

**SCICOM Meeting, April 22-24, 1997
Kona, Hawaii**

PARTICIPANT LIST

Members

John Bender*	University of North Carolina, Charlotte
Gerard Bond	Lamont-Doherty Earth Observatory, Columbia University
Kevin Brown	Univ. of California San Diego, Scripps Institution of Oceanography
Susan E. Humphris (Chair)	Woods Hole Oceanographic Institution
Hermann R. Kudrass	Bundesanstalt für Geowissenschaften und Rohstoffe, Germany
Roger L. Larson	University of Rhode Island, Graduate School of Oceanography
John Ludden	CRPG, Vandoeuvre-les-Nancy, France
Judith A. McKenzie	Swiss Federal Institute of Technology (ETH), Zurich
Kenneth G. Miller	Rutgers, The State University, New Brunswick
Gregory F. Moore	University of Hawaii
J. Casey Moore	University of California, Santa Cruz
Jonathan C. Overpeck	NGDC, NOAA, Boulder
Julian A. Pearce	University of Durham, United Kingdom
Maureen E. Raymo	Massachusetts Institute of Technology, Cambridge
Steve D. Scott	Canadian Secretariat for Ocean Drilling, Toronto
Kensaku Tamaki	Ocean Research Institute, University of Tokyo, Japan

Liaisons

Dave Falvey	Joint Oceanographic Institutions, Inc.
Jack Baldauf	Science Operator (ODP-TAMU)
Dave Goldberg	Wireline Logging Services (ODP-LDEO)
Bruce Malfait	National Science Foundation

Guests & Observers

Ju-Chin Chen	Chinese Taipei ODP Consortium
Kathy K. Ellins	JOIDES Office, Woods Hole Oceanographic Institution
John Farrell	Joint Oceanographic Institutions, Inc.
Dick Kroon	University of Edinburgh, United Kingdom
Maria Mutti	JOIDES Office, Woods Hole Oceanographic Institution
Eli Silver	University of California, Santa Cruz
David Scholl	USGS, Menlo Park
Alister Skinner	TEDCOM Chair, British Geological Survey, Edinburgh
Shirley Waskilewicz	JOIDES Office, Woods Hole Oceanographic Institution

* alternate for Emily M. Klein

SCICOM Motions**SCICOM Motion 97-1-1**

The Agenda for the April 1997 meeting of SCICOM is approved.

Proposed: Scott, Seconded: Larson

Unanimous

SCICOM Motion 97-1-2

The Minutes of the December 1996 PCOM Meeting are approved as a true record with the modifications noted.

Proposed: Kudrass, Seconded: Brown

Unanimous

SCICOM Motion 97-1-3

Considering the breadth of the mandate of the SSEP committees, SCICOM envisions that Alternate Chairs will act in concert with the Chair such that the Alternate Chairs can easily serve as Chair in the Chair's absence and also serve to facilitate the SSEP's mandate. Therefore, SCICOM appoints Ted Moore as Chair and Mike Underwood as Alternate Chair for the Environment SSEP, and John Tarduno as Chair and Keith Loudon as Alternate Chair for the Interior SSEP.

Proposed: Miller; Seconded: Larson

14 in favor, 2 absent

SCICOM Motion 97-1-4

SCICOM recommends that each SSEP establish liaisons with appropriate science programs, as directed by the SCICOM Chair.

Proposed: Overpeck, Seconded: Ludden

14 in favor, 2 absent

SCICOM Motion 97-1-5

In recognition of the need to integrate a wide range of responsibilities within the mandate of SCIMP, SCICOM nominates Joris Gieskes (to serve as Chair for one year) with Tom Janecek as Alternate Chair. After this phase-in period, the Chair will pass to Tom Janecek with Wonn Soh serving as the Alternate Chair.

Proposed: McKenzie, Seconded: G. Moore

Unanimous

SCICOM Consensus 97-1-6**Earth's Deep Biosphere Pilot Project Program Planning Group****Overall Goal**

To develop a plan of drilling and downhole sampling to investigate:

- the distribution, depth extent, and genetic range of the sub-seafloor biosphere living in rocks and sediments;
- the nature, ecology, and contribution of the sub-seafloor biosphere to global biogeochemical budgets.

Mandate

1. To develop a plan for the integration of microbiological sampling and analysis into drill sites with other objectives, where appropriate.
2. To organize the development of drilling proposals, if specific drilling sites or transects are required.
3. To provide advice on the need for, and specifications of, a shipboard microbiological facility, development of sampling procedures, analytical techniques, and curation of samples.
4. To actively collaborate with other appropriate international science initiatives.

Timeline

- The PPG will exist for a maximum of three years, with an annual evaluation by SCICOM of the necessity for its continuation.
- The PPG will report to the August 1997 SCICOM meeting on initial progress, with particular attention to mandate 3 in order that the microbiological facility can be constructed during the upcoming yard period of the *JOIDES Resolution*.
- The PPG will produce a final, written report of the overall plan and its implementation.

SCICOM Consensus 97-1-7

Long-Term Observatories Program Planning Group**Overall Goal**

To develop a plan for the integration of long-term instrumentation in boreholes with seafloor observatories planned by other global geoscience programs, with the goal of:

- investigating the structure and dynamics of the Earth's interior
- quantifying the flux of heat and materials to and from the Earth's interior.

Mandate

1. To devise experiments that incorporate the use of ODP boreholes for long-term measurements at seafloor observatories.
2. To recommend mechanisms for the implementation, emplacement, and oversight of borehole-related instrumentation in the context of seafloor observatories planned by other global geoscience initiatives.
3. To organize the development of instrumentation/experimental proposals in collaboration with appropriate global geoscience initiatives.
4. To recommend ways in which instrumentation in boreholes can be serviced and maintained by, and data retrieved from, platforms other than the *JOIDES Resolution*.
5. To provide advice on site survey data, core measurements, logging requirements, and the completion of boreholes in preparation for instrumentation.

Timeline

- The PPG will exist for a maximum of three years, with an annual evaluation by SCICOM of the necessity for its continuation.
- The PPG will report to the August 1997 SCICOM meeting on initial progress.
- The PPG will produce written reports of the overall plan and the mechanisms for oversight of borehole-related instrumentation.

SCICOM Motion 97-1-8

SCICOM requests that information on the scientific background and relevant publications of proponents included in proposals. This information may be in the form of : 1) a two page curriculum vitae and relevant publication for one or more proponents (not to exceed 4 proponents); or 2) a combined summary (not to exceed two pages) of the background of the individuals and/or groups submitting the proposal.

Proposed: Miller, Seconded: Overpeck

11 in favor, 3 against, 2 absent

SCICOM Motion 97-1-9

SCICOM requests that the JOIDES Office change its External Comments Criteria for proposal review.

Strike: "Evaluators are asked to refrain from commenting on the competence (e.g., research capability and research record) of the proponents. We ask this because..."

Substitute: "Reviewers are asked to comment on the competence (e.g., research capability and research record) of the proponents only if they feel that it is particularly relevant to the evaluation of the science contained in the proposal. We ask for minimal comments on the proponents because..."

Proposed: Miller, Seconded: C. Moore

11 in favor, 3 against, 2 absent

SCICOM Motion 97-1-10

SCICOM recommends the adoption of a new Proposal Submission and Evaluation Process beginning with the 15 September 1997 submission date. This new process will be a two-step procedure with external evaluation of fully developed proposals, and is described in detail in the Proposal Submission and Evaluation Process document revised at the April SCICOM meeting.

Proposed: Bender, Seconded: Overpeck

14 in favor, 2 absent

SCICOM Motion 97-1-11

SCICOM reaffirms its commitment, as expounded in the ODP Long Range Plan and subsequently in the Implementation Plan, to the use of drilling platforms other than the *JOIDES Resolution (JR)* to solve scientific ocean drilling problems in situations where use of the *JR* is impossible or inappropriate. SCICOM is also committed to the establishment of linkages with other research programs in the earth sciences. Thus, SCICOM is open to the consideration of proposals for co-funded projects using alternative platforms to accomplish projects of great mutual interest to ODP and other drilling programs.

Proposed: Larson, Seconded: Brown

Unanimous

SCICOM Motion 97-1-12

SCICOM accepts the recommendations of the JOI Steering Committee on ODP Publications to slow down the transition to electronic publications, with the understanding that previously anticipated cost savings will not be realized. SCICOM notes that a questionnaire will go out to the user community and expects to be informed of the progress of the Steering Committee in monitoring the transition to electronic publications.

Proposed, Larson, Seconded, McKenzie

15 in favor, 1 abstention

SCICOM Motion 97-1-13

SCICOM asks SCIMP to develop a list of improvements in, or additions to the laboratory, meeting, and accommodation facilities on the JR that could be made at the 1999 dry dock. The scope of facility upgrades and spatial dimensions of expansions should be fully addressed and justified. Given the uncertainties in the level of funding that will be available for this enhancement (\$0-3M), the list must be prioritized with suggestions for groupings of improvements that could be carried out at different funding levels or at a later time. This prioritized list should be completed for the August 1997 SCICOM meeting.

Proposed: Brown, Seconded: Larson

14 in favor, 2 absent

SCICOM Motion 97-1-14

**Extreme Climate and Environments of the
Paleogene and Cretaceous**

Based on the recommendations of the MESH/USSAC workshop on "Warm Climate Intervals", SCICOM establishes a PPG on Extreme Climate and Environments of the Paleogene and Cretaceous.

OVERALL GOALS

To develop drilling plans to investigate past warm climate intervals of the middle Cretaceous to Paleogene and the biotic response to these unusual climates:

1. Determine the frequency, amplitude, and forcing of global climate change, latitudinal thermal gradients, sources of deep water and vertical ocean structure, and changes in global sedimentary fluxes;
2. Focus on major intervals of abrupt climate change (e.g. Barremian/Aptian, Cenomanian/Turonian, K/T, P/E, and lower/middle Eocene, and middle/late Eocene);
3. Investigate major aberrations in the global carbon budget (e.g., mid-Cretaceous black shale);
4. Develop a firm astronomical time scale for the Paleogene and a preliminary one for the Cretaceous and integrate this chronology with the magnetobiostratigraphy.

MANDATES

Work with other appropriate global geoscience programs to develop a strategy that will:

- develop the drilling strategy to complete the defined goals;
- identify geographic areas appropriate to meeting the science objectives; and
- organize the development of specific drilling proposals.

TIMELINE

The PPG will exist for a maximum of three years, with an annual evaluation by SCICOM.
 The first PPG report will be due for the March 1998 SCICOM meeting.
 The PPG will produce a final written report.

Proposed: Miller, Seconded: Kudrass

Unanimous

SCICOM Motion 97-1-15

Scientific Drilling of Shallow-water Reef Systems PPG

SCICOM proposes the creation of an ODP PPG that is focused on the scientific drilling of shallow water reef systems that cannot be drilled with the JR.

GOAL

The goal of this PPG is to develop a coordinated international research plan, and to identify community facility requirements needed, for scientific drilling of shallow-water reef systems. This goal is critical for 1) understanding the causes and effects of Pleistocene and Recent sea level change (e.g., associated with orbital forcing and abrupt climatic change), and 2) providing the geographic network of low-latitude cores needed to understand the dynamics of annual to Milankovitch-scale climatic change (e.g., ENSO, monsoon and tropical N. Atlantic variability).

MANDATE

Work with other research programs (e.g., IGBP PAGES, PAGES/CLIVAR, ARTS*) to develop a coordinated international strategy that will:

- define primary scientific objectives
- assess what has been done to date to meet these objectives
- develop the drilling strategy to complete the defined objectives, including a plan for shared drilling technologies/facilities, downhole measurements and sampling, core logging and curation (sharing of samples)
- define the critical core measurements needed to meet objectives
- identify a mechanism for regular data and information exchange (e.g., on the www)
- develop a plan for coordinating shallow-water reef drilling with deeper objectives that can be drilled with the JR (e.g., along transects and with annually-resolved sediment records)
- define a range of possible funding scenarios, and what can be accomplished for each scenario.

TIMELINE

The PPG will have a lifetime of up to three years, with annual review by SCICOM. The PPG will produce a final, written report.

* Acronyms are:

PAGES = International Geosphere-Biosphere Programme
 (IGBP) Past Global Changes

PAGES/CLIVAR = a joint Working Group/Program between PAGES and the WCRP CLIVAR
 (Climate Variability and Predictability) Program

ARTS = Annual Records of Tropical Systems (a PAGES "task" associated with both of the above)

Proposed: Overpeck, Seconded: Miller

14 in favor, 2 absent

SCICOM Motion 97-1-16

The Architecture of Oceanic Lithosphere

SCICOM proposes the creation of a PPG focused on the study of the architecture of oceanic lithosphere.

GOAL

The goal of this PPG is to develop a plan to study ridge-crest processes and the architecture of oceanic lithosphere in regions of fast-formed crust and slow or ultra-slow regions of oceanic crustal formation. This drilling plan should be linked to the establishment of long-term observatories at ridge axes and in older crust off axis. Furthermore, the PPG group should plan a program for the complete penetration of oceanic crust.

MANDATE

1. Select suitable areas for detailed study on (i) a fast spreading axis; (ii) a slow or ultra-slow spreading axis;
2. Develop a strategy for long-term observation of oceanic crust, both on the ridge axes and off the ridge axis;
3. Define the technological requirements to achieve these objectives, including liaisons to the PPG on "Long Term Observations", to CONCORD and the OD-21 project, and to projects involving the development of riser-type facilities;
4. To define priorities for achieving the goal of studying the architecture of zero age crust, crust along different flow-lines, deep penetration of crust and emplacement of observatories.

TIMELINE

The PPG will exist for a maximum of three years with an annual evaluation by SCICOM. Recommendations from the CONCORD meeting should be integrated into the proposed strategy. The first report should be available for the summer SCICOM 1998 meeting.

Proposed: Ludden, Seconded: Pearce

Unanimous

SCICOM Motion 97-1-17

Climate and Tectonics Links

SCICOM proposes the establishment of a PPG on links between climate and tectonics.

GOALS

To develop drilling plans to investigate the interaction between climate and tectonics; specifically the influence of first-order displacements of the earth's crust on regional to global-scale climate change. Crustal displacements of interest may include, but are not limited to:

- 1) orogenic events, such as rapid uplift of mountain belts and plateaus (e.g. Himalayan-Tibetan system)
- 2) first order, epeirogenic motions of continental interiors, including continental rift systems (e.g. South Africa, East Africa, East Antarctica)
- 3) surface deformations which may lead to changes in ocean circulation patterns (e.g. opening of passages along island arc systems; formation of the Isthmus of Panama).

Aspects of the climate system of interest may include but are not limited to:

- 1) Changes in ocean surface circulation and temperatures
- 2) Changes in deep ocean circulation
- 3) Regional to planetary-scale changes in atmospheric circulation and water vapor transport (e.g. monsoon circulation, jet stream patterns).
- 4) Onset of glaciation.

The intent is to integrate, on a multidisciplinary scale, tectonic and climate elements of the problem through the use of multiple proxies, including sedimentological, geochemical (sediment provenance), faunal and isotopic measurements to be made on OPD core material.

MANDATES

1. To develop drilling strategies and identify areas where these goals can be met.
2. To organize the development of specific drilling proposals for specific sites/transects.
3. To actively collaborate with other appropriate international science initiatives.

PPG COMPOSITION

To fully address the multidisciplinary aspects of the problem, the PPG expertise should include climate modeling, tectonophysics/geophysics, geochemistry and paleoceanography.

TIMELINE

The PPG will exist for a maximum of three years with an annual evaluation by SCICOM. The first PPG report will be due for the March 1998 meeting. The PPG will produce a final written report.

Proposed: Bond, Seconded: Pearce

14 in favor, 2 absent

SCICOM Motion 97-1-18

The general area of drilling will remain in the Indian Ocean and western Pacific through FY 2000.

Proposed: Brown, Seconded: Casey Moore

10 in favor, 5 abstentions, 1 absent

SCICOM Motion 97-1-19

In response to EXCOM Motion 97-1-17 concerning the need for a Deep Drilling Plan for Phase III, SCICOM considers that the great expense of this operation must be fully justified in terms of the significance of its scientific objectives. SCICOM recommends that lead proponents of currently active proposals be contacted and asked to specify at the earliest opportunity any "deep-hole" sites that they originally included or intended to include in proposals but that were dropped for logistical reasons. The deep hole sites must be strongly justified in terms of meeting significant LRP objectives. SCICOM recommends that the wider scientific community be informed of the opportunity for deep drilling and asked to submit additional proposals.

Proposed: Brown, Seconded: Scott

14 in favor, 2 absent

SCICOM Motion 97-1-20

SCICOM prioritizes Phase III technological developments as follows:

1. Developments essential for "any" progress on key scientific objectives of the ODP Long Range Plan
 - Microbiological Systems, Alternate Platforms
2. Developments that significantly augment achievement of scientific objectives of the ODP Long Range Plan
 - Hammer Drill Advancements, Riser-Type Drilling, Logging Innovations;
3. Developments that would enhance the science and cost effectiveness of the scientific objectives of the ODP Long Range Plan
 - Logging While Coring
 - Advanced Corks
 - Advance Borehole Observatories

Proposed: Casey Moore, Seconded: Brown

14 in favor, 2 absent

SCICOM Motion 97-1-21

SCICOM offers a heartfelt "mahalo" to Greg Moore for his efforts in bringing us to his tropical kingdom. Those of us on the field trip trod above the ocean's former surface on recent lava flows and sniffed at unique aromatic concoctions ranging from sulfur vents to volcano wine. We all return to what passes for spring in our more boreal homelands with memories of this island's beautiful convergence of Earth's hydrospheric, atmospheric, biospheric, and lithospheric systems.

Proposed: Larson, Seconded: Scott

14 in favor, 2 absent

SCICOM Motion 97-1-22

SCICOM notes that several members of PCOM who were not carried forward to SCICOM have not been formally recognized for their services. SCICOM appreciates the efforts of Jim Natland, Bob Carter and Greg Mountain during the sometimes difficult time of transition to the new system and encourages their future participation in ODP science.

Proposed: Brown, Seconded: Greg Moore

14 in favor, 2 absent

DRAFT Meeting Minutes

A. Welcome and Introduction

Humphris welcomed old PCOM and new SCICOM members, liaisons and guests, and asked everyone in the room to introduce themselves, their affiliation, the capacity in which they were attending the meeting, and their field of expertise. Greg Moore explained the logistics of the meeting.

Humphris talked about the responsibilities of SCICOM, not only because it is a new committee, but also because of the number of people on the panel who are new to the JOIDES Advisory Structure. She showed an overhead of the JOIDES Advisory Structure, and said SCICOM is responsible for providing the scientific direction of the Program, and is accountable for achieving the goals in the Long Range Plan (LRP). SCICOM provides advice to JOI, the prime contractor, who provides the information to the subcontractors: TAMU, responsible for vessel operations, and LDEO, responsible for logging. There are two SCICOM meetings a year: the first, focused on long term planning, and a second to prioritize proposals that are of high priority and ready for drilling; these will then be sent to OPCOM for scheduling. SCICOM will act on scientific advice from the SSEPs panels, who will nurture proposals until they are ready to be sent forward to SCICOM for ranking. OPCOM, as a subcommittee of SCICOM, will provide technical and technological advice as it pertains to long-term planning as well as determine the annual drilling schedules. Input to OPCOM will be provided by PPSP, SSP, SCIMP and TEDCOM (although the latter reports to both SCICOM and OPCOM). OPCOM will then provide advice and action items directly to JOI or, if there are significant scientific or budgetary implications, to SCICOM. The members on this subcommittee have to be nominated by SCICOM at this meeting.

Humphris presented and discussed the contents of the Agenda of this meeting. Because there is currently no OPCOM (one of the agenda items for this meeting is to set up OPCOM), some issues that would normally fall within the mandate of OPCOM will have to be discussed during this SCICOM meeting, as decisions regarding prioritization of technological issues have to be made prior to the upcoming EXCOM meeting in June, and OPCOM will not meet until August. One important aspect of the new structure is the new procedure of proposal submission and evaluation. This procedure has to be approved at this meeting, so that it can be approved at the June EXCOM, and be in place by the next deadline of September 15. Humphris asked if there are any other agenda items that anyone would like to add, but none were added.

SCICOM Motion 97-1-1

The Agenda for the April 1997 meeting of SCICOM is approved.

Proposed: Scott, Seconded: Larson

Unanimous

The minutes of the last December meeting were discussed. Modifications were recommended by Malfait and by Kudrass.

SCICOM Motion 97-1-2

The Minutes of the December 1996 PCOM Meeting are approved as a true record with the modifications noted.

Proposed: Kudrass, Seconded: Brown

Unanimous

Humphris presented the status of the action items from the last PCOM meeting. All action items have been addressed or will be during this meeting. Scott commented on the issue of shipboard scientific staffing, and in particular expressed concern on behalf of Zierenberg that Leg 169 was used at PCOM as an example of how having eight sulfide petrologists "caused havoc on board", casting a bad light on a tremendously successful leg. Falvey replied that this issue was originally raised in general terms at the JOI Co-Chief Scientists' review. Co-Chief Scientists and TAMU got together and identified unbalanced shipboard scientific expertise as a problem, and used Leg 169 as an example, as a significant number of non-US members were sulfide petrologists, and the US was left with achieving balance on the shipboard party. McKenzie noted that this is a problematic issue for legs with highly focused objectives, as people of a certain specialty are attracted by a leg addressing relevant problems. Scott said he agreed, but wanted to point out that Zierenberg is concerned that using his leg as an example of poor balance in the shipboard party cast a bad light on the results of the leg. Humphris stated that the Minutes from this meeting would clearly state that SCICOM recognizes the success of the leg, and that the comments in the 1996 PCOM Minutes referred only to the desirability of more choice from non-US partners in making decisions on shipboard staffing.

B. Liaison Reports**1. NSF (Malfait)**

Malfait started his report reviewing the problem of finding resources and showed the costs for operating the program starting from 1970, as well as the projected costs, and required contributions, to run the program post-2003 (Appendix 1). There are several ways to increase the resources needed for the future of the program: increasing the level of contribution of existing partners, adding new partners, and increasing the NSF contribution, but that is already over 60% in the program. The NSF budget has not been growing, and larger amounts have been allocated to global change and environmental science. The NSF Ocean Science Division Budgets and Ocean Drilling Program Budgets are listed in Appendix 2.

Malfait reported on three mid-term issues (1999-2003):

- 1) International participation: the final notification regarding the participation of ODP-partners will be due in June. Based on the Council and EXCOM Meetings in February, the situation looks positive. However, there is concern regarding the level of contribution by members. The membership of the Peoples Republic of China is currently under consideration as a 1/6 partner.
- 2) NSF Review of the 1998-2002 Program Plan: the program has been approved through to 2003. Funding approval from NSB is required. A review panel will meet this summer.

- 3) Mid-life refit of the *JOIDES Resolution* in 1999: the resources necessary for the refit are approximately \$6M. Only \$1.5M is budgeted in the program, and an additional ~\$4M are needed. NSF is trying to find resources outside the program budget.

Malfait then reported on long-term issues (post -2003):

- 1) ODP as presently structured will end in 2003. The ODP Long Range Plan calls for a two ship program in Phase IV (post- 2003): a *JOIDES Resolution*-like vessel, and a riser vessel. The Japanese are planning for OD-21 with the construction of a riser-equipped vessel.
- 2) The ODP/*JOIDES* plan and OD-21 plan are merging into an Integrated Ocean Drilling Program, with two vessels and integrated science planning and management. Japan and the U.S. would be equal partners with something like 1/3 membership each, and possibly the rest of the international community would contribute the remaining 1/3. A plan is being presented to the European Community in May. The resources needed to support such a program are a concern. A projection for the costs for 2003-2009 are shown in Appendix 1.

Malfait concluded his report mentioning other NSF activities. NSF has started an initiative "Life in Extreme Environments" -- a cross-directorate program that includes preparation for the Mars program. Approximately \$6M have been allocated in FY 97, and over 120 proposals were submitted on April 15.

A U.S. Seafloor Observatory Program (USSOP) is being developed to coordinate the interests of BOREHOLE, OSN, the US CABLE PROGRAM and RIDGE. Keir Becker at Miami is coordinating the initial planning.

Finally, NSF has completed the environmental assessment for Antarctic drilling, which is on file at NSF. The conclusion is the "proposed drilling will have no more than a minor or transitory effect on the environment". Only minor changes in the operating procedures are required.

Humphris asked whether the \$6M required for the dry-dock refit just covers the ship costs or includes any changes to the science facilities. Malfait confirmed that additional costs for scientific facilities will have to come from elsewhere. Pearce, in regard to OD-21, commented on the difficulty in Europe to plan for a new framework which is 5 yr ahead, and does not yet exist. Larson expressed concern about the notion that Japan and the US will be co-equal partners in the post-2003 plan. The problem is that, if Japan and US are the two major players, that tends to squeeze the influence of the other international partners. The hallmark of success of ODP is the international aspect. Larson wondered how this problem can be solved. Malfait said that one option is a 1/3 membership from the rest of community. Humphris said that SCICOM should start setting up an appropriate Advisory Structure to incorporate as wide an international participation as possible. Casey Moore said that in the future program there will be much more space on board ship, so that everyone can be accommodated. Humphris replied that the concern is about the representation from the international community in decision-making that can be accommodated within the 1/3x3 structure. Bender asked if the costs to operate the two ships are the same. Malfait responded that the riser vessel is more expensive.

2. JOI (Falvey)

Falvey stated that JOI is the prime contractor of NSF to manage ODP, and it is advised by the JOIDES Advisory Structure. The major task of JOI is the production of the Annual Program Plan. Falvey reported on the following major topics:

(a) Budget allocations for FY 98 (Appendix 3).

The budget, adding up to \$44.4 M went to NSF last week. Falvey explained the meaning of Fixed Costs, A-base and X-base budgets, and showed in detail the summary of FY 98 X-base projects (Appendix 4). X-base budget allows the mobility and flexibility that keeps the program dynamic and innovative.

(b) RFP's regarding Wireline Logging Services and Site Survey Data Bank. Both RFPs closed on 14 January, 1997. Regarding Wireline Logging Services, an assessment panel (Stoffa, Orcutt and Mayer) was appointed by JOI. Only Lamont responded, and the response met or exceeded the technical requirements. JOI will award the contract for Wireline Logging Services to Lamont-Doherty Earth Observatory and partners.

Regarding Site Survey Data Bank, JOI received three responses: Lamont-Doherty Earth Observatory, Scripps Institution of Oceanography and University of Houston. JOI appointed an assessment panel, composed by Watkins, Eldholm, Detrick and Lyle. The panel ranked all responses as technically acceptable, and Lamont received the best rating. JOI awarded the contract back to LDEO.

(c) Internationalization Initiative.

- Taiwan Universities joined the Australia/Canada/Korea Consortium on 29 January, 1997, under the name "Chinese Taipei", bringing the new consortium to 92% operational. The new name is the Australian-Canada-Chinese Taipei-Korea Consortium for Ocean Drilling.
- Portugal joined the European Consortium on April 18, 1997.
- Discussions continue between NSF and other US Government Agencies on China's application to join ODP as an associate member at the one-sixth level.
- Consortium based on the Sultan Qaboos University, Oman, are seeking support of other Gulf States for an associate membership.
- India and Indonesia. Initial discussions regarding their future membership are requested for the end of July and early August.
- Renewed efforts to have South Africa join the program will coincide with the October 1997 port call.

(d) Public Affairs Initiative. JOI is making an effort to bring together and make public affairs more effective. Aaron Woods at TAMU and Pamela Baker-Masson at JOI are working together now. One major initiative is the Port Call Event Strategy. This started in San Francisco and has been continued through to Lisbon, and is an effective way to get a high profile for the Program. An additional initiative is the News Release Policy.

Humphris asked Falvey to clarify what an associate membership means. Falvey replied that it is based on the notion that many things go in units of 12 in the program, and they put forward a proposal of fractional membership. An associate member will receive 1/6 of quantifiable rights (e.g. 2 shipboard participants a year, 1 Co-Chief every 6 years, 2 panel members, 17 copies of ODP publications, etc.). Ludden asked if the X-base budget is accepted, and if it was looked at in Arizona. Humphris said PCOM looked at it, and the overall priorities are maintained in this budget.

3. ODP-TAMU (Baldauf)

Baldauf, the new official liaison from TAMU, said that TAMU, as the Science Operator, provides facilities and services necessary to implement objectives and goals in the Annual Program Plan. They view themselves as a service organization and the science community as their customer forming an integrated team to achieve the common goals of the LRP. In addition to shipboard services, TAMU provides a great deal of shore-based support, which includes engineering development, development of scientific equipment, production of Scientific Results Volumes and additional report volumes, management of database systems, and maintenance of the core repository responsibility for the curation of the cores.

Baldauf reported on the following five items.

- (1) Reorganization. Last December the old ODP-TAMU structure was reorganized in order to achieve optimal efficiency and incorporate project management and cost savings. The new operational structure is formed by a Director, two Deputy Directors, each coordinating one of the two groups: (1) scientific shipboard operations, and (2) services and products to the scientific community (Appendix 5). Curation has been removed from Information Services, and it has been integrated into the science services. The reorganization will save approximately \$500,000 in FY '98, \$300,000 saved in shipping and supplies, and \$250,000 in salaries and elimination of positions. Three positions, Manager of Science Services, Curator, and Manager of Technical Support have been advertised internationally. Pending University approval, Tom Davies will start in June as Manager of Science Services. TAMU expects to fill the other two positions in the next few months.
- (2) FY '97 Program Plan (Appendix 6). The budget for FY97 is \$34.7 M, and reflects a 1.8% reduction from FY '96. Of this amount, \$21 M is going into shipboard operations, day rate, salaries, travel and fuel. The remaining portion of the FY97 budget is distributed through functional areas, such as publications, engineering developments, etc. The FY97 SOE (Special Operating Expenses) are \$2.7 M, and comprise both development opportunities (Diamond Coring System, hammer drill system, JANUS) as well as additional costs associated with leg activities (re-entry hardware for Legs 173 and 176, CORK for Leg 174B). In addition, the SOE include the salary for a new position, now approved by the University, and the equipment for electronic publishing on the WWW.
- (3) FY '98 budget (Appendix 7). The budget for FY98 is \$34.5 M, of which about 62% is for shipboard operations, and the SOE for FY98 are \$3.3 M. The challenge of the FY98 budget is moving to distant oceans, and an additional \$920,000 will be needed for travel, fuel, etc. TAMU has not programmed any development or replacement of equipment, such as replacing outdated computers, into the FY98 budget. The level of investment in shipboard and shorebased computers during 1993-98 averaged \$600,000/year (Appendix 8). The budget for these items is going to zero in the next few years, and if we assume that the life expectancy of a computer system is 4-5 years, the problem of updating the systems will have to be addressed in the future. Among SOE in FY98, the most significant are related to Leg 178, with \$700,000 for an ice support vessel and \$150,000 for incinerators and trash compactors to comply with the Antarctic Treaty for operating in Southern Ocean areas.
- (4) Overview of operations:
Leg 171A - Returned to Barbados accretionary prism with mainly a LWD program. 2500 m were logged during 11 days of operations at 5 sites, and no cores were recovered. The

objectives were achieved at each site. Requests to deepen holes in two locations came in from the ship, and for increasing penetration beyond that previously approved. This request was approved in one case, and deeper objectives were achieved.

Leg 171B - Blake Nose. 16 holes were completed at 5 sites; with a total of 427 cores recovered, and 3200 m of cores.

Leg 172 - NW Atlantic Sediment Drifts. 42 holes were completed at 11 sites, and all objectives were achieved. A drawworks failure occurred at 1064A, the last site.

(5) Upcoming schedule, base on the rankings at the Dec '96 PCOM Meeting:

Leg 179- There is the possibility of adding a port stop (Mauritius?) and making this into two legs .

Leg 173 - TAMU is still working with Portugal to obtain clearance to drill in the proximity of cables owned by Marconi and French Telecom. Marconi is requesting 15 nm clearance on both sides or asking ODP to accept all liability in case of breakage as well as revenue lost during breakage. The ship is currently lowering pipe and yet clearances for this site are in suspension. There have been negotiations with Marconi and the Science and Foreign Ministry of Portugal during the last few days, and at this point the Ministry seems favorable to the request of a 1nm clearance.

N.B. Clearance to drill within 1nm was given on Wednesday, on the condition that a sea floor survey was done before drilling.

Baldauf showed a summary of current leg information (Appendix 9), and the status of the selection process for Co-Chief Scientists and scientists, and gave some statistics of the national representation through Leg 172 (Appendix 10). Among 118 participants, 47.8% are from US whereas member countries have a representation between 7.5 to 8.4%.

Finally he showed the current mode of operation for the core repositories. Cores from the Atlantic go to Bremen, cores from the Pacific and North Atlantic north of 60N go to the Gulf Coast Repository. There are two exceptions: cores from Kerguelen Plateau will go to the Gulf Coast Repository, and cores from New Jersey will go to LDEO to be housed with the Leg 150 cores. He also said that TAMU has taken new initiatives with curation. They recently shipped some cores from Legs 139 and 169 to a Mining Conference in Toronto as a P.R. initiative, and it was a great success.

Humphris clarified that SOE in TAMU budgets are equivalent to X-base expenses of JOI. McKenzie asked about the status of the hammer-drill. Baldauf said that the testing phase is complete. Larson asked where and when the drydock will take place. Baldauf said that it still has to be decided, but it will likely be in Singapore in June 1999. Raymo asked if the percentages of national shipboard participants changes when also logging and staff scientists are included. The answer is no. Ludden asked over what time period these percentages are averaged. Baldauf said they try to average them on a yearly basis. Scott said that the Mining Conference in Toronto attracted over 5,000 people from 63 countries, so ODP was well exposed to the mining industry.

Skinner asked why the problem of cables and clearance was not considered earlier during the planning phase of the cruise. Baldauf clarified that clearance had already been obtained from Portugal, and the Marconi protest was a recent development. Skinner added that

in the case of fiber optic cables, the problems of clearance are due to the fact that there is no way of knowing exactly where cable is. Humphris asked why the types of cables made a difference. Skinner said that fiber optic cables are much smaller in diameter and are not armored. There is an international agreement for laying the cables this way, and this has consequences for those subsequently working in the area. Humphris said that SSP should look at this issue. Miller said that SSP has made several recommendations that this problem be evaluated early by the JOIDES Advisory Structure. The proponents don't have easy access to information available from cable companies, whereas ODP-TAMU could obtain this information easily. Baldauf said that once TAMU gets the highly ranked proposals, they start evaluating any problems such as cables. Skinner said that companies who own the cables will give the information they have, if it is requested. Miller noted that there were problems in knowing the exact location of cables on the seafloor on Leg 150, of which he was Co-Chief, that interfered with drilling operations. He added that the companies that owned the cables would not give information on exact locations to the Co-Chiefs when requested. He further stated that SSP had noted that the necessity of moving sites during a Leg in order to avoid seafloor cables whose exact location was unknown prior to the start of a leg was a problem because the sites do not go through the proper JOIDES review. The panel had raised their concerns on the matter several times in the past by recommending to PCOM that they request ODP/TAMU, which has ultimate liability, to investigate the matter sooner. Miller also noted that information about seabed hazards is requested from proponents on the site summary forms. Humphris concurred that TAMU needs to evaluate potential cable problems early on in the process.

4. LDEO (Goldberg)

Goldberg reported on the following items:

(1) Recent Logging Results

Leg 170: Costa Rica. One hole was wireline logged, and 5 holes LWD. The Inmarsat-B was installed and tested.

Leg 171A: Barbados. Five holes were LWD, and the results are excellent.

Leg 17B: Blake Nose. Three holes were logged, and Standard, FMS, and GHMT tools used.

Leg 172. Two holes were logged, and Standard and FMS tools used. The HCGR (K and Th gamma ray) and IMPH (medium resistivity) data at Holes 1063A and 1061A clearly identify the boundary between the 40 kyr and 100 kyr cycles (Appendix 11).

(2) Upcoming Operations and FY98 Deployments include the use of the following tools:

Leg 174A: New Jersey Margin. Standard and LWD tools

Leg 174B: CORK 395A. Standard and DLL tools

Leg 175: Benguela. Standard and GHMT tools

Leg 176: Return to Hole 735B. Standard and VSP, DLL

Leg 177: S. Ocean Paleoceanography. Standard and GHMT

Leg 178: West Antarctic Peninsula. Standard and GHMT, WST

Leg 179: Woodlark Basin. Standard and BHTV, VSP, DLL

Leg 180: SW Pacific Gateway. Standard and GHMT.

(3) FY97 Ongoing projects

- Oracle Log Database (Appendix 12)
- Core-Log Image Correlation Project (Appendix 13)
- Core Log Integration Platform

- Temperature data (Appendix 14). The focus will be on designing temperature logging rather than just collecting.
- Satellite Transfer of Log Data (Appendix 15). The goal is to have the internet connected on ship. The project is moving along, increasing data transfer rates regularly.

Goldberg said that he has prepared a summary of achievements of logging during the past 6 years connected to the goals of the LRP. He said this document could be useful as a target of how logs can be built into new proposals, and could also be useful to the SSEPs.

Kudrass asked how is the Oracle project connected to Janus. Goldberg replied there are plans to integrate them.

C. JOIDES ADVISORY STRUCTURE

1. New Mandates and Terms of Reference

Humphris said that the version of the Mandates and Terms of Reference, included in the Agenda Book, is the final, EXCOM-approved version. The current Guide to the Ocean Drilling Program is now out of date and the JOIDES Office will produce a new one this summer. She reviewed the new annual calendar and said that the whole schedule is devised based on the interactions that need to go on between different panels for final advice to SCICOM. The deadlines for proposal submission were changed in response to community concerns, as the 1st January was a terrible time for everybody. The new deadlines are: 15th March and 15th September. In the future, SCICOM meetings will be in March and late August/early September in order to allow JOI, TAMU and LDEO more time to work out budgets for submission to NSF. OPCOM will meet either before or after SCICOM. At the March meeting, it will meet before SCICOM because OPCOM will provide advice to SCICOM for long term technological and budgetary issues. At the August/September meeting, OPCOM will meet after SCICOM, because it will devise a drilling schedule based on the scientifically-ranked proposals sent to them by SCICOM. The schedule will be then circulated by e-mail to SCICOM for approval.

In terms of the timing of meetings during the implementation of the new calendar, an interim SSEP meeting took place in January and consisted of several members from each of the old thematic panels. In June, the new SSEPs will meet for the first time, the new SCIMP will meet also in June, and in August, OPCOM will meet for the first time. By November, the new meeting schedule should be fully in place. SCICOM at this meeting has to establish a rotation scheme for its members, choose the membership for OPCOM, and appoint liaisons to the various panels.

2. SCICOM/OPCOM

A rotation scheme has to be established, as 50% of SCICOM consists of new members all appointed at the same time, and it is impractical to have them rotate off all at the same meeting in three years. There is the need to stagger the rotation, with 1/3 of the panel rotating each year. The older members will rotate off first, then the newer ones. There are six new US members at this meeting, and there is the need for people to volunteer for either one meeting more or less. Klein, Miller and Overpeck will stay for the full term; Bond, Larson and Raymo will serve for one extra meeting. The following rotation scheme was approved:

Name	Affiliation	Date of Appoint.	Alternate	Rotation Date
Bond, Gerard C.	LDEO	3/97	Mountain, Greg(LDEO)	4/00
Brown, Kevin M.	SIO	4/96	Tauxe, Lisa(SIO)	4/99
Humphris, S.E. (Chair)	WHOI	1996		8/98
Klein, Emily M.	Duke	3/97	Bender, John(UNC)	4/00
Kudrass, Hermann	Germany	8/93		8/97
Larson, Roger L.	URI	7/95	D'Hondt, Steve(URI)	8/98
Ludden, John	France	3/97		8/00
McKenzie, Judith A.	ESF	4/95	Kristoffersen, Y.	4/98
Miller, Kenneth G.	Rutgers	3/97	Mountain, Greg(LDEO)	4/00
Moore, Gregory F.	U. Hawaii	8/95	Fryer, Patty(U.Hawaii)	8/98
Moore, J. Casey	UCSC	3/97	Zachos, Jim(UCSC)	8/00
Overpeck, Jonathan T.	NGDC/NOAA	3/97	Peterson, Larry(RSMAS)	8/00
Pearce, Julian A.	UK	1996	Robertson, Alastair	8/98
Raymo, Maureen E.	MIT	3/97	Boyle, Ed(MIT)	8/00
Scott, Steven D.	A-C-K-CT	3/97	Chen, Ju-Chin	4/99
Tamaki, Kensaku	Japan	3/97	Suyehiro, Kyoshi	4/00

Next the issue of OPCOM membership was discussed. This subcommittee will be formed by six members: three SCICOM and three non-SCICOM members. For the first year, it will be chaired by the SCICOM Chair, and therefore two additional SCICOM members willing to sit on the panel are needed. In addition, three non-SCICOM members have to be appointed. These people should have working experience with ODP, have been out on legs, and have experience with, or interest in, logistical issues so that they can deal with the wide range of issues that are likely to be brought up.

The selected SCICOM members are: Humphris, Casey Moore, and Tamaki and they have all agreed to serve. The non-SCICOM members that will be invited to serve are: J. Natland (J-P. Montagner, alternate), D. Hodell (J. Backman, alternate), and R. Carter (N. McCave, alternate).

3. SSEPs

SCICOM decided that the panels will be asked to deal with the issue of rotation themselves. At this meeting, SCICOM needed to select a Chair for each SSEP, and to establish liaisons between the SSEPs and SCICOM. Humphris said she has communicated with panel members asking them if they would be willing to be considered for the position of Chair and if not, whom would they recommend.

Miller said that the new panels are covering a broader thematic area than the previous ones, and it would be useful to have also a Vice-Chair. Ludden suggested appointing a Chair and a Chair-Elect. Humphris said that this would imply designating who will be chair for the next 6 years. Falvey said there is no function in the current mandate for a Vice-Chair, and it would be

necessary to change the Mandates. Humphris suggested that a Chair and an Alternate Chair be designated.

Regarding the Environment SSEP, she had responses from 11 of the 16 members, and the names of three people emerged. After some discussion of these and other Panel members, a Chair and an Alternate Chair were selected.

Regarding the Interior SSEP, Humphris had responses from 9 of the 16 members. Two names emerged, and after some discussion of these and other Panel members, a Chair and an Alternate Chair were selected.

SCICOM Motion 97-1-3

Considering the breadth of the mandate of the SSEP committees, SCICOM envisions that Alternate Chairs will act in concert with the Chair such that the Alternate Chairs can easily serve as Chair in the Chair's absence and also serve to facilitate the SSEP's mandate. Therefore, SCICOM appoints Ted Moore as Chair and Mike Underwood as Alternate Chair for the Environment SSEP, and John Tarduno as Chair and Keith Louden as Alternate Chair for the Interior SSEP.

Proposed: Miller; Seconded: Larson

14 in favor, 2 absent (Moore, McKenzie)

SCICOM Motion 97-1-4

SCICOM recommends that each SSEP establish liaisons with appropriate science programs, as directed by the SCICOM Chair.

Proposed: Overpeck, Seconded: Ludden

14 in favor, 2 absent

4. SCIMP

Humphris said that she had responses from 13 out of 16 members in polling them for their choice of Chair. Several names had been suggested, but two of these had declined to be considered. Humphris suggested that, given that this is a new Panel, one scenario would be to appoint someone with previous experience as a Panel Chair for one year to help with the transition, and then make a transition to a new Chair. That way, the transition could be smooth and retain some continuity with issues from the previous Panels, but it could set the stage for a new approach in the future. After some discussion of possible scenarios, a transition sequence was determined.

SCICOM Motion 97-1-5

In recognition of the need to integrate a wide range of responsibilities within the mandate of SCIMP, SCICOM nominates Joris Gieskes (to serve as Chair for one year) with Tom Janecek as Alternate Chair. After this phase-in period, the Chair will pass to Tom Janecek with Wonn Soh serving as the Alternate Chair.

Proposed: McKenzie, Seconded: G. Moore

Unanimous

5. Other Panels

Humphris presented the lists of membership for SSP, TEDCOM, PPSP, and EXCOM and pointed out the new members. The UK member for SSP has not yet been announced. The French members on TEDCOM and PPSP are still pending, and the nominated members should be announced to the JOIDES Office next week.

SCICOM then moved to select Liaisons from SCICOM to these panels. The following liaison relationships have been appointed. Two liaisons have been appointed for most panels, so that responsibility is shared, with the exception of PPSP and SSP (see note).

SCICOM Liaison to	Panel
Humphris	PPSP
Overpeck	Environment SSEP
Raymo	Environment SSEP
Moore	Interior SSEP
Scott	Interior SSEP
Tamaki	SSP
Miller*	SSP
Ludden	TEDCOM
Brown	TEDCOM
Natland as a member of OPCOM will be the liaison to SCIMP.	

* It was realized post-SCICOM that Miller cannot be the SSP liaison, as he is not a member of OPCOM.

6. Approved PPGs (Subsurface Biosphere and Long-Term Observatories)

SCICOM had to determine the mandates and memberships for the two PPGs approved at the PCOM December meeting: the Deep Biosphere and Long Term Observatories PPGs.

6.1 Subsurface Biosphere Workshop

J. Farrell gave a report on the workshop held in Washington DC in March entitled "Earth's Deep Biosphere". The conclusion of the meeting was that the biomass beneath the sea floor is much larger than previously thought, almost ubiquitous, even in the most extreme environments. It was recommended that geologists and microbiologists work together to investigate the problem, and that they need to develop an understanding for each other's terminology. The task is extremely large, and the tools and strategies still have to be defined.

6.2 Mandates

Humphris presented a draft mandate for the Deep Biosphere PPG to SCICOM for discussion. This was revised before acceptance by consensus.

SCICOM Consensus 97-1-6

Earth's Deep Biosphere Pilot Project Program Planning Group**Overall Goal**

To develop a plan of drilling and downhole sampling to investigate:

- the distribution, depth extent, and genetic range of the sub-seafloor biosphere living in rocks and sediments;
- the nature, ecology, and contribution of the sub-seafloor biosphere to global biogeochemical budgets.

Mandate

1. To develop a plan for the integration of microbiological sampling and analysis into drill sites with other objectives, where appropriate.
2. To organize the development of drilling proposals, if specific drilling sites or transects are required.
3. To provide advice on the need for, and specifications of, a shipboard microbiological facility, development of sampling procedures, analytical techniques, and curation of samples.
4. To actively collaborate with other appropriate international science initiatives.

Timeline

- The PPG will exist for a maximum of three years, with an annual evaluation by SCICOM of the necessity for its continuation.
- The PPG will report to the August 1997 SCICOM meeting on initial progress, with particular attention to mandate 3 in order that the microbiological facility can be constructed during the upcoming yard period of the *JOIDES Resolution*.
- The PPG will produce a final, written report of the overall plan and its implementation.

Humphris presented a draft mandate for the Long Term Observatories PPG to SCICOM for discussion. The following mandate has been accepted by Consensus.

SCICOM Consensus 97-1-7

Long-Term Observatories Program Planning Group**Overall Goal**

To develop a plan for the integration of long-term instrumentation in boreholes with seafloor observatories planned by other global geoscience programs, with the goal of:

- investigating the structure and dynamics of the Earth's interior
- quantifying the flux of heat and materials to and from the Earth's interior.

Mandate

1. To devise experiments that incorporate the use of ODP boreholes for long-term measurements at seafloor observatories.

2. To recommend mechanisms for the implementation, emplacement, and oversight of borehole-related instrumentation in the context of seafloor observatories planned by other global geoscience initiatives.
3. To organize the development of instrumentation/experimental proposals in collaboration with appropriate global geoscience initiatives.
4. To recommend ways in which instrumentation in boreholes can be serviced and maintained by, and data retrieved from, platforms other than the JOIDES Resolution.
5. To provide advice on site survey data, core measurements, logging requirements, and the completion of boreholes in preparation for instrumentation.

Timeline

- The PPG will exist for a maximum of three years, with an annual evaluation by SCICOM of the necessity for its continuation.
- The PPG will report to the August 1997 SCICOM meeting on initial progress.
- The PPG will produce written reports of the overall plan and the mechanisms for oversight of borehole-related instrumentation.

6.3. Members

Humphris presented to SCICOM a list of nominations and volunteers for each PPG, broken into groups depending on fields of expertise. Prior to the meeting, Humphris had contacted the appropriate international geoscience initiatives to invite nominations to these PPGs. In addition, SCICOM members were asked to bring nominations to the meeting. Humphris reminded SCICOM that proportional representation is not required for PPGs, but each member country or consortium has the right to send a representative. The list of names were discussed and a group were selected for each PPG to represent a diverse range of expertise. The JOIDES Office will contact these individuals to determine whether they are willing to serve. McKenzie volunteered to be SCICOM liaison to the Deep Biosphere PPG. Humphris said she will inform SCIMP to send a member as liaison to the first meeting. Brown will serve as the SCICOM liaison to the Long-Term Observatories PPG.

D. Proposal Submission and Evaluation Process

1. Background to the Development of a New Proposal Submission and Evaluation Process

Humphris explained that in order to implement the external review process, it is necessary to have clean proposals. In fact, with the system now in use, revisions and addenda are added to the original proposal, ending up in a combined package of different documents, making it difficult for a person not familiar with ODP to evaluate the proposal. In addition, the complaint has frequently been made that ODP puts proponents through a lot of work rewriting proposals only to have them ultimately not drilled, so there is a need to try to filter out proposals at an early stage. A new draft proposal submission and evaluation procedure was developed by the JOIDES Office in consultation with JOI and NSF, and a draft was taken to EXCOM for comment only. They made suggestions and revisions, resulting in the document included in the

Agenda Book. A first round of external evaluation was set in motion at the Interim SSEP meeting. Humphris said SCICOM needs now to make suggestions and revisions, so that she can take a final document to EXCOM in June for their approval.

2. Report of Interim SSEPs

Ludden reported on the Interim SSEP meeting, which took place in Woods Hole in January. He said the group comprised members from old panels, about 22 people, and they worked as a single group rather than two separate ones. He said the group found working together through the entire meeting extremely beneficial and recommended the continuation of this approach. The goal of the meeting was to select approximately 20 proposals among those active in the system and send them out for external comment. The criteria used in selecting the proposals for external comment were:

- (1) The proposal addresses a scientific problem that is identified as a high priority in the ODP LRP (or moves the program beyond the LRP);
- (2) There is clear justification that drilling is the best way to achieve the scientific objectives being addressed;
- (3) There is a well defined drilling strategy, the success of which can be assessed on the basis of geophysical/geological data as presented in the proposal.

Each proposal was ranked from A (high) to C (low) for each of these criteria. Those scoring a (C) for any of the review criteria were not recommended for external comment. A total of 25 new proposals, revised proposals and letters of intent were submitted to the January 1997 deadline. Of these, 13 were sent out for external comments. A full review was provided for all new (not revisions or addenda) proposals submitted to the January 1997 deadline.

Regarding the implementation of the external evaluation process, Farrell said he tried to contact most evaluators by e-mail, and almost all people asked were willing to comment on the proposals and they seemed glad to find that ODP had opened up to the outside community. Humphris said proponents were called, they were informed that their proposal was selected for external comment, and those who had not revised their proposals within the past year were given the option of doing so. They were given a month to do so. Ellins said that a few proponents did not want their proposals to go out for external comment at the present time.

3. Discussion of Proposal Submission and Evaluation Process

Humphris presented the ODP proposal process document and specifically asked for comments on the general concepts in this document. She showed how the system is moving to a two-step system of proposals, starting with the 15 September 1997 deadline: 1) a Preliminary Proposal, that will be evaluated and nurtured (if appropriate) through the SSEPs, and 2) a Full Proposal, that is developed taking into account the advice from the appropriate panels. Proposals already in the system will not be required to go through the "Preliminary Proposal" stage, but any revisions will be expected to meet the guidelines for full proposals.

Miller said he thinks this structure may be too bureaucratic in some instances, and it would be important to add at the beginning of the document that the option exists in exceptional cases to submit a Full Proposal without going through the Preliminary Proposal stage. It would

be implicit that the Full Proposal should meet all required criteria for a Full Proposal. Humphris said it could be done, but it should be clearly restricted to exceptional cases.

Humphris continued and said that Full Proposals will be reviewed by the SSEPs to determine whether they meet the criteria necessary to be sent out for external comments. These criteria have been outlined by Ludden during his report on the interim SSEP meeting. Humphris said that evaluators are requested to comment on the science in the proposal, and whether the proposed science will contribute to advancing the field or not. Other aspects, such as Site Survey readiness, can be dealt within from the structure.

The external comment process will be managed by JOI, rather than the JOIDES Office, in order to maintain the confidentiality of the comments, because the JOIDES office rotates. Proponents and the SSEPs will each submit 5 international names of potential evaluators. Reviews will come back to JOI, JOI will remove the identity from the comments, and will send them to the JOIDES Office. The JOIDES Office will send the comments back to the proponents, who will have a chance to respond to the comments of the external evaluators. Both the evaluations and the proponent's response will go to the SSEPs, and they will make a recommendation to SCICOM. SSEPs will make decisions as to the scientific priority by grouping, rather than ranking, the proposals. SCICOM will have to look at them and agree with the assessment of the SSEPs, and then will make decisions as to ranking and scheduling. Larson asked if there is a place during the review process where proposals can be rejected. Humphris replied that the SSEPs can reject a preliminary proposal by discouraging the development of a full proposal.

Humphris pointed out that during the external evaluation process, the evaluators are not asked to comment on the competence of the individuals listed on the proposal. She explained that her feeling and PCOMs is that there is a big difference between a drilling proposal at the beginning of the process and at the end, when it gets scheduled. In addition, science is carried out by shipboard participants, it is a large group of people making that effort, and therefore to comment on individuals is not necessary. She also added that EXCOM disagrees with her on this issue, and that she wants the opinion of SCICOM on this matter.

G. Moore said he agrees with Humphris and thinks this process is quite different from an individual proposal as it involves a large group of people. C. Moore said he agrees too. Silver commented that one should reply to EXCOM saying that there is an entire Advisory Structure, with panels, to nurture proposals. Bond asked the reason why EXCOM wanted a comment on proponent's competence. Humphris replied that they felt that a two-page CV would provide an idea of the experience of the individuals, helping to assess whether the proposed scientific project is sound or not. Raymo said she thinks that there isn't anything wrong with including a CV with an ODP proposal. Miller said the CV of the lead PI should be included. Falvey said that these are not individual proposals for a personal grant, but rather a scientific project owned by this committee. Pearce said it could be difficult for young scientists who don't yet have a reputation and are not well known. Raymo said it would be tough on all. Miller asked for a clarification if this information would help in deciding whether these people would make good Co-Chief Scientists. Humphris said nominations and recommendations for Co-Chief Scientists come from SCICOM, but the final decision rests with TAMU. Overpeck asked how often

someone submits a proposal and then they are not included in the drilling phase. Humphris and Baldauf replied that it is rare, but it has happened in the past. Overpeck asked why it can't be stated in a section of the proposal that the proponents have the expertise to carry out the science project. McKenzie said that ODP science grows as a group effort, rather than as the result of one individual. Kudrass said that, since an ODP proposal is the property of the group, he doesn't think a CV will help in evaluating the science. Raymo said she thinks a CV helps to give a personality and a face to someone, and that it is an advantage. Tamaki said that he thinks that a CV would not be necessary for ODP proposals.

Miller quoted the EXCOM minutes related to this issue. The problem has two sides: one is the science problem, the other is the review of what a person brings to the table in making a case for the scientific problem. He said the main issue is to try and get additional information about the proponents. Maybe a paragraph describing who these people are would be sufficient. By not requiring any comment there is a risk of losing an important aspect of proposal review.

Humphris said that she has the impression that many people on this panel would like to see a CV attached to a proposal. She asked for a straw vote: 7 members were in favor of including a CV, and 6 were against. The discussion then proceeded on how to use the CV in evaluating the proposal. Bond said that the evaluator could choose whether to comment on the CV. McKenzie made an analogy with reviewing a paper; i.e., we judge the paper and the science, not the people who wrote it. Overpeck said that a paper is different, it stands by itself as a finished piece of work. Humphris asked whether SCICOM thought it fair to ask evaluators to comment on how a person is going to do in accomplishing the proposed science when it is not only their responsibility, as they become part of a team of scientists. Overpeck said that he would like to have as much input as possible to make the best decision. Silver said that his experience with the drilling program showed that an ODP proposal is different from an NSF proposal, as the ODP proposal grows with the input from the panels. Raymo agreed that ODP and NSF proposals are different, and said that having a CV for information purposes may be best. Malfait said that the inclusion of CVs may be providing external evaluators with misleading information since these individuals (proponents) may not be involved in conducting the science. G. Moore said that proposals usually have many proponents, and how far down the list are they evaluated. Pearce agreed, and questioned where one should stop the CV review process. Brown said that if a CV has to be included, then he prefers to have a CV for every proponent. Falvey questioned on which proponent(s) should there be comment in the case that there are 20 proponents. Pearce recommended that a summary be included of the expertise of the group relevant to the proposal. Miller said it should not be a requirement, but proponents should have the flexibility to include either a CV, or a statement of expertise of the group. Bond said that tells you what their background is and how they will interact, helps to provide information on the field of research of the proponents, and how their expertise fits in with the proposal. Ludden said that if the CV of the proponents is required, the proponents should also see the CV of all the members on JOIDES Panels. It is agreed that it is a good idea for other reasons, and Humphris said the CVs could be made available on the JOIDES Office Web Page.

SCICOM Motion 97-1-8

SCICOM requests that information on the scientific background and relevant publications of proponents included in proposals. This information may be in the form of : 1) a two page

curriculum vitae and relevant publication for one or more proponents (not to exceed 4 proponents); or 2) a combined summary (not to exceed two pages) of the background of the individuals and/or groups submitting the proposal.

Proposed: Miller, Seconded: Overpeck

11 in favor, 3 against, 2 absent

SCICOM Motion 97-1-9

SCICOM requests that the JOIDES Office change its External Comments Criteria for proposal review.

Strike: "Evaluators are asked to refrain from commenting on the competence (e.g., research capability and research record) of the proponents. We ask this because..."

Substitute: "Reviewers are asked to comment on the competence (e.g., research capability and research record) of the proponents only if they feel that it is particularly relevant to the evaluation of the science contained in the proposal. We ask for minimal comments on the proponents because..."

Proposed: Miller, Seconded: C. Moore

11 in favor, 3 against, 2 absent

SCICOM Motion 97-1-10

SCICOM recommends the adoption of a new Proposal Submission and Evaluation Process beginning with the 15 September 1997 submission date. This new process will be a two-step procedure with external evaluation of fully developed proposals, and is described in detail in the Proposal Submission and Evaluation Process document revised at the April SCICOM meeting.

Proposed: Bender, Seconded: Overpeck

14 in favor, 2 absent

E. Workshop/Committee Reports

1. JOI JANUS Steering Committee Report

Farrell said that some information about this Steering Committee (SC) is included in the Agenda Book. He said the Steering Committee is charged with providing guidance from the community and to provide advice on what is needed in this project.

Farrell reviewed the status of JANUS Phase I. He said it was successfully deployed on Leg 171B, and that Tracor did a wonderful job working hard, and they met the set deadline. On March 31, 1997 Tracor delivered the product to TAMU, and the testing for the acceptance has started with Leg 172. As recommended by the SC, the modified commercial package Applecore is the primary JANUS data acquisition software tool for visual description. During Phase II, it is planned to develop digital image capture for VCD. TAMU is evaluating for the hardware a linear CCV camera system. The SC has recommended exploration of commercial tools available off the shelf.

Farrell said that there has been concern about the management of this project, and he reassured SCICOM that things are moving in the right direction. He also said that the product is very good and he wanted to stress that this is a very sophisticated piece of software. It will take time to learn how to use a relational database. The first step is to make sure we are not losing data, and the second step is to learn how to use it.

Kroon asked what is happening with the color data. Farrell said it is not yet part of the database, but it is very high on the priority list. Brown asked when a decision will be made on the acceptance of what Tracor delivered. Baldauf said a meeting will be taking place in May to pull together the information, and a decision will be made before end of the year, probably in early summer.

1. 1. Steps Taken to Address PCOM Motion 96-3-11

Baldauf said the PCOM Motion was generated at a time when no deliverables from Tracor existed, and since then there has been extensive positive communication among people at TAMU and Tracor. Baldauf reviewed the JANUS development schedule of IS/ODP (Appendix 16) and said the JANUSWeb is still problematic at this time, and also reviewed the Tracor development schedule (Appendix 17). Baldauf also reported some of the positive comments about JANUS from shipboard participants on Legs 171B and 172. Baldauf outlined the criteria that will be used to determine the acceptance of JANUS Phase I. These are: 1) meets user group specifications, 2) meets maintainability requirements, and 3) is able to be used and supported.

Pearce asked who will decide the acceptance of the product generated by Tracor. Baldauf said the final signoff will be with TAMU, but input will be coming from user groups. Raymo asked if the SC is going to be involved in the acceptance decision. Baldauf said yes, that this is his understanding. Farrell added that it is instrumental that SC works closely with TAMU. Baldauf said there was a communication problem between TAMU and SC, but it is being dealt with. Falvey said the situation is proceeding. Humphris asked if further development goes on during the acceptance stage. Baldauf said yes. Miller asked if JANUS will be deployed also at Bremen, or at TAMU only. A mirror site for JANUS is planned, but at present will not take place for several years. This in part reflects resources availability, perceived demand, and current priorities. Current activities focus on continuation of JANUS and data migration.

2. ICDP

Larson reported on the ICDP meeting which took place in Potsdam one month ago. The membership of ICDP currently includes Germany and the US (contributing each \$700K/year), P.R. China (contributing \$200K/year), and UNESCO (which contributes a very small amount, but is included for political reasons). Probably Russia and Schlumberger will join, Russia in June 1997, and Schlumberger as an industrial member. There is the possibility that Greece, Japan, Mexico and "ESF" will join in the future.

During the meeting, two consensus statements were made: 1) the program should have a "flagship program," probably the drilling of active faults, 2) the program should develop a portable facility for drilling lakes that do not freeze in winter. Several possibilities for a potential ODP/ICDP collaboration were discussed and include: 1) a heave-compensation-on-a-barge workshop, 2) the next COSOD might be expanded to COED (Conference on Earth Drilling), 3) a joint drilling program cofunded and coordinated between the two programs. Two possible areas are the Gulf of Corinth and the New Jersey Transect.

A question from the meeting is if SCICOM and ODP are willing to consider proposals for co-funded projects. Larson said that at the meeting he said he thought it would be possible, and he would bring the question to SCICOM. This would be in line with the recommendations of the Long Range Plan. Larson questioned whether ODP at this point in time, given funding and the X-base budget, is prepared to entertain these types of proposals. Brown asked how much money is involved in these projects. Larson said about \$300,000 would be reasonable for the case of the New Jersey transect, but it should be evaluated for specific projects. Humphris said that in the LRP Phase III we talked about using alternative platforms. If we can address some high priority science with this kind of collaboration, we should then address how we prioritize that against other science. We should not say that we will not consider it for budgetary reasons, but keep the option of joint collaboration open. Falvey said that currently there is ca. \$1.5M in the X-base budget for leg enhancements and ice boats, and similar money could be available for other projects in the next years. Miller said that the legacy of core repositories has been a great success. One advantage of collaboration is that we might be able to establish ties that will internationalize the cores obtained and provide them to the world community. Humphris asked Larson if he is willing to continue as liaison to this group. Larson agreed.

SCICOM Motion 97-1-11

SCICOM reaffirms its commitment, as expounded in the ODP Long Range Plan and subsequently in the Implementation Plan, to the use of drilling platforms other than the *JOIDES Resolution (JR)* to solve scientific ocean drilling problems in situations where use of the *JR* is impossible or inappropriate. SCICOM is also committed to the establishment of linkages with other research programs in the earth sciences. Thus, SCICOM is open to the consideration of proposals for co-funded projects using alternative platforms to accomplish projects of great mutual interest to ODP and other drilling programs.

Proposed: Larson, Seconded: Brown

Unanimous

3. Final Outcome of Sampling Policy Workshop

Farrell presented the new sampling policy, which was approved by PCOM and EXCOM. He said that he would like to hear if SCICOM has any suggestions about this document, before JOI takes it to NSF for final approval.

Overpeck said that, in other communities working with cores, archive cores are used up if science requires it. He asked Farrell how this will work with the new ODP policy, as he thinks this is not the case. Farrell said that this point was discussed at length during the Workshop, and there are time limits and restrictions in sampling archive cores, but it is eventually possible.

4. JOI Publications Steering Committee Report

Scholl reported on the JOI Publications Steering Committee meeting which took place in Washington DC, April 3-4, 1997. The mandate for this Committee is how to handle the transition from printed to electronic publications, and has two foci: Alpha, the concerns of the user community, and Beta, making sure what we put out on the web is the very best. Based on information assembled by the 13 members of the SC, and advice from different publishers and libraries about future directions of publications, the SC has made three groups of recommendations (Appendix 18).

1. Initial Report (IR) volumes. The current publication strategy is correct in direction, but too rapid for the user community to effectively follow. For the immediate future (e.g., 3-5 years) full, printed format, IR volumes should be published. To effectively use CD-ROM information requires education and involvement of the user community.
2. Scientific Results (SR) volumes. The transition from paper volumes to all electronic (CD and Internet) format is properly conceived and should be carried forward.
3. Acquire a Data Base of User information. Distribute a questionnaire to acquire a data base of the present electronic capabilities of the ODP user community. Such a questionnaire should be distributed periodically (every 18 months) in order to steer effectively the transition from printer to electronic publications.

Scholl said that for the moment it is better to stay with a CD rather than with the internet, as a CD can be used from any computer. In order to use the internet for publications, a better infrastructure has to be set up for service customers in the future, with mirror sites to help speed problems. When electronic publications do appear, the user community will then know how to access this information. The SR should be refocused in the future as an Internet product, as this offers an incredible opportunity to assemble all information from drilling legs on an ODP web site. The SR of the future could also be connected to JANUS.

Brown asked whether it would be worth charging for the volumes, in order to recoup some money. Baldauf said they are now bringing in \$26K with this type of charge. Falvey said that the MOU requires 100 copies be given to all full members. Regarding the costs, Scholl said that moving towards electronic publications will actually not save money, as the budgets have to be kept higher when going through the transition.

Baldauf discussed the budget aspects of the publication issue. The overall budget for publications represents 4% of the budget for entire program. He said that TAMU needs some stability in the publication plans, and 18 months is the time required by TAMU for planning and budgetary purposes. Baldauf discussed the ODP volume format, showing the strategy based on directives given by JOI on 9/13/96 (Appendix 19), and showed the comparison between this strategy and the strategy recommended by the Publications Steering Committee in April 97 (Appendix 20). The additional cost is \$500K a year. These projection are based on number of pages of future volumes.

Humphris said she does not understand those figures, as at the PubCom meeting it was said that there was no savings in going electronic. Baldauf said the numbers are based on volume size. Humphris said the numbers are incomparable because they do not include all costs associated with electronic publishing. The whole exercise of reviewing publications was

undertaken as a cost savings measure, but in the end it clearly is not. Miller asked whether SCICOM should consider recommending 3 or 5 years for continuation of the IR. He said he thinks 3 years is enough time, and the situation can be reevaluated in the future. Humphris said the decision should be left to the PubCom to come back with a report after the results of the questionnaire are known. Kudrass said there was extensive discussion about publications at the last German ODP meeting, and the majority want to keep the printed version of both IR and SR as long as possible as it is considered necessary to maintain the visibility of the science. Humphris said that the SC has recommended that the SR go electronic, but the IR will be printed for a longer time, and she hopes this step is in a direction that the German community will accept, as we are trying to make some compromise.

SCICOM Motion 97-1-12

SCICOM accepts the recommendations of the JOI Steering Committee on ODP Publications to slow down the transition to electronic publications, with the understanding that previously anticipated cost savings will not be realized. SCICOM notes that a questionnaire will go out to the user community and expects to be informed of the progress of the Steering Committee in monitoring the transition to electronic publications.

Proposed, Larson, Seconded, McKenzie

15 in favor, 1 abstention

N.B. Figures presented at the SCICOM meeting were preliminary figures that compared the JOI model budget as prepared in January 1997 to the PubCom model projections calculated with different models for the legs in FY00-02. Since that time TAMU was instructed to prepare the FY99-02 budget based on a 1.5% annual inflation rate. To meet this rate, the leg models were changed, printing estimates were revised, and cuts were made to a variety of cost centers. The table (Appendix 21) is based on the final figures that will be submitted with the TAMU FY98 Program Plan. Because all pre-press work is the same whether books or CDs are produced, the comparison of the two models comes down to the printing and distribution costs for books containing only site chapters vs. books containing site chapters and prime data. On a five-year average, books with only site chapters are 41% smaller than full books. Details of the assumptions used for leg models are explained in the table footnote.

F. Leg Reports**1. Leg 170**

Eli Silver gave a report on Leg 170. The objectives were to determine mass and fluid flow through the Costa Rica subduction complex. Costa Rica is the best location to achieve this, because of the lack of trench turbidite-fill, and for the excellent seismic control. He said they drilled 5 sites, 3 were primary and 2 were added during the cruise to complete objectives. Silver then reviewed the specific site objectives. Site 1039 was the reference site for incoming sediment and basement, understanding of regional fluid flow and the geochemical reference site. Objectives at Site 1040 and 1043 were determination of fluid and mass flow through the deformed sedimentary wedge, and the comparison of underthrust sediments with the reference site. Site 1041 and 1042 were drilled to determine the nature of the slope apron, age, physical properties, and composition of prism material under the apron, and heat and fluid flow.

Results indicated that the age of the subducting crust is lower Miocene, and heat flow is much lower than predicted. Fluid circulation in the upper crust must be responsible for this trend. Geochemical data indicate for both Ca and Si increasing values to about 300 m, then decreasing to values typical of surface. This suggests the presence of sea water flowing through the fault. Salinity curves show that there is a zone of fresh water that occurs in different parts of the wedge. LWD at Site 1043, the site that penetrated through the decollement, indicated the presence of several narrow, fluid-filled fault zones.

C. Moore asked if the fresh water comes from recharge or from deep sources. Silver said this question is still unanswered. Larson asked if there is a seep at the sea-floor where the fault is. Silver said they had dives there to check, and there was no seep. The seeps are higher up in the prism, where the faults meet the surface, and fluids out of decollement surface diffuse through the sediments. Pearce asked about the relationship between the offscraping at the decollement and the large Be anomaly in the Nicaraguan volcanoes. Silver said that the transfer must happen deeper. Kudrass asked how they explain the removal mechanism.

2. Leg 171A

Casey Moore reported that during 11 days on site, they drilled 5 sites, with a total of 2959 meters of logs, which is double the cumulative depth of all previous OPD LWD holes. Two drill sites were reference sites, and three were beneath the accretionary prism. The drilling was designed to drill the entire section, determine the origin and evolution of the decollement, and its seismic image. The logging proved to be critical in making the correlations among lithology, structure, and porosity. A paleoceanographic event, a lower Miocene radiolarian-rich mudstone layer, controlled the development of the decollement at Site 1044. Consolidation processes explain density profiles in the decollement and control seismic images. An interesting question was what changes in physical properties actually produce negative polarity reflections at decollement surfaces. These negative polarity decollements were never logged or drilled. Data indicated that negative polarity reflections of the decollement zone are due to arrested consolidation of fluid-enriched zones. Fluid enrichment was probably supported by deeply sourced fluids.

Brown asked how the anomalies can be explained without hydrofracturing. C. Moore replied that the flow is there, but the flow regimes are not such to produce hydrofracturing. McKenzie asked if the initiation of the decollement is stratigraphically controlled; this was confirmed by Moore.

3. Leg 171B

Dick Kroon reported on the results of leg 171B, during which 5 sites were drilled down the spine of Blake Nose. This leg was designed to recover a series of critical boundaries in Earth history, in which drastic changes in climate and oceanography coincide with drastic changes in the Earth's biota. The Blake Nose is a salient on the margin of the Blake Plateau, where Paleogene and Cretaceous sediments have never been buried deeply by overlying sediments. The recovered boundaries include: the late Eocene radiolarian extinction, late Paleocene benthic extinction, the K-T boundary, the mid-Maastrichtian event, and several episodes of organic-rich sediments in the Albian. The K-T boundary was recovered at 3 sites, and each contains a

complete stratigraphic section of the boundary events, including a 10- to 17-cm-thick spherule bed, a rusty brown limonitic layer, a dark gray clay bed (planktonic foraminifer Zone P0), and white ooze that represent planktonic foraminifer Zone Pa. Organic-rich black shales (with up to 4-5% TOC) were drilled in Albian strata at Site 1052, and correspond to the "oceanic anoxic events" recognized in many land sections worldwide.

G. SHORT TERM PLANNING

1. Review of Status of Upcoming legs

Humphris said that the FY98 Science Plan is in the Agenda Book. A summary sheet of site survey readiness was distributed at the meeting, and indicated that, overall, site surveys for most proposals are in good shape. Humphris said that PPSP, due to concern over hydrocarbons, has disallowed a number of sites for Leg 175 (Benguela). Humphris asked Baldauf and Goldberg to report on any news regarding upcoming legs.

Baldauf said that on Leg 174B, Mike Fuller will be doing magnetic studies on the drill string. Regarding Leg 178, the selection of an ice boat is in progress: vessels from Chile are being considered, Francis will be there in the next months to assure seaworthiness and a RFP will be soon be issued for that selection. Baldauf said he mentioned already the possibility of a change of location for the port call of Leg 179, with the possibility that Mauritius will be added.

Humphris said that TAMU has sent out an announcement about opportunities for science on the support ship for Leg 178. Regarding Leg 179, Humphris asked Baldauf about the status of where the Hammer Drilling will be tested. Baldauf said he does not have information on the specific site location. Humphris said that there is a letter from Natland in the Agenda Book. PCOM had appointed a subcommittee of one (Natland) to investigate sites. From this letter it emerges that one of the sites discussed is somewhere near 735B and a decision has not been made, but that was the recommendation. McKenzie asked if there is a chance that the hammer-drill apparatus will not be ready. Baldauf replied that the testing phase is complete and things are proceeding according to schedule. McKenzie asked what science will be involved, as this information has to be available to people who are considering applying for that leg. Baldauf said that for Leg 179, there is not going to be a routine scientific party, but a smaller group of 15-16 people.

Goldberg said there is an ongoing project over the next six months addressing the correlation of images scanned from cores and downhole scans. It is a means to orient the two images, core to log, and orienting the core in hardrock where features can be identified. This project is currently going on onshore. There is now shore testing on cores from Leg 118, 148, and 149. Leg 173 has got support from NERC to make a shipboard test of this device.

Ludden asked if the comments from the Interim SSEP regarding Leg 180 (Woodlark) were passed on to the Co-Chiefs. Humphris said she talked with a Co-Chief (a letter from the Co-Chief is included in the Agenda Book) and also requested SSP to take another look at the data. SSP has done that and has written a long review pointing out how the data indicate the presence of an active fault, as well as addressing some of the other concerns of TECP. SSP is convinced that the scientific objectives can be met on the basis of the data that are presented.

2. Dry-dock Requirements

Humphris said that SCICOM needs to give guidelines to SCIMP to come up with a list of improvements for the science facilities onboard the JR so that SCICOM can look at them in August and make recommendations to JOI. Baldauf reviewed the costs related to the dry-dock, and said they fall into three areas: ship modifications (drilling services), science modifications (science services), and ship operations (Administrative Services) (Appendix 22). He said the information included in the Agenda Book is based on discussions between scientific staff and drilling services.

Humphris asked Baldauf what specific advice TAMU needs from SCICOM regarding the dry-dock issue. Baldauf said SCICOM needs to prioritize items to improve the scientific shipboard environment. Humphris said that SCICOM will ask SCIMP to review shipboard facilities and provide a list of modifications and upgrades needed to address the LRP for the foreseeable future, and SCICOM will make recommendations during the August meeting. Pearce asked whether this planning should be done only for Phase III, or also thinking about the program post 2003. Humphris said that at the moment SCICOM should be planning for Phase III, as it is not known yet what will be decided in the future. She added that SCIMP should also look at the life expectancy of the facility they are recommending. Humphris asked how much time will be involved in the renovations. Baldauf replied up to the duration of one cruise. Humphris said that the period of one Leg will be reserved in FY99 for the dry-dock. Raymo asked how long the ship will be operating after the renovations, if the ship owners would be willing to contribute to the costs, and how in general these issues have been considered. Baldauf said that the daily rate currently paid (\$44,551) is 3-4 times less than that for other drilling vessels, and they would be willing to renegotiate the contract if they would contribute to the renovation costs. After renovations, the ship could have ca. 15-20 yrs of further operations. Falvey, Silver and McKenzie brought attention to the need to improve living quarters and living conditions on board. Humphris said she thought that was a recommendation that came out of the Co-Chief Scientist workshop that JOI held. Baldauf said there are budgets for the living environments, and one should prioritize what needs to be done. Falvey said there is also a recommendation from the Performance and Evaluation Committee IV to urge TAMU and SEDCO to look for options for improving living and laboratory conditions on board. Casey Moore said that in TAMU budgets under drilling systems there are instrumentation and digital recording systems, that should be considered under science modifications. Baldauf said that reason why it is not under science, is that it has to be negotiated with ODL how the \$6M investment from NSF should be utilized, and it seems more likely to be accepted under drilling systems. Ludden said a possibility to consider that would decrease costs of renovation is if JR is considered a research vessel or a drilling vessel. In the second case, scientists would work on cores in shorebased labs. Baldauf said TAMU has given thought to that. Silver said he is against this, as shipboard scientists produce a package to present when they come off the ship. To achieve this level of shorebase completion would require adding a significant amount of time.

SCICOM Motion 97-1-13

SCICOM asks SCIMP to develop a list of improvements in, or additions to the laboratory, meeting, and accommodation facilities on the JR that could be made at the 1999 dry dock. The scope of facility upgrades and spatial dimensions of expansions should be fully addressed and

justified. Given the uncertainties in the level of funding that will be available for this enhancement (\$0-3M), the list must be prioritized with suggestions for groupings of improvements that could be carried out at different funding levels or at a later time. This prioritized list should be completed for the August 1997 SCICOM meeting.

Proposed: Brown, Seconded: Larson

14 in favor, 2 absent

H. 5-Yr. Planning-Scientific

Humphris said that under this theme, SCICOM has to discuss the longer term scientific planning for the next 5 years and these include: the status of the different themes within the LRP, a reaffirmation of the ship track, identification of themes that require a PPG, and a response to EXCOM which has mandated SCICOM to look at what scientific objectives would be used for testing the deep drilling capabilities of the JR. She suggested that SCICOM break up in small groups, and each address a specific theme of the LRP. In particular, she asked each group to identify 1) proposal pressure for each theme, and 2) themes that require additional proposals; 3) recommend a plan to (i) define requirements to address the scientific objectives, (ii) generate additional proposal pressure; and 4) identify scientific objectives that need deep drilling that could test the capabilities of the JR.

Casey Moore asked why should the drilling capability of JR be tested. Humphris said that we need to know the current capability of the present ship in order to assign different tasks to different ships post 2003. Larson said the problems has two aspects: one is the depth of penetration; the other is the maximum length of the drillstring as a function of weather and sea characteristics. Humphris said that it is important, that if we are going to attempt to test the JR's capabilities in a certain way, it has to be while we are doing high priority science; therefore, first we need to identify high priority science that needs deep drilling.

2. Review of Proposals within the System Categorized by the LRP Theme & 3. Need for PPGs and DPGs

Two groups, one for Earth's Environment and one for Earth's Interior, reported on the five core themes. Miller presented the discussions of the group for Earth's Environment.

Core Theme - Changing Climate: The proposal pressure addressing "ultra high-resolution, oceanic gateways" and polar ice is good, but it will probably be necessary to foster and nurture the various efforts. Humphris asked whether the group feels there is a need to reassemble the Antarctic DPG, disbanded at the last PCOM meeting. Miller said that this should be flagged as high priority item, but we should wait for the reaction of the SSEPs and at the next SCICOM meeting we should look at this again. Under "extreme climate," the proposal pressure is low. Miller said the group thought that this is a topical problem with a good degree of interest. The group recommends the creation of a PPG: Extreme Climates of the Paleogene and Cretaceous.

Farrell asked about the outcome of the USSAC workshop on "Warm Climate Intervals", as he said one of the goals of that workshop was to generate proposal pressure. Miller said he could contact the organizer of the meeting for feedback on what emerged from their meeting, and try to coordinate the activities. Larson said that the workshop was mainly focused on the

Cenozoic, and the Cretaceous was excluded, and added that a PPG would have different goals from the Workshop, and would have the mandate to achieve a precise goal. McKenzie said that a PPG would emphasize the Mesozoic and formulate goals and a drilling program. These are better defined for the Cenozoic. Humphris said she thinks there is good justification for this PPG, but it would be a good idea if the international group of the PPG could build on what the USSAC workshop did. SCICOM expressed the consensus that there should be a PPG on Extreme Environments.

SCICOM Motion 97-1-14

**Extreme Climate and Environments of the
Paleogene and Cretaceous**

Based on the recommendations of the MESH/USSAC workshop on "Warm Climate Intervals", SCICOM establishes a PPG on Extreme Climate and Environments of the Paleogene and Cretaceous.

OVERALL GOALS

To develop drilling plans to investigate past warm climate intervals of the middle Cretaceous to Paleogene and the biotic response to these unusual climates:

1. Determine the frequency, amplitude, and forcing of global climate change, latitudinal thermal gradients, sources of deep water and vertical ocean structure, and changes in global sedimentary fluxes;
2. Focus on major intervals of abrupt climate change (e.g. Barremian/Aptian, Cenomanian/Turonian, K/T, P/E, and lower/middle Eocene, and middle/late Eocene);
3. Investigate major aberrations in the global carbon budget (e.g., mid-Cretaceous black shale);
4. Develop a firm astronomical time scale for the Paleogene and a preliminary one for the Cretaceous and integrate this chronology with the magnetobiostratigraphy.

MANDATES

Work with other appropriate global geoscience programs to develop a strategy that will:

- develop the drilling strategy to complete the defined goals;
- identify geographic areas appropriate to meeting the science objectives; and
- organize the development of specific drilling proposals.

TIMELINE

The PPG will exist for a maximum of three years, with an annual evaluation by SCICOM.

The first PPG report will be due for the March 1998 SCICOM meeting.

The PPG will produce a final written report.

Proposed: Miller, Seconded: Kudrass

Unanimous

Core Theme - Sea-Level: Additional proposals are needed for atolls and guyots, which provide information on decadal/millennial and longer time scales. Former legs drilling atolls and guyots were not successful because of recovery problems. There is a need for new drilling technology and to use supplementary platforms to drill atolls and guyots. The group recommended either to

have a workshop or to create a PPG on the theme, "Atolls and Reef Terraces," and said that this group could be generated later on this year and could be in collaboration with other international initiatives, such as PAGES, CLIVAR, ARTS etc. There are several proposals in the system that are addressing the transect approach or that could be encouraged by the SSEPs in this direction and be better developed.

Falvey said that a workshop would not guarantee international participation, and the mechanism currently in the structure to do that is a PPG. Regarding the proposed PPG on Atolls and Reef Terraces, Humphris said that the idea of involving other programs, such as PAGES, is a good one, as the LRP stresses the need to encourage international collaboration. Larson said that this PPG could have overlapping mandates with the PPG on Extreme Climates. McKenzie and Overpeck disagreed, and said that the PPG on Atolls and Reef Terraces would address very recent lithologies. Overpeck added that there could be a joint technological concern about drilling with JR in similar lithologies. Larson said that ICDP expertise could be useful in drilling the atolls.

This PPG could be seen as a demonstration that ODP is thinking about different drilling platforms. SCICOM expressed the need for this PPG with the following motion.

SCICOM Motion 97-1-15

Scientific Drilling of Shallow-water Reef Systems PPG

SCICOM proposes the creation of an ODP PPG that is focused on the scientific drilling of shallow water reef systems that cannot be drilled with the JR.

GOAL

The goal of this PPG is to develop a coordinated international research plan, and to identify community facility requirements needed, for scientific drilling of shallow-water reef systems. This goal is critical for 1) understanding the causes and effects of Pleistocene and Recent sea level change (e.g., associated with orbital forcing and abrupt climatic change), and 2) providing the geographic network of low-latitude cores needed to understand the dynamics of annual to Milankovitch-scale climatic change (e.g., ENSO, monsoon and tropical N. Atlantic variability).

MANDATE

Work with other research programs (e.g., IGBP PAGES, PAGES/CLIVAR, ARTS*) to develop a coordinated international strategy that will:

- define primary scientific objectives
- assess what has been done to date to meet these objectives
- develop the drilling strategy to complete the defined objectives, including a plan for shared drilling technologies/facilities, downhole measurements and sampling, core logging and curation (sharing of samples)
- define the critical core measurements needed to meet objectives
- identify a mechanism for regular data and information exchange (e.g., on the www)
- develop a plan for coordinating shallow-water reef drilling with deeper objectives that can be drilled with the JR (e.g., along transects and with annually-resolved sediment records)

- define a range of possible funding scenarios, and what can be accomplished for each scenario.

TIMELINE

The PPG will have a lifetime of up to three years, with annual review by SCICOM. The PPG will produce a final, written report.

* Acronyms are:

PAGES = International Geosphere-Biosphere Programme
(IGBP) Past Global Changes

PAGES/CLIVAR = a joint Working Group/Program between PAGES and the WCRP CLIVAR
(Climate Variability and Predictability) Program

ARTS = Annual Records of Tropical Systems (a PAGES "task" associated with both of the above)

Proposed: Overpeck, Seconded: Miller

14 in favor, 2 absent

Larson asked what drilling of shallow water implies, less than 75 m or the photic zone depth? McKenzie replied that it is meant from the photic zone down, in the areas that cannot be drilled with JR. Farrell said that some of these scientific objectives have been met by drilling at Saanich and Cariaco. Overpeck said that questions regarding sea level changes in shallow reef systems cannot be drilled with JR, and there is the need to develop a coordinated international effort to develop a strategy.

Core Theme - Fluids and Bacteria: Under the theme "subsurface biosphere," a PPG has already been appointed. Under "gas hydrates," a high priority topic, there is only one proposal. The group felt more proposals are needed, and also suggested inviting Charlie Paull to the next SCICOM meeting. Regarding "extreme carbon environments," more proposals are needed. The group also felt that this topics could fall in the mandates of the PPG on Extreme Climate. Miller said that discussion on Fluid Flow and Mass Balance was deferred to general group discussion.

Casey Moore brought up the issues of fluid and geochemical sampling and LWD, as related to the Gas Hydrate legs. Humphris said this will be discussed under technological prioritization. Regarding Gas Hydrates, Farrell said there is a Workshop planned at Stanford this summer, and it would be good to have some contact with this group. McKenzie said there will also be an ESF workshop. Humphris said she has the feeling that the Gas Hydrates community is fairly active, and she is not concerned about the need to foster their activities from within the JOIDES Advisory structure, but rather just advertise for need of proposals.

Pearce presented the discussions of the group for Earth's Interior.

Core Theme - Transfer of Heat and Materials To and From Earth's Interior: There are several proposals for ION, LIPs and ores, currently many more than could be accommodated. Current proposal pressure on fluxes are appropriate for the planning of the program. On the other hand, additional proposals are needed for the architecture of the oceanic crust. However, they would come later in the schedule depicted in the implementation plan.

Technological requirements to achieve the objectives of this core theme are: DCS, riser-type drilling, high-T tools, hammer, observatory sites. The group suggested the creation of a PPG on the Architecture of Oceanic Lithosphere. They said that this group could be established at a later stage, post-CONCORD, where there is a working group looking at deep drilling in the ocean crust. This PPG could be a combined one with Interridge.

Brown said that high-T tools will also be needed in drilling deep holes, because high temperatures will be encountered. Scott said he is the President of the Canadian Mineralogical Society, and they are organizing at their next meeting a day long session on seafloor mining systems. He said that this could be an opportunity to generate proposals with the input from the mining industry. Humphris questioned reasons to wait until after CONCORD for recommending a PPG on the Architecture of Oceanic Lithosphere. Pearce said that the idea of the group was that CONCORD will come up with a drilling philosophy, and even if the CONCORD Working Group will not propose sites, the group felt that if they are going to come up with proposals it would be good if it was in line with the overall strategy for deep holes. Humphris said that then this needs to be revisited in August. Larson argued that a PPG on Oceanic Lithosphere should be a placeholder, and be appointed now rather than waiting until after CONCORD. Humphris agreed and said it probably would be better to set it up now, so that people on the PPG know they have a mandate, they go to CONCORD, and use the information to strengthen their mandate. SCICOM agreed to establish this PPG. Humphris expressed concern for overlap of the mandates of this PPG with those of the PPG on sea floor observatories, established by PCOM during its December meeting. Ludden said the PPG on sea floor observatories is a broader group. Brown said that this PPG should focus more on deep drilling. Ludden said they should develop a strategy for use of long term observatories. Humphris said she thinks this group should be looking at the science and what needs to be done.

SCICOM Motion 97-1-16

The Architecture of Oceanic Lithosphere

SCICOM proposes the creation of a PPG focused on the study of the architect of oceanic lithosphere.

GOAL

The goal of this PPG is to develop a plan to study ridge-crest processes and the architecture of oceanic lithosphere in regions of fast-formed crust and slow or ultra-slow regions of oceanic crustal formation. This drilling plan should be linked to the establishment of long-term observatories at ridge axes and in older crust off axis. Furthermore, the PPG group should plan a program for the complete penetration of oceanic crust.

MANDATE

1. Select suitable areas for detailed study on (i) a fast spreading axis; (ii) a slow or ultra-slow spreading axis;
2. Develop a strategy for long-term observation of oceanic crust, both on the ridge axes and off the ridge axis;

3. Define the technological requirements to achieve these objectives, including liaisons to the PPG on "Long Term Observations", to CONCORD and the OD-21 project, and to projects involving the development of riser-type facilities;
4. To define priorities for achieving the goal of studying the architecture of zero age crust, crust along different flow-lines, deep penetration of crust and emplacement of observatories.

TIMELINE

The PPG will exist for a maximum of three years with an annual evaluation by SCICOM. Recommendations from the CONCORD meeting should be integrated into the proposed strategy. The first report should be available for the summer SCICOM 1998 meeting

Proposed: Ludden, Seconded: Pearce

Unanimous

Core Theme -Deformation of the Lithosphere and Earthquake Processes: There are several proposals, more than can be accommodated, addressing rifted margins and convergent/collisional tectonics subthemes. Additional proposals are needed in the subthemes of earthquake mechanisms, seismogenic zones and climate/tectonic links. Pearce, on behalf of the group, suggested the creation of a DPG on Extensional Tectonics, and said that this is justified by the need to integrate and coordinate the existing proposals addressing extensional tectonic objectives. Regarding seismogenic zones, there will be a meeting in June in Hawaii where probably proposals will be generated, and therefore the group felt a PPG is not needed, but there is a strong need for proposals. The group felt that proposals addressing climate/tectonic links should be encouraged and recommend the need for proposals be advertised in EOS or JOIDES Journal.

Technological requirements for this theme include measurement of in-situ stress, observatory science, riser-type drilling and logging tools.

Bond asked if in the area of collisional tectonics, there are any proposals in the area of back arc convergence? He said they are not common now, but they were in the past. Pearce said that actually there were none specifically addressing that. Silver said he had one proposal in the system but it was dropped because of the problems of getting clearance. Tamaki said there is a proposal from Japan addressing back arc thrusting. Humphris said that back arcs could be considered as an area where proposals are invited in an EOS ad.

Humphris asked the group if they felt it a good idea to establish a DPG for proposals on extensional tectonics. SCICOM agreed that it would be a good idea. Malfait asked Humphris for her perspective of what a DPG is. He said that PCOM established a DPG when a decision to drill in an area was made, but the sense in which Humphris is using it now is broader. Humphris said that a DPG is set up when, given a scientific objective, there is a broad range of proposals in the system, and these need to be focused into one drilling program, so that SCICOM can evaluate it and prioritize it relatively to the others. Malfait then said that if a PPG generates 6 or 7 proposals, will you then need a DPG. Humphris said that SCICOM writes a mandate for a PPG, and sees this as a mechanism to get something coming in. G. Moore said he agrees with Malfait's concern, and he would leave the DPG to do detailed planning at a later stage. Pearce commented that SCICOM will be faced in September with a lot of proposals to prioritize. Humphris said that every proposal will be judged on its merits. She added that she understands

Malfait's concern, and she doesn't see the urgency for a DPG on extension tectonics at this time. SCICOM agreed.

The discussion proceeded on the theme "climate/tectonics links". Raymo said she is curious to hear what people thought about climate/tectonic links. Humphris said she thinks that climate-tectonics links is just the sort of topic where we need a PPG to bring the people together. Raymo said she thinks SCICOM has to be very flexible and go where the best science is and not go where the proposals are. Humphris stressed that SCICOM has to maintain the flexibility to address scientific objectives of high priority that are out of the LRP. Kudrass said this topic is not focused enough: it is addressed under climate, where gateways provide links between climate and tectonics, and there are already many proposals. He said that stressing other points, such as monsoons, would be interesting. Raymo said she thinks the entire climate history of the last 16 Ma is related to Tibet, and there is much more than just monsoons.

Bond asked about the Arctic, and said that beyond 2003, drilling will probably require the use of continental platforms or ice breakers. This will be important for climate/tectonic links. Humphris said that NAD is going to give a presentation to EXCOM about their plans, as there might be some cooperation by ODP and Arctic drilling happening before 2003. Falvey said that EXCOM agreed to a NAD proposal to establish some type of cooperation between ODP and NAD, but this hinges on identifying common programs as well on NAD being able to generate funds from other sources, to support an alternate platform. They are finalizing an implementation plan by May-June, which will be used in each country as a basis to seek funds. The Germans are currently leading this, and will put in a major proposal for drilling in the Laptev Sea. Skinner said there are about 20 recognized sites throughout the Arctic where a science plan for drilling has been developed, and the most likely to succeed is the one in the Laptev Sea. Humphris said to Bond that Arctic drilling is most likely going to succeed. SCICOM expressed the need for a climate/tectonics link PPG with the following motion. Humphris and Bond agreed that it is the job of the PPG to work on this and define the focus, as it might become too broad.

SCICOM Motion 97-1-17

Climate and Tectonics Links

SCICOM proposes the establishment of a PPG on links between climate and tectonics.

GOALS

To develop drilling plans to investigate the interaction between climate and tectonics; specifically the influence of first-order displacements of the earth's crust on regional to global-scale climate change. Crustal displacements of interest may include, but are not limited to:

- 1) orogenic events, such as rapid uplift of mountain belts and plateaus (e.g. Himalayan-Tibetan system)
- 2) first order, epeirogenic motions of continental interiors, including continental rift systems (e.g. South Africa, East Africa, East Antarctica)
- 3) surface deformations which may lead to changes in ocean circulation patterns (e.g. opening of passages along island arc systems; formation of the Isthmus of Panama).

Aspects of the climate system of interest may include but are not limited to:

- 1) Changes in ocean surface circulation and temperatures

- 2) Changes in deep ocean circulation
- 3) Regional to planetary-scale changes in atmospheric circulation and water vapor transport (e.g. monsoon circulation, jet stream patterns).
- 4) Onset of glaciation.

The intent is to integrate, on a multidisciplinary scale, tectonic and climate elements of the problem through the use of multiple proxies, including sedimentological, geochemical (sediment provenance), faunal and isotopic measurements to be made on OPD core material.

MANDATES

1. To develop drilling strategies and identify areas where these goals can be met.
2. To organize the development of specific drilling proposals for specific sites/transects.
3. To actively collaborate with other appropriate international science initiatives.

PPG COMPOSITION

To fully address the multidisciplinary aspects of the problem, the PPG expertise should include climate modeling, tectonophysics/geophysics, geochemistry and paleoceanography.

TIMELINE

The PPG will exist for a maximum of three years with an annual evaluation by SCICOM. The first PPG report will be due for the March 1998 meeting. The PPG will produce a final written report.

Proposed: Bond, Seconded: Pearce

14 in favor, 2 absent

After the PPGs were approved, Humphris asked everyone to send her names of people who might be appropriate members for the four new PPG's. She will put them together, circulate them for comments and suggestions, and the membership will have to be done by e-mail during the next few months. Larson said SCICOM does the staffing of PPG's, but they will report to SSEPs. Humphris said that the mandates say that the reporting relationships will be established by SCICOM as appropriate, so it could be either the SSEPs or SCICOM. McKenzie asked if there is a conflict, i.e., a member of a committee cannot be member of PPG. Humphris said that this is correct. Pearce suggested establishing a Chair for each PPG, and asking them to make recommendations for nominations. Humphris said SCICOM needs first a list of people, then it can establish Chairs, and then she can work with the Chairs to come up with the membership. Scott asked if on PPGs there is one representative from each member country or consortium. Humphris said no, PPGs are not proportional representation panels.

4. Four-year Ship Track Recommendation

The issue of recommending the ship track for the next four years was discussed. Humphris said PCOM Motion 96-1-12 applies and extends into 1999. Larson asked about conflict of interest for this discussion. Five members have proposals in the system and cannot take part in the discussion and will have to abstain from a vote (Larson, Scott, Moore, Miller and Ludden). G. Moore asked how far legs have been scheduled. Humphris replied until February 1999 (Kerguelen) and reminded SCICOM that there will be the dry dock sometimes during the summer of 1999.

SCICOM Motion 97-1-18

The general area of drilling will remain in the Indian Ocean and western Pacific through FY 2000.

Proposed: Brown, Seconded: Casey Moore

10 in favor, 5 abstentions, 1 absent

5. Steps to Achieve the Goal of Testing the Depth Capabilities of the JOIDES Resolution

The discussion proceeded to address EXCOM Motion 97-1-17, regarding the steps to test the deep-drilling capabilities of the JR. Humphris said that in June she needs to report to EXCOM about the steps that SCICOM has taken in this direction. Humphris said that SCICOM has to decide if any of the proposals in the system are likely candidates or if we need to seek additional proposals to test the deep-drilling capabilities of the JR.

During the group discussions, both groups had identified possible objectives that could be achieved with deep drilling. Miller said that possible deep hole objectives for the Earth Environment Group could be Cretaceous history, bacteria, and margin history. Pearce said that possible deep drilling objectives for the Earth Interior Group are: oceanic crust architecture, hydrothermal reaction zone, subduction complexes, seismogenic zones, and deformation of rifted margins.

G Moore said we could respond to EXCOM saying that we recognize there are many proposals that included deep sites, but these were dropped due to logistical considerations, and SCICOM could encourage the proponents currently in the system to identify deep holes. Humphris said this would not be sufficient for EXCOM. Larson said that there is not anything in the active proposals that meets the deep penetration criteria. Also, drilling deep holes is going to be expensive. Humphris said that the feeling of the entire Advisory Structure is that we do not want to drill a deep hole until the science in the proposal is highly ranked. Skinner said that to test the deep-drilling capabilities, the JR should drill a new hole from day one. Humphris asked if it would be good to do this test in an area which it has been drilled before, so that the lithologies are known. Skinner said this would help to reduce the number of mistakes. Brown suggested addressing the problem with two steps: ask proponents of proposals in the system to bring up opportunities for deep holes, as well as advertise to the community. It is suggested that a call for proposals is advertised in the JOIDES Journal, the USSAC Newsletter, etc.

SCICOM Motion 97-1-19

In response to EXCOM Motion 97-1-17 concerning the need for a Deep Drilling Plan for Phase III: SCICOM considers that the great expense of this operation must be fully justified in terms of the significance of its scientific objectives. SCICOM recommends that lead proponents of currently active proposals be contacted and asked to specify at the earliest opportunity any "deep-hole" sites that they originally included or intended to include in proposals but that were dropped for logistical reasons. The deep hole sites must be strongly justified in terms of meeting significant LRP objectives. SCICOM recommends that the wider scientific community be informed of the opportunity for deep drilling and asked to submit additional proposals.

Proposed: Brown, Seconded: Scott

14 in favor, 2 absent

1. 5-Yr Planning Technological

2. Conoco Hydril Update

Baldauf said that this is an industry cooperation to look at mud circulation systems, reducing string size and operating time, which will result in savings. The program is mainly funded by oil companies, which participate with a \$50,000 contribution. ODP-TAMU participates as a non-paying member, and is there for technological exchange. The applications to JR are minimal at this time, as it has no mud circulation system, but future applications will be more applicable to OD-21. Currently there are four Phases planned for this project (Appendix 23).

Humphris said that at the last meeting, PCOM passed a motion on the possibility of testing this system on the JR, and asked if this is still possible. Baldauf said he has no information about this, but he could inquire. Brown asked how much technical improvement will be needed to refit the JR with a riser system. Baldauf said he will address this point in detail later, and said that to refit the JR with a mud circulation system would be a multi-million dollar investment.

1.3 Prioritization of the Technical Requirements Identified in the Strategic Implementation plan

Humphris said that SCICOM has to prioritize the technological requirements identified in the strategic implementation plan, in response to an EXCOM Motion, that asked SCICOM to address two issues: prioritization of technological developments required to support the objectives of the Long Range Plan, and identification of mechanisms for the development of this technology (in house, collaborations, or external). She said that Falvey has been tasked to seek joint programs with industry, and the second of these objectives will be dependent on the success of this initiative. Then she said she asked TAMU and LDEO for general information as background on technological prioritization that is included in the Agenda Book. She asked Baldauf and Goldberg to give a brief overview.

Baldauf said that the TAMU report included in the Agenda Book was developed by the engineering group at TAMU, and is focused on strategies for 97-98: development of the active heave compensator and the hard rock coring system. Emphasis from 98-into phase III is on continuing development of the hard rock hammer drill system, development of deep drilling activities, and legacy holes. The suggested priority and prices listing for innovations regarding (1) improved sedimentary coring, (2) hard rock drilling/coring, (3) measurement systems, (4) deep drilling/casing systems are in Appendix 24.

Goldberg said the subject is technology transfer, where we are and where we are going in Phase III (Appendix 25). He mentioned three areas where LWD can be applied, and current technology is directly applicable to LRP:

1. difficult drilling environments (used in accretionary prisms, 156, 170, 171A; other difficult environments could be sands and fans, and atolls and guyots).
2. shallow-intermediate depth measurements (174B drilled shallow crust).

3. ephemeral or pressurized environments, with changing physical properties: gas hydrates, fault zone drilling.

Goldberg then addressed objectives that can be achieved with minor modifications in current LWD and Wireline Logging tools. The first generation of LWD can be improved by using new technology currently available. However, their deployment is currently limited by the size of ODP drill bits. The current RAB configuration can be modified in order to be used with the ODP configuration. The estimated cost of this is \$90K.

Goldberg mentioned fluid sampling and permeability logging, and said these are key objectives in LRP. They propose to develop a technology, using an existing Schlumberger tool, the MDT tool, that could be deployed with minor modifications, at an approximate cost of \$185K. Last, Goldberg presented a feasibility study for Logging While Coring simultaneously. He mentioned the possibility of working on this in a joint project with industry. He said advantages for ODP would be time savings, if coring and drilling could be done at the same time. The cost of this feasibility study would be \$75K.

Brown asked whether the \$75K includes an engineering evaluation. Goldberg said these would be basically the costs for getting the people together for evaluation and to discuss feasibility. Overpeck asked if it has been calculated how much time is wasted in having to stop coring for logging and vice-versa. He said the numbers could be high. Humphris said it has not been done, but it could be interesting. She added that this is one of the "super X base" items recommended projects in the implementation plan, and sooner or later it will require research as to the benefits as opposed to the costs.

Skinner, regarding the RAB modifications, said that maybe they could modify the bottom hole assembly rather than the tube, and it would cost less than \$90K. Goldberg said the \$90K is a guess, and mostly includes materials, as they would buy the sleeves. They investigated alternatives, and TAMU was looking at it closely and there wasn't much difference in the costs.

Falvey said he wants to bring all this information back into the context of what EXCOM saw in February. Up to now, there has been little detailed planning about this. At the last couple of EXCOM meetings, EXCOM has fully endorsed the LRP and indicated they want program innovation. Clearly, EXCOM does not want to see the program continuing into Phase III effectively doing the same, but wants to tackle harder programs and get bigger results. At the Townsville meeting, PCOM created the five bar diagrams indicating what science they want to do, as well as the large scale technology they believed was necessary to achieve it. Falvey said he later had to put forward the budgetary implications of that. The purpose of this exercise from the EXCOM perspective is to look at the cost of the program in the future, post 2003. The current program can be done with \$44.4M plus inflation beyond FY98, and this includes six drilling legs in reasonably distant oceans, current publications and the transition to the new publication system, a moderate program of leg enhancements within current X-base (approximately \$1.5 M/year). This amount does not include inflation beyond FY98, a significant upgrade of JR, operation of alternative platforms, a high level of leg enhancements and a high level of technology developments. The cost estimates, presented to EXCOM, for the use of additional platforms is budgeted at \$4-8 M/year. Considering the outcome of the ODP Council in

February, it seems that the best we can hope for is \$44.4M plus inflation. ODP will have to find other ways to tackle the budget problem, like talking to industry, as LDEO and TAMU have started doing, finding out which of these innovations we can do together. As part of this process JOI, LDEO and TAMU will go to the Offshore Technology Conference next month, and a week later they will give a presentation to the Drilling Engineering Association, a forum for exchange within industry about potential cooperative projects. The Conoco Hydril project started there. Falvey said he needs input from SCICOM for a document he will prepare for EXCOM, that will include super X-base priorities in a priority order. EXCOM needs to look at broad super X- base and additional proposals, and put them into priority order or group and give some focus for what project managers and operators need to tackle in their dealings with industry. The list Falvey has now includes: riser-type drilling, high resolution legs, modification to LWD plus fluid sampling, microbiological system, logging while coring, advanced boreholes and CORKs, shallow-water platforms, ice-breaking platforms.

Humphris said that is not clear whether platforms should be included there, because although an expense, they are not a technological development. Falvey said that if we had \$1 M in an X-base, it should be prioritized where the money should be used, and he thinks the use of platforms should be included in the prioritization list. Humphris said SCICOM needs to discuss the list that Falvey presented. SCICOM has to come up with prioritization of these items based on what they think will be drilled over the next 5 years and in what position SCICOM wishes to be at the end of those 5 years. She said it is difficult to do this, as these projects are different in magnitude, and in addition, for things like a microbiological system, we don't know yet what is precisely needed (an entire lab, a van, a box, a cardboard box?). Casey Moore said there are things that can be bought off the shelf, and can provide good science. Humphris said that money is still needed to buy them, but in this case the development in house is not needed. The question to consider is how important it is. Skinner said that LWC is probably the biggest advance needed, as industry clearly does not need that as much as ODP. He added that, for example, a blow-out preventer can be bought, and doesn't need to be produced in house. Falvey said there is a spectrum of options ranging between something that is done entirely in house, to having someone else doing it and paying for it entirely, but most of the items on the list are somewhere in between these two options. Humphris reminded that EXCOM requires two things: prioritizations of the technological developments needed to support scientific objectives of LRP, and identification of who may or may not take the lead on these developments. Baldauf said that the hammer drill should be included in the list. Humphris said she considered adding heave compensation. Baldauf said this is hard-rock reentry and is different from the heave compensator. Falvey said this is legitimate, as in Townsville the need for a larger diameter hammer drill emerged. Baldauf said the cost would be \$0.5 M or more, and it is in Phase III developments. Brown asked how deep will the hammer drill. Falvey replied that depth is not the issue, but the speed, as it makes hole three times faster in hard rock. Skinner said that it also provides the opportunity to put in an extra casing. Humphris said that active heave compensation is scheduled to be done in 98, but she gathers that will not quite be the end of the story, because we might need sea-floor stabilizers to do final WOB control in order to use the diamond coring of other coring systems. Baldauf said sea-floor control is tied in with the hammer-drill component, but the issue would be whether to continue with the development of this type of coring system.

Overpeck said that regarding microbiology and alternative platforms, SCICOM has proposed two PPG's and it makes sense to do that only if we have the facilities. He said these two items should be therefore high-priority. He also added that an alternative platform in the case of shallow reef system need not be as expensive as it has been portrayed, and will not just address sea-level, but also climate objectives of the LRP. Skinner said that he thinks Falvey's figures are realistic for drilling in shallow water. Overpeck said that this would be true if one wants to drill several hundred of meters, but probably shallow short cores would be sufficient to achieve some of the climate goals. McKenzie said that drilling in the Great Barrier Reef was less than \$1M, and there is whole range of things that can be done according to how much money is available. Overpeck said that SCICOM has to make sure that PPG's give cost estimates in their recommendations.

Humphris suggested trying to group the items by priority in terms of objectives we are making a drive to achieve. Clearly being able to do microbiology is a high priority. Everybody agreed. Overpeck and Miller suggested that alternative platforms should be considered a high priority. Humphris asked if they would consider them as high priority as microbiology. Miller said he thought so. Ludden suggested dividing alternative platforms into low and high cost. Low cost platforms are more affordable, it is more likely that ODP could get them, and high priority science can be done with them. The discussion proceeded and it emerged that it is difficult to divide them into groups, as there is a continuum of costs.

Humphris suggested that alternative platforms are high priority, they require minimal ODP effort, but costs are highly variable. Humphris said that the next item that would have a major impact on the science as well as on saving time is Logging While Coring. Kudrass suggested grouping this with Logging While Drilling innovations. Goldberg said there is a problem, as Logging While Coring is 100% ODP development. Goldberg said that the scientific advantages of LWD are higher value compared to LWC, and the difference is time and cost savings, as well as depth (there is no depth offset as with separate cores and logs). More measurements can be done with LWD than with LWC. Brown said that riser drilling should be the priority number 1, with the provision that it does not use up all the money. Scott disagrees, and said this should be done by the Japanese ship. Humphris asked for agreement that ODP should spend minimal amount of time and dollars on riser drilling. SCICOM agreed.

Humphris mentioned advanced CORKs, and said these are not developed purely by ODP, therefore to improve them does not require much effort from ODP. These are important for long-term maintenance of observatories. The advancement mainly involves leaving the holes in a condition suitable for emplacing observatories. Falvey said that the oil industry is interested in making fluid flow and chemistry measurements in situ, as they need improved systems to monitor flow from horizontal wells into vertical wells. He added that this might be an area where somebody else could do the developments for ODP. The SCICOM consensus is that they are not necessarily high priority, relative to other items, as they can be developed outside of ODP. Humphris said she thinks hammer drill advancements are important for architecture of the oceanic lithosphere, rifted margins, and also for diamond coring, and are generally important for recovery in the hard rock environment.

Humphris summarized the discussion saying there are 2 items that unless we do them, we can make zero progress: they are microbiological systems and alternative platforms to drill in shallow water. She recommended these two be highlighted as highest priorities that define areas where unless we do something, we make zero progress. The next group are high priorities which will significantly help the program. The other 2 are also high priorities, but require little effort on ODP's part. These instruments will be coming into ODP as time progresses. Appendix 26 give a Summary Table of the discussion.

SCICOM Motion 97-1-20

SCICOM Prioritizes Phase III technological developments as follows:

1. Developments essential for "any" progress on key scientific objectives of the ODP Long Range Plan
 - Microbiological Systems, Alternate Platforms
2. Developments that significantly augment achievement of scientific objectives of the ODP Long Range Plan
 - Hammer Drill Advancements, Riser-Type Drilling, Logging Innovations;
3. Developments that would enhance the science and cost effectiveness of the scientific objectives of the ODP Long Range Plan
 - Logging While Coring
 - Advanced Corks
 - Advance Borehole Observatories

Proposed: Casey Moore, Seconded: Brown

14 in favor, 2 absent

J. Long term Planning

Tamaki reported on OD-21. He started by reviewing EXCOM Motion 97-1-22, and said that OD-21 has three types of requirements: science, engineering and management. He showed the lines of financing and budget approval, and said that Monbusho (ORI) and STA (Jamstec) have approved the program, but the MOF (the Ministry of Finances) still has to approve it. An answer is expected after CONCORD.

Tamaki reported on the upcoming CONCORD meeting. He showed the different working groups that will meet during the meeting, as well as the meeting schedule.

K. SCICOM Correspondence

Humphris said that SCICOM has already talked about both letters in the Agenda Book during reports on the status of projects. Regarding Taylor's letter, she said she asked the SSP to look at the data and they have written a report saying they believe the feature to be drilled is an active fault. Regarding Natland's letter, Natland has met with some TAMU engineers and one possibility of hammer-drill testing is around Hole 735B.

L. OLD and NEW BUSINESS

M. Future Meetings

A large number of members (5) said they have a conflict of dates and cannot attend the next SCICOM meeting in Switzerland. It was discussed whether to move the meeting to either a

week before or a week later, but the conflicts remain. Therefore, the dates of the next SCICOM meeting remain as originally scheduled. Humphris asked those members who cannot attend, to please let their alternates know as soon as possible, and let her know who will attend.

Overpeck offered to host the spring 1998 meeting in Boulder, Colorado. Suggested dates are the week of 23 of March, with OPCOM first. Pearce offered to host the summer 1998 meeting in Durham, United Kingdom. Suggested preliminary dates for SCICOM are: 24-26th of August with OPCOM after.

N. Review of Motion and Action Items

SCICOM Motion 97-1-21

SCICOM offers a heartfelt "mahalo" to Greg Moore for his efforts in bringing us to his tropical kingdom. Those of us on the field trip trod above the ocean's former surface on recent lava flows and sniffed at unique aromatic concoctions ranging from sulfur vents to volcano wine. We all return to what passes for spring in our more boreal homelands with memories of this island's beautiful convergence of Earth's hydrospheric, atmospheric, biospheric, and lithospheric systems.

Proposed: Larson, Seconded: Scott

14 in favor, 2 absent

SCICOM Motion 97-1-22

SCICOM notes that several members of PCOM who were not carried forward to SCICOM have not been formally recognized for their services. SCICOM appreciates the efforts of Jim Natland, Bob Carter and Greg Mountain during the sometimes difficult time of transition to the new system and encourages their future participation in ODP science.

Proposed: Brown, Seconded: Greg Moore

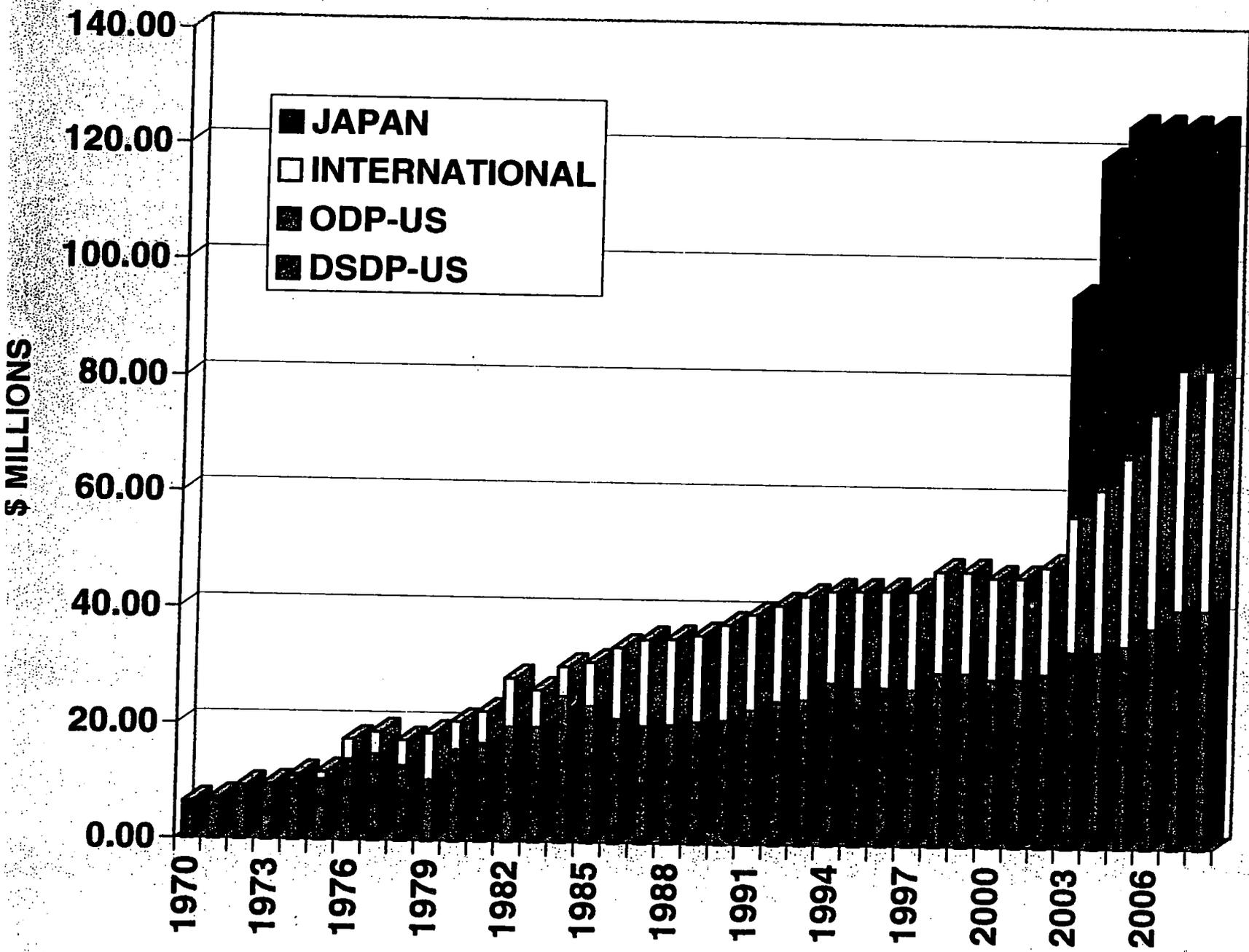
14 in favor, 2 absent

ADJOURN

APPENDICES

- Appendix 1 - Projected costs, and required contributions, to run the program post-2003
- Appendix 2 - The NSF Ocean Science Division Budgets and Ocean Drilling Program Budgets
- Appendix 3 - JOI Budget allocations for FY 98
- Appendix 4 - JOI summary of FY '98 X-base projects
- Appendix 5 - Reorganization at ODP-TAMU
- Appendix 6 - TAMU FY97 program plan
- Appendix 7 - TAMU FY98 budget
- Appendix 8 - TAMU projection of cost and time frame of replacement of equipment, with example of outdated computers
- Appendix 9 - Summary of current leg information, with status of shipboard staffing
- Appendix 10 - Statistics of the national representation through Leg 172
- Appendix 11 - HCGR (K and Th gamma ray) and IMPH (medium resistivity) log data at Holes 1063A and 1061 clearly identify the boundary between the 40 kyr and 100 kyr cycles
- Appendix 12 - Oracle Log Database project
- Appendix 13 - Core-Log Image Correlation Project
- Appendix 14 - Temperature data
- Appendix 15 - Satellite Transfer of Log Data
- Appendix 16 - JANUS development schedule of IS/ODP
- Appendix 17 - Tracor Development schedule
- Appendix 18 - Recommendation of JOI Publications SC
- Appendix 19 - TAMU publication strategy based on directives given by JOI on 9/13/96
- Appendix 20 - Comparison of estimated budgets for Strategy recommended by JOI and later by the Publications Steering Committee in April 97
- Appendix 21 - IR Cost Comparison: Printing Site Chapters vs. Full Book (submitted post-SCICOM)
- Appendix 22 - Costs, as estimated by TAMU, related to the dry-dock, split into three areas: ship modifications (drilling services), science modifications (science services), and Ship Operations (Administrative Services)
- Appendix 23 - Phases in Conoco Hydril Project.
- Appendix 24 - TAMU suggested technological priority and prices listing for innovations regarding (1) improved sedimentary coring, (2) hard rock drilling/coring, (3) measurement systems, (4) deep drilling/casing systems
- Appendix 25 - LDEO technological prioritization
- Appendix 26 - Prioritization of Technological Developments

**OPERATIONS AND MANAGEMENT
(DSPP - IPOD - ODP - IODP)**



NSF OCEAN SCIENCES DIVISION BUDGETS
\$ IN MILLIONS

	FY 96	FY 97	FY 98 REQ.
OCEAN SCIENCES RESEARCH	106.5	109.3	112.2
OCEANOGRAPHIC FACILITIES	47.5	52.3	52.3
OCEAN DRILLING PROGRAM	39.6	40.3	41.8
OCEAN SCIENCES DIVISION	193.6	201.8	206.2

OCEAN DRILLING PROGRAM BUDGET

	FY 96	FY 97
OPERATIONS & MANAGEMENT	27.7	27.1
U.S. SCIENCE SUPPORT	5.4	5.7
UNSOLICITED PROPOSALS	6.0	6.2
OTHER NSF ACTIVITIES	0.5	1.3
TOTAL	39.6	40.3

Budget Allocations for FY 98

Summary of Program Plan Budgets:

	FY96	FY97	FY98
TAMU			
HQ/Admin	2 000 000	1 858 000	1 958 000
Publications	2 106 000	2 128 000	1 872 000
Drilling/Engin.	3 917 000	3 584 000	4 958 000
Tech/Logistics	3 860 000	3 586 000	n/a
Science Ops*	1 017 000	1 262 000	4 113 000
Ship Ops	20 922 000	21 567 000	21 567 000
Info Serv/Curation	3 896 000	3 627 000	2 359 000
TAMU Total	37 718 000	37 612 000	37 827 000
LDEO	4 810 000	4 880 000	4 639 000
JOI/JOIDES/DB	1 872 000	1 908 000	1 934 000

(* Now "Science Services"; which includes curation in FY 98)

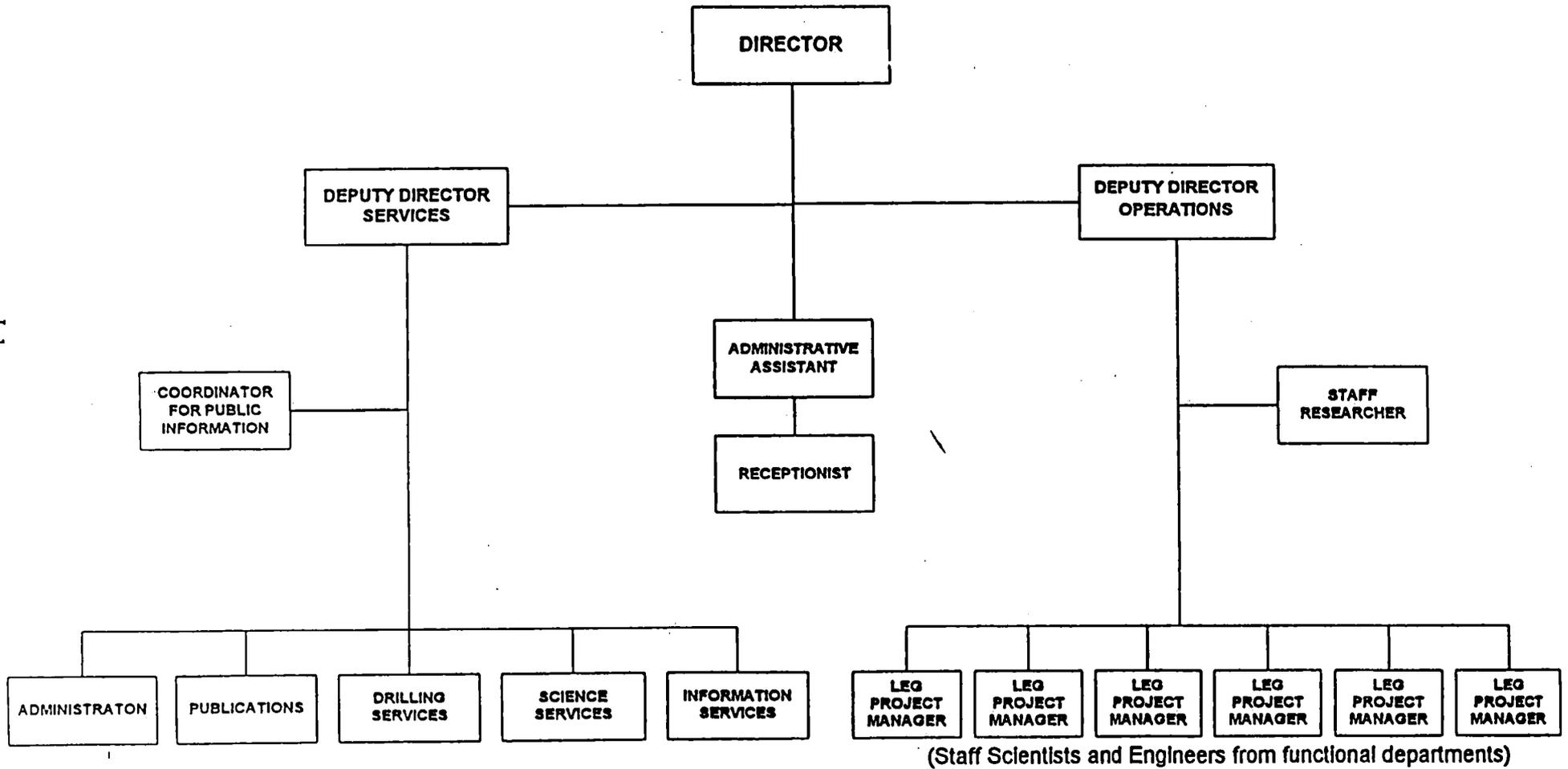
Draft ODP FY98 budget of \$44.4 million is based on funding from NSF and 5 11/12 non-US members.

	Fixed Costs	A-Base	X-Base
TAMU	21 567 000	12 957 000	3 303 000
LDEO	2 190 000	2 047 000	402 000
JOI/JOIDES/DB	0	1 934 000	0
Total	23 757 000	16 938 000	3 705 000
		TOTAL	44 400 000

Summary of FY 98 X-Base Projects

TAMU	Science Services	15,325
	Gulf Coast Repository	6,519
	Sampling Parties	44,800
	Technical Support	66,094
	Drilling Operations	18,489
	Development Engineering	232,472
	Material Services	5,855
	Active Heave Compensator	556,000
	Leg 176– Reentry Hardware	7,700
	Leg 177 – S. Ocean Paleo	76,223
	Leg 178 – W. Antarctic Pen	68,799
	Leg 180 – Woodlark Basin	201,907
	Leg 181 – SW Pacific Gateway	103,962
	Leg 182 – Great Aust Bight	120,785
	Information Services	91,462
	Visual Core Description	200,000
	Data Migration	200,000
	Publications	197,659
	WWW Publications	67,128
	Administration	47,235
Ship Operations	869,534	
Dry Dock	<u>105,000</u>	
Total	\$3,302,948	
LDEO	Core-Log Image Correlation	66,923
	Active Heave Compensation	24,626
	Core-Log Integration (CLIP)	56,557
	Leg 176 – Reentry H/ware: VSP	34,778
	Leg 176 – Reentry H/ware: DLL	9,926
	Leg 177 – S. Ocean Paleo: GHMT	9,472
	Leg 178 – W. Ant Pen: WST	16,392
	Leg 178 – W. Ant Pen: GHMT	47,872
	Leg 180 – Woodlark Basin VSP	34,778
	Leg 180 – Woodlark Basin: BHTV	13,640
	Leg 180 – Woodlark Basin: DLL	9,926
	Leg 181 – SW Pac G/way: GHMT	<u>46,672</u>
	Total	\$402,102

OCEAN DRILLING PROGRAM
TEXAS A&M UNIVERSITY



FY97 BUDGET SUMMARY

APPENDIX 6

	FY95 Actual Expenditures	FY96 Program Plan Budget	FY97 Program Plan Base Budget	FY97 Special Op. Expenses
418014-01000 Headquarters/Administration	1,927,255	1,999,542	1,767,159	
418014-02000 Public Information			91,103	
<i>Subtotals</i>	<u>1,927,255</u>	<u>1,999,542</u>	<u>1,858,262</u>	
418024-01000 Publications - Office	110,537	176,877	139,012	
418024-02000 Photo Lab	146,499	177,916	130,415	
418024-03000 Publications	1,917,059	1,751,000	1,759,189	
418024-04000 WWW Publication				100,358
<i>Subtotals</i>	<u>2,174,095</u>	<u>2,105,793</u>	<u>2,028,616</u>	<u>100,358</u>
418034-01000 Drilling Services - Office	124,280	178,728	200,364	
418034-02000 Drilling Operations Team	2,474,662	2,985,153	1,554,931	
418034-03000 Downhole Systems Team	935,327	753,471	319,938	
418034-04000 Material Services Team			255,785	
418034-05000 Diamond Coring System	396,206			551,000
418034-06000 Ship Systems Team			70,857	
418034-07000 Hammer Drill System				300,814
418034-13000 Leg 173 - Reentry Hardware				148,267
418034-14000 Leg 174B - Cork/Hole 395A				66,074
418034-16000 Leg 176 - Reentry Hardware/Engr.				116,040
<i>Subtotals</i>	<u>3,930,475</u>	<u>3,917,352</u>	<u>2,401,875</u>	<u>1,182,195</u>
418044-01000 Technical & Logistics - Office	277,430	347,777	317,142	
418044-02000 Technical Support	3,380,764	3,024,176	2,730,591	
418044-03000 Logistics	506,037	488,207	538,566	
<i>Subtotals</i>	<u>4,164,231</u>	<u>3,860,160</u>	<u>3,586,299</u>	
418054-01000 Science Operations	1,153,878	1,017,003	1,049,888	
418054-02000 Split-Core MST Purchase				190,373
418054-03000 XRF Crystal				6,000
418054-04000 Semi-Annual Report				8,000
418054-05000 Solaris 2x Upgrade				8,100
<i>Subtotals</i>	<u>1,153,878</u>	<u>1,017,003</u>	<u>1,049,888</u>	<u>212,473</u>
418064-01000 Ship Operations - ODL	19,110,202	20,401,859	20,863,761	
418064-02000 Ship Operations - ODP	862,951	520,375	680,990	
<i>Subtotals</i>	<u>19,973,153</u>	<u>20,922,234</u>	<u>21,544,751</u>	
418094-01000 Information Services	1,045,624	1,448,516	1,533,039	
418094-02000 Janus Project	1,535,058	1,700,000	34,782	
418094-03000 Janus I				661,702
418094-04000 Janus II				150,000
418094-05000 Core Desc. Image Capture Sys.				111,233
418094-06000 East Coast Repository	208,166	244,770	262,558	
418094-07000 West Coast Repository	144,795	235,508	207,826	
418094-08000 Gulf Coast Repository	90,034	98,978	63,922	
418094-09000 Curatorial Section	113,283	130,547	162,931	
418094-10000 Bremen Core Repository	34,937	37,100	57,700	
418094-11000 Sampling Parties				29,400
418094-12000 Data Migration				300,000
<i>Subtotals</i>	<u>3,171,897</u>	<u>3,895,419</u>	<u>2,322,758</u>	<u>1,252,335</u>
GRAND TOTALS	\$ 36,494,984	\$ 37,717,503	\$ 34,792,449	\$ 2,747,361

FY98 BUDGET SUMMARY

		FY96 Actual Expenditures	FY97 Program Plan Budget	FY98 Program Plan Base Budget	FY98 Special Op. Expenses
418010-01	Headquarters/Administration	2,261,782	1,767,159	1,825,549	47,235
418010-02	Public Information	71,410	91,103	85,446	-
	<i>Subtotals</i>	<i>\$2,333,192</i>	<i>\$1,858,262</i>	<i>\$1,910,995</i>	<i>\$47,235</i>
418020-01	Publications - Office	138,306	139,012	138,527	-
418020-03	Publications	2,133,992	1,759,189	1,468,638	197,659
418020-04	WWW Publication	-	100,358	-	67,128
	<i>Subtotals</i>	<i>\$2,272,299</i>	<i>\$1,998,559</i>	<i>\$1,607,165</i>	<i>\$264,787</i>
418030-01	Drilling Services - Office	189,149	200,364	217,497	-
418030-02	Drilling Operations Team	3,009,153	1,554,931	1,681,296	18,489
418030-03	Development Engineering Team	743,404	319,938	764,320	232,472
418030-04	Material Services Team	-	255,785	902,389	5,855
418030-05	Diamond Coring System	550,507	551,000	-	-
418030-06	Ship Systems Team	-	70,857	-	-
418030-07	Hammer Drill System	-	300,814	-	-
418030-08	Active Heave Compensation	-	-	-	556,000
418030-13	Leg 173 - Reentry Hardware	-	148,267	-	-
418030-14	Leg 174B - Cork/Hole 395A	-	66,074	-	-
418030-16	Leg 176 - Reentry Hardware/Engr.	-	116,040	-	7,700
418030-17	Leg 177 - S. Ocean Paleoccean	-	-	-	76,223
418030-18	Leg 178 - West Antarctic Peninsula	-	-	-	68,799
418030-20	Leg 180 - Woodlark Basin	-	-	-	201,907
418030-21	Leg 181 - SW Pacific Gateway	-	-	-	103,962
418030-22	Leg 182 - Great Australian Bight	-	-	-	120,785
	<i>Subtotals</i>	<i>\$4,492,213</i>	<i>\$3,584,070</i>	<i>\$3,565,502</i>	<i>\$1,392,192</i>
418040-01	Technical & Logistics - Office	320,462	317,142	-	-
418040-02	Technical Support	2,865,757	2,730,591	-	-
418040-03	Logistics	465,891	538,566	-	-
	<i>Subtotals</i>	<i>\$3,652,110</i>	<i>\$3,586,299</i>	<i>-</i>	<i>-</i>
418050-01	Science Services	1,265,881	1,049,888	1,080,020	15,325
418050-02	Split-Core MST Purchase	-	190,373	-	-
418050-03	XRF Crystal	-	6,000	-	-
418050-04	Semi-Annual Report	-	8,000	-	-
418050-05	Solaris 2x Upgrade	-	8,100	-	-
418050-06	East Coast Repository	248,339	262,558	254,481	-
418050-07	West Coast Repository	271,086	207,826	182,276	-
418050-08	Gulf Coast Repository	98,298	63,922	91,879	6,519
418050-09	Curatorial Section	216,995	162,931	106,193	-
418050-10	Bremen Core Repository	60,734	57,700	49,356	-
418050-11	Sampling Parties	-	29,400	-	44,800
418050-12	Technical Support	-	-	2,215,613	66,094
	<i>Subtotals</i>	<i>\$2,161,333</i>	<i>\$2,046,698</i>	<i>\$3,979,818</i>	<i>\$132,738</i>

FY98 BUDGET SUMMARY

		FY96 Actual Expenditures	FY97 Program Plan Budget	FY98 Program Plan Base Budget	FY98 Special Op. Expenses
418060-01	Ship Operations - ODL	20,142,865	20,863,761	21,028,409	-
418060-02	Ship Operations - ODP	752,393	680,990	618,734	869,534
418060-03	1999 Drydock	-	-	-	105,000
	<i>Subtotals</i>	\$20,895,258	\$21,544,751	\$21,647,143	\$974,534
418090-01	Information Services	1,742,525	1,533,039	1,732,951	91,462
418090-02	Janus Project	1,824,981	696,484	-	-
418090-03	Photo Lab	167,018	130,415	134,695	-
418090-04	Visual Core Description (Janus II)	-	150,000	-	200,000
418090-05	Core Desc. Image Capture Sys.	-	111,233	-	-
418090-12	Data Migration	-	300,000	-	200,000
	<i>Subtotals</i>	\$3,734,524	\$2,921,171	\$1,867,646	\$491,462
	GRAND TOTALS	\$39,540,929	\$37,539,810	\$34,578,269	\$3,302,948

Cumulative Obsolescence Ship & Shore

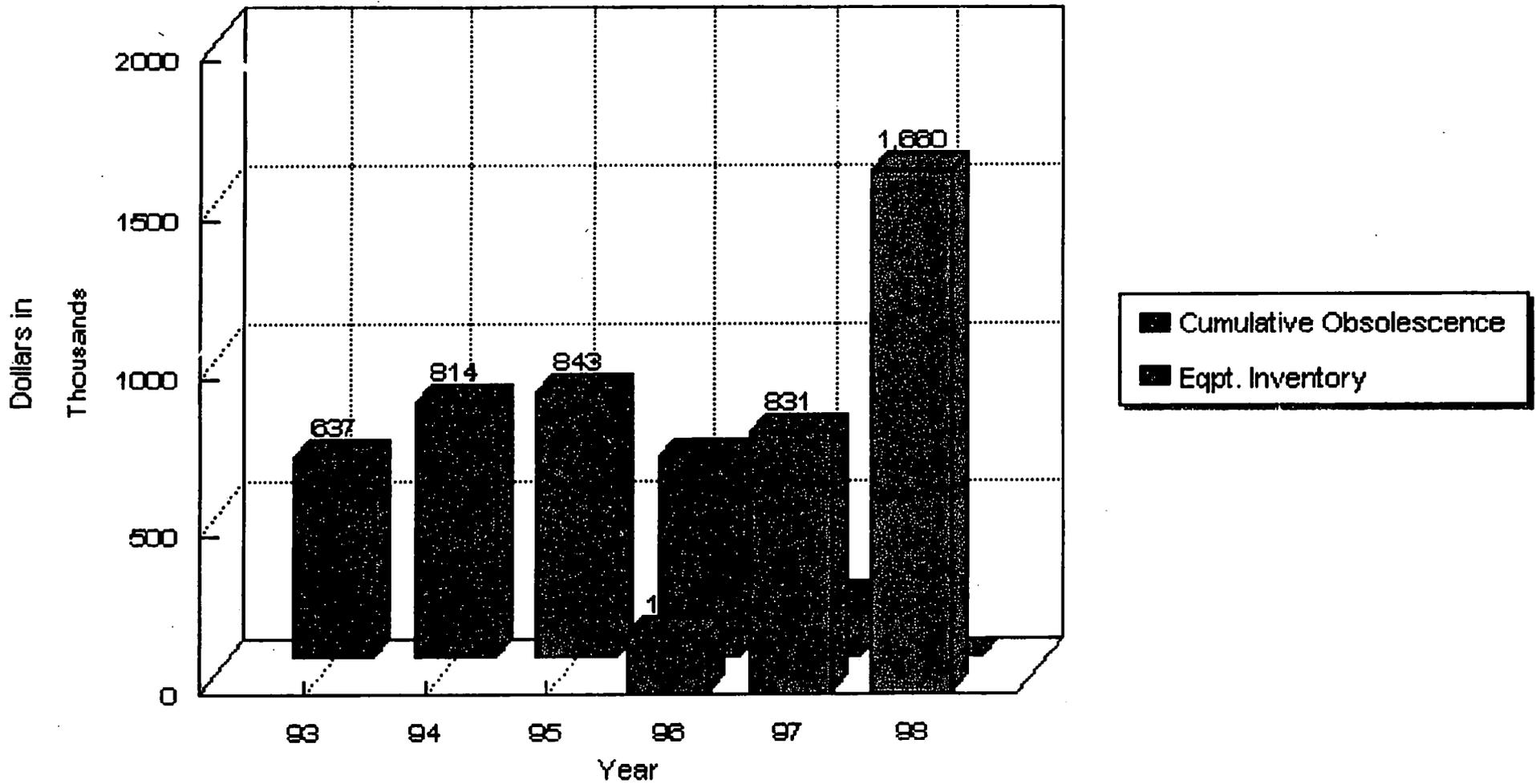
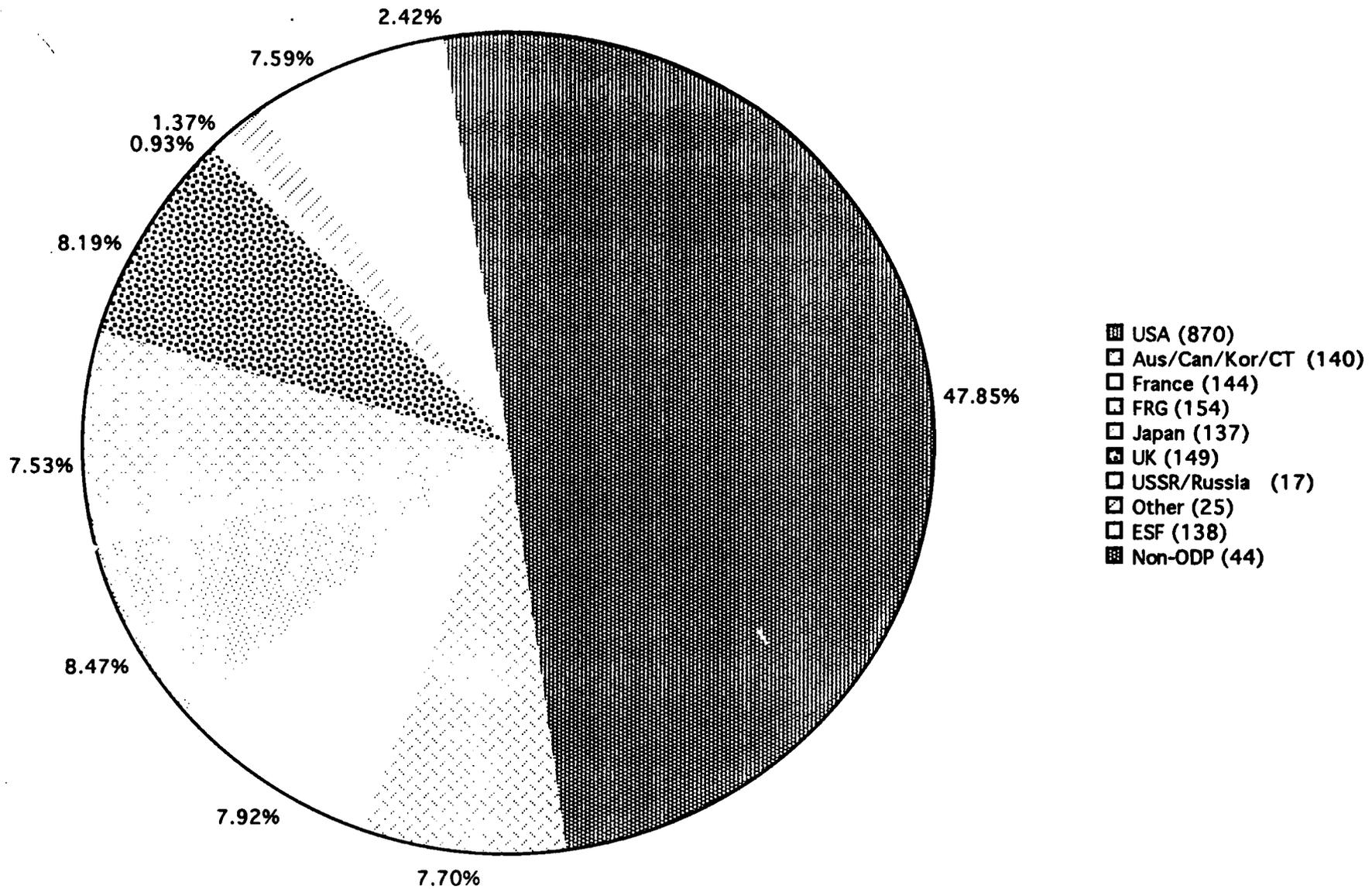


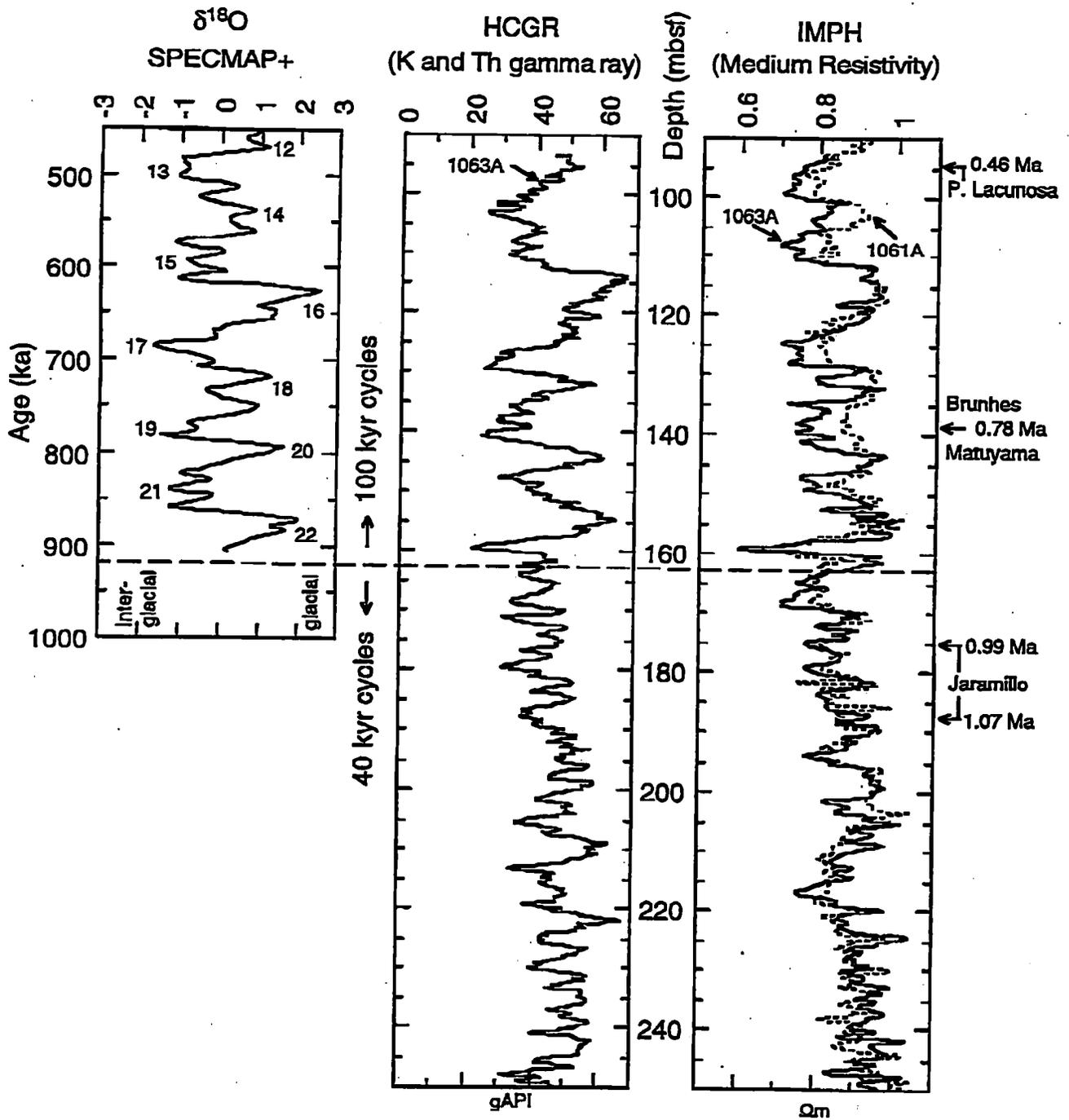
Table 1: Leg Information

Leg	Area	Ports	Cruise Dates	Co-Chief Scientists	Staff Scientist	Staffing	Territorial Permission
173	Iberia	Lisbon-Halifax	April-June 1997	Dr. Marie-Odile Beslier Dr. R.B. Whitmarsh	Dr. Paul Wallace	Complete	Portugal
174A	New Jersey Shelf	Halifax-New York	June-July 1997	Dr. James Austin Dr. Nicholas Christie-Blick	Dr. Mitch Malone	Complete	
174B	CORK Hole 395A	New York-Las Palmas	July - August 1997	Dr. Keir Becker	Dr. Mitch Malone	Complete	
175	Benguela	Las Palmas-Cape Town	August-October 1997	Dr. Wolfgang Berger Dr. Gerold Wefer	Dr. Carl Richter	Complete	Congo, Angola, Namibia, South Africa
176	Hole 735B	Cape Town-Cape Town	October-December 1997	Dr. Henry Dick Dr. James Natland	Dr. Jay Miller	Underway	
177	S. Ocean Paleooceanography	Cape Town-Punta Arenas	December '97-February 1998	Dr. Rainer Gersonde Dr. David A. Hodell	Dr. Peter Blum	Underway	Norway
178	Antartic Peninsula	Punta Arenas-Cape Town	February-April 1998	Dr. Angelo Camerlenghi Dr. Peter F. Barker	Dr. Gary Acton	To be determined	Antarctic Treaty/MARPOL compliance
179	NERO/Hammer Drilling	Cape Town-Singapore	April-May 1998	TBN	Dr. John Firth	To be determined	
180	Woodlark Basin	Singapore-Townsville	June-July 1998	Dr. Philippe Huchon TBN	Dr. Adam Klaus	To be determined	Papua New Guinea
181	SW Pacific Gateways	Townsville-Wellington	August-September 1998	Dr. I.N. McCave TBN	Dr. Carl Richter	To be determined	New Zealand
182	Great Australian Bight	Wellington-Fremantle	October-November 1998	Dr. Albert C. Hine Dr. David A. Feary	Dr. Mitch Malone	To be determined	Australia
183	Kerguelen	Fremantle	December '98-February 1999	Dr. Millard F. Coffin TBN	Dr. Paul Wallace	To be determined	Australia, France



Total: 1818 Participants
 Plot includes Staff Scientists and LDEO Logging Scientists

ODP Leg 172
1063A, Bermuda Rise
1061A, Blake Ridge



Joides Resolution

11 April 1997

Trevor Williams, Leg 172



Oracle Log Database

- ◆ Data tables for geophysical and LWD developed
- ◆ Web interface: Search by map location, leg, hole, or tool
- ◆ On-line java data plotting tool
- ◆ 179 holes of geophysical and LWD data currently on-line



LUBR/LDEO Core-Log Image Correlation Project

GI - FROM
D. GOL (E2DOV)
UPCOMING LEG.

- ◆ Joint LUBR/LDEO project to integrate core and log image data in FY 97/98
- ◆ Allows for core orientation in consolidated sediments
- ◆ Shore testing completed using cores from Legs 118, 148, 149
- ◆ Sea-trials : Phase I during Leg 173 (NERC funded) Phase II during Leg 176



Temperature Data Project

- ◆ Migration (and reprocessing) of historic temperature data from 9-track to DAT
- ◆ Evaluation of the use of ODP temperature data to estimate rebound equilibrium and thermal gradient
- ◆ Development of data model for log database
- ◆ Recommendations for improved temperature logging strategies



Satellite Transfer of Log Data

- ◆ Inmarsat-B system (provided by SeaNet) installed during Leg 170 portcall
- ◆ Successfully tested during Leg 170
- ◆ Global coverage between 70°N and 70°S latitude
- ◆ Data transfer rates up to 56 Kb/s
- ◆ Direct TCP/IP connection to LDEO

JANUS

IS/ODP Development Schedule

Curation Application

- Was placed in use on Leg 172. Modifications and enhancements were made by on-board ODP software developer.
- Conversion of Curation related data, i.e. corelog, samples, etc... has been completed and is waiting verification by Curatorial personnel before migration to the ODP Production Oracle database.
- Sample Request information was entered into the JANUS database on shore in preparation for Leg 173.

Repository Sampling

- Initial production version completed along with user's guide.
- Testing on shore has been done by repository personnel.
- Testing of this application, emulating shorebased sampling, has occurred on Leg 172 utilizing live data.

JANUSWeb

- Work continues in adding queries and enhancements for access to ODP data.
- A version of the JANUSWeb application was installed on Leg 172 for use by shipboard personnel to access Leg 172 data. All reports indicate that the application was received with resounding approval by on-board scientists.

Core Display Application(UG1-Video Display of Corelog Information)

- This application has been completed and has been used on Legs 171 and 172 as the production display utilizing the JANUS database.

4/16/97

JANUS

IS/ODP Development Schedule (cont.)

Moisture/Density (MAD-formerly Index Properties)

- This application has received final testing on Leg 172, enhancements made, and is currently in production on the ship.
- Data from this application is loaded to the JANUS database by a Tracor-developed load program.

Coulometer

- This application was used in production on Leg 172 and enhancements were made to provide more to more efficient use by shipboard users.
- Data from this application is loaded to the JANUS database by a Tracor-developed load program.

Tensor Tool

- This application along with the data model for incorporation of the Tensor Tool data into the JANUS database was developed by ODP on-board software developers during Leg 172. It is currently in use.

Business Objects Queries and Reports

- Multiple queries and reports were development for the shipboard users during Leg 172 by the ODP on-board software developments.
- Additional queries and reports will continue to be developed by an ODP on-board software developer during Leg 173 and by shore-based development staff on an ongoing basis as needs are defined.

JANUS

TRACOR Development Schedule

Coding & Testing Completed in August 1996

- Corelog, Operations, Curation, Sampling (UG1)
- MST (UG2a)
- Paleontology (UG2b)

Completed by Leg 172

- Physical Properties (UG3)
Moisture Density Data Upload
- Chemistry (UG4a)
IW, Carbonate, Rock/Wet, Gas,
XRD, XRF
- Data Extraction, File creation for Load
into Applecore (UG4b)

Will not be addressed in Present Plan

- Underway Geophysics, Seismic,
Core Photos (UG6)

SC Prioritized List for Completion

1. Visual Core Description
Data model
Hard Rock data input
2. Age/Depth Function
3. Color Reflectance
4. Thin Section*
5. Paleomagnetism
6. Thermcon
7. Chemistry QC
8. Adara

*Work being done by TAMU Developers

4/16/97

**EXECUTIVE SUMMARY OF PUBCOM INITIAL
RECOMMENDATIONS**

I) INITIAL REPORTS (IR)

A) PRODUCTS AND PUBLICATION STRATEGY RECOMMENDED

1) Current publication strategy for IR volume is correct in direction but too rapid for user community to effectively follow.

2) For immediate future (e.g., 3-5 years), continue to publish FULL PRINTED format of IR volume.

3) Continue to improve. CD-ROM publication of full IR volume in at least pdf format.

4) Target transition process and time-line to all electronic publication of IR by tracking changing ability and acceptance of user community to view, download, print, and thus effectively use CD-ROM information--requires education and involvement of user community.

5) Notwithstanding the current bandwidth limitations of efficient transmission of IR data on the Internet, and the consequent probable need for at least one European and one Japanese mirror site, devise a strategy to provide Internet access to IR volume as soon as practical.

II) SCIENTIFIC RESULTS (SR)

A) PRODUCTS AND PUBLICATION STRATEGY RECOMMENDED

1) Present transitional downramp from paper volume to an all-electronic (CD and Internet) format of the SR volume is properly conceived and should be carried forward.

2) Design an SR product that refocuses all outside-publications (references, abstracts, entire article if possible) of leg science and houses all meaningful and significant Leg science that is not published in the outside literature.

3) Provide, as soon as practical, the publication of the SR volume as an Internet product, with first accepted papers appearing as soon as possible.

4) Market the SR volume, both in CD and Internet format, as the place to go to get connected to the principal results of ODP scientific results

III) ACQUIRE A DATA BASE OF USER INFORMATION

A) PREPARE AND DISTRIBUTE A QUESTIONNAIRE

1) Electronically-distribute (email, FAX, and web site) a questionnaire, with a backing surface mailing, to acquire a data base of the present electronic capabilities of the ODP user community and their present habits and preferences in viewing, absorbing, and using ODP science data and information.

2) Issue questionnaire periodically to track changing status and use this information to stay in step with user community and most effectively steer transition from mostly printed to most electronic publication of ODP data.

ODP Proceedings Format

Electronic Publication Strategy (Directive given by JOI to TAMU 9/13/96)†

	Year Volume Produced*					
	FY97	FY98	FY99	FY00	FY01	FY02
Initial Reports:						
Book (site chapters and prime data) + CD (for viewable volume and data sets)	165, 166, 167, 168, 169S					
Book (site chapters) + CD (prime data, viewable volume, and data sets)	169	170, 171A, 171B, 172, 173, 174, 175				
CD viewable volume (site chapters, prime data, and data sets) + WWW version	Develop prototype all-electronic volume		176, 177, 178, 179, 180, 181	182, 183, 184, 185, 186, 187	188, 189, 190, 191, 192, 193	194, 195, 196, 197, 198, 199
Scientific Results:						
Book	150X					
Book + CD (for viewable volume and data sets)	152, 153, 154, 155, 156, 157	158, 159/159T, 160	161**, 162, 163	164, 165, 166, 167, 168		
CD viewable volume + WWW version					169S, 169, 170, 171A, 171B, 172, 173, 174	175, 176, 177, 178, 179, 180

† Format of *Proceedings* material may change, subject to new PUBCOM recommendations.

* FY = Fiscal Year (October – September)

** Beginning with 161, all SR books have 500-page limit.

Publications Department Budget Comparisons: FY98-02

Budget Projection submitted in January 1997

(based on 9/96 JOI Mandate)

	FY98	FY99	FY00	FY01	FY02
Initial Reports	387,567	125,061	142,061	128,551	141,188
Scientific Results	162,824	141,861	256,420	150,680	158,834
Total	550,391	266,922	398,481	279,231	300,022

Budget Projection for PUBCOM Recommendation

(based on 4/97 PubCom meeting and revised projections)

	FY98	FY99	FY00	FY01	FY02
Initial Reports	508,286	524,972	600,353	630,998	663,209
Scientific Results	163,728	141,860	256,515	150,680	158,864
Total	672,014	666,832	856,868	781,678	822,073

Initial Reports cost difference between JOI and PUBCOM models

FY98	FY99	FY00	FY01	FY02
120,719	399,911	458,292	502,447	522,021

Notes:

1. No printing contract established for FY99 and beyond. Estimates based on 5% increase per year.
2. Recovery for FY00-02 based on these leg types:
 - 1 hard rock leg (1,500m)
 - 2 high-recovery, high-resolution, soft rock legs (6,000m)
 - 3 medium legs (2,000m soft rock, 500m hard rock)
3. Medium for storing "CD" material will probably change in FY99 or FY00. Estimates are based on current CD technology. New technology may decrease costs significantly.

Initial Reports Cost Comparison: Printing Site Chapters vs. Full Book

	JOI Model (Site Chapters)	PubCom Recommendation (Full Book)	Cost Difference
FY98	268,109	442,365	174,256
FY99	269,631	461,070	191,439
FY00	249,287	382,705	133,418
FY01	317,591	476,549	158,958
FY02	330,566	477,092	146,526

Notes:

1) Average number of pages printed per leg:

JOI Model: 670

PUBCOM Model: 1130

2) Page counts based on:

FY98: 170–172: actual recovery and pages; 173–175: revised recovery estimates.

FY99: 176–181: recovery estimates as outlined in the FY98 Program Plan.

FY00: 182–186: recovery estimates based on leg projections listed below.

FY01: 187–192: recovery estimates based on leg projections listed below.

FY02: 193–198: recovery estimates based on leg projections listed below.

3) FY00-02 Leg Projections

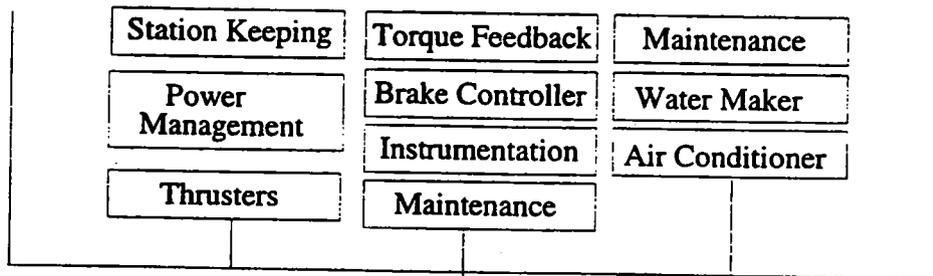
1 equipment-intense leg, soft sediment to lithified (2300m)

1 downhole measurements leg, soft sediment (1500m)

2 high-recovery legs, soft sediment (6200m)

2 mixed legs, soft sediment and hard rock (2000m/500m)

Classification	Marine Systems	Drilling Systems	Shipboard Systems	Living Quarters
\$1,515,000	\$2,758,000	\$1,425,000	\$945,000	\$680,000



Drydock - Drilling Services

Project Management Costs
\$1,923,950

PHASE 1 - Conceptual Engineering
- capped at 500k
- establish feasibility, project schedule + costs

1A - May / Sept 97
- high risk equipment component design and system analysis (550k)

2 - Sept 97
- Engineering (10M)

3 - Onshore Fabrication / testing (7.5M)

4 - Offshore installation / testing (25M)

*** SCIENCE STRATEGY FOR THE LONG RANGE PLAN ***

- o BOREHOLE, "A Plan To Advance Post-Drilling, Sub-Seafloor Science," Dec 1994,
- o JOI-USSAC Position for International Scientific Ocean Drilling, 1998-2003, Mar 1996,
- o ODP Long Range Plan, "Understanding Dynamic Earth Thru Ocean Drilling," Mar 1996,
- o ODP Five Year Science Plan (1998 - 2003), Sep 1996,
- o ODP Strategic Implementation Plan (1998-2003), Mar 1997.

*** TECHNOLOGY REQUIRED TO MEET SCIENCE OBJECTIVES ***

1. IMPROVED SEDIMENTARY CORING
2. SUBSTANTIAL HARD ROCK CORING
3. EXPANDED DOWN HOLE MEASUREMENTS
4. DEEPER DRILLING / CASED HOLES
5. NEW GENERATION LEGACY HOLES

MARCH 1997



Improve Core Recovery
and Core Quality

Recover young Fractured
Oceanic Crust

Recover alternating sequences

Drill / re-enter holes on
sloping hard rock surface

Drill deep stratigraphic holes

III. STATUS OF CURRENT DEVELOPMENT

- o ACTIVATION OF HEAVE COMPENSATOR**

- o INNOVATION OF HAMMER DRILL-IN CASING**

- o DOWN HOLE MEASUREMENT TOOLS**

IV. PLAN FOR PHASE III DEVELOPMENT

- 1. IMPROVED SEDIMENTARY DRILLING**

- 2. HARD ROCK DRILLING / CORING**

- 3. DOWN HOLE MEASUREMENTS**

- 4. DEEP DRILLING / CASING**

- 5. NEW GENERATION LEGACY HOLES**

*** SUGGESTED PRIORITY LISTING FOR INNOVATION ***

1. IMPROVED SEDIMENTARY CORING

Adapt DCS technology in the form of active heave control to the JR heave compensator to improve drill string heave reduction from the present 50-80% to 90-95%, thus achieving more uniform sea floor stability for improved core quality and landing protection for all sea floor activities. Evaluate existing coring tools for incremental improvements.

- o **HISTOGRAM** - Monitor ship heave effects on the drill string, pre and post activation of heave compensator, as well as coring tool effects for comparison. Installed during Leg 170 Port Call, San Diego. Technology transfer from DCS program (\$75,000).

- o **LOW FRICTION SEALS** - Improve sensitivity of JR passive heave compensator for shallow depth, light sea states coring / landing conditions from 80% to 90%. Install during Leg 174 Port Call, Halifax. Technology transfer from DCS program (\$85,000).

- o **ACTIVATE HEAVE COMPENSATOR** - Improve responsiveness, as well as sensitivity of JR passive heave compensator for deep depth, heavy sea states coring / landing from 50% to 90%. Install during Leg 177 Port Call, Capetown. This primary transfer of technology from the DCS program (\$1.2 million) will greatly increase the downhole life of drilling/coring tools.

- o **SEAFLOOR INDICATOR** - Develop precision seafloor indicator Sub to provide real time Driller's information. Recommend \$95,000-175,000 in PHASE III.

- o **ADAPT TECHNOLOGICAL ADVANCEMENTS** - The ultimate objective is to evaluate existing coring tools / bits for improvement. Recommend \$250,000 per year in Phase III.

*** SUGGESTED PRIORITY LISTING FOR INNOVATION ***

2. HARD ROCK DRILLING/CORING

Diamond coring shall receive primary attention, following active control of the JR heave compensator, in the form of "smart" subs to both isolate residual drill string heave and control WOB.

Also, hydraulic hammer technology shall be adapted to provide spudding capability on hard, sloping rock and large ODP drill-in casing systems to provide a re-entry hole in fractured rock.

o **ISOLATE SEA FLOOR** - Adapt Isolation Sub technology that separates residual drill string heave from the Bottom Hole Assembly (BHA) in order to maintain uniform weight-on-bit (WOB). An Isolation Sub would be acquired/built in Phase III for an estimated \$150,000, or \$80,000 each for several.

o **WOB MONITOR** - Develop WOB Sub by adapting force and position sensors, currently used for horizontal steering, to signal an adjusting device (Thruster Sub) in order to correct for drill-off weight and hole sticking reaction to residual drill string heave. A WOB Sub would sense positional angularity of the BHA, as well as drill collar weight changes. The WOB Sub would signal a Thruster Sub via either electrical wire or hydraulic pulse or sonic excitation telemetry. A WOB Sub would be adapted in Phase III for an estimated \$200,000, or \$90,000 each for several.

o **THRUSTER SUB** - Weight-On-Bit control for diamond coring shall be provided with a Thruster Sub (Force-On-Bit (FOB) Sub), currently utilized for horizontal drilling, to produce vertical downward force on the bit. This Sub must have provision for receiving/interpreting the WOB Sub signal and directing minimal pump power through variable ports. Combined with the WOB Sub, the Thruster Sub shall provide the final measure of control for WOB variation to conduct diamond coring. The Thruster Sub would be acquired or built for an estimated \$250,000, or \$125,000 each for several.

o **TOP DRIVE TORQUE CONTROL** - Following stabilization of the BHA at the sea floor via Active Heave Compensation and Smart Subs, diamond drilling/coring tools can be applied with improved success. The Top Drive on the JR should be adapted with its own PC driven control system to allow the DC drive motor to slip when the rate of penetration rapidly decreases, so that drill string torsion is not allowed to increase until the string shortens, frees the stuck drill bit and strikes it on the bottom of the hole. This activity, used to resist torsional impact and fatigue on drill pipe when rotary drilling, is particularly important to protect diamond coring bits and core integrity. The estimated cost for Phase III is \$100,000.

*** SUGGESTED PRIORITY LISTING FOR INNOVATION ***

3. MEASUREMENT SYSTEMS

Adaptation of currently available oilfield measurement and control tools will allow extensive physical and chemical conditions to be monitored real time and transmitted to the JR via telemetry systems. This technology is rugged, reliable and AVAILABLE.

o **MULTI-PURPOSE SENSORS** - Measurement While Drilling (MWD) systems currently in use provide proven technology with which to sense pressure, temperature, azimuth, angularity and location, store this data and transmit it, via hydraulic pulse or sonic excitation telemetry, to data processors aboard the JR. Such tools, by providing important Driller's information, should greatly increase the life of drilling/coring tools. ODP Development Engineering Team personnel are experienced with this technology.

o **LOGGING WHILE CORING** - Logging While Drilling (LWD) systems currently in use provide proven technology with which to sense formation lithography, density and porosity, as well as chemistry, and do so within an envelope small enough to allow full size coring tools to pass. While hole logging may be an issue for Phase IV, basic hole information can be gained real time with currently available technology.

o **FORMATION EVALUATION** - Formation Evaluation While Coring (FEWC) provides more than another step toward hole logging for Phase IV. In situ formation evaluation can be utilized to make "halt or procede" decisions while coring, as well as core integrity during coring, rather than at the surface.

o **LABORATORY PRESSURE SAMPLES** - Future requirements for fluid sampling tools abound. The existing PCS tool requires several improvements that include in situ monitoring, as well as pressurized core removal and evaluation. Likewise, laboratory stack facilities must be prepared to accomodate pressurized cores. Logging sensors provide information with which to make real time selections for remote side wall sampling.

*** SUGGESTED PRIORITY FOR INNOVATIONS ***

4. DEEP DRILLING / CASING SYSTEMS WORKSHOP MAR 1998

Deep drilling involves placing the necessary equipment and tools aboard the JR so that its full potential can be utilized: coring to 3000 meters of earth within 8500 meters total depth. This requires drill-in casing systems, hydrocarbon management and four nested casing strings.

- o **DRILL-IN CASING SYSTEM** - Deeper holes will require that the Hard Rock Re-Entry System be enlarged to 20" X 16" casing to accommodate as many casing strings as possible (5 or 6 with liner hangers). This system is potential for an industry JIP for drilling-in 26" casing into deeper Gulf of Mexico sediment.
- o **HYDROCARBON SENSOR** - Drilling/coring on the Margins will require hydrocarbon control in the form of a methane sensor for responsive well control. A methane sensor located, near the bit can be adapted to send an early warning signal to the surface to initiate a rapid mud sweep or other procedures.
- o **PORE PRESSURE SENSOR** - Pore pressure sensors can be adapted from MWD technology to indicate partial pressure values during coring. Such information could be of utility to science, as well as to the Driller for hole control.
- o **RATE OF PENETRATION** - Drillers on land prefer to operate from Weight-On-Bit and Rate-Of-Penetration information. Currently, neither exist at sea. Additionally, XCB core length at any time would indicate XCB deterioration. Accelerometers are available for adaptation to drilling or coring tools to indicate ROP with about a two second delay to the surface. See item 2. Hard Rock Coring Systems.
- o **CONTINUOUS CASING** - Petroleum explorers typically drill with a mud system to support the hole and only set casing at formation pressure points. In contrast, crustal provinces are fragile and broken rock does not support a drilled hole. Mud sweeps are utilized to attempt wall stabilization (as well as hole cleaning). However, ODP must set relatively short casing strings often in attempts to drill deep. Horizontal drillers have adapted plasticizers with cement and expandable casing (slotted steel housings) to achieve cased holes. Such equipment would benefit ODP because many more sizes could be utilized and far less casing stowage (weight) would be required.

LOGGING TECHNOLOGY DEVELOPMENT

D. Goldberg

LDEO Borehole Research Group

April 3, 1997

LWD Tool Modifications

At this juncture, the deployment of Logging While Drilling (LWD) tools by ODP has been extremely successful in achieving LRP objectives in accretionary prisms. The tools used to date (natural gamma ray, electrical resistivity, bulk density, and neutron porosity) have been first generation LWD technology. The next generation of these tools has been significantly improved and new "at-the-bit" and acoustic technologies are currently available. However, our ability to deploy some of these tools is limited by the size of ODP drill bits and collars. Moderate re-engineering of the Resistivity-at-the-Bit (RAB™) tool could make it suitable for ODP deployment. The current RAB tool configuration requires a 8-1/2" drill bit for the imaging system to remain at a close proximity of the borehole walls and produce high resolution data. Since ODP routinely uses 9-7/8" bits, mechanical tool modifications to the imaging sleeve need to be developed. We propose to collaborate with Schlumberger-Anadrill to build an extended sleeve for use in standard 35 cm (9-7/8") diameter ODP holes. In addition, the new geometry will require the algorithms for absolute resistivity measurements to be revised. The modified tool would be capable of obtaining log data in moderate-to-high resistivity environments, such as crustal sites, as well as downhole engineering parameters of shock, torque, and instantaneous penetration rate. In view of other technological developments, such as the hammer-in casing system, which are designed to improve recovery under difficult drilling conditions the RAB tool could prove to be quite complementary where lithological and structural information has characteristically been restricted. Logs and engineering parameters could be acquired as continuous profiles below the seafloor in these environments.

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Fluid sampling and permeability logging

The sampling of *in situ* formation fluids and the measurement of bulk permeability in basement rocks is a key objective of the LRP. We propose to develop a deployment approach which allows straddle packer elements to be lowered into a re-entry hole for fluid sampling

and permeability measurements. The design will use the existing Schlumberger MDT™ tool. Since current ODP logging is limited to tools that can be lowered through a 10-cm drill pipe, use of the MDT will require a protective sleeve and a conventional wireline 'wet-connect' cablehead to deploy this large-diameter tool below a re-entry cone. Following a feasibility study by staff engineers from LDEO, ODP-TAMU, and Schlumberger of the engineering requirements, cost, reliability, and deployment risks of this approach, a prototype system will be developed and tested. Follow-on development using the wet-connect in conjunction with other new technologies, will also be investigated. This could expand logging tool selection to other large-diameter tools which are currently available from industry.

Logging-While-Coring Feasibility Study

Logging-While-Coring (LWC) is short hand for the simultaneous use of Logging-While-Drilling (LWD) and coring tools in ODP (or other) drilling applications. In addition to the present advantages of acquiring LWD data alone, several additional benefits of LWC are anticipated, including: (1) considerable time savings by coring and logging simultaneously, (2) improved drilling safety from log data recovered at the bit, and (3) simultaneous and combined core and log depth measurement, essentially eliminating depth uncertainty for core-log integration. LWC concepts have been previously discussed and endorsed by the JOIDES Downhole Measurements Panel in September 1994. The development of Logging-While-Coring capabilities, however, will require considerable modification of existing LWD tools. In simplest terms, the mechanical systems and battery assemblies which fill the annulus of these tools need to be re-engineered so that coring tools can pass through them. A feasibility study is proposed to examine the detailed engineering efforts and costs that would be required for LWC development either through a JIP (Joint Industry Project) or a specific ODP-industry collaboration.

Table 1. Approximate Cost and Duration of Logging Technology Developments:

	Project	Cost	Duration
I	RAB modification	\$90K	~ 6 mo.
II	MDT design	\$185K	>1 yr.
III	LWC feasibility	\$75K	~ 9 mo.

Prioritization of Technological Developments

Group 1

Microbiological Systems	ODP effort variable (depending on scope of requirements); highly cost effective
Alternative Platforms	Highly variable cost; minimal ODP engineering/development effort

Group 2

Hammer Drill Advancements	Substantial ODP effort ; high potential for improving many aspects of core recovery
Riserless Drilling/BOP	Minimal ODP effort; high potential for drilling in currently unapproachable environments
Logging Innovations/LWD	Minimal ODP effort; high potential for better logs

Group 3

Logging While Coring	Major ODP effort (little industry interest); high potential scientific payback; less cost effective than LWD innovations
Advanced CORKs	Low ODP effort; Important for long-term maintenance and servicing of observatories; low cost
Advanced Borehole Observatories	Minimal ODP effort; third party development; cost effective