects seismic velocities and porosity estimates from such velocities. Drilling is, therefore, necessary to check seismic data.Cowan questioned the inference that fluid sampled by drilling is the same as that escaping at the surface; Cathles noted that this is the case, on land, in New Zealand. Leinen characterized CA as a program to study instantaneous flux, downplaying tectonics, and asked what, given the current-related problems at Nankai (Leg 131), would be the likelihood of success with measurements that depend on recovery in particular intervals. Cathles responded that there is a connection between fluid expulsion and tectonics; results will also have tectonic significance. He added that there are no currents at the CA sites and that no problems with unconsolidated sediments or swelling clays were encountered at Site 174, previously drilled in the area. He noted that clathrates tend to enhance cementation. Cathles agreed with Leinen, however, that recovery at Site 174 was poor and, furthermore, that it would be useful to discuss the suitability of Site 174 as a reference hole with people familiar with that hole. Watkins pointed out that neither Geoprops nor packers are yet working, but Cathles said that samples can be obtained in other ways. Natland asked if the DPG had considered that fluids in rocks of differing porosities and strengths might respond to processes in different ways. Cathles replied that it had not, but that there is a large decrease in porosity with depth and most activity occurs in the upper layers. Deeper, basement-derived fluids will be studied in the hole at a landward-verging fault. Cowan, however, noted that the latter statement represents a hypothesis.

879 STATUS OF ENGINEERING AND TECHNICAL DEVELOPMENTS

ODP-TAMU

Francis presented engineering aspects of upcoming legs (Appendix 15), beginning with Leg 135. Drill-In Casing with Funnel will be used on this leg. It permits the establishment of a re-entry cone at lower cost ($15,000 vs. $50,000). Tripping pipe is avoided. The system will probably sink into the sediment eventually, but is sufficient for pipe trips to change bits on this leg.

Leg 136 will employ the prototype borehole plug (Appendix 15). The plug cannot be used in existing re-entry cones, but requires a modified cone costing about the same as the standard cone. The plug is about 20 ft long, with a maximum diameter of 20 inches and a weight of about 1.5 tons. It costs about $30,000. The data logger will not be on Leg 136 and a dummy will be used. The hole will be pumped to 200-400 p.s.i.; if the pressure holds for 15 min., the plug will be assumed to be working.

Leg 137 involves preparation of Hole 504B. A rented electromagnetic thickness inspection tool and multi-finger caliper will be aboard. The 60 day tool rental is at a rate of $100/day and a cost of $5000/run/tool. The German digital borehole televiewer will be used. The milling tool (Appendix 15) will be employed to grind up junk but, as mentioned earlier in the meeting, no liner will be carried.

Leg 138 (Sedimented Ridges) may encounter high temperatures, acid fluids and high concentrations of H_2S. Well-tried systems will be used for drilling. Effects of borehole fluids on equipment will be considered. Steel is subject to sulfide stress cracking, seals may not resist high temperatures, and liners will be changed as the temperature increases, with metal liners above 170°C. Downhole temperatures will be measured to ±10% using heat tabs and a heat-sensitive crayon. H_2S content of the pore water will be monitored using gas chromatography. H_2S in the atmosphere is a major safety concern and H_2S monitors will be installed. There will be a training session on H_2S safety before the ship sails. If required by Canada, a H_2S consultant would cost about $50,000. Steam flashing will not be a problem. If the well starts to flow, a valve can be closed or mud pumped.

Leg 140 or 142 will employ the DCS Phase II as used on Leg 132 (Appendix 15). It is a slow system which would limit coring to 300-500 m in a single leg. DCS II incorporates a platform occupied by 3-4 people 40 ft. above the rig floor. This is a safety concern and a slingshot test on land at a cost of $170,000 is required to investigate motion of the heave compensator should the drill string break. In response to a question from Mutter, Francis said that there is an anti-slingshot system on the heave compensator, but if the test by Draco shows that the system is dangerous, DCS II would have to be abandoned. Natland said that the system was not tested prior to Leg 132 as there was insufficient time. Sparks noted that the actual heave compensator on the ship will not be tested. Responding to Austin, Moberly and Tucholke, Francis said that the cost of the test is covered within the DCS budget, but that development of DCS Phase III, with all personnel on the rig floor, will require much more expenditure. DCS II is scheduled for use on the first EPR leg, but ODP-TAMU is uneasy about hydrothermal drilling with the DCS II because of blowout danger. Austin noted that this was the first time that PCOM had been informed of a safety restriction on penetration with the DCS II.

Humphris requested information on the timing of Phase III. Francis replied that no funds are available this year for work on DCS III. If the fuel price situation is resolved, DCS II drilling on the EPR can go ahead. DCS III is the long-term objective; it may not be available for a second EPR leg. Sparks added that the feeling of TEDCOM at its last meeting was that DCS III is 4 years away. Davis noted that use of the DCS for hydrothermal drilling forms the core of the Sedimented Ridges program and is essential for the deeper EPR objectives. Leinen asked if there could be no deep penetration. Francis replied that slowness of the system is also a problem, but for safety, 1500 m at the EPR is excessive; 600 m will probably be the limit. Duncan, however, said that in a worse-case scenario the temperature gradient could be even higher than expected. Pyle said that these are major changes compared to what PCOM heard at its August meeting and he reminded PCOM that DCS is critical to renewal.

Sparks cautioned against over-dramatizing the situation and referred to the TEDCOM minutes (Agenda Book white pages, p. 102-104) for an account of DCS status. Austin, however, agreed that PCOM was now receiving a different perspective. Responding to a question from Sparks, he said that PCOM was told that in order to speed up development, additional funds, an alternative platform and continuous testing were all needed. When PCOM decided to test DCS next at a site of scientific interest, these new concerns were not raised. Francis said that he, too, had only learned of the safety problem in the last few weeks. Moberly said that PCOM must take into account the advice of its advisory structure, for example TEDCOM. Cita-Seroni said that, at the August PCOM meeting, Storms had expressed uncertainty, and he had wanted an additional DCS test on Loihi Seamount. His opinion was changed by PCOM after discussion. Austin, however, said that concerns at that time were about drillability and not safety.

Natland suggested telephoning the ODP-TAMU engineers for further information. Austin said that if the proposed Sedimented Ridges and EPR programs cannot be tackled because of DCS concerns, this affects FY92 Pacific planning. Responding to Moberly's suggestion that PCOM accept the guidance of its advisory structure, Austin asked Sparks if he would advise drilling under the circumstances discussed. Sparks responded that he was not competent to make such a decision. It was agreed that Austin, Francis and Natland would telephone ODP-TAMU for additional information.

Francis continued his report by addressing the status of tools used on legs 133 and 134 (Appendix 15). The Vibro-Percussive Corer (VPC) was not a total success. J. Pheasant, an engineer from the British Geological Survey who was on Leg 133, could not be sure that the VPC was vibrating. He will do further work in the UK. The Motor-Driven Core Barrel (MDCB) is a re-design of the old Navidrill and was tried on Leg 134. There were 2 successful deployments: the first recovering 24 cm of core in 14 min., and the second recovering 2 m of core in 60 min. A load of about 10,000 lb on the XCB bit is required to provide a reaction for the MDCB. This will result in penetration of weak formations and the MDCB may, therefore, be unsuitable for drilling through chert nodules in chalk. This is a disturbing implication, since the MDCB is required to cut a clean hole in weak formations for the Geoprops probe. The Sonic Core Monitor (SCM) has been run 10 times, yielding a couple of good runs. The tool is theoretically viable, but the electronics package is not robust. The Adara heat flow tool is fitted into the shoe of the APC. It has been tested a couple of times, but the software requires work, and Francis could not, therefore, comment on its success.

Responding to questions from Leinen and Becker, Francis said that Geoprops cannot be used without the MDCB and also that formations can be too hard to use the APC and yet still too soft for MDCB. Davies said that the VPC on Leg 133 was not really a success. The engineers could not be sure it was running. It should be land-tested, but is potentially a good tool.

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879 (continued) Further discussion of DCS II following telephone conversation with ODP-TAMU engineers

Austin, Francis, Natland and Sparks spoke with B.Harding and S.Howard, engineers at ODP-TAMU, before the meeting reconvened. Austin said that concerns arise from more complete evaluation of Leg 132 DCS II results than was available to Storms, who had reported to PCOM in August. At several points during drilling on Leg 132, self-induced blowouts occurred; (cool) drilling fluid came up onto the platform. The difficulty of evacuating the platform would lead to a safety problem in the event of the fluid being hot. A tubing blowout preventer on the platform may solve this problem, but the problem of H_2S remains. DCS II is unsafe where there is substantial H_2S, because of the difficulty of evacuating the drilling platform quickly.

Austin reported that ODP-TAMU engineers suggested employing DCS II at the EPR. High temperatures may be encountered at 100-200 m, but these can be handled better than H_2S. Because of the potential H_2S problem, it would be irresponsible to schedule Sedimented Ridges II in FY92 without knowing results of Sedimented Ridges I (Leg 139). The main modification involved in development of DCS III from DCS II is moving all personnel to the rig floor. With an investment of $1-1.5 million, DCS III could be ready in 18-24 months. At least 1 field test would be required. Duncan said that DCS III is needed for deep drilling on the EPR. Austin agreed, adding that the engineers want to go to this next step.

Natland reported that the slingshot test is necessary because only part of the heave compensation system was tested prior to Leg 132. The test damages equipment and insurance is required. If DCS II was only going to be used on 1 more leg, the test would not be considered necessary and the money saved could be invested on DCS III development. However, DCS II will probably be required for 2 to 4 legs before DCS III will be available. Austin concluded by reporting that the engineers see DCS II as not compatible with existing scientific objectives. Humphris asked if ODP-TAMU would go ahead with DCS III even before DCS II had been tested further. Austin said that they want coring experience with the DCS II system on the EPR.

ODP-LDGO

Jarrard began his report (outlined in Appendix 16) by stating that only 2 of the next 7 legs will use ODP-proven logging technology, but he expressed cautious optimism about most technological developments. Leg 136 is a test of the digital, high-temperature Borehole Televiewer (BHTV); a high-temperature tool is not needed on that leg. BHTV is now scheduled for use on Leg 137. Jarrard commented that a massive influx of funds would not have changed the pace of tool development. Pyle noted that Gable has not agreed to meet any deadlines for supplying a French version of a tool to measure formation temperature.

Jarrard said that reaming has been listed as a possibility during Leg 140. He said that ODP-TAMU accepted responsibility for widening DCS holes. The EPR-DPG wants reaming at EPR-1 and ODP-TAMU should tell PCOM, at its next meeting, how this can be done. Francis said that reaming of DCS holes has not been considered and will be a post-DCS III development. Jarrard replied that reaming at the EPR may then have to await a later leg, and not be carried out on Leg 140. Francis said that the drill-in BHA may be a nested system, and its

innermost pipe diameter will determine the size of the reaming tool. Natland noted that the standard BHA in its present configuration will allow logging and reaming. Francis said that there are three different BHA options for EPR drilling, ranging in cost from $0.7 to $1.2 million. The least expensive is the Leg 132 system, the most expensive is a nested system. Natland added that DCS development will be evaluated in December, 1990. The minimum diameter of hole that will allow use of off-the-shelf tools should be a factor in design of the BHA. Jarrard said that a 4 inch hole would be too narrow, unless conditions were ideal (i.e., a "rifle barrel" hole). A logging attempt would be worth trying in a 5 inch hole. ODP-LDGO needs to be informed of ODP-TAMU's plans in order to factor in costs and time requirements. Responding to Austin, Francis said that the 3 BHA options can be available for EPR (Leg 142), if money is available. The cheapest, modified Leg 132 BHA is not ideal; ODP-TAMU would prefer smaller-diameter BHAs. Francis did not know the innermost internal diameter of the expensive, nested option. Austin asked if PCOM should make a statement endorsing ODP-TAMU's desire to gain experience and advising them to optimize arrangements for logging. Moberly noted that PCOM has previously said that ODP-TAMU is responsible for enabling conventional logging runs to be made.

Jarrard moved to technology needs. There are no major technological implications of the potential FY92 programs except Sedimented Ridges II, which will require high-temperature, slimhole logging capability. Such tools do not exist. Jarrard drew attention to risk estimates for potential FY92 programs (Appendix 16). Sedimented Ridges II and EPR have only a 30% estimated chance of success and Cascadia is intermediate. Cascadia logging could be carried out if ODP is prepared to lose tools and a BHA. Responding to a question from Mutter, Francis said that ODP-TAMU has no money for development of slimhole, high-temperature fluid sampling. Los Alamos (LANL) and Sandia laboratories have worked for many years on the problem, but there is still no perfect tool. A representative of LANL is scheduled to participate in Leg 137 to test their tool; LANL's tool is the only one with a small enough diameter to permit use with the DCS. Its temperature limit is 350-400°C. If the test is successful, the tool will be tried on Sedimented Ridges I, where high temperatures may be encountered. Responding to questions from Mutter and Moran, Jarrard said that the estimated probability of success at Hess Deep should perhaps be 80%, rather than the stated 70%; but that ODP-LDGO is not sure how clean the hole will be. The optimistic ranking of Cascadia is based on the new SES and an aggressive logging program (i.e., being prepared to lose tools).

880 DETAILED PLANNING INFORMATION FOR PACIFIC DRILLING

Austin instructed PCOM that they must decide on a schedule for approximately mid-November 1991 to October 1992,when the ship is scheduled to depart for the Atlantic. The departure date represents the "preferred scenario", so there is some flexibility. The ship may return to the Pacific in FY93. FY92 program should comprise 6 legs or 5 legs plus an engineering leg. He called on PCOM watchdogs to give short presentations on programs in the Pacific Prospectus.

ATOLLS AND GUYOTS

Tucholke listed objectives of the program as: 1) mid-Cretaceous to early Tertiary sea level history, 2) the "paradox" of reef drowning, 3) vertical tectonic history, 4) paleolatitude, 5) basalt geochemistry, 6) facies anatomy of reefs, and 7) acoustic stratigraphy and diagenesis. He went on to describe thematic panel rankings (Agenda Notes p. 20-25).

There are two proposals, 202/E(Rev) focussing on the Marshall Islands, and 203/E(Rev), with sites primarily in the Mid-Pacific Mountains. A major episode of edifice formation and drowning took place in the mid-Cretaceous, in addition to younger events. In the Marshall Islands the proposed sites comprise 2 archipelagic sites to address sea-level history and highstand input of turbidites, 5 guyot lagoon and fringing reef sites and 1 pelagic cap site (Appendix 17). In the Mid-Pacs, drilling will test a hypothesis relating to the formation of 3 types of guyot, atoll, volcanic and barrier reef. The hypothesis proposes that their formation is the result of motion of the underlying plate relative to the Darwin Line. Most drilling in both proposals is planned for the lagoonal environment to take advantage of high-resolution stratigraphy provided by coccoliths.

Discussion

In response to a question from Becker, Tucholke said that DCS offers the best chance of decent recovery in the reefal environment. Shackleton, clarifying the views of OHP, said that OHP does not regard this as a sea level program and, therefore, there is no need to wait for a report from the Sea Level Working Group. The Mid-Pac proposal is the highest-rated proposal addressing Mesozoic Ocean history and the vertical tectonic history of the Pacific. Jenkyns added that there is also a black shale component to the program. Austin commented that the Atolls and Guyots (AG) program appears to have fallen from favor. Suess replied that it represents 1 of 2 strategies for sea-level studies, the other being the continental margin approach. Both strategies should be employed. There are two purposes of AG: 1) to obtain general scientific benefits, and 2) to test the sea level strategy. Shackleton did not think that this is the best location for a sea-level program, but that this is not primarily a sea-level program. Watkins, however, said that a central Pacific study is essential for global sea-level correlation. Von Rad said that global paleoceanographic history should also be stressed. The Cretaceous climate may have been less equable than previously thought, with possible Albian cooling, perhaps related to anoxia. Cita-Seroni asked if objectives could be combined into a single leg. Tucholke replied that each proposed leg is about 58 days long. It would be possible to design 1 very good leg if a decision can be made on the most important objectives. If sea level is considered the priority, the leg would differ from each existing proposals.

Leinen asked if OHP rankings would have been different if the Mesozoic/non-Mesozoic balance on the panel had been different. Shackleton said that it would certainly have differed, since OHP presently contains a majority of Neogene workers. PCOM, however, organized the panel this way in terms of the LRP. Suess said that SGPP had tried to combine the proposals but the result was 1 proposal with 2 parts. The Mesozoic paleoceanography and sea-level themes are difficult to combine. SGPP's primary interest is in sea level. Moores said that if TECP had contained a proponent, AG would have been rated more highly. Tectonic elements should be kept in mind and holes extended to basement. Tucholke said that he disagreed with Suess and that the same objectives occur in both proposals. A designer program based on both is feasible. Both are drillable with the *JOIDES Resolution*. Humphris said that LITHP ranked the program sixth out of six because this is not the way LITHP would choose to study the DUPAL anomaly. Shackleton observed that AG is OHP's highest-ranked Mesozoic leg.

BERING SEA

Lancelot reported that the Bering Sea is an isolated fragment of the Kula plate of uncertain, but possible Cretaceous, age. The proposal advocates drilling at 3 locations: the Umnak Plateau, Sounder Ridge and Shirshov Ridge, to address: 1) Neogene climate and paleoceanography, 2) Paleogene and Cretaceous environments, and 3) Structural and tectonic history of the Bering

Sea. There is a great deal of oil industry data in the region. Austin noted that a USSR proposal on the Shirshov Ridge has been received by the JOIDES Office including some seismic data. Lancelot continued, pointing out that the Neogene study may fill in a gap in high latitude climatic studies. The late Neogene section is not calcareous but the proponents think that there will be an underlying calcareous section. Most pre-Neogene oceanic sediments globally have been subducted and the record is, therefore, poor. However, existence of a good Cretaceous section in the region is uncertain.

Discussion

Suess said that the absence of calcareous micro-organisms is interesting in terms of the ocean-wide silica budget. Natland asked if the Cretaceous section can be reached with less than 1000 m of drilling and added that a re-entry site may be necessary. Lancelot replied that casing may be required and a re-entry site might be preferable. Francis said that this program is difficult to incorporate with other objectives, because it has a July/August weather window. Moberly noted that the proponents had always said that the Shirshov Ridge component would be enhanced by Soviet data. The possibility exists of low returns, but if objectives can be met scientific returns would be great. Von Rad said that existing proposals would be more mature if the USSR was a participant, but Austin said that this only applied to the Shirshov component.

PERU GAS HYDRATES

Taira noted that little is known about Bottom Simulating Reflections (BSR). The program (PGH) would study the physical composition of the BSR (gas, water, solid), its chemical composition (CO_2, salinity, C_2H_6...), and its mechanism of formation (saturation level) (Appendix 18). The BSR is strong at anticlines and fades st synclines. In response to a question from Tucholke, Cathles said that it is hypothesized that the clathrate nucleates, by an unknown process, and that there is subsequent equilibrium exchange between hydrate and fluid leading to the growth of clathrate. Continuous flow through the clathrate is plausible. If concentrations above and below the clathrate differ and the layer itself grows, this provides a mechanism for recording the amount of fluid passing through the clathrate.

Discussion

Suess said that the old interpretation was that free gas existed below the clathrate and that drilling was unsafe.The new (Hyndman) model depends on the mechanism that hydrates can grow from an undersaturated solution in the absence of free gas, and that they are, therefore, safe to drill. However, the lower level of saturation is unknown, and it is necessary to assume that there is no differential motion between gas and water. In the Peru location, as opposed to CA, it can be confidently assumed that the gas is of purely biogenic origin and that there is no hydrocarbon reservoir.

Jenkyns asked if the same objectives could be fulfilled by drilling at CTJ. Taira said that the advantage of Peru is that the system is simple, with purely biogenic gas and simple structure. Cowan noted that there is possible redundancy between this program and CA drilling off Vancouver Island. Taira, answering a question from von Rad, said that there are no estimates of the time required for Peru drilling, but it would probably involve at least a third of a leg. Cathles responded to Cowan's earlier comment by saying that it would take more time to achieve these objectives at CA. The BSR study is embedded in a larger program at CA. Francis said that CA sites are in shallower water and less safe if gas is present. Seismic resolution there

is limited and a gas layer could be missed. Davis, however, said that gas layers can be resolved off CA by velocity moveout/Poisson's ratio. Shackleton said that the strategy at Peru requires 3 ocean history holes to be drilled, while geochemists examine results from the first hole. OHP could not rank the program highly on the basis of what was presented in the proposal.

Austin reminded PCOM that Suess is a proponent. He was comfortable with allowing proponents to remain as information sources, yet PCOM is on record as not allowing this at thematic panel meetings. Tucholke suggested that proponents leave during discussion and return for questions. Malpas agreed, adding that it is difficult to prevent proponents from making a case. Austin said that in future proponents will leave and return after the program has been discussed.

SEDIMENTED RIDGES II

As a proponent, Davis left the room. Mutter said that Sedimented Ridges I (SR I) has been planned with a hydrothermal focus while SR II is to focus on massive sulfide deposits. Middle Valley, the faster spreading center, is scheduled to be drilled on both legs and the Escanaba Trough, where spreading rates are lower, only on SR II. The focus of the hydrothermal study is on type B holes (see Pacific Prospectus), and all but the deepest are scheduled for SR I. Mutter said that on SR II, the intention is to drill into sulfides and, given the safety concerns about the DCS II previously expressed, this cannot be accomplished in FY92.

Discussion

Francis noted that drilling of sulfides cannot be done with the current DCS, but may be possible using other methods. Malpas said that only DCS could give good recovery, but Francis said that DCS is slow and, with other methods, more core may be obtained, though at lower recovery rates. Humphris commented that experience suggests that recovery would be very low with normal drilling. Mutter said that, except the deep hole, most objectives are already on the schedule for Leg 139, including many holes in sulfides. Malpas asked how SR I would be modified if DCS is not available, and Davis returned to provide information. He first said that there was a need to ensure that sulfide geologists get samples and maintain their interest in ODP. All sulfide mound drilling using DCS drilling was moved to SR II for logistical reasons. If SR II does not take place, some mound drilling with modification of standard technology would be attempted on SR I. This would provide some information on permeability, temperatures and flow rates so that ODP-TAMU engineers can better evaluate risks associated with DCS drilling in this environment, perhaps with a view to proceeding with SR II at some future date. Deepening of hole MV-3 would have to be abandoned, among other things. Humphris asked if DCS could be used for sulfides if there was no active venting and H_2S. Austin said that the engineers want to learn about the environment in the vicinity of sulfides, and Davis replied that the plan is to work up toward the high-temperature situation. Responding to Cathles, Davis said that sulfide drilling has hydrological objectives, in addition to the primary petrological objectives.

Austin highlighted the SR-DPG recommendation that SR II follow SR I by no more than 1.5 to 2 years. DCS III is at least 1.5 to 2 years away. He asked Davis how long SR II could wait if SR I is left unchanged. Davis answered 5-10 years, scientifically, but the shorter time frame was thought necessary to maintain the support of the geological community. There is no technological necessity for a quick return. Austin then asked if a modified SR I would be preferable for maintaining community interest, as opposed to PCOM merely expressing its intent to schedule a follow-up leg. Davis said that he was not familiar with all engineering

constraints, but if there is a reasonable chance of success in sulfides using present techniques, he would prefer to alter SR I. Suess said that he understood that downhole instrumentation would require a return to the sites, but Davis said that this would not require the drillship. In answer to a question from Becker, Davis said that sulfide drilling in Middle Valley had been rescheduled to SR II and deepening of MV-3 had been moved to SR I, placing all sulfide drilling on SR II, prior to DCS safety concerns. Now deepening of MV-3 would probably be pushed back by the co-chiefs of SR I to SR II.

Responding to Mutter, Davis said that modeling suggests that if a hole is drilled into a closed hydrothermal system, it will disturb that system. Also there can be mixing of fluids within the hole. The model requires high permeability, whereas the actual permeability is low. Because surface samples are not representative of what exists at depth there is still a need to drill. Casing the hole will prevent leakage of formation waters. Mutter said that downhole measurements of temperature, pore pressure and permeability and also downhole fluid sampling are considered essential to the success of this proposed leg and asked how these measurements would be made. Jarrard said that leased tools such as the JAPEX and SANDIA tools will be used; fluid sampling and temperature measurement will, in theory, use off-the-shelf tools but their performance in practice must be demonstrated before their use at sea.

NORTH PACIFIC TRANSECT

Lancelot noted 2 objectives: 1) Neogene history of surface and deep water resolution (OHP interest), and 2) Cretaceous superchron plate geometry and plate boundary evolution (TECP interest). The first is the primary objective, and emphasizes the high-latitude record. Drilling is planned for 2 settings on highs, the Detroit and Patton-Murray seamounts. Other sites are located in deep basins, where they would take advantage of ridge-flank deposition at a time when they were above the CCD. Seismic data are poor and inadequate for ties to cores. The deep basin sites will probably not reveal much Cretaceous sediment. Siliceous sediment should be abundant, but is not the target of this program. Lancelot strongly encouraged acquisition of new and better seismic data, even if this occurred after drilling, though it would be preferable to acquire them before. Lancelot was not convinced that 1 or 2 holes could define superchron geometry. He felt that the paleolatitude of Detroit Seamount and confirmation of the motion of the Hawaiian Hotspot did not add strength to the existing proposal.

Discussion

Natland said that he had looked at DSDP Leg 86 results before Leg 132 and had a number of concerns. He felt that the Neogene objectives would be compromised by a lack of biostratigraphic resolution in the upper section. In addition, the top of Detroit Seamount has been scoured by currents and sediment there was probably redeposited. Based on experience at Suiko Seamount, paleomagnetic measurements on many flow units from the basement of Detroit Seamount would be required in order to determine a statistically valid paleolatitude but this is not proposed. Finally, concerning Mesozoic biostratigraphy, there is only 1 reference site (Site 183) with only about 4 cm of Maastrichtian nannofossil chalk at the bottom of that hole. Cita-Seroni said that she was surprised that OHP had given this proposal its highest priority. All of the deep sites are in water depths of about 5 km, the seismic data are old and poor and the sediments thin. Shackleton said that the purpose of the deep sites is a low-frequency record of siliceous sediment, the polar front and wind transport. A piston core from the top of Detroit Seamount contains a record of the last 100,000 years. Leinen agreed with Shackleton and Moberly noted that the existing seismic data were accepted by CEPAC. Mutter said that not only is the quality of the old (1965 *Vema*) data poor, but the lines are not located

accurately and, consequently, neither are the drilling sites. Francis asked how deep the holes to be drilled to bit destruction would be and asked how sure the proponents are limestone lies below the transparent sediments at these deep-water sites. Lancelot said that the theme is important, but that the program is not focussed and the choice of sites is not well documented. However, so little is known of high latitudes in the Pacific that it is worth trying to resolve part of the puzzle. Shackleton, commenting on the suggested Cretaceous weakness, said that the prime objective is Neogene and that tectonic objectives were inserted by CEPAC.

CHILE TRIPLE JUNCTION

Austin said that the purpose of the program is to study subduction of an active ridge crest. The proposal has been around for a long time and he admired the tenacity of the proponents. A great deal of data, of many different kinds, is available. It is configured as a 2 leg program. TECP has ranked Chile Triple Junction I (CTJ I), which focuses on the collision area for the most part, as their first choice. CTJ II, focussing on pre-and post-collision events, is their second choice.

Pre-collision drilling will study forearc and possible backstop. There is a BSR and the fluids emphasis of the proposal has increased over time, but it remains primarily a structure and tectonics program. The collision study involves east-west and north-south transects, with fluid monitoring where the ridge axis is subducted. Ophiolite emplacement is also to be studied. It is not clear whether the gas responsible for the BSR is thermogenic or biogenic. Post-collision drilling will study the recovery of the forearc. The study of fluids is secondary in the CTJ proposal, in general.

Discussion

In response to a question from Tucholke, Austin said that the basic foci of the proposal are the nature of the forearc destructive process, monitored by uplift and subsidence. Mutter expressed doubts as to how drilling would address ophiolite emplacement. Moores said that perhaps it was impossible to address collision problems with drilling, but that this is a world-class problem. The rationale for 2 legs was logistical. Regarding ophiolites, Moores said that he had some concerns about whether one hole would solve the problem. The subduction zone developed from preexisting fault zones at the subduction complex. Natland asked whether any of the problems can be addressed well by trying to address all. Von Rad said that both SGPP and TECP are excited by this proposal, but SGPP thought that only 1 hole need be drilled in each of the pre- and post-collision areas rather than transects. SGPP suggested 1 leg of CTJ and a second leg that is half CTJ and half PGH. Suess added that SGPP's interests are focussed on the collision zone and on fluids, although the proposal is not strong on the latter. Taira said that TECP felt that this was a vertical tectonics program addressing morphological changes and metamorphic effects of ridge subduction. CTJ II covers primarily vertical tectonics, and this would be lost if only one leg was scheduled. Malpas said that CTJ is the closest to a purely tectonic program before ODP. It is a world class area; the ophiolite study is just an add-on. Cowan characterized CTJ as exploratory and a chance to address hypotheses. Austin said that the proponents are extremely enthusiastic and asked whether reconnaissance still plays a part in ODP. Humphris said that LITHP sees collision as an important problem, but had difficulty in understanding how the proposed drilling will solve the problem.

Mutter said that renewal must be considered: ODP cannot promote serendipity as the rationale for its programs. Moberly, however, said that selling ODP would be assisted by increasing the interest of other groups of scientists and Jenkyns agreed. Responding to Shackleton, Austin

said that the South American margin has been accretionary for 150 m.y., but where is all the sediment? That is the reason that proposal spends much time on the nature of erosion (episodic, etc.). The type of rock found impacts on that process. Tucholke said that balanced cross-sections would be very helpful and Moores replied that he was sure that the proponents are working on that. Natland said that he was intrigued by the collision zone, but that CTJ has to be thought of as an exploratory program.

EAST PACIFIC RISE

Malpas said that the EPR-DPG was formed to reconcile existing 12°50'N and 9°30'N proposals. (Objectives of EPR drilling are listed in Appendix 19, together with a summary. The total program involves an array of 6 holes both along and transverse to the ridge axis.)

Malpas said that PCOM had heard that reaming has not yet been addressed, but it is needed. ODP is already committed to an EPR engineering leg as a test of the DCS. The first EPR science leg may have to be delayed to await development of DCS III, which will lag the first EPR engineering leg by at least 1 year. The other option would be to drill slowly with DCS II to relatively shallow depths. Scheduling of the EPR engineering leg depends on the success of Hole 504B clearance (Leg 137). If Hole 504B is not cleared, transit to EPR-1 would take 13.5 days. Malpas asked if these days could be used more effectively and questioned whether they should be taken off the Leg 137 engineering leg, since as much time as possible is required for testing DCS (Appendix 19).

Discussion

Duncan pointed out that the ODP-TAMU engineers will require at least 1 extra engineering leg to test DCS III when it is introduced. Francis said that the transit from Victoria would be 11.5 days. The engineers will require at least 33 days on site during the first engineering leg. Moores recommended that the proponents factor in tectonics.

CASCADIA

Cowan compared the objectives of the Cascadia DPG (CA-DPG) program with those of the Oregon Margin (OM) proposal (Appendix 20). The DPG program is strongly fluids-oriented, and includes 3 sites in the Vancouver Island (VI) area. (Measurements required at the OM sites are listed in Appendix 20.)

Cowan went on to discuss some issues and risks. 1) Technological capabilities at the time of the leg: it may be possible to squeeze fluid from cores if instruments like Geoprops are not available. 2) Local variability of focussed venting (OM) is an issue, adding uncertainty to quantitative estimates of flux. 3) Hole conditions: the area is known to be locally cemented (carbonates and crusts). Cementation of the upper layers may preclude use of the WSTP and LAST. Unstable conditions due to swelling clays or breakouts are also possible. 4) DPG recommendations should be reconciled with those arising from the SGPP/TECP reviews. 5) Whether drilling would represent progress beyond accretionary wedge drilling to date. The proposals were initially tectonic, but are now focussed on fluid flux. If fluid flux goals can be achieved, this region, especially OM, is an excellent place for such a study. Cowan felt that the program will not yield a quantum leap relative to existing knowledge if fluid flux objectives

cannot be reached because of tool development problems. He suggested that it be evaluated as a fluids leg.

Discussion

Taira said that TECP had prioritized OM more highly than VI. Von Rad said that SGPP discussed this program intensely and that its compromise (Agenda book white pages, p. 195-196) did not differ greatly from the DPG report (Agenda Book white pages, p. 225). Malpas said that that changes to the original proposals were great: the DPG created a fluids program, as did SGPP, while TECP preferred a tectonics program. The original proposals had a tectonics focus; the fluids component was added and the tectonics component was now minimal. This should be clarified to the proponents. Moberly said that the DPGs report to PCOM. Austin added that PCOM nominates a DPG to evaluate proposals that are competing, or that cover some common ground. Cathles suggested that the definition of tectonics may be part of the problem; the fluids are moving because of tectonics. Malpas, however, argued that OM addressed faulting, etc., as did the original VI proposal. This component was not part of the DPG's proposed VI drilling. Moores said that TECP felt that the data from OM was better than that from VI. Von Rad noted that TECP's interest had been in deep penetration of the prism and the panel lost interest when this component was deleted.

HESS DEEP

Duncan reported that the objective of drilling at Hess Deep (HD) is to obtain a complete section of oceanic crust by offset drilling. Sites are located at a deep area at the tip of a westward-propagating rift tip west of the Galapagos. Targets are: 1) layer 2-3 transition, 2) upper and lower plutonic sequences, and 3) the Moho. Supporting data include submersible dives and Seabeam coverage. Rocks are fresh and the rift valley is bounded by stepped faults with relief varying between 5400 and 2200 mbsl. A number of 1 -1.5 km deep holes are planned and drilling is estimated to require 4 legs. The order of priority of the sites is HD-2, 1, 3, 4, followed by 5 and 6. SSP would like greater seismic coverage and a sidescan survey to identify talus and intact surfaces. LITHP wants to start drilling without these additional data and the proponents argue that photographs from submersibles reduce the need for sidescan data. TECP would like more thought given to structural considerations. Duncan added that US and French groups should work together to describe HD sites in detail. The proposal includes no description of logging activities.

Discussion

Responding to questions from Malpas, Duncan said that it is not known with certainty whether the Moho is pristine or whether juxtaposition of lower crust and upper mantle rocks is structural. He added that the reason for drilling, in spite of the availability of dive samples, is to view oceanic lithosphere in more dimensions. Humphris said that the original work on HD was prompted by work on the propagating rift. Moores expressed concern that the expectations depend on interpretive cross-sections that are not balanced. Francis said that the 4 leg scenario is probably an underestimate of the time required, but Mutter noted that the first leg is the priority. Duncan added that Moho drilling would be the target at the first site, HD-2. Drilling would start in cumulate gabbro and penetration would be 1-1.5 km. Watkins commented that better seismics might improve chances of achieving the objective, and Kidd noted that one objective is to test the 2 structural models and yet seismic data are lacking. Mutter, however, said that testing structural models was not the primary purpose of the program. Humphris noted that there is a section in hand from Hole 735B at the other end of the fast-slow spreading

spectrum. Duncan said that, for the Moho objective, the program is ready but needs work to address structural development.

881 PROGRAM PLAN FOR FY 92

Austin drew PCOM's attention to the Agenda Notes (p. 18-26), which contained information and considerations relevant to selection of the FY92 program plan. A total of 6 science programs, or 5 science programs and an engineering leg, should be selected. The selection must be based on the following. 1) Panel input: should the highest priorities of each thematic panel be drilled, or should PCOM focus on multidisciplinary programs at the expense of individual thematic panel priorities? 2) Previous commitments. 3) Excitement. (Austin noted EXCOM's recommendations in this regard.) 4) Technological concerns.

Moberly reviewed other considerations with respect to the proposed programs. He said that EXCOM is interested in generating excitement outside the drilling community. This suggests the following order: HD, in particular the mantle objective; AG, mid-Cretaceous drowning; SR II, drilling sulfides will involve a large community not presently interested in ODP, as will CTJ; BS, links ODP to NAD and GSGP initiatives; and 504B, with links to continental deep drilling. Safety and logging should also be considered. Moberly went on to suggest an "easy to hard" ranking: NPT, with weather the only constraint; HD, some structural uncertainty; AG, some difficulty with reef recovery; BS, weather problems; PGH, probably the easiest if there is a change in gas hydrate drilling policy; CTJ hole stability, concerns about present site selection; EPR, speed of drilling with DCS a problem; SR II, DCS safety concerns. Considerations related to future drilling might be: to leave the northern Pacific loop for another year, or to leave the southern loop. For example, CTJ might be picked up on the way to Antarctica or South Atlantic at some later stage. Finally, considerations of tenacity of proponents would yield the following ranking: AG, BS, CTJ, EPR, SR, CA. All have been around since COSOD-1.

Austin noted that the ship will arrive in Panama to conclude Leg 140 at the end of November 1991. This will be the beginning of northern hemisphere winter and southern hemisphere summer.

Malpas said that exciting science is a question of packaging, but the science must be done properly or it will backfire. Some proposals rely on technological developments and should be dropped from FY92 to avoid failures. Austin asked PCOM if some possibilities should be eliminated first. Watkins noted that some sites can be reached from the Atlantic at a future date because of their proximity to the Panama Canal. Leinen proposed a motion to this effect, noting that some legs involved prior commitments (see below for final motion). Becker asked why the proposed motion omitted an EPR science leg from the FY92 program. Malpas replied that even if DCS II did make hole on an EPR engineering leg early in FY92, it would be necessary to learn to ream the DCS hole before the end of FY92 if a science leg were scheduled. In addition, deep penetration (beyond 150 m) is precluded by temperature-related safety concerns. The best equipment, in this case DCS III, is required if ODP is to push exciting science. The alternative is a half-hearted attempt. However, EPR science objectives should be kept in mind to keep pressure on the engineers. Sites are close to the Panama Canal and can be rescheduled when equipment is ready. Responding to Humphris, Natland said that Harding of ODP-TAMU had indicated that if DCS II is used only for the engineering leg, no slingshot test would be performed and the money would be applied to DCS III. In response to a question from Duncan, Malpas said that the purpose of the engineering leg at EPR would be practice with DCS II. Science objectives would await DCS III. Duncan, however, felt that 150 m of bare rock drilling would still be an achievement. Mutter asked if DCS II would be needed for the

deep site on Leg 139, but Davis answered that DCS is not required. Leinen said that her motion did not preclude making hole with DCS II. The test of DCS III will probably be at the EPR.

Lancelot said that all science is supposed to be exciting, but that HD and EPR will arouse most public interest. He disagreed with the philosophy of trying to attract outsiders to ODP, arguing that they would be involved as proponents if they wanted to be in ODP. He added that even if there is investment in DCS III, chances of success are slim. DCS II can make progress at EPR. Cita-Seroni, von Rad, Taira and Jenkyns expressed agreement with Leinen's motion. Austin noted the danger of taking pressure off the ODP-TAMU engineers to pursue developments and commented that Leinen's motion will add to the number of previous commitments. Francis said that the implication of the motion is that DCS II will be used for the EPR engineering leg and then ODP would switch to DCS III. He raised the possibility of the engineering leg achieving a penetration of 300 m and the temperature remaining low. Pyle said that the science plan must emphasize the content of Leinen's motion so that technology development can be taken into account in FY92 budget planning. PCOM finally passed the following motion.

PCOM Motion

With the present status of technology development, particularly DCS Phase II, it appears unlikely that an optimal science program can be undertaken both for Sedimented Ridges II and EPR Science I in FY 92. PCOM, therefore, moves that these programs be considered as a high priority for drilling at the earliest possible date commensurate with technology development and ship scheduling, assuming that the science remains a high priority of the relevant thematic panels(s). Since (at this time) the science at these areas is of extremely high priority in thematic panel and PCOM rankings, PCOM wishes to stress that technology development, particularly that of DCS Phase III, take place as expeditiously as possible.

Motion Leinen, second Malpas Vote: for 15; against 0; abstain 1; absent 0

Austin proceeded by summarizing top thematic panel priorities. LITHP: EPR science (no longer an option in FY92). TECP: 1 and 2 are CTJ I and II. SGPP: CA (modified) and CTJ (modified). OHP: NPT. He added that, in the past, PCOM has been more sympathetic to high priority panel choices than to multidisciplinary programs. In response to a comment from Becker, Austin said that all of these programs rank high globally. Moberly suggested that commitments to LITHP could be satisfied by scheduling 504B with HD as an alternative (with the same staffing) in the event that further drilling at 504B proves impossible, and also scheduling EPR engineering. Austin said that establishing an EPR site with DCS II is a commitment; he suggested scheduling a second EPR engineering leg for DCS III late in FY92 to keep pressure on the engineers. Mutter commented that scheduling HD late in FY92 would allow time for a seismic survey. Austin agreed and suggested that HD could, therefore, also be scheduled as an alternative to a second engineering leg. Leinen noted that AG is the highest-priority Mesozoic program of OHP, in any ocean, and Austin said that it had been a high priority at both COSOD meetings.

Malpas commented that if PGH and BS are dropped, only 4 legs are left: CTJ (1 leg), AG (1 leg), NPT and CA. Mutter stressed the need to know what can be done in 1 leg. He asked if a single CTJ leg would be a combination of the 2 proposed legs or the first leg of a 2 leg program. Austin said that the CTJ proponents would be satisfied with a single leg addressing collision objectives, primarily the first leg of the 2 leg program. The collision objectives are ambitious on their own. Moores added that the collision study would be condensed and, for

example, 2 holes in the pre-collision area would be included. Von Rad pointed out that PCOM had previously stated that 1 or 2 legs would be required for CTJ. It should be done properly; he suggested 1.5 legs CTJ combined with 0.5 leg PGH. Francis had raised the issue of long transits and Duncan noted that they would reduce science. Becker suggested sandwiching CTJ between 504B/HD and EPR engineering. Responding to Moberly, Francis said that the ODP-TAMU engineers would prefer at least 2 other legs between DCS tests. Moberly said that if transits are long, CTJ and AG would be compressed from an original request of 2 legs each to 0.75 leg each. In answer to Lancelot, Francis said that EPR engineering requires 33 days, and some transit time could therefore be incorporated in the engineering leg. Austin commented that long transits would also damage possible add-ons.

Von Rad noted that the AG is being focussed into 1 leg. Lancelot added that he was tempted to rate 1 AG leg highly. Moberly said he would prefer to see elements of both AG proposals drilled. Austin commented that they have proved difficult to combine. Leinen raised the possibility of postponing CA until its chances of success are higher, because Geoprops and the wireline packer were not working. Jarrard said he was not sure that there would ever be a working wireline packer. Fluid samples can be obtained from the cores and the tools might not be critical. Cathles agreed and, in response to a question from Leinen, added that even in the absence of further technological advances, CA would still produce valuable results. Leinen feared that optimum science might be compromised for lack of tools, but Taira maintained that CA is a good program without the fluids component. Austin said that, if there were no further objections, he would favor scheduling 1 CA leg, without further commitment.

There was further discussion of modifications to the CA-DPG recommendations by SGPP and TECP. Cowan said that the VI component should be maintained. Malpas said that VI was originally a tectonic proposal, but that the DPG changed the emphasis to fluids. TECP responded that there was, as a result, insufficient tectonic emphasis. In response to Natland, Cathles said that no serious reservations were expressed by the proponents at the DPG meeting. Austin commented that, philosophically, PCOM should accept input from its DPGs. He further commented that Malpas had been voicing a proponent's objections to thematic panel modifications, not to the DPG report.

Austin asked why thematic panels had proposed modifications to CA. Cathles commented that VI did not fill an entire leg, and he thought that both OM and VI proponents felt stronger combined. Taira said that TECP did not like the half and half approach. Von Rad said that he did not like the philosophy that DPGs have the last word. Thematic panels have expertise. Moberly answered that DPGs report to PCOM and that thematic panels have an obligation to comment, but that PCOM makes the final decision, not the DPG. Moran reiterated the concern that CA relies on prototype tools except for the WSTP, which did not work on Leg 131. Austin reminded PCOM that if technology is not scheduled for use, it will be a guarantee no technological development. Cowan agreed that there is always a risk, adding that the tools will be developed on this leg. Mutter asked if CA was, therefore, an engineering leg. Taira said that ODP has to take a chance. Worthington asked about the timing relative to renewal, in case of failure. Malfait said that the key dates for renewal are late 1991 to early 1992, and that CA would be post-renewal.

Austin asked if PCOM could honor a commitment to the second CA leg recommended by the DPG. Watkins and Cathles said that if the leg is a success and exciting, or alternatively a failure or ambiguous, the question will be answered. Austin noted that this approach differed from that to SR, where PCOM committed to return. He asked about the modifications and Malpas moved that PCOM accept the DPG program. PCOM passed the following motion.

PCOM Motion

PCOM moves that, should a one-leg program of Cascadia margin drilling appear on the FY92 schedule, it should be that program submitted by the Cascadia margin Detailed Planning Group.

Motion Malpas, second Cowan Vote: for 13; against 2; abstain 1; absent 0

PCOM continued to discuss general aspects of the FY92 proposed program. Francis noted that ODP-TAMU had considered running the ship slowly to save fuel costs, trading science time for transit time. He also made the general point that a long engineering leg wastes the time of engineering personnel. NPT has a length problem at 69 days, he added. Tucholke suggested 2 legs of AG instead of NPT, but Shackleton said that would not be welcomed by OHP. Austin said that optimum leg length is reached with the minimum objectives from proposal 203/E(Rev). Tucholke asked if ODP should do a few things well or many things less well. Austin emphasized that the early part of the FY92 program must be exciting. Moberly said that PCOM must choose between North and South Pacific programs because of logistics. Austin said that CTJ was out on its own, but Watkins pointed to its high ranking. Malpas said that 504B cannot be delayed because of possible further deterioration of the hole. Von Rad said that CTJ is essential and that the decision must rather be between eastern and western Pacific programs. Jenkyns disagreed, characterizing AG as essential.

Austin questioned the technological capability to carry out AG successfully. Moberly, however, said that recovery is only a problem in very rubbly limestones. Cita-Seroni said that ESF supports the AG program; PCOM should not attempt to put all of the programs in FY92. Tucholke said that CTJ is TECP's first global choice, but that its second choice (i.e. conjugate passive margins) comes up soon in the Atlantic. CTJ is also easier to reach from the Atlantic than is the Western Pacific. Austin commented that he was getting the sense that weakness as a science program might be the main reason for dropping CTJ. Taira, however, suggested dropping NPT instead. Austin responded that NPT is OHP's priority and has links to Global Change. Lancelot commented that ODP has had problems at convergent margins, for example at Nankai. AG and NPT are globally-oriented and highly visible in comparison to CA and CTJ. Moberly suggested that the question was whether to spread or focus ODP's efforts, and having made that decision, how to spread or concentrate. Austin suggested a straw vote on the issue of spreading or concentrating the effort. **PCOM favored concentration on more science at fewer locations.**

Shackleton said that some low-priority NPT science would be lost because of long transits. Mutter said that PCOM might not be able to include priorities of all panels, noting that subduction complexes have been well-studied in the western Pacific. Austin commented that it was possible to incorporate the first priorities of all thematic panels, but Moberly reminded PCOM that was a majority of PCOM favored further concentration. Duncan asked if there was sufficient time available to address AG and CTJ objectives in a schedule that incorporates all thematic panel priorities. Austin said that only the collision objectives of CTJ could be met.

Malpas reminded PCOM that the plan to depart for the Atlantic in October, 1992 flexible. He suggested inserting a second AG leg and sliding the rest of the schedule back, utilizing the first leg of FY93, which would be HD or EPR engineering. If the science is there, ODP should have the option to stay. Moberly said that non-US representatives should be consulted about any delay in moving to the Atlantic. Cita-Seroni said that her mandate from ESF was to adhere to the fiscal year, except in the single case relating to requirements of AG. Jenkyns said that the

UK would have no objection. Austin commented that the philosophical intent to return to the Atlantic is the important point, rather than exact timing. Von Rad said that the FRG could wait another 2 months to move to the Atlantic. Lancelot said that the issue of timing was less important to France than the thematic issue of preferring to limit drilling of accretionary complexes. Austin added that most Atlantic programs could use extra planning time. Humphris asked if Malpas's proposed schedule would create problems with weather windows. Francis replied that it was near the edge but acceptable.

Austin said that he would still like to get PCOM's feeling for an overall schedule. Cowan said that he would like to hear from TECP whether CTJ can accomplish sufficient science in the time available. Moores said that it could because of the uniqueness of the tectonic setting. Suess noted that, in any case, SGPP's support had been only for the collision zone objectives.

Malpas presented a motion that the *JOIDES Resolution* depart the Pacific in approximately January 1993. This meant that the first priorities of all panels could be addressed in addition to a comprehensive AG program. Austin called for discussion. Tucholke asked if there was time to do both AG and CTJ well. Austin said that 38 days of drilling would be available, compared to a requirement of 41.5 days to achieve highest-priority proposed collision objectives of CTJ. In response to von Rad, Austin said that the BSR element was included. Malpas said that if PCOM decided which programs should get 0, 1 or 2 legs, he would include that in his motion, or alternatively withdraw it. In a series of straw votes, the opinion of PCOM was that AG should be a 2 leg program, with the remainder being 1 leg programs. Suess said that AG was initially ranked by SGPP as a 2 leg program. The expectation during the new rankings was that only 1 leg would be available. Shackleton said that OHP saw 203/E(Rev) as requiring more than 1 leg, but did not discuss the merits of 1 leg versus 2. He felt that if 2 legs were scheduled, they should comprise a generic program, taking in some of both proposals. Cowan pointed out that the proposed schedule gave CA a lot of time at the expense of NPT. Austin agreed that NPT should get more time, but that such imbalance might be unavoidable. Malpas altered the motion to include the proposed schedule.

Austin asked if PCOM was delaying, for the time being, which AG proposals to include. Tucholke pointed out that 202/E(Rev) required 58 operational days. Moberly said that the second AG leg should end closer to the start of NPT than Honolulu. Leinen suggested that the extra leg should go to the more highly-rated 203/E(Rev), but others disagreed. Tucholke said that it would be better to combine AG proposals rather than give them separate legs. Austin reiterated that this has been historically difficult and raised the question of a DPG. Leinen suggested leaving it to OHP, perhaps with some extra help. Tucholke, however, pointed out that many themes are involved. PCOM passed the following motion.

PCOM Motion

PCOM moves that the *JOIDES Resolution* be scheduled to depart the Pacific Ocean approximately in mid-January 1993, thus allowing for 8 legs of drilling after the September 1990 port call at the conclusion of Leg 139. Thus the program is:

Leg 140	**504B or Hess Deep**
Leg 141	**Chile Triple Junction**
Leg 142	**Engineering 4, EPR**
Leg 143	**Atolls and Guyots**
Leg 144	**Atolls and Guyots**

Leg 145	**North Pacific Transect**
Leg 146	**Cascadia Accretion**
Leg 147	**Hess Deep or EPR**

Motion Malpas, second Leinen Vote: for 15; against 0; abstain 1; absent 0

Austin concluded that a DPG would be needed for AG, and reminded PCOM that it would have to add to its agenda empowering this group and getting recommendations for members. A representative will also be required from each thematic panel. Francis produced a tentative list of ports for the proposed schedule. Shackleton asked that PCOM not forget that NPT was ranked above AG by OHP and requested that NPT be given as much time as possible. However, Austin reminded PCOM that 56 day legs are the basis of planning.

882 LEG 137 - POSSIBLE ALTERNATE USES OF THE DRILLSHIP IF CLEANING OPERATIONS AT HOLE 504B ARE UNSUCCESSFUL

Austin began by pointing out that part of OHP's response had been left out of the Agenda Notes (p. 33). OHP recommended either starting Leg 138 or carrying out APC coring in the 504B area (covered by proposal 373/E). Becker commented that, since Leg 137 starts in March 1991, the prospectus must be written immediately. Urgently required, therefore, is clarification of: 1) contingencies, 2) time to devote to pre-cleanout fluid sampling and logging, and 3) how to schedule certain logging operations.

Becker said that the following contingencies, which singly or in combination can occupy 0 to 18 days, have been considered. 1) "Full" logging. A fairly full logging program has already been carried out and further logging can only occupy up to 5 more days. 2) Hydrogeochemistry near Hole 504B (proposal 123/E). WSTP will not be on the ship. Fluid samples can be obtained by squeezing cores, but temperature measurements can not be made. ODP-TAMU should leave a functional temperature tool on the ship. 3) Double APC coring at Site 505, 80 km north of Site 504B (proposal 373/E). Sediment thickness is only 225 m, so this option would occupy less than 5 days. 4) New hole at Site 504. Insufficient time is available. 5) Set a hard rock guidebase at Hess Deep. Again, insufficient time is available. 6) Start Leg 138.

Discussion

Moberly said that HD sites require better placement before setting a guidebase. Jarrard asked if the new APC heatflow tool, instead of the WSTP, would solve the problem. Becker replied, however, that the APC would only penetrate the upper 100 m or so of the 275m section. The hydrogeochemical objective is a local heat flow peak to the south of Hole 504B.

In response to a question from von Rad, Natland said that the sedimentary section at Site 505 is thick because of redeposition from surrounding highs. It has been cored (not with the APC) with good recovery. Becker said that his preference would be for contingencies 1, 2 and 3 in that order, but if the casing at Hole 504B is found to be bad early in the program, these options might not fill the time available. In answer to a question from Cowan, Becker said that the hydrogeochemical study would involve drilling holes at heat flow highs and address the uniformity of pore fluids.

Austin asked PCOM to consider the possibility of abandoning the option of starting Leg 138 in order to reduce the number of options. Moberly said that there is usually little enthusiasm or expertise among a scientific party for starting the next leg. Responding to Austin, however, Francis said that Leg 138 has a full program with tight time constraints. Leinen noted that proposal 373/E was reviewed, but was never ranked highly enough to drill. PCOM should consider only highly-approved programs. Austin said that SGPP and LITHP are both in favor of the hydrogeochemical study. SGPP is also in favor of double APC coring to basement near Hole 504B. Von Rad asked where the hole would be located. Austin replied that SGPP did not name a site.

Tucholke suggested starting Leg 138, since the ranking of the hydrogeochemical study was low. Jenkyns asked if the hydrogeochemistry ranking would rise if one site were extracted for drilling, making it , in effect, an "add-on". Leinen, however, said that the ranking would go down since the proposal (123/E) intended the study of a range of regimes. Duncan pointed out that 2 thematic panels chose this proposal. Austin commented that Leg 138 Site EEQ 2, which is outside Ecuadorian waters, would occupy 7+ days. He suggested dismissing the hydrogeochemical study since its level of priority is questionable. Tucholke also suggested dropping work at Site 505 if it is an area of redeposition. Moberly commented that starting Leg 138 has the virtue of flexibility. There was general agreement. Becker noted that full logging is still the first choice of the panels, and Austin said that this should be incorporated in the motion to be written by Tucholke. Natland observed that if Leg 138 is begun, the Leg 137 scientific party will be able to perform some studies that the Leg 138 party might not, for example pore-water sampling, temperature measurements, logging and basement coring. Becker said that the Leg 137 party will include a pore water chemist but no sedimentologists. He suggested another option: setting a re-entry cone for an OSN hole, if this is one of the projected OSN sites. Austin disagreed, adding that such action would have to wait until FDSN had better defined its objectives. In the event that there is insufficient time to start Leg 138, Becker suggested that hydrogeochemistry work near Hole 504B be carried out and Duncan agreed that this point should be addressed. Natland added that, if there is not enough time to make useful progress at EEQ 2, the next item on the list should be addressed. Tucholke agreed to modify the motion to this effect.

Becker said that he would like the temperature probe to be left on the ship for Leg 137 and that he still required some guidance as to how much time to spend on fluid sampling before beginning the clean-out of Hole 504B. He noted that the LANL sampler and flow meter permeability tools were scheduled for use on Leg 139 and there will be no WSTP on Leg 137. Austin said that the minutes would show that PCOM will rely on the experience of the chief scientist in this matter. Becker asked whether logging runs should be firmly scheduled in the event that Hole 504B is successfully cleaned, or left for the science leg. He singled out the FMS, which he said he would like to see run, adding that DMP also recommends it. Leinen suggested that this is micromanagement, but Austin confirmed that the ODP-TAMU engineers must get the time that they need at 504B. PCOM passed the following motion.

PCOM Motion

In the event that time is left following the attempt to clear and drill Hole 504B, these contingencies will be followed: 1) full logging program, 2) begin Leg 138 drilling. If the remaining time is too limited to begin reasonably Leg 138 drilling, then HPC/APC coring for hydrogeochemistry should be conducted in high-heat flow areas near 504B.

Motion Tucholke, second Leinen Vote: for 15; against 0; abstain 0; absent 1

883 MEMBERSHIP ON JOIDES PANELS

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

LITHP

Batiza, Cathles, Perfit and Mevel are rotating off the panel. Humphris asked that Perfit be retained until after the spring 1991 meeting. LITHP nominated J. Bender to replace Batiza and R. Zierenberg to replace Cathles. Both are willing to serve. LITHP has not been notified of the French substitute for Mevel. Jenkyns noted a correction to the membership list: the UK member is P. Kempton (BGS) and not P. Browning.

TECP

TECP requests that Dalziel, Engebretson and Buck, who are rotating off the panel, be replaced by S. Cande, C. Keen and M. Zoback, respectively. All have agreed to serve. Crawford said that Etheridge would be replaced by P. Symonds (BMR). Jenkyns pointed out that Westbrook is the alternate to Robertson and not a member.

In view of the large numbers of petrologically-driven proposals received by TECP, and the loss of expertise in this area with Buck's rotation, PCOM nominated J. Karson (Duke) instead of Keen.

SGPP

MacKenzie will replace Suess as chairperson after the Spring 1991 meeting. Frölich and Goldhaber are rotating off the panel. SGPP nominees for their replacements were G. Klinkhammer (OSU), K. Kvenvolden (USGS) and F. Sayles (WHOI).

PCOM felt that carbonate expertise is required by SGPP, especially with two legs of AG drilling scheduled, and nominated P. Swart (Miami). As PCOM was reluctant to having more than one member from the same institution, PCOM's nominees are Sayles and Swart.

OHP

OHP requested that Kent and Berger remain on the panel, at least until after the next meeting. OHP wishes to retain their expertise following a previous large membership turnover. If Kent is replaced, OHP requests a magnetostratigrapher. OHP had not approached any nominees, but suggested J. Channell (Florida) and J. Zachos (Michigan) as their choices to replace Kent and Berger, respectively.

PCOM felt that Kent and Berger should be replaced immediately. PCOM felt that T. Herbert's (SIO) area of expertise made him more suitable than Zachos as a replacement for Berger.

DMP

No membership action required. Austin reported that Worthington had suggested that Becker replace Langseth as PCOM liaison. Leinen said that the SMP liaison to DMP, Gieskes, had only attended 1 meeting and that liaison between the 2 panels is particularly important since they have just jointly endorsed core-log integration. Austin noted that SMP and DMP plan 1 joint meeting/year and that he would bring this point to Worthington's attention.

IHP

Austin reported that Moore, the IHP chairperson, wishes to leave after the fall meeting. Crawford said that N. Rock (University of Western Australia) will replace Lee. Moberly said that Co-chiefs would rotate through this panel more frequently than other members, as their purpose was to keep IHP aware of vagaries in post-cruise publication procedures.

PPSP

PCOM unanimously endorsed PPSP's proposal that L. Garrison join the panel.

SMP

Leinen noted that lack of a sedimentologist on SMP will hinder development of core-log integration. There is no member from FRG on SMP, and Austin informed von Rad that he should take action to find a FRG sedimentologist.

SSP

The industry representative, Hedberg, has resigned. USSAC nominates J. Farre (EXXON) as a replacement. Austin pointed out that Hedberg had been unable to attend meetings. He urged all panel chairpersons to notify PCOM of members who do not attend. Von Rad said that the FRG nominee would have to be changed.

TEDCOM

Austin reported that TEDCOM would like PCOM endorsement to find a person with high-temperature drilling expertise, which would involve an extra panel member. Kappel noted that USSAC would have to pay. Duncan suggested seeking an Icelandic scientist because of their experience with high-temperature drilling. He said that perhaps ESF should nominate someone, and offered to find some names. Natland suggested J. Eichelberger (LANL), who has worked with the Mono Lake drilling group. Moberly noted that TEDCOM was initiated to involve industry people and cautioned against replacing industry people with non-industry people. Austin said that he would advance Eichelberger to Sparks, but that he agreed with Moberly. Jenkyns noted that Grassick had been replaced by A. Skinner (BGS) as UK representative.

884 OTHER PERSONNEL ACTIONS

CO-CHIEF SCIENTIST NOMINATIONS

PCOM recommended co-chief scientists for the following drilling legs. All recommendations are in alphabetical order and no order of priority is implied.

Leg 140, Deepening of Hole 504B or Hess Deep

504B: No nominations

Hess Deep:

US: H. Dick (WHOI), K. Gillis (WHOI), J. Karson (Duke)

Non-US: J. Auzende (F), J. Erzinger (FRG), J. Francheteau (F) J. Malpas (C-A), C. Mevel (F)

Leinen said that she would like to see PCOM reiterate its endorsement of proponents as co-chiefs. Francis pointed out that ODP-TAMU must respect MOUs and balance US and non-US involvement. He added that FRG has been under-represented to date.

Leg 141, Chile Triple Junction

US: S. Cande (LDGO), S. Lewis (USGS), S. Macko (INSTITUTION?), P. Shanks (USGS)

Non-US: J. Behrmann (FRG), K. Emeis (FRG), S. Scott (C-A), T. Urabe (J), G. Westbrook (UK)

Leinen suggested choosing a sample-oriented person and a geophysicist. Austin commented that one of the proponents should be rewarded for their work to get this proposal on the FY92 schedule.

Leg 142, Engineering 4/EPR

US: R. Batiza (UH), C. Langmuir (LDGO)

Non-US: J. Cann (UK), J. Francheteau (F), R. Hekinian (F), A. Saunders (UK)

Austin said that a science leg has not been scheduled, but that PCOM usually nominates a single co-chief for engineering legs.

Legs 143 and 144, Atolls and Guyots

PCOM decided to ask for additional panel input before the next PCOM meeting, April 1991. Moberly said that discussion should be delayed until after the AG-DPG, depending on when this meets. A provisional list was given to ODP-TAMU, but ODP-TAMU will not act until April.

Leg 145, North Pacific Transect

PCOM decided to defer discussion until its April 1991 meeting. The provisional list discussed at the Annual Meeting is not to be acted upon by ODP-TAMU until April.

Leg 146 Cascadia Accretion

US: B. Carson (Lehigh), M. Goldhaber (Colorado Sch. Mines) V. Kulm (OSU) C. Moore (UCSC)

Non-US: K. Emeis (FRG),R. Hyndman (C-A)

Austin summarized PCOM's discussion by noting PCOM would prefer a mix of old and new blood and that a proponent should be chosen, in addition to maintaining international balance.

Leg 147, Hess Deep or Engineering 5/EPR

(Note: If Hess Deep: See Leg 140)

(Note: If Engineering/EPR: See Leg 142)

PCOM LIAISONS

Becker will become DMP liaison and be TEDCOM alternate. Mutter will replace Becker as LITHP liaison, after LITHP's next meeting. Mutter will also replace Langseth on DMP, but Langseth will attend DMP's next meeting. Leinen becomes liaison to the North Atlantic Arctic Gateway DPG (NAAG-DPG). The updated list is as follows:

LITHP	J. Malpas, J. Mutter	NARM-DPG	B. Tucholke
TECP	A. Taira, B. Tucholke	NAAG-DPG	M. Leinen
SGPP	R. Moberly, U. Von Rad	AG-DPG	J. Watkins
OHP	R. Duncan, H. Jenkyns	SL-WG	J. Watkins
DMP	K. Becker, D. Cowan		
IHP	Y. Lancelot		
PPSP	J. Austin		
SMP	M. Cita-Seroni, M. Leinen		
SSP	Y. Lancelot, J. Watkins		
TEDCOM	J. Natland, K. Becker		

LIAISONS WITH OTHER GLOBAL GEOSCIENCE PROGRAMS

International Lithosphere Program (ILP) Coordinating Committee on Continental Drilling

Austin said that liaison would be from ODP rather than PCOM. Panel members would be preferable. Action was deferred until the April 1991 PCOM meeting.

Inter-RIDGE

The interim Inter-RIDGE Steering Group has nominated P.J. Fox (USA), M. Sinha (UK) and J. Francheteau (F) as initial liaisons with ODP. PCOM nominated J. Bender (LITHP), J. Franklin (LITHP) and M. Mottl (SMP) to represent ODP as liaisons with InterRIDGE. J. Bender will be co-chairperson of this group from the ODP side, and a co-chair from the Inter-RIDGE side must be nominated. Pyle said that a proper procedure would be to call to determine the interest of ODP members in serving on the liaison group, then write to the Inter-Ridge Steering Group with names. He added that travel to meetings should be avoided as much as possible, and that liaisons should keep in touch by phone, etc. Mutter said that Inter-RIDGE meets twice a year and Austin replied that one of the ODP representatives should be sent. Pyle, reiterated that a primary objective was to avoid formality. Moberly said that PCOM put forward a mandate which EXCOM approved, and that ODP nominees should have a good working knowledge of ODP drilling plans.

PCOM will invite co-chairs to the August PCOM meeting, where they will present a single report. Travel expenses will be covered by ODP.

DETAILED PLANNING GROUPS AND WORKING GROUPS

North Atlantic Rifted Margins DPG (NARM-DPG)

Austin informed PCOM that all on the list below have accepted their nominations. The DPG will meet in February or March for the first time.

G. Boillot (F)*
M Coffin (UTIG)
O. Eldholm (ESF)*
J. Hall (C-A)
K. Hinz (FRG)*
D. Hutchinson (USGS)
H. Larsen (ESF), chairperson
K. Miller (Rutgers)
A. Morton (UK)*
D. Sawyer (Rice)
S. Srivastava (C-A)*
R. Whitmarsh (UK)*

* Proponents

Additional petrological expertise was suggested by the chair, Larsen. His nominee is J. Hertogen (ESF). Cita-Seroni said that ESF would like M. Comas, a Spanish structural geologist, to be added. Austin noted that Comas, a proponent, balances Hertogen, a non-proponent. PCOM has now sent Comas an invitation. PCOM felt that NARM-DPG would also benefit from the expertise of R. Buck (LDGO). He was nominated.

Austin said that DPGs normally meet only once, but that the NARM-DPG faces a complex task and may meet twice. Austin will contact thematic panel chairpersons to discuss liaisons when meeting dates/venues are set. He wished to avoid separate DPG and thematic panel rankings of proposals. Mutter questioned whether a WG would be more appropriate than a DPG, but Austin replied that it is a DPG because highly-ranked proposals exist and there is an urgent need to define a drilling program. Cita-Seroni agreed, adding that it is politically important to ESF. Austin noted, however, that the intent is not to exclude proposals. Mutter said that the NARM-DPG needs C. Keen, but Austin said that she is a proponent and that would upset proponent/non-proponent balance on the DPG. As a back-up in case of refusal by Buck, Austin suggested Sawyer (TECP).

North Atlantic Arctic Gateway DPG (NAAG-DPG)

All on the list below have accepted their nominations.

W. Berggren (WHOI)
R. Henrich (FRG)*
E. Jansen (ESF)*
L. Mayer (C-A)
P. Mudie (C-A)*
W. Ruddiman (LDGO), chairperson
T. Vorren (ESF)

* Proponents

Austin reported that the NAAG-DPG will probably meet in February. Austin will contact thematic panel chairpersons to determine whether they will nominate liaisons when meeting dates/venues are set.

Sea Level WG (SL-WG)

All on the list below have accepted their nominations.

M-P. Aubrey (WHOI)
R. Carter (C-A)
N. Christie-Blick (LDGO)
P. Crevello (Marathon), chairperson
P. Davies (C-A)
A. Droxler (Rice)
G. Eberli (ESF)
R. Halley (USGS)
T. Loutit (EXXON)

K. Miller (Rutgers)
W. Sager (TAMU)
M. Sarnthein (FRG)
A. Watts (UK)
E. Winterer (SIO)

Cita-Seroni said that J. van Hinte would be attending SL-WG for ESF. Austin reported that OHP had suggested adding R. Flood to this WG. He said that SL-WG would probably meet at Marathon Oil Co., Denver, in March 1991. Jenkyns noted that some of the names on the list would also appear on the AG-WG. He suggested creating a sub-group of the SL-WG to act as the AG-DPG and Leinen suggested adding a day, and some extra people, to the SL-WG meeting for consideration of AG. Austin, however, said that a separate group was needed even if the same people are involved. Austin will contact thematic panel chairpersons to discuss liaisons when meeting dates/venue are set.

Atolls and Guyots DPG (AG-DPG)

Following inclusion of two legs for AG in the FY92 Drilling Program, PCOM felt the need to establish an AG-DPG. After some discussion, PCOM nominated three proponents and three non-proponents (including the chairperson) to form the core group:

R. Halley (USGS)
F. Duennebier (UH)*
M. McNutt (MIT)*
D. Rea (Michigan), chairperson
H. Staudigel (SIO)
E. Winterer (SIO)*

* Proponents

Non-US partners add members as they please. Moberly presented a motion for establishment of the DPG. Von Rad said that the number of drilling days should not be included in the motion. Austin commented that the mandate to create a 2 leg program from 2 proposals is more precise than for previous DPGs, but PCOM felt that the final drilling program should include elements of both AG proposals. Francis stressed the importance of keeping AG legs to approximately 56 days. Leinen and Tucholke added that the DPG should take into account priorities of thematic panels and that panel minutes should be provided to the DPG. Austin replied that he would ask panel chairpersons to provide liaisons (non-proponents) who will supply panel interests or, alternatively, to provide a written input. Francis said the DPG should also understand there will be no DCS for AG drilling. PCOM passed the following motion.

PCOM Motion

PCOM establishes an Atolls and Guyots Detailed Planning Group (AG-DPG) to be charged to construct a two-leg drilling plan that includes the priority 1 and 2 targets of proposal 203/E(Rev) (approximately 38.4 days) and additional targets of proposals 203/E(Rev) and 202/E(Rev), selected so as to create a maximized, balanced scientific return from the range of objectives of these proposals. The DPG will also take into account thematic panel priorities.

Motion Moberly, second Tucholke Vote: for 14; against 0; abstain 0; absent 2

Moberly noted that each proposal contains a number of scientific objectives, and the staffing of the AG-DPG should take into account the proponents as well as the range of objectives. He added that two legs means two legs of 56 days each, including transit time. Furthermore, the recommendations and co-chief nominations of the AG-DPG, and comments on the recommendations of the thematic panels will be presented to PCOM before its August 1991 meeting.Moberly noted that Lancelot had left the name of a French nominee. Austin said that non-US participants are free to attend as full members, but that they must provide their own funding. He added that he would provide PCOM members with the time and place of the DPG meeting. He expects the DPG to meet for 1 day only. Watkins was pencilled in as PCOM liaison.

PCOM passed the following motion.

PCOM Motion

PCOM moves that nominees for panels, WGs and DPGs, selected by PCOM, be approached to serve.

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

885 FUTURE MEETINGS

Austin summarized the future PCOM meeting schedule. The 1991 Spring PCOM meeting will be hosted by Leinen at the University of Rhode Island, Graduate School of Oceanography from 23-25 April 1991. No field trip is scheduled at present.

The 1991 Summer PCOM meeting will be hosted by von Rad at the Bundesanstalt für Geowissenschaften und Rohstoffe, Hannover FRG, from 20-22 August 1991. A two-day field trip to the Harz Mountains will be held following the meeting.

The 1991 PCOM Annual Meeting will be hosted by Austin and the JOIDES Office at the University of Texas at Austin, Institute for Geophysics (Thompson Conference Center) from 4-7 December 1991. The meeting will be preceded by the Panel Chairperson's meeting on 3 December 1991. A field trip may be held prior to the meeting.

The 1992 Spring PCOM meeting will be hosted by Duncan at Oregon State University, College of Oceanography from 21-23 April 1992. A field trip will be held.

The 1992 Summer PCOM meeting will be hosted by Malpas in Victoria, British Columbia, Canada.

The 1992 PCOM Annual Meeting will be hosted by Mutter at Columbia University, Lamont-Doherty Geological Observatory.

886 OTHER BUSINESS

OFFSET DRILLING WG

Austin reported that LITHP and TECP have requested a WG on offset drilling and have provided a list of nominees. He asked PCOM whether the WG should be approved, or whether the responsibility should be left with thematic panels as previously discussed by PCOM (April 1990).

Moberly suggested inviting guests with appropriate expertise to the normal panel meetings. Austin replied that the panels preferred that a separate body be organized. Duncan said that TECP would like a greater tectonic component in offset drilling and he thought that a WG would be the best way to ensure this. Austin noted that he was reluctant to have 3 DPGs and 2 WGs operating during any one period, but Natland said that a WG is needed, and it would be wrong to delay its formation because of timing. Duncan pointed out that, since PCOM's April meeting, HD is now on the schedule, potentially as a multi-leg program. Nonetheless, Austin said that he was reluctant to authorize a WG until LITHP and TECP have had another joint meeting. He said that he would discuss with the panel chairpersons the possibility of adding some discussion of this matter to that meeting, perhaps in the context of an extra day, possibly with extra personnel. Natland highlighted the risk of a number of Atlantic offset drilling proposals not being subjected to a proper evaluation. Austin was against going ahead with a WG immediately while so many other meetings are scheduled.

ADD-ON/PIGGY-BACK SCIENCE

Austin introduced the subject, which involved setting aside a number of days from the drilling schedule for "add-on" science. Mutter said that Becker had left a note to the effect that he was against "add-on" science, characterizing it as a misnomer since it subtracts from scheduled legs. If "add-on" science is to be endorsed, Becker was of the opinion that it should have the same thematic thrust as the original leg. Austin noted that PANCHM had made the same suggestion. Von Rad pointed out that regional availability of the ship would be the most important factor, but Austin said that PANCHM felt that there would be problems of staffing and expertise if there were no thematic link between the "add-on" and the original leg. Austin added that it was true that "add-ons" are really subtractions. Moberly said that "add-ons" should be put off until FY92 so that they can be factored into the schedule but Austin said that one impetus for "add-ons" was to increase excitement during renewal. Watkins said that "add-ons" should be considered on a case-by-case basis. Pyle noted that if ODP rejects "add-ons" it would be showing itself to be inflexible, as charged by EXCOM.

Austin continued by saying that PANCHM felt that if the possibility of "add-ons" was advertised, it would generate too many proposals. PANCHM suggested that there be a finite time window for "add-on" proposal submission, perhaps from January (when the ship track is published) until spring panel meetings. Austin added that PPSP is adamant that there be normal safety review of these proposals. Natland said that it should be stated that "add-on" proposals will be considered conditional to their impact on original legs. Austin noted that there are currently 2 "add-on" proposals in the system, for drilling in the Santa Barbara Basin and on the Navy Fan. Leinen commented that it is important that PANCHM are excited by the idea of "add-ons". Austin noted that PANCHM were less positive when they realized that "add-ons" involve subtraction from the original leg. Pyle asked whether SEDCO's wishes regarding leg length should control ODP. Francis replied that the contract refers to legs of approximately 8 weeks in length; there will be problems if leg lengths are increased. He added that no legs are

less than 56 days; that length has become the minimum. Austin advised PCOM that if ODP advertises a policy of "add-ons", some will have to be incorporated. Mutter said "add-ons" for drilling sediments would take away time from LITHP/TECP objectives, but Austin pointed out that the "add-ons" need not involve a new hole but, instead, allow deepening to basement or additional logging. Austin continued that one goal of "add-ons" is to show the outside world that there is another way to do ocean drilling besides the 56 day leg; this should expand the community involved in ODP. Mutter reiterated that he thought it important to "add-on" to legs and not subtract. Austin replied that co-chiefs design legs to fill time available; if they have 54 days, they will use 54 days instead of 56. He added that he believed that ODP needs to try "add-ons" but that he was reluctant to make it a permanent policy. Austin said that PCOM should not decide on a specific "add-on" before the policy has been advertised so that all can respond. Watkins suggested a straw vote on the policy. That vote determined that a majority of PCOM were in favor of allowing "add-ons". Moberly put a motion before PCOM. Tucholke commented that the motion implied that time will be made available and that some "add-ons" must be included. Mutter again expressed the concern that this will take time away from legs and create dissention among co-chiefs, but Austin said that co-chiefs have always had to prioritize sites. PCOM passed the following motion.

PCOM Motion

PCOM moves that JOIDES allow and advertise the possibility of including short, one to four days proposals along the general ship track. Proposals will be reviewed by the thematic panels, SSP and PPSP for PCOM's decision.

Motion Moberly, second Leinen Vote: for 10; against 3; abstain 1; absent 2

Discussion

Austin turned the discussion to the total number of days of "add-on" science to be allowed. Leinen suggested no more than 12 days. Francis added that this should be on the understanding that average lengths of legs will not be changed. Moberly suggested 10 days. Leinen said that the long transits in the FY92 schedule would allow the number of days to be varied. Austin noted that it will be imperative for ODP to provide some days for "add-ons" during the first year for which the policy is advertised. He asked PCOM to consider the question of thematic consonance with original legs and the issue of the timing of the "add-on", noting that an "add-on" cannot be announced too close to the date of departure of its parent leg without creating staffing problems. Austin added that it was his understanding that the policy will begin with FY92 and Leg 141. Tucholke put forward a motion to devote 10 days to "add-ons", so that ODP would be forced to provide this time. Leinen pointed out, however, that so far there are insufficient programs supported by thematic panels to ensure that the 10 days could be used. The motion was defeated. Vote: for 2; against 12; abstain 0; absent 2.

Austin said that the window for submission of proposals must be limited to avoid a potential. Leinen suggested endorsing the PANCHM window of opportunity. Austin stated that the window in question is from January until spring, for the panels to provide recommendations for a PCOM decision in August. Moberly noted that the window really begins after the PCOM Annual Meeting, since word of the ship track was public from that time forward, and Austin agreed.

PCOM Consensus

PCOM generally endorses the PANCHM recommendations (Appendix 8) for the submission and review of "add-on" proposals.

PCOM also passed the following motion.

PCOM Motion

PCOM will consider scheduling up to 10 days of *ad hoc* drilling during legs 141 to 147.

Motion Cowan, second Leinen) Vote: for 12; against 0; abstain 2; absent 0

Austin concluded by saying that the minutes will reflect that PCOM understands the SEDCO working relationship with ODP-TAMU regarding leg length.

DISCONTINUING BLIND WHOLE-ROUND SAMPLING/FREEZING FOR ORGANIC GEOCHEMISTRY

Natland moved that PCOM endorse OHP's plan (see Agenda Notes, p.34; white pages p. 205) for whole round samples. Leinen noted that SMP was also asked to consider this. They had asked about the number of requests for whole rounds and wanted the opinions of geochemists on continuing/discontinuing the policy. The majority of PCOM felt that the number of requests has been very small. Leinen said that the samples are apparently only refrigerated for 3 years and that they are, in any case, not geochemically useful. Austin said that PCOM then endorses the OHP recommendations and requests that the existing samples be returned to the repositories. PCOM passed the following motion.

PCOM Motion

PCOM endorses the recommendation of the Ocean History Panel that whole-round sampling for organic geochemistry (OG) be discontinued, and that frozen 30-cm whole-round core sections presently in the repositories stored as OG samples, be returned to the regular collection.

Motion Natland, second Moberly Vote: for 13; against 0; abstain 1; absent 2

LENGTH OF DRILLING LEGS

Austin reiterated that PCOM recognizes that the average length of drilling legs should be 56 days.

AUSTRALIAN RENEWAL BROCHURE

Crawford noted that copies of the Australian renewal brochure are available. The brochure is designed to accompany the LRP.

PRESENCE OF PROPONENTS ON PANELS

Mutter raised the issue of proponents on panels. Von Rad said that on SGPP, proponents are not allowed to vote for their own proposals. Mutter asked if Suess was in the room during recent SGPP rankings. Mutter noted that if the PCOM chairperson had been a proponent of a proposal under consideration for FY92, he would have been absent for the entire process of selecting the FY92 schedule. Austin said that perhaps PCOM needs one or more *pro-tem* chairs. Moberly commented that it was common in the past for the PCOM chairperson to be out of the room for a whole afternoon. Austin said that, when generating the FY93 prospectus, PCOM may need to invite representatives from other proponent groups in the prospectus to balance those on PCOM. Leinen said that that even when proponents are asked to respond to specific questions, it can turn into a discussion, and Mutter stated that either all proponents should be present or none. Pyle noted that proponents would have to attend all PCOM meetings, and Leinen added that it would be better to exclude all. Mutter commented that there is a perception that ODP is a closed program. Cowan said that PCOM must deal with the information to hand and suggested excluding all proponents. He noted that the NSF system is to exclude everyone connected with a proposal.

Watkins suggested that this issue be placed on the agenda for full discussion at the next PCOM meeting. Jenkyns added that the JOIDES Office could consider the matter in the interim. Austin said that he was afraid that situations might arise where there was insufficient critical mass in the room to consider proposals properly. However, Mutter replied that any such item must be tabled and passed to the next meeting. Leinen agreed.

Tucholke went on to say that PCOM has a policy that no proponents be present. Jenkyns requested that Tucholke's comments be conveyed to the panel chairs. Mutter noted that the policy is not being uniformly applied. Tucholke said that panel chairs should know in advance to replace people if there is the likelihood of insufficient critical mass. Alternates should be nominated.

FY93 PROGRAM PLAN

Austin suggested that the JOIDES Office assemble the FY93 prospectus during the summer of calendar 1991. PCOM agreed with this plan.

STRATCOM

Pyle asked Austin about the future of STRATCOM. Austin replied that his feeling was that STRATCOM had no mandate to meet further, at present. There was no further discussion.

PARTICIPATION OF STUDENTS AS LABORATORY TECHNICIANS

Leinen began by saying that SMP had suggested that graduate students be allowed to participate in ODP legs as lab technicians. ODP-TAMU had endorsed the proposal because there is a lack of adequate technical support aboard ship. PCOM should limit numbers participating in legs and avoid having students compete with established scientists for slots. SMP's suggestion is to replace 2 science slots with 2 student nominees, 1 US and 1 non-US. The students would be members of the technical staff. Francis said that he had thought that SMP wanted extra slots, but Leinen said that their plan will reduce the number of science slots.

Austin said that the ratio of technicians to scientists should be improved. Leinen commented that, at present, students participate as scientists. Pyle said that SMP's recommendation must be considered by JOI, Inc. since it affects MOUs. Austin said that he would like the non-US PCOM members to come to the April meeting with recommendations. He added that students may prefer to participate as scientists rather than technicians.

887 ADJOURNMENT

The meeting was adjourned at 1:30 PM.

APPENDICES ATTACHED TO THE 28 NOVEMBER - 1 DECEMBER 1990 PCOM MEETING

1. Science Operator report, supplemental information
2. Wireline Logging report, supplemental information
3. PPSP Annual Report
4. DMP Annual Report, summary
5. SMP Annual Report, summary
6. SSP Annual Report
7. IHP Annual Report
8. PANCHM minutes
9. STRATCOM reports, summary
10. TECP Annual Report, summary
11. SGPP Annual Report
12. OHP Annual Report, summary
13. EPR-DPG Report, summary
14. Cascadia DPG Report, summary
15. Science Operator, engineering and technical developments, supplemental information
16. Wireline Logging, engineering and technical developments, supplemental information
17. Atolls and Guyots PCOM Watchdog Report, supplemental information
18. Peru Gas Hydrates PCOM Watchdog Report, supplemental information
19. EPR PCOM Watchdog Report, summary
20. Cascadia PCOM Watchdog Report, summary
21. LITHP Annual Report

LIST OF HANDOUTS DISTRIBUTED AT THE 28 NOVEMBER - 1 DECEMBER PCOM MEETING

1. NSF Report
2. JOI, Inc. brochure on Nansen Arctic Drilling
3. Minutes of the SMP Meeting, 9-10 October 1990
4. Recommendations for an East Pacific Rise Drilling Program
5. List of legs and ports for the FY92 Program Plan

JOIDES Lithosphere Panel FY'90 Annual Report

The JOIDES Lithosphere Panel (LITHP) has met twice in the last year: once in March in New Orleans, where a joint morning session was held with the Tectonics Panel (TECP), and more recently in October. Our activities are documented in detail in the minutes from those meetings.

A number of important steps have been taken in the last year to begin to address LITHP's long-term goals that were outlined in our 1988 Long-Range Planning Document. In order to address our overall thematic objective of understanding the structure and composition of the oceanic crust and upper mantle, the lithosphere community now recognizes that both a complete crustal section and a program of offset sections of the lower crust and upper mantle are necessary. In the last year, progress has been made in both areas:

1) **drilling a complete crustal section** - this continues to be a critical long-term goal of LITHP and, based on the recommendation that resulted from the joint LITHP-TECP meeting in March, PCOM has created the Deep Drilling Working Group to identify the technology needed and to examine the strategies required to achieve this objective.

2) **drilling offset sections** - in the shorter term, drilling offset partial sections of the lower layers of the oceanic crust affords a way of characterizing parts of the crust using more immediately available drilling capabilities. Much of the interest in this strategy was generated by the DOLCUM workshop held 18 months ago, and a number of proposals have been submitted in the last year to use offset drilling in a number of different tectonic settings.

   LITHP is now urgently recommending that PCOM establish a working group to prioritize the scientific objectives that can be realized by offset drilling, and to determine a drilling program to meet the goals that are set.

In the last year, we have seen an initial step taken towards our goal of establishing global seismic arrays with the scheduling of the pilot hole off Hawaii. LITHP is very much aware that the most effective way to continue installation of new observatories is as an integral part of the ODP Long Range Plan so that all drilling sites that are in appropriate locations to become part of the seismic array, be equipped with re-entry cones when initially drilled. This requires, in the short term, identification of appropriate locations and, in the long term, continued monitoring to ensure re-entry cone installation in all potential observatory sites.

Other important highlights of the year include the formation of two Detailed Planning Groups to formulate drilling programs for the East Pacific Rise (this is already completed) and for North Atlantic Rifted Margins. In addition, LITHP is encouraged with

the progress being made in locating or developing high temperature and slimhole logging tools, and wishes to stress that the success of LITHP's drilling programs next year depends on at least the basic suite of tools previously defined being available.

A major activity at both meetings has been ranking proposals, first in order to provide input to determine the track of the vessel through 1994 and, more recently, to prioritize the proposals in the Pacific Prospectus. In this report, I will present only the latter. Only six of the nine programs in the Pacific Prospectus were included in our rankings, and these fell into two clearly separated groups. The top three - EPR Bare Rock Drilling, Hess Deep, amd Sedimented Ridges II - received notably higher ratings (in fact, all but one of the 1st, 2nd, and 3rd place votes). Each of the top three addresses high priority LITHP objectives and hence are all critical to achieving our goals. EPR drilling has been a long-standing very high priority of the Panel in its efforts to obtain crustal sections of new oceanic crust. Sedimented Ridges II addresses fundamental hydrogeological and geochemical problems in hydrothermal systems and is essential to the overall Sedimented Ridges program that has been formulated. Hess Deep, by comparison, is a relatively new proposal, but provides an exciting opportunity to investigate the lower crust and upper mantle at a fast-spreading ridge. LITHP feels that we need to demonstrate success in addressing lithospheric problems and these three programs are critical in that effort.

LITHOSPHERE PANEL FY'90 REPORT

I Progress towards Thematic Objectives

1. Structure of crust + upper mantle

a) complete crustal section

(i) Deep Drilling Working Group

(ii) EPR Detailed Planning Group

b) drilling offset sections

(i) generation of proposals

RECOMMENDATION

PCOM establish an Offset Drilling Working Group

2. Global seismic arrays

a) scheduling of Oahu pilot hole

RECOMMENDATION

Observatory installation needs to be part of overall long Range Plan.

Requires : • site location (short-term)
• monitoring of re-entry cone installation (long-term)

II Other Highlights (from LITHP-TECP meeting)

1. Formation of N. Atlantic Rifted Margins DPG
2. Commitment to multi-disciplinary effort towards MOR processes.

000072

III Immediate Concerns

1. DCS SYSTEM

2. HIGH T AND SLIMHOLE LOGGING TOOLS

3. Engineering leg to 504B

a) Viability of Hole 504B

RECOMMENDATION

All equipment necessary to establish the future of 504B drilling should be carried on Leg 137.

b) Use of any available time

RECOMMENDATION

LITHP recommends the following use of additional time (in order):

1) full logging program (prior to recasing with liner)

2) investigation of hydrogeochemistry of sediments + upper basement near 504 (proposal exists)

IV Other Issues

1. ODP success in addressing Cosod I themes
   - 3-page summary addressing 5 themes

2. Implementation of LRP

V Ranking of Proposals

1) Spring - global rankings

2) Fall - Pacific rankings

5.3 Ranking of Pacific Proposals for the FY'92 Program

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

Rank	Program	1st Place	2nd Place	3rd Place	4th Place	5th Place	6th Place
1	EPR Bare Rock Drilling	8	4	-	-	-	-
2	Hess Deep	3	6	3	-	-	-
3	Sedimented Ridges II	1	2	8	-	1	-
4	Chile Triple Junction	-	-	1	5	3	3
5	Cascadia Margin	-	-	-	4	5	3
6	Atolls and Guyots	-	-	-	3	3	6

EXECUTIVE SUMMARY: STRATEGY COMMITTEE
ad hoc subcommittee of JOIDES PLANNING COMMITTEE
Joint Oceanographic Institutions, Inc.
Washington, D.C.
29 May 1990

As decided upon by PCOM during its Paris meeting, the purpose of the inaugural meeting of the STRATCOM subcommittee was two-fold:

1.) To facilitate renewal of ODP:

- by examining and implementing ways to showcase and enhance the program's effectiveness, both within the U.S. and among the international partners.
- by presenting such strategies to PCOM at its August, 1990 meeting.
- by reporting on STRATCOM existence and its initial deliberations to EXCOM during its joint meeting with the ODP COUNCIL in June, 1990, with a view to enlisting its active support in the renewal effort.

2.) To examine various means of showcasing ODP's accomplishments to a growing number of detractors, as evidenced by recent correspondence to the JOIDES Office (see PCOM Agenda Book, Paris Meeting, 4/90).

STRATCOM was also to recommend to PCOM at its August meeting whether or not a continuing mandate for its existence was warranted.

Identification of Themes to Serve a Focused Drilling Program

Discussion culminated in a recommendation to PCOM for consideration of the following themes for a focused approach to ocean drilling (no priority order):

- **HIGH-RESOLUTION NEOGENE PALEOCEANOGRAPHY TRANSECTS**
- **SEA-LEVEL STUDIES**
- **DEEP-DRILLING TO UNDERSTAND THE STRUCTURE AND FLUID DYNAMICS OF ACCRETIONARY PRISMS**
- **PASSIVE MARGIN EVOLUTION**
- **EVOLUTION OF SEDIMENTED AND UNSEDIMENTED RIDGE CRESTS**
- **OFFSET DRILLING FOR DEEP LITHOSPHERE OBJECTIVES**

Publicity/"Dog and Pony Shows"

Discussion resulted in a recommendation to JOI, Inc. to hold a presentation similar to its well-received National Science Board program (perhaps in modified form) before the combined EXCOM/ODP COUNCIL at its 20-21 June meeting in Washington, D.C., with a view to soliciting EXCOM response concerning subsequent scheduling and formatting of such events in member countries.

Maximizing Impact of the Long Range Plan

Given ODP's existing liaisons with FDSN and GSGP, and probable future liaisons with InterRIDGE, Nansen Arctic Drilling Program, IGBP and

JGOFS, STRATCOM will formulate a series of one-page summaries of ODP's existing and newly evolving relationships with a number of important global initiatives in the earth sciences.

Those initiatives are listed, along with suggested authors (no priority order):

- GLOBAL CHANGE (B. Ruddiman/N. Pisias)
- TECHNOLOGY DEVELOPMENT (C. Sparks/B. Harding)
- GLOBAL SEDIMENTARY PROCESSES (M. Arthur)
- RIDGE CREST PROCESSES (J. Malpas/B. Detrick)
- HIGH-LATITUDE DRILLING (G. Brass/L. Johnson)
- CONTINENTAL DRILLING (T. Pyle)

The written summaries will be included with the JOI, Inc. brochure, intended as a popular summary to accompany publication of the LRP.

Other Recommendations

For PCOM

In light of the themes listed above (while stressing that they are a flexible framework, into which modified/new themes could be incorporated), STRATCOM suggests to PCOM that it charge the thematic panels to go beyond existing, unsolicited proposals and Detailed Planning Group drilling plans to synthesize a prospectus involving a finite number of long-term focuses of ODP, each perhaps consisting of 4-6 drilling legs. The following questions must be addressed:

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

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

STRATCOM considers that its *ad hoc* status as an executive subcommittee of PCOM is appropriate and should be retained.

For JOI, Inc.

Consider augmenting the number of LRP/brochure packets to be published (currently ~2,500) to include more mailings to international partners (now set at ~200 each) and perhaps to more/other U.S. organizations.

For National Science Foundation

Approach the Ocean Studies Board of the National Academy of Sciences (and perhaps other, similar review bodies as deemed appropriate) for a formal review of the LRP.

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

MINUTES

STRATEGY COMMITTEE
ad hoc subcommittee of JOIDES PLANNING COMMITTEE

Joint Oceanographic Institutions, Inc.
Washington, D.C.
29 May 1990

MEMBERS: Dr. James Austin, PCOM, chairman
Dr. Ralph Moberly, PCOM
Dr. Margaret Leinen, PCOM
Dr. John Malpas, PCOM
Dr. Nicklas Pisias (primary author of the ODP Long Range Plan)
Dr. Thomas Pyle, JOI, Inc.
(a senior member of the West German scientific hierarchy tentatively scheduled to attend did not)

GUEST: Dr. James Baker, JOI, Inc.

Introduction

As decided upon by PCOM during its Paris meeting, the purpose of the inaugural meeting of the STRATCOM subcommittee was two-fold:

1.) To facilitate renewal of ODP:

- by examining and implementing ways to showcase and enhance the program's effectiveness, both within the U.S. and among the international partners.
- by presenting such strategies to PCOM at its August, 1990 meeting.
- by reporting on STRATCOM existence and its initial deliberations to EXCOM during its joint meeting with the ODP COUNCIL in June, 1990, with a view to enlisting its active support in the renewal effort.

2.) To examine various means of showcasing ODP's accomplishments to a growing number of detractors, as evidenced by recent correspondence to the JOIDES Office (see PCOM Agenda Book, Paris Meeting, 4/90).

STRATCOM was also to recommend to PCOM at its August meeting whether or not a continuing mandate for its existence was warranted.

General Discussion

In advance of the meeting, correspondence had circulated between Austin and Moberly concerning possible agenda items. All members and Tom Pyle received copies, and that correspondence is included (see Appendix A).

Given the ad hoc status of STRATCOM, initial discussion focused on the role ODP does and should continue to play vis-a-vis other "big science" initiatives.

Moberly set the tone by stating that ODP's primary function, over the next few years, ought to be to satisfy the interests of thematic panels, the U.S., and the international

partners. Baker contributed that the program should address the needs of the professional earth sciences community first.

Malpas described the present situation in Canada, where competition among existing earth science programs is intense. Of the four major initiatives currently being developed internally: ODP, LITHOPROBE, continental drilling and global change (which in Canada means study only of the last 10K years of earth history), only ODP and LITHOPROBE are now being financially supported. Only two of these four will be supported in the future as well. To continue to attract support, ODP must liaise with other programs and offer "lollipops" to the international partners in the form of both thematic and regional ocean drilling initiatives of particular interest to them.

Most important, Malpas felt that ODP must make a major commitment to one (or more) of the tenets that got it funded originally: high latitudes, "natural laboratories", and deep drilling. In other words, STRATCOM should rally the PCOM to "bite the bullet", i.e., commit to a few programs and do them properly.

Pisias felt that the Long Range Plan (LRP) has been written to illustrate a phased approach to problem-solving with the drill, and emphasized that ODP is not yet ready to do some things, e.g., deep drilling.

Pyle evinced some sympathy for a "high risk-high return" drilling program, perhaps once a year. Austin and Leinen responded that such science must still have the scrutiny and endorsement of the thematic panels prior to its inclusion in the drilling schedule.

Identification of Themes to Serve a Focused Drilling Program

Discussion continued concerning possible strategies for implementing a more focused approach. The following were discussed:

- ask each of the international partners to name their scientific priorities, while soliciting learned bodies within the U.S. (perhaps the National Academy of Sciences) to do the same.
- modify the existing program to rely less on unsolicited proposals, and more on thematic panel/working group/detailed planning group syntheses (perhaps of unsolicited proposals, at least in part) addressing important themes emphasized in the LRP. PCOM could then take such input to establish a finite number of programs to receive intensive drilling effort.

The overriding perception of STRATCOM was that the thematic panels should still do much of the work, given guidance from the PCOM (with specific reference to the April PCOM motion concerning the 1990-1993 four-year plan for concentration of drilling in the Pacific and the Atlantic north of the equator) and with cognizance of the thrusts of other international science initiatives.

- perhaps the November 1990 Annual PCOM Meeting with Panel Chairmen should be the time to get this process started, after a general discussion within PCOM in August.

A long discussion followed during which STRATCOM considered themes which might be appropriate for a focused effort, but without regard to a regional (e.g., Pacific) emphasis. First, the scientific objectives listed for Phase I of the LRP were discussed in detail (see p. 103, LRP): "Given the present level of technology and the present status of planning, the following themes will be part of the main focus of ODP: high-resolution Neogene

paleoceanographic transects, sea-level studies, 1.0-1.5 km deep holes on accretionary wedges, plate kinematic studies, deep holes at fast-spreading, unsedimented ridge crests and intermediate-spreading, sedimented ridge crests, and coordination of Arctic drilling efforts." Then, STRATCOM considered themes highlighted as objectives of the existing body of unsolicited proposals from all oceans ranked highly by the thematic panels. STRATCOM recognized that both groups of themes were generally similar, particularly when LRP phase I themes were modified [as above] to include drilling activity in any ocean.

The discussion culminated in a recommendation to PCOM for consideration of the following themes for a focused approach to ocean drilling (no priority order):

- **HIGH-RESOLUTION NEOGENE PALEOCEANOGRAPHY TRANSECTS**
- **SEA-LEVEL STUDIES**
- **DEEP-DRILLING TO UNDERSTAND THE STRUCTURE AND FLUID DYNAMICS OF ACCRETIONARY PRISMS**
- **PASSIVE MARGIN EVOLUTION**
- **EVOLUTION OF SEDIMENTED AND UNSEDIMENTED RIDGE CRESTS**
- **OFFSET DRILLING FOR DEEP LITHOSPHERE OBJECTIVES**

STRATCOM considered whether the paleoceanography theme was broad enough to satisfy the community's known temporal and latitudinal interests, and concluded that this theme might need to be discussed further within PCOM, perhaps to include Mesozoic and high-latitude aspects.

Publicity/"Dog and Pony Shows"

STRATCOM then turned its attention to the complex issue of generating positive publicity for ODP prior to and during the renewal period (1990-1992).

The committee was aware of EXCOM's stated intent to have each international partner organize its own publicity campaign, perhaps coordinated by JOI, Inc., and that letters expressing JOI's willingness to coordinate such efforts had already been sent to EXCOM members by Baker (for an example, see Appendix B). PCOM had also heard in April about JOI's well-received mid-March presentation about ODP to the National Science Board.

Malpas informed STRATCOM that each international partner will have its own timeline for renewal. (The Canada /Australia [CAN/AUS] timeline can be found on p. 7 of the January, 1990, issue of *The Resolution Report*, the newsletter of the Canadian Secretariat of ODP.) He detailed CAN/AUS plans for generating renewal enthusiasm, including 1.) a conference on ocean drilling during the Townsville, Australia port-call of the *Resolution* (October, 1990), with invited politicians from the U.S. as well as Canada and Australia, 2.) a 1.5-day meeting on global change during the Victoria, B.C. port-call (July, 1991), and 3.) a possible international session of ODP during the PACRIM meeting in Bangkok, Thailand (October, 1991). Such a meeting might include highlights of the Victoria meeting, perhaps special sessions on technology, and invited science presentations. He suggested that a JOI-coordinated "dog-and-pony show" for CAN/AUS might need to precede the Victoria meeting by 6 months-1 year.

Further discussion resulted in a recommendation to JOI, Inc. to hold another such presentation (perhaps in modified form) before the combined EXCOM/ODP COUNCIL at its 20-21 June meeting in Washington, D.C., with a view to soliciting EXCOM response concerning subsequent scheduling and formatting of such events in member countries.

Maximizing Impact of the Long Range Plan

Discussion centered on ways to maximize the impact of the LRP for scientific audiences of various interests. STRATCOM formulated one action plan, as follows:

Given ODP's existing liaisons with FDSN and GSGP, and probable future liaisons with InterRIDGE, Nansen Arctic Drilling Program, IGBP and JGOFS, STRATCOM will formulate a series of one-page summaries of ODP's existing and newly evolving relationships with a number of important global initiatives in the earth sciences.

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- RIDGE CREST PROCESSES (J. Malpas/B. Detrick)
- HIGH-LATITUDE DRILLING (G. Brass/L. Johnson)
- CONTINENTAL DRILLING (T. Pyle)

The written summaries will be included with the JOI, Inc. brochure, intended as a popular summary to accompany publication of the LRP.

Austin volunteered to solicit these write-ups, edit/reformat them, and if necessary get outside review in time to meet JOI, Inc.'s publication schedule (~July, 1990).

Other Recommendations

For PCOM

In light of the themes listed above (while stressing that they are a flexible framework, into which modified/new themes could be incorporated), STRATCOM suggests to PCOM that it charge the thematic panels to go beyond existing, unsolicited proposals and Detailed Planning Group drilling plans to synthesize a prospectus involving a finite number of long-term focuses of ODP, each perhaps consisting of 4-6 drilling legs. The following questions must be addressed:

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

STRATCOM felt that each thematic panel could perhaps generate such a prospectus once a year, for incorporation into the following fiscal year's program plan at the Annual PCOM Meeting with Panel Chairmen each November. Although the November 1990 meeting was probably too early to ask for such syntheses, the group felt that such a strategy could perhaps be in place for the advisory structure before November 1991.

STRATCOM considers that its *ad hoc* status as an executive subcommittee of PCOM is appropriate and should be retained.

Formalizing its identity would require EXCOM approval, which STRATCOM felt to be undesirable, at least for the moment.

Malpas felt that enthusiasm should guide participation in STRATCOM, and he said that he would endeavor to continue to speak on behalf of the other international partners.

For JOI, Inc.

Consider augmenting the number of LRP/brochure packets to be published (currently ~2,500) to include more mailings to international partners (now set at ~200 each) and perhaps to more/other U.S. organizations.

Austin suggested targeting high school districts as well as college geoscience departments, in order to bring knowledge of ODP to prospective undergraduate as well as graduate students in earth science.

Pyle acknowledged that JOI, Inc., in addition to generating the brochure to accompany the LRP, had approached Thomas Horton Associates concerning a film incorporating ODP footage for possible airing on the Arts and Entertainment network, as well as for National Geographic Explorer. He suggested that this might be enough for the time being, given the difficulty and costs of generating "popular" science literature.

For National Science Foundation

Approach the Ocean Studies Board of the National Academy of Sciences (and perhaps other, similar review bodies as deemed appropriate) for a formal review of the LRP.

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

Future Meeting Schedule

STRATCOM decided that Austin/Moberly could speak on its behalf during the upcoming meeting of EXCOM/ODP COUNCIL, and therefore that a meeting of the full committee at that time would be unnecessary. Whether or not further meetings of the committee are warranted will await general PCOM discussion in August.

Conclusion of the Meeting

The inaugural meeting of STRATCOM adjourned at 4:30 PM.

INSTITUTE FOR GEOPHYSICS
THE UNIVERSITY OF TEXAS AT AUSTIN

Appendix A

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Memorandum

15 May 1990

From: Jamie Austin

To: Ralph Moberly

Re: Response to your 5/7/90 strawman agenda, strategy meeting

Please forgive my delay in responding to you. You may not have intended that we give you written responses prior to the 29 May meeting, but in my opinion several of your points merit an open discussion at this time.

I discussed your memo with Art Maxwell, and I will let you know how Art sees things at appropriate points in this discussion. I will take each of your points in turn.

Ways to improve the chances of program renewal

1. I completely agree that the international aspect of ODP has been and continues to be one of its strongest points. That is emphasized in the LRP, and I feel that we cannot say it strongly or often enough.

   - Art has informed me that real progress is being made on admission of the Soviet Union. I'm sure that you have gotten information from either Chuck or Barry, but the implication is that a decision may be made prior to the EXCOM meeting in June.

   - Art (and other EXCOM members) received a letter from Jim Baker suggesting that JOI coordinate "road shows" both within the U.S. and abroad. (You have seen the copy of the letter sent to Jim Briden.) I enclose a copy of Art's response, both endorsing the general idea and suggesting that such a show be made to EXCOM/ODP Council in June. I concur with Art's suggestion.

   - As part of the "road show" effort, PCOM could encourage JOI to solicit any and all co-chiefs (particularly US, but perhaps inviting foreign co-chiefs as well) to participate in these efforts. Frankly, I feel that this should be made part of a co-chief's post-cruise responsibilities on a more formal level, but perhaps we could discuss this at the strategy meeting.

2. I do not consider the next EXCOM/ODP Council meeting an inappropriate forum for an intense and wide-ranging discussion of renewal. Why do you see this discussion as having a possibly negative tone? The ODP Council is exactly the group that needs to be convinced that ODP must survive through the 1990's! If you (we) cannot convince this group that ODP is a viable, exciting effort, then we certainly will not be able to convince real antagonists. Maxwell absolutely agrees with my point of view. He feels that delaying these discussions until the October EXCOM may be like closing the barn door after the stock has left!

3./4. I do not feel that excitement needs to be "'manipulated'" into ODP as it is presently configured. After a long, arduous process of self-examination, the advisory structure has been reconstituted for a thematic approach. The themes are exciting! All we have to do is publicize them, and fully document ODP's contributions in addressing them!

- I am staunchly against periodically ignoring thematic panel input to schedule "headliner" programs that are not mature. Art echoes this sentiment. In my opinion, PCOM would not have scheduled the Oahu test hole unless it had been highly ranked by both LITHP and TECP. If we cannot continue to sell ODP successfully in competition with other programs based upon the proposals that are written for it and reviewed through the panel structure, it is certainly time for ocean drilling to stop.

- Frankly, if we were to adopt this approach, we are already too late, at least to mount a "pizzazz" effort for 1993 renewal. We are already firmly scheduled throughout much of the period when MOU's will be negotiated and signed!

- I have no objection to PR work on the programs that we do drill. Perhaps we could think about hiring a publicist, or even a PR firm, to accomplish this task. (Unfortunately, none of us is qualified to replace Walter Sullivan.) Perhaps JOI could help, at least in the U.S. How about on the international scene?

5. I am all for generating excitement about new technology, but I'm not sure how best to accomplish it. I agree that we should not build up too much publicity about "new" systems like the DCS until we have a feeling about whether or not they will work, but we must get out as much information as possible to proponents or they will give up on the program's technical capabilities and stop writing ODP proposals!

6. Direct involvement is one approach, and I certainly think that the upcoming Oahu leg is an opportunity for such involvement which is not to be missed. Art concurs, particularly in regard to ship visits while the vessel is in port. (He is not as enthusiastic about letting the Walter Sullivans of the world go to sea. He may be afraid that they will get seasick or die on the rig floor, but I sailed with Sullivan once and he had a great time.)

- How about video/movies/NOVA/DISCOVERY? TV is everyone's best friend but ODP's. I think we should explore real-time reporting from the ship, a la Ballard. It would not need to happen on every leg, but why couldn't we could have the equipment aboard and generate some relationship with PBS/some other network for periodic broadcasts from the Resolution? In an era when science education is being spotlighted, particularly in the U.S., why not draw students into the game?

7. By all means, let's emphasize what we do right.

- The program has changed for the better recently - improved liaisons with other international programs (kudos to Tom Pyle), new emphasis on thematic planning,

increasing awareness on the part of PCOM that it must to the extent it can follow its own panel structure's advice...

- All of which has happened without sacrificing the program's responsibility to be responsive to: outside proposals and incredible diversity of opinion.

- The bottom line is that ODP should not , cannot, and need not stand on its impressive laurels. The program has (for decades) and can still fire the imagination of us all. But we (the natural sciences community) have to want that to happen.

- Therefore, I believe our response should be measured, but enthusiastic: letter writing to specific detractors, particularly if in their apparent ignorance they are in a position to do us harm (e.g., Coleman), formal review of documents generated within the program (e.g., Ocean Studies Board review and comment on the LRP, something John Sclater, as OSB chairman, has already agreed to do), and flexibility (to adapt to the changing ideas of proponents, to adopt new technology, and if necessary to embrace other initiatives which have historically been or are currently being viewed as competitive with ODP [e.g., NEREIS]).

Well, Ralph, this document is hardly an agenda, but it certainly is a point of view. If we need an agenda for the meeting, should we wait until everyone on the committee has been able to get something like this out? I look forward to further discussions.

Distribution: M. Leinen
J. Malpas
N. Pisias
A. Maxwell

cc: T. Pyle
E. Kappel

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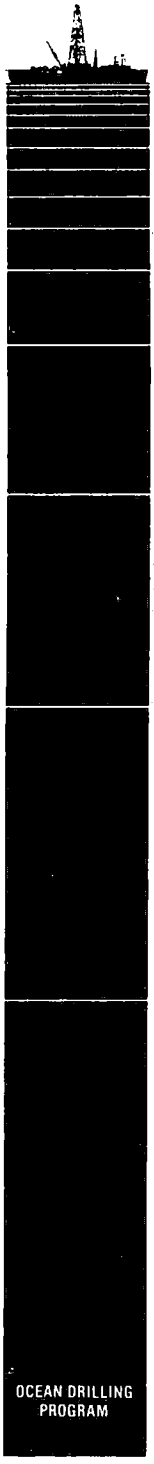
7 May 1990



Memo To: Members of JOIDES ad hoc Strategy Committee

From: Ralph Moberly

Re: Some points to be discussed at strategy meeting

Here are some comments to get us started in our 29 May meeting. Perhaps all of us should arrive with such a list. Many of these points were developed in a 3 May 1990 discussion session with Barry Raleigh & Chuck Helsley, although these summary comments to assist the Strategy Committee are mine.

Ways to improve the chances of program renewal

1. The international aspect of the program is the glue that will hold it together, even if some sectors of the community object during the science review in the US.

- If all (or even all but one) of the present partners opt for renewal, NSF almost certainly will follow.

- We must do all we can to keep it international. Other factors being equal, special attention should go to addressing the concerns raised by the international partners. Some of the international concerns expressed included:
  - opportunities for drilling in any ocean (Satisfied?)
  - looking towards new technology (Is that OK within budgetary limitations for DCS, other engineering, and logging? Is Deep-drilling Working Group the next appropriate step?
  - Does new technology also mean new vessels? i.e., the French, Japanese and Russian possibilities, and a post-Resolution deeper-drilling platform; if so, what are the implications for renewal with these added costs in $, international interest, and available scientist-time?)
  - ties to new global initiatives (how does enthusiasm of non-US members of PCOM match with general caution of non-US members of EXCOM? Be careful of distinction between international and US-only initiatives).

- Should the team that performed before the NSB put on a road show?

- Any last-minute non-US problems with the Long Range Plan? Can we help with the local brochures to help to de-fuse objections with the LRP held by non-US partners?

2. The next EXCOM meeting (late June) is not the appropriate place to bring up negative or controversial topics.

• Too many ministers-bankers will be present because ODP Council meets at same time. There should be neither a printed agenda item nor open discussion.

• Emphasis there should be positive: on scientific achievements and engineering advancements, and 4-year direction of vessel.

• Maybe part or all of the presentation for the National Science Board should be repeated at the meeting.

• Discussion of negative issues might, however, start in JOI Board meeting on Friday.

• The October EXCOM meeting is a good time to raise a general discussion of real and potential problems with renewal.

3. Excitement must be "manipulated" into the program, to generate publicity, and then the publicity must be driven to the hilt.

• Manipulation should follow several directions - in the program plan (selection and order of drilling legs), in engineering and tool development, in ties to other global initiatives, in publicity aboard the drilling vessel.

• Manipulation must follow a schedule to have maximum impact.

• A year of potential "headliners" should be tied to renewal time:
- find out the optimum window when favorable and enthusiastic publicity will affect renewal favorably by impressing a broad range of the geologic and non-geologic scientific community and the general public, both US and non-US.
- orchestrate or manipulate the drilling schedule for that window, with the aim of scheduling not necessarily the highest-ranked thematic programs, but rather a succession peaking to ones that best combine potential pizzazz headlines with good science and an excellent chance for "success".
- perhaps tweak or adjust the sites, objectives, and leg length to emphasize the potential for zip and zing.
- Here are some examples from thematically-ranked programs most familiar to me; each of the other members of this ad hoc committee must know others:

☛ (Hess Deep) ***Moho Reached!*** ODP attains major scientific objective first proposed in 1960s!! Identification in place of material of the earth's "inner space"!!! How did the crust of the earth form??? (and back-up articles ✍ of analogy of length of time (1946 to present) to develop and deploy Hubble Space Telescope to penetrate "outer space"; of the trials and tribulations of the management and costs (brought forward in constant dollars) of Mohole Project, in contrast to ODP; of ideas about the interior of the earth, meteorite analogies, origin of earthquakes and volcanoes, and all of that good stuff. Play up the persistence of scientists to obtain and use facilities to solve first-order scientific puzzles.) Incidentally, Hess Deep can go with regular drilling and full suite of logs; doesn't depend on DCS.

☛ (Atolls & Guyots) ***Darwin's theory confirmed!*** Ancient Pacific site of immense volcanism!! Wide-spread drowning of ancient reefs!!! Why did some reefs die and some live??? (background articles ✍ on Darwin's writings and good reputation before Origin of Species; on discovery of guyots by scientist in Navy during World War II and on atoll drilling in post-war era. Interviews with biologists on fragility of reef

systems; with paleoceanographers on Cretaceous as time of extensive greenhouse conditions; with paleontologists on extinctions, etc. Play up the interrelationships in the natural sciences).

☛ (Sedimented Ridges) ***Ocean drillers penetrate growing ore body!*** Technological advances allow scientists to sample and measure characteristics of an active mineral deposit!! Host sediments and conditions of origin defined!!! Where can ore bodies be found??? (and interviews ✍ with "friendly" mining company geologists and government geologists on value in predicting deposits on land; interviews with government officials about EEZ, about need for metals and other raw materials in our overpopulated world. Articles on the necessary drilling, fluid-sampling, and logging advances, with appropriate thanks to countries and companies that provided expertise and equipment; on the need for additional marine geophysics, sampling, etc to map EEZ and rest of sea floor. Play up the relationship between technological advances and resources.)

☛ (Loihi) ***Submarine volcano probed!*** Newest active Hawaiian volcano prepared for monitoring!! Cored samples compared with lavas of equally active Kilauea!!! Why do volcanoes grow and die??? (background article on natural laboratory concept, including donation of fibre-optic cable and vessel time by industry. Interviews ✍ with volcanologists about volcano monitoring across the range of active volcanoes - hazardous to non-hazardous, and easily accessible to poorly accessible; with a Wilson or Morgan father-figure about hotspots; maybe with communications industry or Navy person about seafloor communications. Play up the relationship between technological advances and the concept of environmental monitoring.)

☛☛ and no doubt others could be presented for headlines for the lay public with the help of good PR writers, whether or not a good scientific connection exists: the North Atlantic margins and Continental Drift; Arctic Gateways, Bering Sea, and North Pacific with changing climate; New Jersey Margin and US East Coast sea-level problems (Long-term record of sea level near Atlantic City says Trump's Taj Mahal doomed in 10,000 years!); Cascadia with chemotrophic creatures (mutant teenage ninja clams take gas!); Chile or Barbados with earthquakes, etc. [don't get me wrong; I hope Cascadia and New Jersey are drilled within next 4 years.]

• the schedule before that pizzazz window must continue to have excellent thematic drilling, including ties to global initiatives, but should be of interest chiefly to earth scientists with little chance for "grabber" headlines. The contrast would be part of the impact.

4. <u>Take some chances</u> for a big pay-off in science (and publicity) .

• Excitement comes from sudden major steps. In the scientific community excitement is a hot idea or a sudden event. To capitalize on the excitement we must move quickly to a test by drilling.

• Find a way to insert major new opportunities into the drilling schedule, whether or not "mature", whether or not they obtain top blessing of thematic panels

• Allow one wild card leg or partial leg per year, that could be inserted to replace (or postpone) a normal drilling leg.

- penetrate and take strain measurements around fault that just caused a major sub-sea earthquake - especially tsunamigenic ones, or those of giant magnitude.

- If there arises a new, well defined but controversial theory about something that might be settled by a pattern of holes not needing extensive site surveys or safety considerations, drill it:
  climate transitions
  Cretaceous boundary & dinosaur extinction
  magnetic-reversal mechanism
  another dried-up sea floor, etc.

• Consider strongly the inclusion of legs or partial legs of high interest to applied geology, even if they don't come out at the top of the thematic panels. They will get wide attention, especially in some circles where ocean drilling has not always gotten good publicity
  - Peru clathrates and petroleum geology
  - Valu Fa sulfides and economic geology

5. Excitement in engineering development and other technology comes from what are perceived as quantum jumps rather from continued increments (big leaps vs ramping-up).

• The hydraulic piston core was such a development, but its excitement is past even though we know that it has been improved immensely (by increments) since its development.

• Whether or not next an increment is successful on the next Engineering Leg (132), hold off on publicity of DCS until it is used successfully on a scientific (or scientific plus engineering) leg. Then hit it with a full load of publicity, aimed at what it means for the future. Spread the glory around (TAMU, their contractors, TEDCOM, the SEDCO crews); see that a rash of science papers and poster sessions at meetings give lots of credit to the DCS.

• The same for slim-hole high-temperature tools, whether from LDGO, TAMU, Sandia, or elsewhere. Down-play initial publicity from incremental advances, until something big accumulates.

• There can still be a moderately high level of background publicity from successes of many other developments (drill-in casing, incremental improvements in logging, etc).

6. Direct involvement and publicity.

• The 10 to 14-day leg next March (FDSN hole north of Oahu) presents opportunities owing to its location and brevity, and minimal scientific staff required.
  - Invite Eric Bloch, National Science Board, Bob Coleman and NAS group, friendly vocal seismologists and oceanographers, presidents of GSA, AGU, IUGG, AAPG, SSA, etc.
  - Invite EXCOM!
  - Invite National Geographic, New York Times (Walter Sullivan or replacement), Philip Abelson, etc.
  - Offer either full Honolulu-to-Honolulu trip, or a half-leg trip (exchange at the site by helicopter or ship).
• There will be a West Coast port call in the ~~late-May-to-late-~~June period (San Diego?) that would be ideal for the annual meeting of the EXCOM-ODP Council. If Scripps is lukewarm - a not altogether unexpected reaction if it raises the pain of ex-DSDP - maybe a neutral site farther north is OK (Long Beach? San Francisco?).

7. Emphasize what we are doing right

• Improve the Pyle-PCOM efforts to tie to global geoscience initiatives; better still, show that ocean drilling is leading and will continue to lead the international initiatives.
  - In each of the next couple of years, strive to get legs into the program plan that combine high thematic interest of our panels and high interest to the initiatives.
  - We have many (Arctic Gateways and Bering Sea for NAD, Atolls and guyots for GSGP, several good proposals in both oceans for RIDGE-FRIDGE et al., and we should leave some cased re-entry holes for FDSN).
  - Publicize the tie if and when these legs are approved for drilling.

• To distractors, point out that the science advisory structure of program has changed from the days of the Hsu-letter example.

• Same, point out the hard work and excellent advice of the service panels.

• Show the improvements in publications schedules.

• Show that engineering at TAMU and logging at LDGO have been responsive to JOIDES, and have had many successes. Contrast this with the attitudes and quality of drilling and logging of DSDP. Suggest that the attitudes will continue into the renewal, and we have good reason to expect continued technological improvements.

• Show that, unlike COCORP, Continental Drilling, and some other large earth science projects, the range of participation in ocean drilling has been spread across many institutions and many disciplines.

• Finally, and of overwhelming importance, show that a range of excellent scientific opportunities awaits us. There is a good mix of new opportunities and important older ones retained until operations would allow their attack. There is a mix of disciplines involved. Drilling programs were distilled from a broad range of themes developed at open international conferences, and priorities for their drilling are based on peer review of proposals. Drilling competition is fierce; hundreds of proposals have been culled to a few dozen that have been drilled. That ratio, indicating the contest and scrutiny that proposals undergo, is likely to continue in the future.

I look forward to the lists and comments you will have. See you soon.

Distribution: J. Austin
M. Leinen
J. Malpas
N. Pisias

cc T. Pyle
C. Helsley

JOI **Joint Oceanographic Institutions**
INCORPORATED

Appendix B

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May 4, 1990

Arthur Maxwell
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Dear Art:

One of our discussions at the Amsterdam meeting concerned regional or national briefings on ODP in order to present the current status of the program and to prepare policymakers for the upcoming renewal process. At the meeting, I agreed to begin organizing such briefings. Our recent experience in presenting ODP to the U.S. National Science Board, the governing board for the National Science Foundation, may provide some useful ideas that we can discuss further at the June meeting.

The agenda for the briefing is attached. It was very tightly constrained in time, lasting about an hour and a half. We emphasized global change and paleoclimate because of the current public interest, western Pacific tectonics because of the relation to earthquakes, new technology with an emphasis on logging, and a summary on the long-range plan. The four speakers gave an excellent summary of the program and from all accounts the briefing was very well received.

If you are interested, we at JOI would be willing to help put together such a review for individual countries or groups of countries. It would probably be best if the speakers were local so that they would know best how to respond to local interests. Please let me know if we can provide any other information prior to the June meeting.

Yours sincerely,

Jim

D. James Baker
President

cc: JOI Board of Governors
D. Heinrichs

ODP MEMO

February 26, 1990

TO: Tom Ubois, EO/NSB

FROM: Bruce Malfait, PD/ODP

SUBJECT: ODP Presentation to March NSB

Listed below are the agenda and speakers for the ODP presentation on March 16. We have told them to plan for a presentation lasting an hour. If there are questions, etc. from the Board, we might need an additional 10 to 15 minutes. If you have any questions, please let me know.

OCEAN DRILLING PROGRAM OPERATIONS REVIEW

INTRODUCTION
Dr. Robert Corell - AD/GEO

OVERVIEW OF THE OCEAN DRILLING PROGRAM
Dr. James Baker - President, Joint Oceanographic Institutions

PALEOCLIMATE STUDIES
Dr. William Ruddiman - Lamont-Doherty Geological Observatory

CRUSTAL STUDIES IN THE WESTERN PACIFIC
Dr. Patricia Fryer - University of Hawaii

DEVELOPMENTS IN LOGGING AND INSTRUMENTATION
Dr. Paul Worthington - British Petroleum Research Center

FUTURE DRILLING OBJECTIVES
Dr. Nicklas Pisias - Oregon State University